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PRELIMINARY DATA FROM INTRANUCLEAR-CASCADE CALCULATIONS OF 0.75-, 1-, AND 2-GeV PROTONS ON OXYGEN, ALUMINUM, AND LEAD, AND 1-GeV NEUTRONS ON THE SAME ELEMENTS

Hugo W. Bertini

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ORNL-TM-1996

Neutron Physics Division

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Note:

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Oak Ridge, Tennessee
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ABSTRACT

To satisfy the urgent need of researchers for data from high-energy nuclear reactions, a limited amount of data was generated from an intranuclear-cascade calculation that is in preliminary form. These data include the total nonelastic cross sections, the cascade and evaporation particle multiplicities, the cascade and evaporation particle energy spectra, the cascade particle angular distributions, the radiochemical cross sections, etc., from 0.75-, 1-, and 2-GeV protons on oxygen, aluminum, and lead, and 1-GeV neutrons on the same elements. It is expected that the data from the final form of the calculation will not differ appreciably from those presented, but this cannot be guaranteed.

INTRODUCTION

The main difference between the intranuclear-cascade calculation that was utilized in generating the accompanying data and the calculation that was described previously[1] is that pion production has now been included.

The data are preliminary in that the computer program is not in its final form. The changes that will be made in the program are described below. The data were generated to help satisfy the requests of researchers who had an urgent need for them, even though they are preliminary.

THE CALCULATION

The main features of the calculation are the same as those described in ref. 1. The possibility of producing 1 or 2 pions at the collision sites within the nucleus when a nucleon-nucleon collision occurs and the possibility of producing 1 pion at these sites for pion-nucleon collisions are now included in the calculation. The model used to describe these production processes is the isobar model.[2] However, it is assumed that only the 3/2, 3/2 resonance is excited in the energy range for which the calculation is intended.* The decay of the isobar, once formed, is assumed to take place at the collision site, and the decay pion is assumed to be emitted isotropically in the rest system of the isobar. The angular distribution of the isobar itself is not given by the theory. It is this angular distribution that will be specified more accurately in the final version of the program. For present purposes it has been assumed that the isobar was emitted forward 25% of the time, backward 25% of the time, and isotropically 50% of the time.

*The calculation is expected to apply to nuclear reactions for incident nucleons from about 100 to 2500 MeV and for incident π-mesons from about 100 to 1500 MeV. However, the program will operate at energies from 1-3500 MeV for incident nucleons and 1-2500 MeV for incident π-mesons.

The final version of the program will contain more recent particle-particle cross-section data since this information was scanty when the present calculation was formulated. However, the results from the calculation when it is in the final form are not expected to differ appreciably from those that are presented in this report. Of course there can be no assurance of this until comparisons are made.

THE DATA

The data generated are for 750-, 1000-, and 2000-MeV protons on oxygen, aluminum, and lead, and for 1000-MeV neutrons on the same elements. The data include the following for each reaction but not in the order listed:

The total nonelastic cross section.

The average number of cascade neutrons, protons, π^+, π^0, and π^- mesons emitted.

The average number of neutrons, protons, deuterons, tritons, ^{3}He, and α particles evaporated.

The normalized angular distribution of each type of cascade particle at all energies of emission.

The normalized energy spectra for each type of cascade particle and each type of evaporation particle emitted in all directions.

The average energy of emission for the cascade and the evaporation particles.

The cross sections for the production of the radiochemical nuclei.

$\frac{d^2\sigma}{d\Omega dE}$ in mb/sr-MeV for cascade neutrons and protons emitted in the angular intervals 0-10°, 10-30°, 30-90°, and 90-180°.

$\frac{d^2\sigma}{d\Omega dE}$ in mb/sr-MeV for cascade π^+, π^0, and π^- mesons emitted in the angular intervals 0-25°, 25-75°, 75-130°, and 130-180°.

The integral $\int \frac{d^2\sigma}{d\Omega dE}\, dE$ for each angular interval.

The average energy of emission into each angular interval.

$\frac{d\sigma}{d\Omega}(\theta)$ in mb/sr for three energy intervals: a low-energy interval, a midrange energy interval, and a high-energy interval for each type of emitted cascade particle.

For each type of cascade particle, the cross section for the emission of n particles (n = 1, 2,...., 15) into these energy intervals.

$\frac{d\sigma}{d\Omega}(\chi)$ for the emission of two protons, where χ is the angle between them.

The parallel and perpendicular momentum distribution of the residual nucleus at the completion of the cascade and the average value of each distribution.

The momentum distribution of the residual nucleus at the completion of the cascade and the average value of the distribution.

The excitation energy distribution of the residual nucleus at the completion of the cascade and the average value of the distribution.

The angular distribution of the residual nucleus at the completion of the cascade.

The average residual mass of the nucleus at the completion of the cascade.

The cross section for the emission of all combinations of cascade particles, that is, the cross section for the emission of one cascade proton and nothing else, one proton and one neutron and nothing else, etc.

For several selected combinations of emitted cascade particles, there are available all of the distributions above that refer to the residual nucleus at the completion of the cascade, where the cascade reactions leading only to the emission of each specific combination contribute to each distribution.

A page-by-page description of the data is given in ref. 3. There are a few differences between the descriptions given in that report and the data that follow. That report uses an example from the previous calculation that did not include pion production, and the pagination may also be different. However, the interpretation of the additional output pertinent to the pions should not be difficult nor should the description of each page of output be difficult to find. The output from the first analysis code of each case contains an additional page that is not described in ref. 3. This page (the next to last page of Analysis Code I) contains the energy spectra of the cascade particles emitted at all angles in the restricted range 0-1000 MeV.

The data are listed in accordance with the following table:

Incident Particle	Incident Particle Energy (GeV)	Target	Page
Proton	0.75	Oxygen	9
Proton	1.0	Oxygen	72
Proton	2.0	Oxygen	135
Proton	0.75	Aluminum	199
Proton	1.0	Aluminum	263
Proton	2.0	Aluminum	328
Proton	0.75	Lead	393
Proton	1.0	Lead	459
Proton	2.0	Lead	526
Neutron	1.0	Oxygen	595
Neutron	1.0	Aluminum	658
Neutron	1.0	Lead	722

The data from Analysis Codes I, II, and the Evaporation Code are given in that order for each reaction. The detailed outputs from each of these codes are described in ref. 3.

REFERENCES

1. Hugo W. Bertini, Phys. Rev. *131*, 1801 (1963).

2. R. M. Sternheimer and S. J. Lindenbaum, Phys. Rev. *123*, 333 (1961).

3. H. W. Bertini, *Description of Printed Output from Intranuclear-Cascade Calculations*, ORNL-3433 (May 14, 1963).

INPUT

FROM CARDS

USED FILE 1 INCIDENT PARTICLE PROTON INCIDENT KINETIC ENERGY 750.000 MEV

TOTAL NUMBER OF INCIDENT PARTICLES 6000 TARGET SYMBOL O

SIZE OF HISTOGRAMS FOR OUTGOING K.E. 25 FOR PROT, 25 FOR NEUT, 25 FOR PI+, 25 FOR PIO, 25 FOR PI-.

CROSS SECTIONS WERE CALCULATED FOR AS MANY AS 9 EMITTED PARTICLE COMBINATIONS.

76.000 MEV INTERVAL WAS USED IN CALCULATING HISTOGRAM FOR N(E*)DE FOR TOTAL REACTION

DELTAS FOR OUTGOING KINETIC ENERGY DISTRIBUTION IN MEV

	-.6 MU -.4 O (K.E.) 10D	-.1 MU +.1 O (K.E.) 10D	+.4 MU +.6 O (K.E.) 10D	+.9 MU +.95 O (K.E.) 20D	+.95 MU +1.0 O (K.E.) 20D
PROTONS	75.0000	75.0000	75.0000	37.5000	37.5000
NEUTRONS	75.0000	75.0000	75.0000	37.5000	37.5000
PI+	75.0000	75.0000	75.0000	37.5000	37.5000
PIO	75.0000	75.0000	75.0000	37.5000	37.5000
PI-	75.0000	75.0000	75.0000	37.5000	37.5000

D = DELTA, RESPECTIVE ENERGY INTERVALS OF HISTOGRAMS

OUTGOING COMBINATIONS	10000	01000	00100	00010	00001	01001	10100	11000	11001
INTERVAL FOR N(E*)DE IN MEV	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000

FROM RECORD 1

6000 INCIDENT PROTON HIT O TARGET WITH 16.000 MASS AND 8.000 ATOMIC NUMBER AT 750.000MEV.

FROM RECORD N

THERE WERE 2251. INCIDENT PARTICLE COLLISIONS CREATING 2251 ESCAPING PARTICLE RECORDS. THE GEOMETRIC CROSS SECTION WAS 852.4694672 MB. THE INELASTIC CROSS SECTION WAS 319.8181305 MB. THE CUT OFF ENERGY WAS 1.1066737 MEV.

PROTON ON O INC. K.E. (MEV) IS 750.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

MOMENTUM OF COMPOUND NUCLEUS 1404.497025MEV/C EXCITATION ENERGY OF COMPOUND NUCLEUS 756.915199MEV

THE MASS OF THE RESIDUAL NUCLEUS WAS ZERO 0 TIMES, WAS MINUS 0 TIMES CUT OFF ENERGY 1.106674MEV

FOR 45 INCIDENT PARTICLE COLLISIONS THERE WERE MORE THAN 9 OUT GOING PARTICLES

EMITTED CASCADE PARTICLES

	PROTONS	NEUTRONS	PI+	PIO	PI-
AVERAGE NO.	0.1997779E 01	0.1367836E 01	0.2101298E-00	0.1226122E-00	0.4664593E-01
VARIANCE	0.1596175E 01	0.1513741E 01	0.1677517E-00	0.1075784E-00	0.4535859E-01
AV. K.E. (MEV)	0.1950986E 03	0.1533625E 03	0.1049084E 03	0.1233507E 03	0.8549310E 02
VARIANCE	0.4814697E 05	0.3416026E 05	0.8114975E 04	0.1050631E 05	0.6379450E 04

RESIDUAL NUCLEUS

OUTGOING COMBINATION	CO	C1	ARM	AREE	AAR
TOTAL CASCADE	0.0782283	0.1320292	252.3505611	40.4510527	13.6343846
10000	0.0327333	0.1453125	210.4796104	22.6730182	16.0000000
01000	0.0341016	0.1569863	226.9763355	20.0925896	15.0000000
00100	0.	0.	0.	0.	17.0000000
00010	0.	0.	0.	0.	17.0000000
00001	0.	0.	0.	0.	17.0000000
01001	0.	0.	0.	0.	16.0000000
10100	0.1400882	0.0325133	209.1638260	20.5787706	16.0000000
11000	0.0197140	0.0834846	141.8523521	13.2726164	15.0000000
11001	0.1919527	0.1496372	349.0168800	23.0482211	15.0000000

CO = (SUM OF PARALLEL RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

C1 = (SUM OF PERPENDICULAR RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

ARM = AVERAGE RESIDUAL MOMENTUM IN MEV/C

AREE = AVERAGE RESIDUAL EXCITATION ENERGY IN MEV

AAR = AVERAGE MASS OF RESIDUAL NUCLEUS FOR TOTAL CASCADE
AAR = MASS OF RESIDUAL NUCLEUS FOR DESIGNATED OUTGOING COMBINATIONS

```
PROTON ON O        INC. K.E. (MEV) IS   750.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

                   ANGULAR DISTRIBUTION OF THE CASCADE NUCLEUS  (FRACTION IN DELTA MU)/(DELTA MU)

       -C.9000000E 00        -0.7000000E 00        -0.5000000E 00        -0.3000000E-00        -0.1000000E-00
                0.1000000E-00         0.3000000E-00         0.5000000E 00         0.7000000E 00         0.9000000E 00

            TOTAL CASCADE                            RATIO OF FORWARD /BACKWARD     0.2887737E 01
        0.1221679E-00         0.1932474E-00         0.2576633E-00         0.3020880E-00         0.4109285E-00
                0.5908485E 00         0.6974678E 00         0.6086184E 00         0.7552199E 00         0.1061750E 01

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.2628205E 01         0.2307692E 01         0.                    0.6410256E-01         0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.3461538E 01         0.1346154E 01         0.1923077E-00         0.                    0.

0 PROTONS   0 NEUTRONS   1 PI+   C PIC   0 PI-       RATIO OF FORWARD /8ACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.9090909E 00         0.4090909E 01

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.1516129E 01
        0.1923077E-00         0.3205128E-00         0.4326923E-00         0.5448718E 00         0.4967949E-00
                0.5769231E 00         0.7692308E 00         0.6570513E 00         0.5288461E 00         0.4807692E-00

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.1666667E 01         0.1666667E 01         0.1666667E 01
```

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PROTON ON O        INC. K.E. (MEV) IS   750.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

      EXCITATION ENERGY DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS (FRACTION PER UNIT EN.)    (DE=DELTA E(MEV))

DEA IS  0.7600000E 02   DEB IS  0.2500000E 02   DEC IS  0.2500000E 02   DED IS  0.2500000E 02   DEE IS  0.2500000E 02
  DEF IS  0.2500000E 02   DEG IS  0.2500000E 02   DEH IS  0.2500000E 02   DEI IS  0.2500000E 02   DEJ IS  0.2500000E 02

            TOTAL CASCADE                          (SUM OVER HISTOGRAM)X(DEA)        0.1000000E 01      0 OFL
        0.1094250E-01          0.1671772E-02          0.4208656E-03          0.1169071E-03          0.5845355E-05
                0.                     0.                     0.                     0.                     0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEB)        0.1000000E 01      0 OFL
        0.2769231E-01          0.9230769E-02          0.2564102E-02          0.                     0.
                0.                     0.5128205E-03          0.                     0.                     0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEC)        0.1000000E 01      0 OFL
        0.3230769E-01          0.3076923E-02          0.3076923E-02          0.                     0.1538462E-02
                0.                     0.                     0.                     0.                     0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DED)        0.                 0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEE)        0.                 0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEF)        0.                 0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEG)        0.                 0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEH)        0.1000000E 01      0 OFL
        0.2909091E-01          0.7272727E-02          0.3636364E-02          0.                     0.
                0.                     0.                     0.                     0.                     0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEI)        0.1000000E 01      0 OFL
        0.3564103E-01          0.2692308E-02          0.6410256E-03          0.1282051E-03          0.
                0.5128205E-03          0.2564102E-03          0.1282051E-03          0.                     0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEJ)        0.1000000E 01      0 OFL
        0.1333333E-01          0.2666667E-01          0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.
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DESCRIPTION OF THE FOLLOWING MOMENTUM DISTRIBUTIONS

THE FIRST GROUP OF NUMBERS BELOW THE TITLES SPECIFY THE MIDPOINTS OF THE MOMENTUM INTERVALS.
THE MOMENTUM IS THE NUMBER INDICATED (MEV/C).

THE SUBSEQUENT GROUPS OF NUMBERS ARE THE FRACTION OF THE TOTAL IN EACH INTERVAL DIVIDED BY DELTA P.

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PROTON ON O        INC. K.E. (MEV) IS   750.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

                          THE MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

  0.7022485E 02   0.2106745E 03   0.3511242E 03   0.4915740E 03   0.6320236E 03   0.7724734E 03   0.9129231E 03
        0.1053373E 04   0.1193822E 04   0.1334272E 04   0.1474722E 04   0.1615172E 04   0.1755621E 04   0.1896071E 04

            TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.2229938E-02   0.2476655E-02   0.1300006E-02   0.6136283E-03   0.3099772E-03   0.1265213E-03   0.4744549E-04
        0.9489098E-05   0.3163033E-05   0.              0.3163033E-05   0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.1825638E-02   0.3559993E-02   0.1643074E-02   0.9128188E-04   0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.2464611E-02   0.1916919E-02   0.1916919E-02   0.8215369E-03   0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.1294543E-02   0.4530900E-02   0.1294543E-02   0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.4358710E-02   0.2167945E-02   0.4792299E-03   0.1141023E-03   0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.2373329E-02   0.              0.              0.4746658E-02   0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
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PROTON ON O        INC. K.E. (MEV) IS   750.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

                    THE PERPENDICULAR MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

  0.7022485E 02   0.2106745E 03   0.3511242E 03   0.4915740E 03   0.6320236E 03   0.7724734E 03   0.9129231E 03
        0.1053373E 04   0.1193822E 04   0.1334272E 04   0.1474722E 04   0.1615172E 04   0.1755621E 04   0.1896071E 04

            TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.3368630E-02   0.2293199E-02   0.9267686E-03   0.3827270E-03   0.1138692E-03   0.2214123E-04   0.9489098E-05
        0.3163033E-05   0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.2008201E-02   0.3559993E-02   0.1551792E-02   0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.2464611E-02   0.1916919E-02   0.2190765E-02   0.5476913E-03   0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.6472715E-02   0.6472715E-03   0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.5180247E-02   0.1597433E-02   0.2510252E-03   0.9128188E-04   0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.2373329E-02   0.2373329E-02   0.2373329E-02   0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
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PROTON ON O        INC. K.E. (MEV) IS   750.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

                    THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

 -0.1896071E 04  -0.1755621E 04  -0.1615172E 04  -0.1474722E 04  -0.1334272E 04  -0.1193822E 04  -0.1053373E 04
       -0.9129231E 03  -0.7724734E 03  -0.6320236E 03  -0.4915740E 03  -0.3511242E 03  -0.2106745E 03  -0.7022485E 02
  0.7022485E 02   0.2106745E 03   0.3511242E 03   0.4915740E 03   0.6320236E 03   0.7724734E 03   0.9129231E 03
        0.1053373E 04   0.1193822E 04   0.1334272E 04   0.1474722E 04   0.1615172E 04   0.1755621E 04   0.1896071E 04

            TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.6326065E-05   0.1423365E-03   0.1682733E-02
  0.2960599E-02   0.1331637E-02   0.5946501E-03   0.2150862E-03   0.1296843E-03   0.3479336E-04   0.1897820E-04
        0.              0.3163033E-05   0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
  0.7028705E-02   0.9128188E-04   0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
  0.6572295E-02   0.5476913E-03   0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
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PROTON ON O        INC. K.E. (MEV) IS   750.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

                    THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

 -0.1896071E 04  -0.1755621E 04  -0.1615172E 04  -0.1474722E 04  -0.1334272E 04  -0.1193822E 04  -0.1053373E 04
       -0.9129231E 03  -0.7724734E 03  -0.6320236E 03  -0.4915740E 03  -0.3511242E 03  -0.2106745E 03  -0.7022485E 02
  0.7022485E 02   0.2106745E 03   0.3511242E 03   0.4915740E 03   0.6320236E 03   0.7724734E 03   0.9129231E 03
       0.1053373E 04   0.1193822E 04   0.1334272E 04   0.1474722E 04   0.1615172E 04   0.1755621E 04   0.1896071E 04

          TOTAL CASCADE                        (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL     0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.6326065E-05   0.1423365E-03   0.1682733E-02
  0.2960599E-02   0.1331637E-02   0.5946501E-03   0.2150862E-03   0.1296843E-03   0.3479336E-04   0.1897820E-04
       0.              0.3163033E-05   0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL     0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL     0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.              0.
  0.1294543E-02   0.5178172E-02   0.6472715E-03   0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL     0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.4564094E-04   0.2784097E-02
  0.3765377E-02   0.3879480E-03   0.1369228E-03   0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL     0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.              0.
  0.2373329E-02   0.              0.4746658E-02   0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
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PROTON ON O INC. K.E. (MEV) IS 750.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES

1ST NO. IS NO. OF PROTONS EMITTED		2ND IS NO. OF NEUTRONS		3RD IS NO. OF PI+		4TH IS NO. OF PIO		5TH IS NO. OF PI-	
26001	0.14207824E-00	26100	0.14207824E-00	35010	0.14207824E-00	35100	0.14207824E-00		
36000	0.28415649E-00	44001	0.28415649E-00	44100	0.28415649E-00	45000	0.85246947E 00		
53010	0.14207824E-00	53100	0.28415649E-00	54000	0.56831298E 00	62001	0.14207824E-00		
63000	0.42623473E-00	72000	0.14207824E-00	81000	0.14207824E-00	24011	0.14207824E-00		
25010	0.14207824E-00	25100	0.71039122E 00	26000	0.14207824E-00	34001	0.28415649E-00		
34010	0.42623473E-00	34100	0.56831298E 00	35000	0.42623473E-00	43001	0.28415649E-00		
43010	0.14207824E-00	43100	0.71039122E 00	44000	0.99454771E 00	52001	0.14207824E-00		
52010	0.42623473E-00	52100	0.85246947E 00	53000	0.14207824E 01	61100	0.14207824E-00		
62000	0.42623473E-00	70001	0.14207824E-00	70010	0.14207824E-00	06100	0.14207824E-00		
14101	0.14207824E-00	15010	0.14207824E-00	23011	0.14207824E-00	23101	0.14207824E-00		
23110	0.14207824E-00	24001	0.28415649E-00	24010	0.14207824E-00	24100	0.12787042E 01		
25000	0.99454771E 00	32101	0.14207824E-00	32110	0.14207824E-00	33010	0.85246947E 00		
33100	0.99454771E 00	34000	0.12787042E 01	42010	0.71039122E 00	42100	0.56831298E 00		
43000	0.32677995E 01	51001	0.42623473E-00	51010	0.28415649E-00	51100	0.56831298E 00		
52000	0.85246947E 00	60001	0.14207824E-00	60010	0.14207824E-00	61000	0.71039122E 00		
05100	0.14207824E-00	14010	0.71039122E 00	14100	0.56831298E 00	15000	0.56831298E 00		
22110	0.14207824E-00	23001	0.42623473E-00	23010	0.99454771E 00	23100	0.14207824E 01		
24000	0.12787042E 01	31110	0.14207824E-00	32001	0.56831298E 00	32010	0.15628606E 01		
32100	0.25574084E 01	33000	0.35519560E 01	41010	0.11366259E 01	41100	0.85246947E 00		
42000	0.32677995E 01	50001	0.14207824E-00	50010	0.28415649E-00	51000	0.71039122E 00		
60000	0.28415649E-00	03200	0.14207824E-00	04100	0.42623473E-00	12101	0.28415649E-00		
13001	0.28415649E-00	13010	0.71039122E 00	13100	0.31257213E 01	14000	0.12787042E 01		
21101	0.28415649E-00	21110	0.14207824E-00	21200	0.14207824E-00	22001	0.15628606E 01		
22010	0.24153301E 01	22100	0.41202690E 01	23000	0.29836431E 01	31001	0.99454771E 00		
31010	0.17049389E 01	31100	0.32677995E 01	32000	0.68197557E 01	40001	0.28415649E-00		
40010	0.56831298E 00	40100	0.42623473E-00	41000	0.29836431E 01	50000	0.71039122E 00		

PROTON ON O INC. K.E. (MEV) IS 750.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PIO 5TH IS NO. OF PI-

CONTINUED

02110	0.14207824E-00	03010	0.42623473E-00	03100	0.85246947E 00	12001	0.28415649E-00
12010	0.24153301E 01	12100	0.39781908E 01	13000	0.28415549E 01	20002	0.14207824E-00
21001	0.26994866E 01	21010	0.44044255E 01	21100	0.83826163E 01	22000	0.83826163E 01
30001	0.71039122E 00	30010	0.12787042E 01	30100	0.85246947E 00	31000	0.99454770E 01
40000	0.19890954E 01	02001	0.14207824E-00	02010	0.85246947E 00	02100	0.28415649E 01
03000	0.28415649E-00	11001	0.42623473E-00	11010	0.88088510E 01	11100	0.19180562E 02
12000	0.10513790E 02	20001	0.19890954E 01	20010	0.38361125E 01	20100	0.42623473E-00
21000	0.17759780E 02	30000	0.55410515E 01	01010	0.42623473E-00	01100	0.14207824E 01
02000	0.26994866E 01	10010	0.12787042E 01	10100	0.15628606E 01	11000	0.44328412E 02
20000	0.40208143E 02	01000	0.36940343E 01	10000	0.11082102E 02		

PROTON ON O INC. K.E. (MEV) IS 750.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 1.00 TO 0.95
(THETA FROM 0 DEG. 0 MIN. TO 18 DEG. 12 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	37.5	DELTA E(MEV)	37.5	DELTA E(MEV)	37.5	DELTA E(MEV)	37.5	DELTA E(MEV)	37.5
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
18.7	0.436E-01	18.7	0.627E-01	18.7	0.314E-01	18.7	0.356E-01	18.7	0.107E-00
56.2	0.284E-01	56.2	0.309E-01	56.2	0.	56.2	0.	56.2	0.
93.7	0.234E-01	93.7	0.243E-01	93.7	0.784E-01	93.7	0.	93.7	0.
131.2	0.196E-01	131.2	0.196E-01	131.2	0.157E-01	131.2	0.711E-01	131.2	0.213E-00
168.7	0.170E-01	168.7	0.187E-01	168.7	0.157E-01	168.7	0.	168.7	0.
206.2	0.177E-01	206.2	0.281E-01	206.2	0.471E-01	206.2	0.	206.2	0.
243.7	0.139E-01	243.7	0.290E-01	243.7	0.471E-01	243.7	0.711E-01	243.7	0.
281.2	0.227E-01	281.2	0.262E-01	281.2	0.941E-01	281.2	0.107E-00	281.2	0.
318.7	0.221E-01	318.7	0.234E-01	318.7	0.627E-01	318.7	0.107E-00	318.7	0.107E-00
356.2	0.303E-01	356.2	0.299E-01	356.2	0.471E-01	356.2	0.711E-01	356.2	0.107E-00
393.7	0.202E-01	393.7	0.337E-01	393.7	0.627E-01	393.7	0.	393.7	0.
431.2	0.183E-01	431.2	0.309E-01	431.2	0.157E-01	431.2	0.356E-01	431.2	0.
468.7	0.189E-01	468.7	0.290E-01	468.7	0.157E-01	468.7	0.356E-01	468.7	0.
506.2	0.145E-01	506.2	0.168E-01	506.2	0.	506.2	0.	506.2	0.
543.7	0.107E-01	543.7	0.150E-01	543.7	0.	543.7	0.	543.7	0.
581.2	0.101E-01	581.2	0.749E-02	581.2	0.	581.2	0.	581.2	0.
618.7	0.505E-02	618.7	0.749E-02	618.7	0.	618.7	0.	618.7	0.
656.2	0.442E-01	656.2	0.206E-01	656.2	0.	656.2	0.	656.2	0.
693.7	0.688E-01	693.7	0.299E-01	693.7	0.	693.7	0.	693.7	0.
731.2	0.839E-01	731.2	0.496E-01	731.2	0.	731.2	0.	731.2	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	0.100E 01

PROTON ON O INC. K.E. (MEV) IS 750.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.95 TO 0.90
(THETA FROM 18 DEG. 12 MIN. TO 25 DEG. 51 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PI0		PI-	
DELTA E(MEV)	37.5	DELTA E(MEV)	37.5	DELTA E(MEV)	37.5	DELTA E(MEV)	37.5	DELTA E(MEV)	37.5
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
18.7	0.634E-01	18.7	0.103E-00	18.7	0.213E-01	18.7	0.464E-01	18.7	0.
56.2	0.282E-01	56.2	0.381E-01	56.2	0.149E-00	56.2	0.232E-01	56.2	0.
93.7	0.341E-01	93.7	0.362E-01	93.7	0.	93.7	0.232E-01	93.7	0.
131.2	0.270E-01	131.2	0.495E-01	131.2	0.213E-01	131.2	0.	131.2	0.
168.7	0.317E-01	168.7	0.324E-01	168.7	0.213E-01	168.7	0.464E-01	168.7	0.
206.2	0.247E-01	206.2	0.286E-01	206.2	0.640E-01	206.2	0.464E-01	206.2	0.
243.7	0.211E-01	243.7	0.362E-01	243.7	0.640E-01	243.7	0.232E-01	243.7	0.
281.2	0.258E-01	281.2	0.267E-01	281.2	0.128E-00	281.2	0.464E-01	281.2	0.
318.7	0.153E-01	318.7	0.286E-01	318.7	0.	318.7	0.116E-00	318.7	0.533E 00
356.2	0.164E-01	356.2	0.248E-01	356.2	0.427E-01	356.2	0.162E-00	356.2	0.
393.7	0.141E-01	393.7	0.171E-01	393.7	0.213E-01	393.7	0.	393.7	0.
431.2	0.129E-01	431.2	0.952E-02	431.2	0.	431.2	0.	431.2	0.
468.7	0.587E-02	468.7	0.571E-02	468.7	0.	468.7	0.	468.7	0.
506.2	0.106E-01	506.2	0.952E-02	506.2	0.	506.2	0.	506.2	0.
543.7	0.305E-01	543.7	0.171E-01	543.7	0.	543.7	0.	543.7	0.
581.2	0.388E-01	581.2	0.210E-01	581.2	0.	581.2	0.	581.2	0.
618.7	0.681E-01	618.7	0.248E-01	618.7	0.	618.7	0.	618.7	0.
656.2	0.470E-01	656.2	0.190E-01	656.2	0.	656.2	0.	656.2	0.
693.7	0.176E-01	693.7	0.571E-02	693.7	0.	693.7	0.	693.7	0.
731.2	0.	731.2	0.	731.2	0.	731.2	0.	731.2	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON O INC. K.E. (MEV) IS 750.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.60 TO 0.40
(THETA FROM 53 DEG. 8 MIN. TO 66 DEG. 25 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
37.5	0.367E-01	37.5	0.411E-01	37.5	0.307E-01	37.5	0.322E-01	37.5	0.389E-01
112.5	0.167E-01	112.5	0.158E-01	112.5	0.267E-01	112.5	0.230E-01	112.5	0.556E-02
187.5	0.956E-02	187.5	0.572E-02	187.5	0.933E-02	187.5	0.115E-01	187.5	0.167E-01
262.5	0.250E-02	262.5	0.320E-02	262.5	0.	262.5	0.	262.5	0.556E-02
337.5	0.796E-03	337.5	0.842E-03	337.5	0.	337.5	0.	337.5	0.
412.5	0.341E-03	412.5	0.	412.5	0.	412.5	0.	412.5	0.
487.5	0.	487.5	0.	487.5	0.	487.5	0.	487.5	0.
562.5	0.	562.5	0.	562.5	0.	562.5	0.	562.5	0.
637.5	0.	637.5	0.	637.5	0.	637.5	0.	637.5	0.
712.5	0.	712.5	0.	712.5	0.	712.5	0.	712.5	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON O INC. K.E. (MEV) IS 750.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.10 TO -0.10
(THETA FROM 84 DEG. 16 MIN. TO 95 DEG. 44 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
37.5	0.569E-01	37.5	0.548E-01	37.5	0.439E-01	37.5	0.491E-01	37.5	0.333E-01
112.5	0.690E-02	112.5	0.920E-02	112.5	0.228E-01	112.5	0.140E-01	112.5	0.333E-01
187.5	0.259E-02	187.5	0.230E-02	187.5	0.	187.5	0.351E-02	187.5	0.
262.5	0.287E-03	262.5	0.383E-03	262.5	0.	262.5	0.	262.5	0.
337.5	0.	337.5	0.	337.5	0.	337.5	0.	337.5	0.
412.5	0.	412.5	0.	412.5	0.	412.5	0.	412.5	0.
487.5	0.	487.5	0.	487.5	0.	487.5	0.	487.5	0.
562.5	0.	562.5	0.	562.5	0.	562.5	0.	562.5	0.
637.5	0.	637.5	0.	637.5	0.	637.5	0.	637.5	0.
712.5	0.	712.5	0.	712.5	0.	712.5	0.	712.5	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON O INC. K.E. (MEV) IS 750.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM -0.40 TO -0.60
(THETA FROM 113 DEG. 35 MIN. TO 126 DEG. 54 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PI0		PI-	
DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
37.5	0.530E-01	37.5	0.569E-01	37.5	0.533E-01	37.5	0.444E-01	37.5	0.556E-01
112.5	0.106E-01	112.5	0.978E-02	112.5	0.133E-01	112.5	0.190E-01	112.5	0.111E-01
187.5	0.249E-02	187.5	0.	187.5	0.	187.5	0.317E-02	187.5	0.
262.5	0.623E-03	262.5	0.	262.5	0.	262.5	0.	262.5	0.
337.5	0.	337.5	0.	337.5	0.	337.5	0.	337.5	0.
412.5	0.	412.5	0.	412.5	0.	412.5	0.	412.5	0.
487.5	0.	487.5	0.	487.5	0.	487.5	0.	487.5	0.
562.5	0.	562.5	0.	562.5	0.	562.5	0.	562.5	0.
637.5	0.	637.5	0.	637.5	0.	637.5	0.	637.5	0.
712.5	0.	712.5	0.	712.5	0.	712.5	0.	712.5	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	0.100E 01	N IS	1.000E 00	N IS	1.000E 00

PROTON ON O INC. K.E. (MEV) IS 750.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PROTONS

0 TO 0.7500000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PROTONS /DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
15.00	0.8998592E-02	225.00	0.9710177E-03	405.00	0.5781632E-03	585.00	0.4002668E-03
45.00	0.4054555E-02	255.00	0.8153584E-03	435.00	0.4892150E-03	615.00	0.4743903E-03
75.00	0.2979764E-02	285.00	0.7338226E-03	465.00	0.4818027E-03	645.00	0.6300497E-03
105.00	0.2305241E-02	315.00	0.7189979E-03	495.00	0.4150916E-03	675.00	0.7264102E-03
135.00	0.1823438E-02	345.00	0.5929879E-03	525.00	0.4521533E-03	705.00	0.7857090E-03
165.00	0.1178563E-02	375.00	0.5040397E-03	555.00	0.3928545E-03	735.00	0.7412349E-03
195.00	0.1089615E-02						

PROTON ON O INC. K.E. (MEV) IS 750.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE NEUTRONS

0 TO 0.7500000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED NEUTRONS/DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
15.00	0.1060951E-01	225.00	0.9959944E-03	405.00	0.5737794E-03	585.00	0.2273465E-03
45.00	0.4622713E-02	255.00	0.9310382E-03	435.00	0.4438671E-03	615.00	0.1948685E-03
75.00	0.2966331E-02	285.00	0.6387355E-03	465.00	0.5088232E-03	645.00	0.3031287E-03
105.00	0.2165205E-02	315.00	0.6387355E-03	495.00	0.2814767E-03	675.00	0.3031287E-03
135.00	0.1872902E-02	345.00	0.6712136E-03	525.00	0.3789109E-03	705.00	0.3464328E-03
165.00	0.1439861E-02	375.00	0.5521273E-03	555.00	0.3139547E-03	735.00	0.4330410E-03
195.00	0.9202122E-03						

PROTON ON O INC. K.E. (MEV) IS 750.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI+

0 TO 0.7500000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI+ / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
15.00	0.5919662E-02	225.00	0.1268499E-02	405.00	0.2818887E-03	585.00	0.
45.00	0.7258633E-02	255.00	0.9161381E-03	435.00	0.7047216E-04	615.00	0.
75.00	0.6835800E-02	285.00	0.1127555E-02	465.00	0.7047216E-04	645.00	0.
105.00	0.3171247E-02	315.00	0.5637773E-03	495.00	0.	675.00	0.
135.00	0.1973221E-02	345.00	0.2818887E-03	525.00	0.	705.00	0.
165.00	0.1761804E-02	375.00	0.1409443E-03	555.00	0.	735.00	0.
195.00	0.1691332E-02						

PROTON ON O INC. K.E. (MEV) IS 750.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PIO

0 TO 0.7500000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PIO / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
15.00	0.5434783E-02	225.00	0.1570048E-02	405.00	0.	585.00	0.
45.00	0.7367150E-02	255.00	0.2173913E-02	435.00	0.1207729E-03	615.00	0.
75.00	0.4710145E-02	285.00	0.1086956E-02	465.00	0.1207729E-03	645.00	0.
105.00	0.3019324E-02	315.00	0.1207729E-02	495.00	0.	675.00	0.
135.00	0.1690821E-02	345.00	0.1207729E-02	525.00	0.	705.00	0.
165.00	0.1570048E-02	375.00	0.1207729E-03	555.00	0.	735.00	0.
195.00	0.1932367E-02						

PROTON ON O INC. K.E. (MEV) IS 750.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI-

0 TO 0.7500000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI- / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
15.00	0.7619048E-02	225.00	0.3174603E-03	405.00	0.	585.00	0.
45.00	0.8571429E-02	255.00	0.1269841E-02	435.00	0.3174603E-03	615.00	0.
75.00	0.5396825E-02	285.00	0.	465.00	0.	645.00	0.
105.00	0.5079365E-02	315.00	0.6349206E-03	495.00	0.	675.00	0.
135.00	0.1587302E-02	345.00	0.	525.00	0.	705.00	0.
165.00	0.1904762E-02	375.00	0.3174603E-03	555.00	0.	735.00	0.
195.00	0.3174603E-03						

PROTON ON O INC. K.E. (MEV) IS 750.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PARTICLES

0 TO 1000 MEV

N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PARTICLES/DELTA E
K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N IS (SUM OVER HISTOGRAM FROM 1 TO 1000 MEV) (DELTA E)

K.E.	PROTONS N(E)	NEUTRONS N(E)	PI+ N(E)	PI0 N(E)	PI- N(E)
25.0	0.7151434E-02	0.8353361E-02	0.6469345E-02	0.6376811E-02	0.7809524E-02
75.0	0.2948632E-02	0.3065930E-02	0.6469345E-02	0.4782609E-02	0.6857143E-02
125.0	0.1996887E-02	0.1922702E-02	0.2156448E-02	0.2173913E-02	0.2285714E-02
175.0	0.1165221E-02	0.1227671E-02	0.1902748E-02	0.1521739E-02	0.1333333E-02
225.0	0.9517456E-03	0.9548555E-03	0.1183932E-02	0.1956522E-02	0.7619048E-03
275.0	0.7560596E-03	0.7729782E-03	0.9725159E-03	0.1521739E-02	0.1904762E-03
325.0	0.6893485E-03	0.6235791E-03	0.4228330E-03	0.1231884E-02	0.3809524E-03
375.0	0.4847676E-03	0.5975966E-03	0.2536998E-03	0.2898551E-03	0.1904762E-03
425.0	0.5559262E-03	0.5066580E-03	0.1268499E-03	0.7246377E-04	0.1904762E-03
475.0	0.4447409E-03	0.4157194E-03	0.4228330E-04	0.7246377E-04	0.
525.0	0.4313987E-03	0.3702501E-03	0.	0.	0.
575.0	0.4091617E-03	0.2403378E-03	0.	0.	0.
625.0	0.5425839E-03	0.2338421E-03	0.	0.	0.
675.0	0.6982433E-03	0.2987983E-03	0.	0.	0.
725.0	0.7738492E-03	0.4157194E-03	0.	0.	0.
775.0	0.	0.	0.	0.	0.
825.0	0.	0.	0.	0.	0.
875.0	0.	0.	0.	0.	0.
925.0	0.	0.	0.	0.	0.
975.0	0.	0.	0.	0.	0.
	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 1.0000000E 00

PROTON ON O INC. K.E. (MEV) IS 750.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ANGULAR DISTRIBUTION OF EMITTED CASCADE PARTICLES

(FRACTION IN EACH INTERVAL)/(DELTA MU)

MU IS COSINE THETA AND SPECIFIES THE CENTER OF THE INTERVAL

MU	PROTON	NEUTRON	PI+	PIO	PI-
0.975	0.3758061E 01	0.3702501E 01	0.1437632E 01	0.1086956E 01	0.9523809E 00
0.925	0.2019124E 01	0.1818772E 01	0.1057082E 01	0.1666667E 01	0.1904762E-00
0.875	0.1485435E 01	0.1591426E 01	0.1057082E 01	0.6521739E 00	0.1523810E 01
0.825	0.1267512E 01	0.1091263E 01	0.3382664E-00	0.1086956E 01	0.9523809E 00
0.775	0.8894819E 00	0.1000325E 01	0.8456660E 00	0.1231884E 01	0.1904762E-00
0.725	0.7782966E 00	0.8249432E 00	0.7610994E 00	0.7246377E 00	0.5714286E 00
0.675	0.7516122E 00	0.6495615E 00	0.7188161E 00	0.7246377E 00	0.5714286E 00
0.625	0.6448744E 00	0.6560572E 00	0.1057082E 01	0.6521739E 00	0.7619048E 00
0.575	0.7560596E 00	0.5326405E 00	0.5919662E 00	0.6521739E 00	0.5714286E 00
0.525	0.7204803E 00	0.7210133E 00	0.4228330E-00	0.7246377E 00	0.3809524E-00
0.475	0.6137425E 00	0.7534914E 00	0.5919662E 00	0.4347826E-00	0.9523809E 00
0.425	0.5158995E 00	0.5651185E 00	0.5073996E 00	0.2898551E-00	0.3809524E-00
0.375	0.4580832E-00	0.4352062E-00	0.5919662E 00	0.1449275E-00	0.1904762E-00
0.325	0.5336891E 00	0.4936668E-00	0.6765328E 00	0.4347826E-00	0.5714286E 00
0.275	0.3958194E-00	0.3897369E-00	0.7188161E 00	0.5072464E 00	0.3809524E-00
0.225	0.4714254E-00	0.3572588E-00	0.6342495E 00	0.1449275E-00	0.5714286E 00
0.175	0.3246609E-00	0.2923027E-00	0.2959831E-00	0.2898551E-00	0.7619048E 00
0.125	0.3246609E-00	0.3572588E-00	0.4228330E-00	0.5072464E 00	0.3809524E-00
0.075	0.2757394E-00	0.2923027E-00	0.4228330E-00	0.5072464E 00	0.7619048E 00
0.025	0.3424505E-00	0.3052939E-00	0.4228330E-00	0.3623188E-00	0.1904762E-00
-0.025	0.2401601E-00	0.2403378E-00	0.3805497E-00	0.2173913E-00	0.5714286E 00
-0.075	0.1734490E-00	0.2923027E-00	0.5073996E 00	0.2898551E-00	0.
-0.125	0.2312653E-00	0.2468334E-00	0.4651163E-00	0.5797101E 00	0.5714286E 00
-0.175	0.2179231E-00	0.1818772E-00	0.5073996E 00	0.6521739E 00	0.1904762E-00
-0.225	0.2090282E-00	0.1753816E-00	0.5496829E 00	0.3623188E-00	0.5714286E 00
-0.275	0.2179231E-00	0.2273465E-00	0.2536998E-00	0.2173913E-00	0.9523809E 00
-0.325	0.1289749E-00	0.2468334E-00	0.5496829E 00	0.2898551E-00	0.1904762E-00
-0.375	0.1067378E-00	0.2208509E-00	0.2114165E-00	0.2898551E-00	0.5714286E 00
-0.425	0.1601067E-00	0.9743423E-01	0.2536998E-00	0.6521739E 00	0.3809524E-00
-0.475	0.1022904E-00	0.8444300E-01	0.1691332E-00	0.2898551E-00	0.1904762E-00
-0.525	0.1200801E-00	0.1169211E-00	0.1268499E-00	0.2898551E-00	0.1904762E-00
-0.575	0.9339560E-01	0.1883728E-00	0.2959831E-00	0.2898551E-00	0.3809524E-00
-0.625	0.1289749E-00	0.1558948E-00	0.3805497E-00	0.4347826E-00	0.3809524E-00
-0.675	0.1022904E-00	0.1623904E-00	0.3382664E-00	0.2898551E-00	0.3809524E-00
-0.725	0.7560596E-01	0.1688860E-00	0.1268499E-00	0.3623188E-00	0.7619048E 00
-0.775	0.8894819E-01	0.7145177E-01	0.3382664E-00	0.3623188E-00	0.5714286E 00
-0.825	0.9784301E-01	0.1299123E-00	0.2959831E-00	0.5072464E 00	0.1904762E-00
-0.875	0.6226373E-01	0.4546931E-01	0.1691332E-00	0.2173913E-00	0.1904762E-00
-0.925	0.8005337E-01	0.7145177E-01	0.2536998E-00	0.3623188E-00	0.
-0.975	0.3557927E-01	0.4546931E-01	0.2536998E-00	0.2173913E-00	0.9523809E 00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	0. TO 10.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
9.9228E-01	7.4421E-01	5.9537E-01	9.4267E-01	3.9691E-01	3.4730E-01	1.9846E-01	6.9460E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.9768E-01	4.9614E-01	5.9537E-01	9.9228E-01	6.9460E-01	5.9537E-01	3.9691E-01	6.4498E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
6.4498E-01	6.4498E-01	2.4807E-01	1.9846E-01	4.9614E-02	1.9846E-01	3.4730E-01	1.4388E 00
INTERVAL 25							
3.6218E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	10.00 TO 30.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
7.2975E-01	3.2997E-01	3.8074E-01	3.2363E-01	2.8555E-01	2.4748E-01	2.8555E-01	3.2363E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.1575E-01	2.7286E-01	2.2844E-01	1.8402E-01	1.6499E-01	2.0306E-01	2.0306E-01	1.5864E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.4595E-01	1.8402E-01	2.7286E-01	2.8555E-01	3.5536E-01	5.1400E-01	5.7745E-01	4.8861E-01
INTERVAL 25							
1.7133E-01							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5105E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.423105E 03 MEV FOR CASCADE PROTON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2260E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.367519E 03 MEV FOR CASCADE PROTON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	30.00 TO 90.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
6.2666E-01	3.1159E-01	2.3848E-01	1.8277E-01	1.4709E-01	9.2258E-02	8.4424E-02	5.6573E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
6.0925E-02	4.0036E-02	4.2647E-02	2.6981E-02	2.4370E-02	2.9592E-02	2.2629E-02	2.3500E-02
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.7407E-02	1.6537E-02	4.3518E-03	4.3518E-03	6.0925E-03	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	90.00 TO 180.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.7060E-01	9.1957E-02	4.2210E-02	2.3366E-02	1.8090E-02	5.2762E-03	7.5375E-04	7.5375E-04
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.6178E 02 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.117692E 03 MEV FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1359E 02 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.385108E 02 MEV FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 0 TO 187

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
9.036E 01	6.706E 01	5.559E 01	4.691E 01	2.624E 01	1.635E 01	1.062E 01	8.234E 00	3.750E 00

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 187 TO 562

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.234E 02	5.912E 01	1.912E 01	2.564E 00	3.256E-01	6.929E-02	0.	0.	0.

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 562 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.455E 02	1.719E 01	8.500E-02	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 0 TO 187

K EQUALS 0	1	2	3	4	5	6	7
8.5105E 01	1.1636E 02	5.3990E 01	2.5290E 01	1.3355E 01	6.3935E 00	3.2678E 00	9.9455E-01
8	9	10	11	12	13	14	15
4.2623E-01	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 187 TO 562

K EQUALS 0	1	2	3	4	5	6	7
1.7731E 02	1.0642E 02	2.1454E 01	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 562 TO 750

K EQUALS 0	1	2	3	4	5	6	7
2.3116E 02	7.4023E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PROTONS	0.37825E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.2250E 01	0.2865E 01	0.3740E 01	0.1129E 02	0.1113E 02	0.4365E 01	0.1530E 01	0.1823E 01	0.1500E 01

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	0. TO 10.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.0915E 00	3.9691E-01	6.4498E-01	3.9691E-01	1.4884E-01	1.4884E-01	1.9846E-01	3.9691E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
6.9460E-01	6.4498E-01	5.4576E-01	6.9460E-01	5.9537E-01	8.9305E-01	7.4421E-01	1.0419E 00
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
4.9614E-01	5.9537E-01	2.4807E-01	2.9768E-01	1.4884E-01	4.9614E-02	4.9614E-02	1.9846E-01
INTERVAL 25							
1.2900E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	10.00 TO 30.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
7.4244E-01	3.4266E-01	2.4748E-01	2.2844E-01	2.4748E-01	2.9190E-01	1.7768E-01	2.6017E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.3479E-01	1.5230E-01	1.9037E-01	1.6499E-01	1.5230E-01	1.2057E-01	8.8839E-02	1.0153E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
6.3456E-02	9.5185E-02	1.0788E-01	9.5185E-02	8.8839E-02	1.6499E-01	1.7133E-01	1.7768E-01
INTERVAL 25							
8.8839E-02							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3795E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.361824E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1439E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.275159E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	30.00 TO 90.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.5520E-01	2.4022E-01	1.6015E-01	1.1315E-01	1.0357E-01	7.1369E-02	4.4388E-02	3.6555E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
3.0462E-02	1.9148E-02	1.5666E-02	1.9148E-02	1.3055E-02	1.3926E-02	1.0444E-02	8.7036E-03
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
5.2221E-03	6.9628E-03	6.0925E-03	0.	8.7036E-04	8.7036E-04	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	90.00 TO 180.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.3969E-01	6.7084E-02	2.8642E-02	1.9597E-02	9.0450E-03	1.5075E-03	1.5075E-03	7.5375E-04
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.4125E 02 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.100918E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1103E 02 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.346721E 02 MEV FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE — NEUTRON

FOR THE ENERGY INTERVAL (MEV) — 0 TO 187

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
7.387E 01	5.678E 01	3.935E 01	3.201E 01	1.966E 01	1.199E 01	1.079E 01	5.079E 00	4.499E 00

TYPE OF CASCADE PARTICLE — NEUTRON

FOR THE ENERGY INTERVAL (MEV) — 187 TO 562

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.166E 02	3.295E 01	9.009E 00	1.455E 00	1.953E-01	1.336E-01	0.	0.	0.

TYPE OF CASCADE PARTICLE — NEUTRON

FOR THE ENERGY INTERVAL (MEV) — 562 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
5.099E 01	4.688E 00	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	C	16	8	06000	1.11	852.5	02251

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 0 TO 187

K EQUALS 0	1	2	3	4	5	6	7
6.6493E 01	1.0329E 02	4.1203E 01	1.8754E 01	9.5192E 00	4.5465E 00	1.7049E 00	0.
8	9	10	11	12	13	14	15
1.4208E-01	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 187 TO 562

K EQUALS 0	1	2	3	4	5	6	7
1.5032E 02	9.1783E 01	3.5520E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 562 TO 750

K EQUALS 0	1	2	3	4	5	6	7
2.2122E 02	2.4437E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
NEUTRONS	0.28386E-00		

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	0. TO 25.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.6090E-02	4.8270E-02	2.4135E-02	2.4135E-02	8.0450E-03	1.6090E-02	1.6090E-02	3.2180E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
4.8270E-02	8.0450E-02	3.2180E-02	3.2180E-02	1.6090E-02	3.2180E-02	8.0450E-03	8.0450E-03
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	25.00 TO 75.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.7939E-02	3.8416E-02	4.3072E-02	3.0267E-02	2.5610E-02	2.3282E-02	2.0954E-02	1.6298E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
8.1488E-03	6.9847E-03	4.6565E-03	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1327E 02 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.234273E 03 MEV FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.7369E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.118649E 03 MEV FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	75.00 TO 130.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.5948E-02	4.2636E-02	4.0128E-02	9.1961E-03	4.1800E-03	2.5080E-03	2.5080E-03	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	130.00 TO 180.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.1651E-02	2.7431E-02	1.8991E-02	1.0550E-02	0.	0.	2.1101E-03	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.4113E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.576220E 02 MEV FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2722E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.512791E 02 MEV FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 0 TO 187

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
4.124E 00	5.079E 00	6.205E 00	6.167E 00	4.493E 00	3.672E 00	2.805E 00	2.735E 00	2.625E 00

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 187 TO 562

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.050E 01	3.516E 00	1.530E 00	2.772E-01	6.511E-02	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 562 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 0 TO 187

K EQUALS 0	1	2	3	4	5	6	7
1.1082E 01	5.5553E 01	2.8416E-01	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 187 TO 562

K EQUALS 0	1	2	3	4	5	6	7
5.5837E 01	1.1082E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 562 TO 750

K EQUALS 0	1	2	3	4	5	6	7
6.6919E 01	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI +	0.54757E 00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.2250E 01	0.2865E 01	0.3740E 01	0.1129E 02	0.1113E 02	0.4365E 01	0.1530E 01	0.1823E 01	0.1500E 01

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	0. TO 25.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.4135E-02	8.0450E-03	0.	1.6090E-02	8.0450E-03	8.0450E-03	2.4135E-02	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.4135E-02	4.0225E-02	4.8270E-02	8.0450E-02	8.0450E-03	0.	8.0450E-03	8.0450E-03
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	25.00 TO 75.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.1641E-02	1.8626E-02	1.0477E-02	1.3969E-02	1.2805E-02	9.3129E-03	1.3969E-02	1.2805E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.7462E-02	4.6565E-03	4.6565E-03	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.9171E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.262895E 03 MEV FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3911E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.148661E 03 MEV FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	75.00 TO 130.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.7558E-02	2.5080E-02	2.0064E-02	8.3601E-03	1.6720E-03	3.3440E-03	8.3601E-04	1.6720E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	130.00 TO 180.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.3211E-02	2.9541E-02	1.2660E-02	2.1101E-03	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF FN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2358E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.647872E 02 MEV FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2026E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.421875E 02 MEV FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI 0 — FOR THE ENERGY INTERVAL (MEV) 0 TO 187

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.500E 00	2.865E 00	2.550E 00	1.802E 00	2.604E 00	2.356E 00	2.040E 00	2.344E 00	1.125E 00

TYPE OF CASCADE PARTICLE PI 0 — FOR THE ENERGY INTERVAL (MEV) 187 TO 562

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
5.999E 00	3.907E 00	2.125E 00	6.929E-02	1.302E-01	0.	8.500E-02	0.	0.

TYPE OF CASCADE PARTICLE PI 0 — FOR THE ENERGY INTERVAL (MEV) 562 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 0 TO 187

K EQUALS 0	1	2	3	4	5	6	7
1.0656E 01	2.8558E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 187 TO 562

K EQUALS 0	1	2	3	4	5	6	7
2.8558E 01	1.0656E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 562 TO 750

K EQUALS 0	1	2	3	4	5	6	7
3.9214E 01	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI 0 0.49275E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.2250E 01	0.2865E 01	0.3740E 01	0.1129E 02	0.1113E 02	0.4365E 01	0.1530E 01	0.1823E 01	0.1500E 01

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	0. TO 25.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
8.0450E-03	0.	0.	0.	1.6090E-02	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	1.6090E-02	0.	8.0450E-03	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	25.00 TO 75.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.1641E-02	6.9847E-03	6.9847E-03	5.8206E-03	1.1641E-03	5.8206E-03	1.1641E-03	1.1641E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
4.6565E-03	0.	0.	0.	0.	0.	1.1641E-03	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1448E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.215000E 03 MEV FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1397E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.105750E 03 MEV FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	75.00 TO 130.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
8.3601E-03	1.3376E-02	7.5241E-03	5.0160E-03	8.3601E-04	8.3601E-04	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	130.00 TO 180.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
6.3302E-03	1.0550E-02	4.2202E-03	1.0550E-02	2.1101E-03	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	C	16	8	06000	1.11	852.5	02251

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1078E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.575581E 02 MEV FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1013E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.675000E 02 MEV FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 0 TO 187

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.125E 00	1.432E 00	1.105E 00	1.178E 00	9.767E-01	1.109E 00	1.020E 00	5.209E-01	1.875E 00

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 187 TO 562

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
7.499E-01	5.209E-01	1.700E-01	6.929E-02	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 562 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 0 TO 187

K EQUALS 0	1	2	3	4	5	6	7
1.2787E 00	1.3355E 01	1.4208E-01	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 187 TO 562

K EQUALS 0	1	2	3	4	5	6	7
1.3497E 01	1.2787E 00	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 562 TO 750

K EQUALS 0	1	2	3	4	5	6	7
1.4776E 01	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	O	16	8	06000	1.11	852.5	02251

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI -	0.24762E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.2250E 01	0.2865E 01	0.3740E 01	0.1129E 02	0.1113E 02	0.4365E 01	0.1530E 01	0.1823E 01	0.1500E 01

CASE NUMBER 16 8 750 2

A= 16
Z= 8
KINETIC ENERGY (MEV)= 750.00
PROTON
GEOMETRIC CROSS SECTION (MB)= 852.47
CUTOFF ENERGY (MEV)= 1.11
6000 CASE HISTORIES
INELASTIC CROSS SECTION (MB) 319.82

AVERAGE EVAPORATION YIELD PER INELASTIC EVENT

NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
0.9266993	0.7707686	0.1155042	0.0266548	0.0231008	0.4673478

CASE NUMBER 16 8 750 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
16	9	3	0.43
	8	47	6.68
	7	1	0.14
15	9	5	0.71
	8	260	36.94
	7	322	45.75
14	8	22	3.13
	7	283	40.21
	6	37	5.26
13	8	3	0.43
	7	52	7.39
	6	102	14.49
	5	1	0.14
12	7	9	1.28
	6	156	22.16
	5	7	0.99
	4	5	0.71
11	7	2	0.28
	6	11	1.56
	5	33	4.69
10	6	3	0.43
	5	55	7.81
	4	3	0.43
	3	6	0.85
9	6	7	0.99
	5	10	1.42
	4	8	1.14
	3	2	0.28
	2	1	0.14
8	3	4	0.57
	2	1	0.14
7	3	10	1.42
	2	48	6.82
6	3	57	8.10
	1	1	0.14
5	3	8	1.14
	2	50	7.10
	1	14	1.99
4	3	36	5.11
	2	50	7.10
	1	3	0.43
3	2	7	0.99
	1	3	0.43
2	1	57	8.10
1	1	129	18.33

CASE NUMBER 16 8 750 2

MOMENTS OF THE ENERGY DISTRIBUTIONS FOR THE FOLLOWING EVAPORATION PARTICLES

	NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
1ST MOM.	8.00682E 00	8.62694E 00	1.19021E 01	1.33200E 01	1.24231E 01	1.20462E 01
2ND MOM.	1.51201E 02	1.46365E 02	2.31546E 02	3.24940E 02	2.45030E 02	3.53354E 02
3RD MOM.	4.85506E 03	3.82883E 03	6.15510E 03	1.21985E 04	6.21786E 03	1.67989E 04

NORMALIZED EVAPORATION NEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.111618	0.126839	0.177575	0.131913	0.142060	0.182648	0.126839	0.157281	0.142060	0.167428
1	0.126839	0.096398	0.152207	0.126839	0.116692	0.076104	0.096398	0.096398	0.126839	0.106545
2	0.131913	0.101471	0.101471	0.116692	0.101471	0.096398	0.131913	0.091324	0.116692	0.096398
3	0.121766	0.065956	0.076104	0.111618	0.096398	0.086251	0.091324	0.076104	0.081177	0.101471
4	0.111618	0.055809	0.065956	0.065956	0.071030	0.081177	0.081177	0.086251	0.101471	0.076104
5	0.071030	0.081177	0.096398	0.065956	0.035515	0.071030	0.045662	0.071030	0.060883	0.060883
6	0.040589	0.060883	0.030441	0.045662	0.030441	0.045662	0.071030	0.060883	0.035515	0.050736
7	0.045662	0.065956	0.060883	0.040589	0.045662	0.045662	0.050736	0.030441	0.050736	0.040589
8	0.055809	0.035515	0.025368	0.086251	0.050736	0.035515	0.050736	0.071030	0.015221	0.035515
9	0.040589	0.030441	0.020294	0.035515	0.030441	0.015221	0.045662	0.055809	0.025368	0.045662
10	0.030441	0.040589	0.050736	0.015221	0.050736	0.040589	0.025368	0.030441	0.030441	0.030441
11	0.015221	0.035515	0.035515	0.015221	0.020294	0.040589	0.010147	0.005074	0.035515	0.020294
12	0.030441	0.035515	0.020294	0.025368	0.025368	0.010147	0.030441	0.020294	0.025368	0.
13	0.025368	0.020294	0.005074	0.030441	0.025368	0.010147	0.030441	0.010147	0.015221	0.015221
14	0.025368	0.005074	0.005074	0.015221	0.025368	0.010147	0.015221	0.020294	0.010147	0.025368
15	0.010147	0.015221	0.025368	0.045662	0.025368	0.025368	0.020294	0.025368	0.010147	0.010147
16	0.020294	0.015221	0.005074	0.030441	0.025368	0.010147	0.015221	0.020294	0.010147	0.025368
17	0.005074	0.010147	0.010147	0.005074	0.005074	0.005074	0.	0.010147	0.005074	0.020294
18	0.005074	0.015221	0.005074	0.010147	0.	0.005074	0.005074	0.010147	0.015221	0.005074
19	0.015221	0.005074	0.005074	0.005074	0.005074	0.005074	0.025368	0.015221	0.015221	0.015221
20	0.020294	0.005074	0.020294	0.005074	0.	0.005074	0.010147	0.005074	0.010147	0.020294
21	0.010147	0.020294	0.005074	0.010147	0.005074	0.005074	0.025368	0.005074	0.015221	0.
22	0.015221	0.	0.005074	0.	0.015221	0.015221	0.	0.010147	0.	0.
23	0.010147	0.025368	0.015221	0.005074	0.	0.	0.010147	0.005074	0.	0.015221
24	0.005074	0.005074	0.010147	0.010147	0.	0.	0.005074	0.020294	0.	0.

NORMALIZED EVAPORATION PROTON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.030562	0.030562	0.030562	0.067237	0.079462
1	0.103912	0.140587	0.122249	0.146699	0.189487	0.103912	0.122249	0.140587	0.158924	0.140587
2	0.110024	0.103912	0.134474	0.116137	0.171149	0.128362	0.097800	0.122249	0.134474	0.122249
3	0.097800	0.128362	0.103912	0.055012	0.152812	0.128362	0.079462	0.097800	0.097800	0.061125
4	0.085575	0.110024	0.103912	0.122249	0.110024	0.079462	0.091687	0.097800	0.097800	0.067237
5	0.073350	0.030562	0.103912	0.073350	0.030562	0.048900	0.079462	0.067237	0.073350	0.042787
6	0.042787	0.061125	0.067237	0.042787	0.030562	0.036675	0.073350	0.073350	0.048900	0.055012
7	0.079462	0.048900	0.085575	0.061125	0.042787	0.055012	0.061125	0.055012	0.055012	0.061125
8	0.036675	0.055012	0.055012	0.048900	0.024450	0.042787	0.067237	0.036675	0.073350	0.067237
9	0.048900	0.048900	0.024450	0.048900	0.006112	0.067237	0.024450	0.048900	0.073350	0.030562
10	0.042787	0.018337	0.036675	0.036675	0.030562	0.048900	0.055012	0.042787	0.012225	0.012225
11	0.012225	0.030562	0.048900	0.036675	0.048900	0.055012	0.012225	0.024450	0.024450	0.012225
12	0.012225	0.006112	0.030562	0.036675	0.024450	0.048900	0.030562	0.012225	0.006112	0.024450
13	0.048900	0.012225	0.030562	0.018337	0.055012	0.036675	0.048900	0.018337	0.024450	0.
14	0.030562	0.030562	0.024450	0.024450	0.024450	0.042787	0.024450	0.006112	0.018337	0.024450
15	0.036675	0.018337	0.024450	0.012225	0.012225	0.018337	0.030562	0.018337	0.024450	0.
16	0.024450	0.006112	0.	0.024450	0.012225	0.006112	0.006112	0.012225	0.006112	0.012225
17	0.036675	0.024450	0.006112	0.012225	0.	0.030562	0.012225	0.012225	0.	0.006112
18	0.018337	0.018337	0.006112	0.018337	0.018337	0.006112	0.006112	0.012225	0.012225	0.006112
19	0.018337	0.006112	0.	0.018337	0.006112	0.012225	0.012225	0.012225	0.006112	0.
20	0.030562	0.012225	0.012225	0.	0.018337	0.	0.012225	0.012225	0.006112	0.018337
21	0.	0.030562	0.018337	0.006112	0.	0.006112	0.006112	0.006112	0.018337	0.012225
22	0.006112	0.006112	0.006112	0.	0.006112	0.006112	0.	0.018337	0.	0.012225
23	0.012225	0.	0.	0.	0.	0.012225	0.006112	0.018337	0.006112	0.006112
24	0.006112	0.	0.006112	0.030562	0.012225	0.	0.	0.006112	0.	0.006112

NORMALIZED EVAPORATION DEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.007752	0.031008	0.023256	0.062016	0.085271	0.069767	0.085271	0.038760	0.077519	0.046512
5	0.046512	0.031008	0.069767	0.054264	0.054264	0.054264	0.085271	0.077519	0.077519	0.031008
10	0.015504	0.015504	0.054264	0.023256	0.054264	0.023256	0.015504	0.038760	0.062016	0.023256
15	0.015504	0.015504	0.062016	0.038760	0.031008	0.015504	0.023256	0.023256	0.015504	0.015504
20	0.031008	0.015504	0.	0.023256	0.015504	0.015504	0.	0.031008	0.	0.007752
25	0.	0.	0.007752	0.007752	0.	0.023256	0.007752	0.	0.	0.015504
30	0.015504	0.007752	0.007752	0.	0.007752	0.007752	0.	0.007752	0.	0.015504
35	0.	0.007752	0.	0.	0.	0.	0.	0.	0.	0.
40	0.	0.007752	0.	0.	0.015504	0.	0.	0.007752	0.	0.
45	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION TRITON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.033898	0.033898	0.033898	0.	0.	0.067797	0.101695	0.101695	0.	0.067797
5	0.033898	0.101695	0.067797	0.033898	0.033898	0.	0.067797	0.135593	0.101695	0.033898
10	0.101695	0.033898	0.067797	0.033898	0.101695	0.033898	0.	0.	0.033898	0.033898
15	0.033898	0.	0.	0.	0.033898	0.	0.033898	0.	0.	0.033898
20	0.	0.	0.	0.033898	0.	0.	0.	0.033898	0.	0.033898
25	0.	0.	0.	0.033898	0.033898	0.	0.033898	0.	0.033898	0.
30	0.	0.	0.067797	0.	0.	0.	0.	0.	0.	0.
35	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
40	0.	0.	0.	0.033898	0.	0.033898	0.	0.	0.	0.
45	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION HE3 SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.076923	0.038462	0.	0.230769	0.038462	0.115385	0.
5	0.115385	0.038462	0.115385	0.038462	0.038462	0.038462	0.	0.115385	0.038462	0.
10	0.038462	0.	0.038462	0.	0.076923	0.	0.038462	0.076923	0.076923	0.038462
15	0.	0.038462	0.038462	0.	0.	0.	0.	0.076923	0.	0.038462
20	0.	0.	0.	0.038462	0.038462	0.	0.038462	0.	0.	0.
25	0.	0.	0.	0.038462	0.	0.038462	0.	0.038462	0.	0.038462
30	0.	0.038462	0.	0.	0.	0.	0.	0.	0.	0.
35	0.	0.	0.	0.	0.038462	0.	0.	0.	0.038462	0.
40	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
45	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION ALPHA SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.001963	0.025515	0.084396	0.153091	0.131501	0.137390	0.113837	0.125613
5	0.117763	0.084396	0.078508	0.037291	0.039254	0.045142	0.025515	0.045142	0.056919	0.037291
10	0.031403	0.025515	0.027478	0.019627	0.045142	0.023552	0.017664	0.011776	0.017664	0.027478
15	0.015702	0.035329	0.013739	0.015702	0.023552	0.015702	0.005888	0.005888	0.017664	0.005888
20	0.013739	0.015702	0.	0.007851	0.003925	0.005888	0.005888	0.011776	0.007851	0.003925
25	0.011776	0.005888	0.	0.011776	0.007851	0.001963	0.007851	0.	0.007851	0.
30	0.003925	0.007851	0.003925	0.	0.003925	0.001963	0.003925	0.003925	0.011776	0.
35	0.003925	0.	0.007851	0.	0.003925	0.003925	0.	0.003925	0.001963	0.005888
40	0.003925	0.003925	0.	0.007851	0.	0.	0.007851	0.	0.003925	0.003925
45	0.	0.	0.	0.	0.003925	0.	0.007851	0.001963	0.	0.007851

INPUT

FROM CARDS

USED FILE 1 INCIDENT PARTICLE PROTON INCIDENT KINETIC ENERGY 1000.000 MEV

TOTAL NUMBER OF INCIDENT PARTICLES 6000 TARGET SYMBOL O

SIZE OF HISTOGRAMS FOR OUTGOING K.E. 25 FOR PROT, 25 FOR NEUT, 25 FOR PI+, 25 FOR PIO, 25 FOR PI-.

CROSS SECTIONS WERE CALCULATED FOR AS MANY AS 9 EMITTED PARTICLE COMBINATIONS.

101.000 MEV INTERVAL WAS USED IN CALCULATING HISTOGRAM FOR N(E*)DE FOR TOTAL REACTION

DELTAS FOR OUTGOING KINETIC ENERGY DISTRIBUTION IN MEV

	-.6 MU -.4 0 (K.E.) 10D	-.1 MU +.1 0 (K.E.) 10D	+.4 MU +.6 0 (K.E.) 10D	+.9 MU +.95 0 (K.E.) 20D	+.95 MU +1.0 0 (K.E.) 20D
PROTONS	100.0000	100.0000	100.0000	50.0000	50.0000
NEUTRONS	100.0000	100.0000	100.0000	50.0000	50.0000
PI+	100.0000	100.0000	100.0000	50.0000	50.0000
PIO	100.0000	100.0000	100.0000	50.0000	50.0000
PI-	100.0000	100.0000	100.0000	50.0000	50.0000

D = DELTA, RESPECTIVE ENERGY INTERVALS OF HISTOGRAMS

OUTGOING COMBINATIONS	10000	01000	00100	00010	00001	01001	10100	11000	11001
INTERVAL FOR N(E*)DE IN MEV	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000

FROM RECORD 1

6000 INCIDENT PROTON HIT O TARGET WITH 16.000 MASS AND 8.000 ATOMIC NUMBER AT 1000.000MEV.

FROM RECORD N

THERE WERE 2289. INCIDENT PARTICLE COLLISIONS CREATING 2289 ESCAPING PARTICLE RECORDS. THE GEOMETRIC CROSS SECTION WAS 852.4694672 MB. THE INELASTIC CROSS SECTION WAS 325.2171059 MB. THE CUT OFF ENERGY WAS 1.1066737 MEV.

PROTON ON O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

MOMENTUM OF COMPOUND NUCLEUS 1697.100250MEV/C EXCITATION ENERGY OF COMPOUND NUCLEUS 1006.915207MEV

THE MASS OF THE RESIDUAL NUCLEUS WAS ZERO 0 TIMES, WAS MINUS 0 TIMES CUT OFF ENERGY 1.106674MEV

FOR 76 INCIDENT PARTICLE COLLISIONS THERE WERE MORE THAN 9 OUT GOING PARTICLES

EMITTED CASCADE PARTICLES

	PROTONS	NEUTRONS	PI+	PIO	PI-
AVERAGE NO.	0.2050677E 01	0.1470948E 01	0.2678025E-00	0.1799913E-00	0.8125819E-01
VARIANCE	0.1381224E 01	0.1773839E 01	0.2100642E-00	0.1580793E-00	0.7727653E-01
AV. K.E. (MEV)	0.2444802E 03	0.1960220E 03	0.1520569E 03	0.1508853E 03	0.1089474E 03
VARIANCE	0.8745341E 05	0.6508167E 05	0.1954364E 05	0.1836208E 05	0.1212269E 05

RESIDUAL NUCLEUS

OUTGOING COMBINATION	CO	C1	ARM	AREE	AAR
TOTAL CASCADE	0.0675694	0.1115147	259.9653778	42.9811287	13.4783747
10000	0.0197102	0.1199064	206.6100407	16.7316461	16.0000000
01000	0.0280152	0.1321873	230.1614323	23.2858058	16.0000000
00100	0.	0.	0.	0.	17.0000000
00010	0.	0.	0.	0.	17.0000000
00001	0.	0.	0.	0.	17.0000000
01001	0.1142086	0.0635905	221.8426876	23.8574166	16.0000000
10100	0.1319322	0.0299014	236.9677391	13.9832373	16.0000000
11000	0.0142466	0.0665082	133.4062691	10.2809450	15.0000000
11001	0.1388324	0.1545698	361.8740234	69.4358330	15.0000000

CO = (SUM OF PARALLEL RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

C1 = (SUM OF PERPENDICULAR RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

ARM = AVERAGE RESIDUAL MOMENTUM IN MEV/C

AREE = AVERAGE RESIDUAL EXCITATION ENERGY IN MEV

AAR = AVERAGE MASS OF RESIDUAL NUCLEUS FOR TOTAL CASCADE
AAR = MASS OF RESIDUAL NUCLEUS FOR DESIGNATED OUTGOING COMBINATIONS

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PROTON ON O        INC. K.E. (MEV) IS  1000.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

                   ANGULAR DISTRIBUTION OF THE CASCADE NUCLEUS  (FRACTION IN DELTA MU)/(DELTA MU)

       -0.9000000E 00        -0.7000000E 00        -0.5000000E 00        -0.3000000E-00        -0.1000000E-00
                0.1000000E-00         0.3000000E-00         0.5000000E 00         0.7000000E 00         0.9000000E 00

            TOTAL CASCADE                            RATIO OF FORWARD /BACKWARD     0.3215470E 01
        0.1681957E-00         0.1485365E-00         0.2315422E-00         0.2577545E-00         0.3800786E-00
                0.6290957E 00         0.6312800E 00         0.6902578E 00         0.7383137E 00         0.1124945E 01

1 PROTONS   0 NEUTRONS   0 PI+   0 PIC   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.4057971E 01         0.9420290E 00         0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.3437500E 01         0.1562500E 01         0.                    0.                    0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.5000000E 01

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.5555556E 00         0.4444444E 01

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.1692982E 01
        0.3257329E-00         0.2931596E-00         0.2280130E-00         0.4234528E-00         0.5863192E 00
                0.5537459E 00         0.7654723E 00         0.7980456E 00         0.4234528E-00         0.6026059E 00

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.2500000E 01         0.                    0.2500000E 01
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PROTON ON O        INC. K.E. (MEV) IS  1000.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

      EXCITATION ENERGY DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS (FRACTION PER UNIT EN.)    (DE=DELTA E(MEV))

DEA IS  0.1010000E 03   DEB IS  0.2500000E 02   DEC IS  0.2500000E 02   DED IS  0.2500000E 02   DEE IS  0.2500000E 02
  DEF IS  0.2500000E 02   DEG IS  0.2500000E 02   DEH IS  0.2500000E 02   DEI IS  0.2500000E 02   DEJ IS  0.2500000E 02

            TOTAL CASCADE                          (SUM OVER HISTOGRAM)X(DEA)        0.1000000E 01       0 OFL
        0.8707162E-02          0.9905315E-03          0.1816695E-03          0.2162733E-04          0.
                0.                     0.                     0.                     0.                     0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEB)        0.1000000E 01       0 OFL
        0.3130435E-01          0.8115942E-02          0.5797101E-03          0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEC)        0.1000000E 01       0 OFL
        0.2750000E-01          0.6250000E-02          0.5000000E-02          0.                     0.1250000E-02
                0.                     0.                     0.                     0.                     0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DED)        0.                  0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEE)        0.                  0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEF)        0.                  0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEG)        0.1000000E 01       0 OFL
        0.4000000E-01          0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEH)        0.1000000E 01       0 OFL
        0.3555555E-01          0.4444444E-02          0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEI)        0.1000000E 01       0 OFL
        0.3543974E-01          0.3387622E-02          0.7817589E-03          0.2605863E-03          0.
                0.1302932E-03          0.                     0.                     0.                     0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEJ)        0.1000000E 01       0 OFL
        0.                     0.                     0.2000000E-01          0.2000000E-01          0.
                0.                     0.                     0.                     0.                     0.
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DESCRIPTION OF THE FOLLOWING MOMENTUM DISTRIBUTIONS

THE FIRST GROUP OF NUMBERS BELOW THE TITLES SPECIFY THE MIDPOINTS OF THE MOMENTUM INTERVALS.

THE MOMENTUM IS THE NUMBER INDICATED (MEV/C).

THE SUBSEQUENT GROUPS OF NUMBERS ARE THE FRACTION OF THE TOTAL IN EACH INTERVAL DIVIDED BY DELTA P.

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PROTON CN O        INC. K.E. (MEV) IS  1000.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

                          THE MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

   0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
         0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

              TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.2278190E-02   0.2020767E-02   0.1027116E-02   0.3320752E-03   0.1647505E-03   0.4376184E-04   0.1801958E-04
         0.7722679E-05   0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.1793340E-02   0.3757475E-02   0.3415886E-03   0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.2762064E-02   0.2025514E-02   0.9206881E-03   0.              0.1841376E-03   0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.              0.5892404E-02   0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.3273558E-03   0.5237692E-02   0.3273558E-03   0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.4529665E-02   0.1094029E-02   0.2495155E-03   0.1919350E-04   0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.              0.2946202E-02   0.2946202E-02   0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.
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PROTON ON O        INC. K.E. (MEV) IS  1000.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

                    THE PERPENDICULAR MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

  0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
        0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

            TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.3238377E-02   0.1807107E-02   0.6332596E-03   0.1441567E-03   0.5920720E-04   0.7722679E-05   0.2574226E-05
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.1878737E-02   0.3672078E-02   0.3415886E-03   0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.2762064E-02   0.2209651E-02   0.7365505E-03   0.1841376E-03   0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.5892404E-02   0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.5237692E-02   0.6547115E-03   0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.4798374E-02   0.9020944E-03   0.1727415E-03   0.1919350E-04   0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.              0.2946202E-02   0.2946202E-02   0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
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PROTON ON O        INC. K.E. (MEV) IS  1000.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

                    THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

 -0.2291085E 04  -0.2121375E 04  -0.1951665E 04  -0.1781955E 04  -0.1612245E 04  -0.1442535E 04  -0.1272825E 04
       -0.1103115E 04  -0.9334051E 03  -0.7636951E 03  -0.5939851E 03  -0.4242751E 03  -0.2545650E 03  -0.8485501E 02
  0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
       0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

            TOTAL CASCADE                        (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.1029690E-04   0.9009792E-04   0.1297410E-02
  0.2756996E-02   0.1122363E-02   0.4195989E-03   0.1081175E-03   0.6435565E-04   0.1029690E-04   0.7722679E-05
       0.5148452E-05   0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.              0.
  0.5892404E-02   0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.              0.
  0.5524128E-02   0.3682752E-03   0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
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PROTON ON O        INC. K.E. (MEV) IS  1000.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

                    THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

 -0.2291085E 04  -0.2121375E 04  -0.1951665E 04  -0.1781955E 04  -0.1612245E 04  -0.1442535E 04  -0.1272825E 04
       -0.1103115E 04  -0.9334051E 03  -0.7636951E 03  -0.5939851E 03  -0.4242751E 03  -0.2545650E 03  -0.8485501E 02
  0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
       0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

          TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL     0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.1029690E-04   0.9009792E-04   0.1297410E-02
  0.2756996E-02   0.1122363E-02   0.4195989E-03   0.1081175E-03   0.6435565E-04   0.1029690E-04   0.7722679E-05
       0.5148452E-05   0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL     0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
  0.              0.5892404E-02   0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL     0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
  0.3273558E-03   0.5237692E-02   0.3273558E-03   0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL     0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.2188059E-02
  0.3569990E-02   0.1151610E-03   0.1919350E-04   0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL     0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
  0.              0.5892404E-02   0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
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PROTON ON O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PIO 5TH IS NO. OF PI-

26001	0.14207824E-00	26100	0.28415649E-00	27000	0.14207824E-00	34020	0.14207824E-00
34101	0.28415649E-00	34110	0.14207824E-00	35001	0.28415649E-00	35010	0.42623473E-00
35100	0.42623473E-00	36000	0.42623473E-00	43110	0.14207824E-00	44001	0.14207824E-00
44010	0.14207824E-00	44100	0.71039122E 00	45000	0.42623473E-00	52011	0.14207824E-00
52101	0.14207824E-00	53001	0.14207824E-00	53010	0.28415649E-00	53100	0.42623473E-00
54000	0.71039122E 00	62001	0.28415649E-00	62010	0.28415649E-00	62100	0.14207824E-00
63000	0.56831298E 00	71100	0.14207824E-00	72000	0.14207824E-00	81000	0.14207824E-00
06200	0.14207824E-00	16001	0.28415649E-00	16010	0.14207824E-00	25001	0.14207824E-00
25010	0.42623473E-00	25100	0.28415649E-00	26000	0.71039122E 00	32111	0.14207824E-00
33020	0.14207824E-00	33101	0.28415649E-00	34001	0.42623473E-00	34010	0.28415649E-00
34100	0.56831298E 00	35000	0.99454771E 00	42101	0.42623473E-00	42110	0.71039122E 00
42200	0.14207824E-00	43001	0.85246947E 00	43010	0.28415649E-00	43100	0.99454771E 00
44000	0.85246947E 00	51011	0.14207824E-00	51110	0.14207824E-00	52001	0.42623473E-00
52010	0.56831298E 00	52100	0.71039122E 00	53000	0.15628606E 01	61010	0.14207824E-00
61100	0.14207824E-00	62000	0.56831298E 00	14200	0.42623473E-00	15010	0.14207824E-00
15100	0.14207824E-00	23011	0.14207824E-00	23020	0.14207824E-00	23101	0.14207824E-00
23110	0.28415649E-00	23200	0.14207824E-00	24010	0.28415649E-00	24100	0.11366259E 01
25000	0.85246947E 00	32002	0.28415649E-00	32011	0.28415649E-00	32020	0.14207824E-00
32101	0.56831298E 00	32200	0.14207824E-00	33001	0.56831298E 00	33010	0.56831298E 00
33100	0.14207824E 01	34000	0.15628606E 01	41002	0.14207824E-00	41011	0.14207824E-00
41020	0.14207824E-00	41110	0.28415649E-00	42001	0.71039122E 00	42010	0.71039122E 00
42100	0.14207824E 01	43000	0.21311736E 01	51001	0.14207824E-00	51010	0.14207824E-00
51100	0.42623473E-00	52000	0.19890954E 01	60100	0.14207824E-00	61000	0.28415649E-00
13110	0.14207824E-00	14010	0.42623473E-00	14100	0.71039122E 00	15000	0.14207824E-00
22011	0.14207824E-00	22020	0.14207824E-00	22101	0.71039122E 00	22110	0.28415649E-00
22200	0.14207824E-00	23001	0.71039122E 00	23010	0.85246947E 00	23100	0.19890954E 01

PROTON ON O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PIO 5TH IS NO. OF PI-

CONTINUED

24000	0.18470171E 01	31011	0.14207824E-00	31101	0.28415649E-00	31110	0.71039122E 00
31200	0.23415649E-00	32001	0.42623473E-00	32010	0.25574084E 01	32100	0.35519560E 01
33000	0.12787042E 01	40011	0.28415649E-00	41001	0.14207824E-00	41010	0.71039122E 00
41100	0.56831298E 00	42000	0.15628606E 01	50010	0.42623473E-00	51000	0.99454771E 00
60000	0.14207824E-00	03110	0.14207824E-00	04010	0.28415649E-00	04100	0.56831298E 00
12101	0.42623473E-00	12110	0.42623473E-00	12200	0.14207824E-00	13001	0.28415649E-00
13010	0.85246947E 00	13100	0.26994866E 01	14000	0.56831298E 00	21011	0.56831298E 00
21020	0.42623473E-00	21101	0.56831298E 00	21110	0.56831298E 00	22001	0.11366259E 01
22010	0.29836431E 01	22100	0.39781908E 01	23000	0.28415649E 01	30101	0.14207824E-00
31001	0.12787042E 01	31010	0.25574084E 01	31100	0.34098778E 01	32000	0.39781908E 01
40001	0.14207824E-00	40010	0.85246947E 00	40100	0.14207824E-00	41000	0.28415649E 01
02101	0.14207824E-00	03010	0.14207824E-00	03100	0.14207824E-00	04000	0.14207824E-00
11020	0.28415649E-00	11101	0.71039122E 00	11110	0.14207824E 01	11200	0.14207824E-00
12001	0.71039122E 00	12010	0.26994866E 01	12100	0.79563816E 01	13000	0.24153301E 01
20020	0.14207824E-00	21001	0.24153301E 01	21010	0.36940343E 01	21100	0.63935210E 01
22000	0.58252080E 01	30001	0.12787042E 01	30010	0.99454771E 00	30100	0.71039122E 00
31000	0.58252080E 01	40000	0.22732519E 01	02010	0.28415649E-00	02100	0.26994866E 01
03000	0.42623473E-00	11001	0.28415649E-00	11010	0.10229633E 02	11100	0.19322640E 02
12000	0.86667728E 01	20001	0.22732519E 01	20010	0.56831297E 01	20100	0.12787042E 01
21000	0.13355355E 02	30000	0.69618339E 01	01001	0.14207824E-00	01010	0.14207824E 01
01100	0.15628606E 01	02000	0.19890954E 01	10001	0.42623473E-00	10010	0.18470171E 01
10100	0.25574084E 01	11000	0.43618020E 02	20000	0.31825526E 02	01000	0.45465038E 01
10000	0.98033988E 01						

PROTON ON O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 1.00 TO 0.95
(THETA FROM 0 DEG. 0 MIN. TO 18 DEG. 12 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
25.0	0.294E-01	25.0	0.570E-01	25.0	0.400E-01	25.0	0.114E-01	25.0	0.471E-01
75.0	0.173E-01	75.0	0.282E-01	75.0	0.320E-01	75.0	0.343E-01	75.0	0.471E-01
125.0	0.184E-01	125.0	0.156E-01	125.0	0.160E-01	125.0	0.114E-01	125.0	0.
175.0	0.173E-01	175.0	0.125E-01	175.0	0.160E-01	175.0	0.229E-01	175.0	0.
225.0	0.133E-01	225.0	0.106E-01	225.0	0.160E-01	225.0	0.343E-01	225.0	0.471E-01
275.0	0.141E-01	275.0	0.119E-01	275.0	0.320E-01	275.0	0.457E-01	275.0	0.471E-01
325.0	0.184E-01	325.0	0.150E-01	325.0	0.240E-01	325.0	0.914E-01	325.0	0.471E-01
375.0	0.129E-01	375.0	0.138E-01	375.0	0.800E-02	375.0	0.	375.0	0.941E-01
425.0	0.125E-01	425.0	0.169E-01	425.0	0.400E-01	425.0	0.686E-01	425.0	0.235E-01
475.0	0.125E-01	475.0	0.144E-01	475.0	0.104E-00	475.0	0.229E-01	475.0	0.
525.0	0.125E-01	525.0	0.175E-01	525.0	0.400E-01	525.0	0.343E-01	525.0	0.471E-01
575.0	0.173E-01	575.0	0.194E-01	575.0	0.	575.0	0.114E-01	575.0	0.
625.0	0.145E-01	625.0	0.294E-01	625.0	0.240E-01	625.0	0.	625.0	0.
675.0	0.106E-01	675.0	0.232E-01	675.0	0.	675.0	0.114E-01	675.0	0.
725.0	0.122E-01	725.0	0.175E-01	725.0	0.800E-02	725.0	0.	725.0	0.
775.0	0.102E-01	775.0	0.939E-02	775.0	0.	775.0	0.	775.0	0.
825.0	0.114E-01	825.0	0.689E-02	825.0	0.	825.0	0.	825.0	0.
875.0	0.325E-01	875.0	0.125E-01	875.0	0.	875.0	0.	875.0	0.
925.0	0.486E-01	925.0	0.294E-01	925.0	0.	925.0	0.	925.0	0.
975.0	0.639E-01	975.0	0.388E-01	975.0	0.	975.0	0.	975.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	0.100E 01

PROTON ON O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.95 TO 0.90
(THETA FROM 18 DEG. 12 MIN. TO 25 DEG. 51 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
25.0	0.560E-01	25.0	0.763E-01	25.0	0.314E-01	25.0	0.195E-01	25.0	0.800E-01
75.0	0.271E-01	75.0	0.369E-01	75.0	0.	75.0	0.195E-01	75.0	0.120E-00
125.0	0.316E-01	125.0	0.295E-01	125.0	0.314E-01	125.0	0.293E-01	125.0	0.400E-01
175.0	0.280E-01	175.0	0.283E-01	175.0	0.392E-01	175.0	0.390E-01	175.0	0.
225.0	0.181E-01	225.0	0.258E-01	225.0	0.549E-01	225.0	0.585E-01	225.0	0.400E-01
275.0	0.135E-01	275.0	0.148E-01	275.0	0.314E-01	275.0	0.195E-01	275.0	0.400E-01
325.0	0.190E-01	325.0	0.160E-01	325.0	0.627E-01	325.0	0.195E-01	325.0	0.800E-01
375.0	0.135E-01	375.0	0.160E-01	375.0	0.549E-01	375.0	0.585E-01	375.0	0.
425.0	0.181E-01	425.0	0.271E-01	425.0	0.314E-01	425.0	0.585E-01	425.0	0.
475.0	0.135E-01	475.0	0.185E-01	475.0	0.392E-01	475.0	0.585E-01	475.0	0.
525.0	0.144E-01	525.0	0.111E-01	525.0	0.157E-01	525.0	0.976E-02	525.0	0.
575.0	0.117E-01	575.0	0.111E-01	575.0	0.784E-02	575.0	0.976E-02	575.0	0.
625.0	0.181E-02	625.0	0.111E-01	625.0	0.	625.0	0.	625.0	0.
675.0	0.126E-01	675.0	0.862E-02	675.0	0.	675.0	0.	675.0	0.
725.0	0.163E-01	725.0	0.172E-01	725.0	0.	725.0	0.	725.0	0.
775.0	0.370E-01	775.0	0.197E-01	775.0	0.	775.0	0.	775.0	0.
825.0	0.325E-01	825.0	0.172E-01	825.0	0.	825.0	0.	825.0	0.
875.0	0.298E-01	875.0	0.123E-01	875.0	0.	875.0	0.	875.0	0.
925.0	0.542E-02	925.0	0.246E-02	925.0	0.	925.0	0.	925.0	0.
975.0	0.	975.0	0.	975.0	0.	975.0	0.	975.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.60 TO 0.40
(THETA FROM 53 DEG. 8 MIN. TO 66 DEG. 25 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PI0		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.289E-01	50.0	0.318E-01	50.0	0.208E-01	50.0	0.256E-01	50.0	0.340E-01
150.0	0.141E-01	150.0	0.101E-01	150.0	0.158E-01	150.0	0.141E-01	150.0	0.140E-01
250.0	0.520E-02	250.0	0.652E-02	250.0	0.750E-02	250.0	0.769E-02	250.0	0.
350.0	0.151E-02	350.0	0.115E-02	350.0	0.583E-02	350.0	0.128E-02	350.0	0.200E-02
450.0	0.252E-03	450.0	0.256E-03	450.0	0.	450.0	0.128E-02	450.0	0.
550.0	0.	550.0	0.128E-03	550.0	0.	550.0	0.	550.0	0.
650.0	0.	650.0	0.	650.0	0.	650.0	0.	650.0	0.
750.0	0.	750.0	0.	750.0	0.	750.0	0.	750.0	0.
850.0	0.	850.0	0.	850.0	0.	850.0	0.	850.0	0.
950.0	0.	950.0	0.	950.0	0.	950.0	0.	950.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.10 TO -0.10
(THETA FROM 84 DEG. 16 MIN. TO 95 DEG. 44 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.432E-01	50.0	0.442E-01	50.0	0.361E-01	50.0	0.355E-01	50.0	0.467E-01
150.0	0.678E-02	150.0	0.561E-02	150.0	0.139E-01	150.0	0.113E-01	150.0	0.333E-02
250.0	0.	250.0	0.234E-03	250.0	0.	250.0	0.323E-02	250.0	0.
350.0	0.	350.0	0.	350.0	0.	350.0	0.	350.0	0.
450.0	0.	450.0	0.	450.0	0.	450.0	0.	450.0	0.
550.0	0.	550.0	0.	550.0	0.	550.0	0.	550.0	0.
650.0	0.	650.0	0.	650.0	0.	650.0	0.	650.0	0.
750.0	0.	750.0	0.	750.0	0.	750.0	0.	750.0	0.
850.0	0.	850.0	0.	850.0	0.	850.0	0.	850.0	0.
950.0	0.	950.0	0.	950.0	0.	950.0	0.	950.0	0.
N IS	0.100E 01	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM -0.40 TO -0.60
(THETA FROM 113 DEG. 35 MIN. TO 126 DEG. 54 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.463E-01	50.0	0.482E-01	50.0	0.455E-01	50.0	0.420E-01	50.0	0.462E-01
150.0	0.369E-02	150.0	0.183E-02	150.0	0.455E-02	150.0	0.800E-02	150.0	0.385E-02
250.0	0.	250.0	0.	250.0	0.	250.0	0.	250.0	0.
350.0	0.	350.0	0.	350.0	0.	350.0	0.	350.0	0.
450.0	0.	450.0	0.	450.0	0.	450.0	0.	450.0	0.
550.0	0.	550.0	0.	550.0	0.	550.0	0.	550.0	0.
650.0	0.	650.0	0.	650.0	0.	650.0	0.	650.0	0.
750.0	0.	750.0	0.	750.0	0.	750.0	0.	750.0	0.
850.0	0.	850.0	0.	850.0	0.	850.0	0.	850.0	0.
950.0	0.	950.0	0.	950.0	0.	950.0	0.	950.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	0.100E 01	N IS	1.000E 00	N IS	1.000E 00

PROTON ON O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PROTONS

0 TO 1.0000000E 03 MEV 0 DEL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PROTONS /DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.7637410E-02	300.00	0.5432467E-03	540.00	0.2876012E-03	780.00	0.3461866E-03
60.00	0.3280784E-02	340.00	0.5752024E-03	580.00	0.3195569E-03	820.00	0.2876012E-03
100.00	0.2194291E-02	380.00	0.4420537E-03	620.00	0.2716234E-03	860.00	0.3994461E-03
140.00	0.1752237E-02	420.00	0.4260759E-03	660.00	0.2876012E-03	900.00	0.5538986E-03
180.00	0.1208990E-02	460.00	0.2929271E-03	700.00	0.2662974E-03	940.00	0.6071581E-03
220.00	0.9160631E-03	500.00	0.3941202E-03	740.00	0.2769493E-03	980.00	0.6976992E-03
260.00	0.7349808E-03						

PROTON ON O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE NEUTRONS

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED NEUTRONS/DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.9214434E-02	300.00	0.6311256E-03	540.00	0.3341253E-03	780.00	0.2301752E-03
60.00	0.3593704E-02	340.00	0.4232254E-03	580.00	0.2821503E-03	820.00	0.1856252E-03
100.00	0.1967627E-02	380.00	0.4974755E-03	620.00	0.3712504E-03	860.00	0.1633502E-03
140.00	0.1358776E-02	420.00	0.5123255E-03	660.00	0.2970003E-03	900.00	0.2301752E-03
180.00	0.1143451E-02	460.00	0.3267003E-03	700.00	0.3341253E-03	940.00	0.2970003E-03
220.00	0.9652510E-03	500.00	0.3267003E-03	740.00	0.2673003E-03	980.00	0.3861004E-03
260.00	0.6608257E-03						

PROTON ON O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE NEUTRONS

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED NEUTRONS/DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.9214434E-02	300.00	0.6311256E-03	540.00	0.3341253E-03	780.00	0.2301752E-03
60.00	0.3593704E-02	340.00	0.4232254E-03	580.00	0.2821503E-03	820.00	0.1856252E-03
100.00	0.1967627E-02	380.00	0.4974755E-03	620.00	0.3712504E-03	860.00	0.1633502E-03
140.00	0.1358776E-02	420.00	0.5123255E-03	660.00	0.2970003E-03	900.00	0.2301752E-03
180.00	0.1143451E-02	460.00	0.3267003E-03	700.00	0.3341253E-03	940.00	0.2970003E-03
220.00	0.9652510E-03	500.00	0.3267003E-03	740.00	0.2673003E-03	980.00	0.3861004E-03
260.00	0.6608257E-03						

PROTON ON O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI+

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI+ / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.5016313E-02	300.00	0.1060359E-02	540.00	0.1631321E-03	780.00	0.
60.00	0.5709625E-02	340.00	0.7748777E-03	580.00	0.	820.00	0.
100.00	0.3915171E-02	380.00	0.8156607E-03	620.00	0.8156607E-04	860.00	0.
140.00	0.1998369E-02	420.00	0.4893964E-03	660.00	0.4078304E-04	900.00	0.
180.00	0.1223491E-02	460.00	0.6933116E-03	700.00	0.	940.00	0.
220.00	0.1101142E-02	500.00	0.4893964E-03	740.00	0.4078304E-04	980.00	0.
260.00	0.1386623E-02						

PROTON ON O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI+

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI+ / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.5016313E-02	300.00	0.1060359E-02	540.00	0.1631321E-03	780.00	0.
60.00	0.5709625E-02	340.00	0.7748777E-03	580.00	0.	820.00	0.
100.00	0.3915171E-02	380.00	0.8156607E-03	620.00	0.8156607E-04	860.00	0.
140.00	0.1998369E-02	420.00	0.4893964E-03	660.00	0.4078304E-04	900.00	0.
180.00	0.1223491E-02	460.00	0.6933116E-03	700.00	0.	940.00	0.
220.00	0.1101142E-02	500.00	0.4893964E-03	740.00	0.4078304E-04	980.00	0.
260.00	0.1386623E-02						

PROTON ON O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PIO

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PIO / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.5157767E-02	300.00	0.1456311E-02	540.00	0.2427185E-03	780.00	0.
60.00	0.6067961E-02	340.00	0.7281554E-03	580.00	0.	820.00	0.
100.00	0.2730583E-02	380.00	0.8495146E-03	620.00	0.	860.00	0.
140.00	0.1881068E-02	420.00	0.9101942E-03	660.00	0.6067961E-04	900.00	0.
180.00	0.1638350E-02	460.00	0.2427185E-03	700.00	0.	940.00	0.
220.00	0.1577670E-02	500.00	0.3640777E-03	740.00	0.	980.00	0.
260.00	0.1092233E-02						

PROTON ON O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI-

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI- / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.7123656E-02	300.00	0.5376344E-03	540.00	0.1344086E-03	780.00	0.
60.00	0.7392473E-02	340.00	0.9408602E-03	580.00	0.	820.00	0.
100.00	0.3225807E-02	380.00	0.6720430E-03	620.00	0.	860.00	0.
140.00	0.2016129E-02	420.00	0.2688172E-03	660.00	0.	900.00	0.
180.00	0.1209677E-02	460.00	0.	700.00	0.	940.00	0.
220.00	0.4032258E-03	500.00	0.1344086E-03	740.00	0.	980.00	0.
260.00	0.9408602E-03						

PROTON ON O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PARTICLES

0 TO 1000 MEV

N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PARTICLES/DELTA E
K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N IS (SUM OVER HISTOGRAM FROM 1 TO 1000 MEV) (DELTA E)

K.E.	PROTONS N(E)	NEUTRONS N(E)	PI+ N(E)	PI0 N(E)	PI- N(E)
25.0	0.6783127E-02	0.8203148E-02	0.4959217E-02	0.5485437E-02	0.7741935E-02
75.0	0.2824883E-02	0.2922483E-02	0.5350734E-02	0.4563107E-02	0.5483871E-02
125.0	0.2019599E-02	0.1597862E-02	0.2610114E-02	0.2378641E-02	0.2258064E-02
175.0	0.1231359E-02	0.1098901E-02	0.1370310E-02	0.1553398E-02	0.1290323E-02
225.0	0.9118023E-03	0.8850609E-03	0.1207178E-02	0.1504854E-02	0.5376344E-03
275.0	0.6220707E-03	0.6534007E-03	0.1239804E-02	0.1213592E-02	0.7526882E-03
325.0	0.5709416E-03	0.5346005E-03	0.8809135E-03	0.1116505E-02	0.8602150E-03
375.0	0.4644227E-03	0.4692605E-03	0.7830343E-03	0.7281553E-03	0.6451613E-03
425.0	0.3792075E-03	0.4573805E-03	0.4893964E-03	0.7281553E-03	0.2150538E-03
475.0	0.3195569E-03	0.3682804E-03	0.6525285E-03	0.3883495E-03	0.
525.0	0.3493822E-03	0.2970003E-03	0.2936378E-03	0.1941748E-03	0.2150538E-03
575.0	0.3280784E-03	0.3029403E-03	0.3262643E-04	0.9708738E-04	0.
625.0	0.2812100E-03	0.3861004E-03	0.9787928E-04	0.	0.
675.0	0.2513847E-03	0.3029403E-03	0.	0.4854369E-04	0.
725.0	0.2939923E-03	0.3029403E-03	0.3262643E-04	0.	0.
775.0	0.3323392E-03	0.2079002E-03	0.	0.	0.
825.0	0.2939923E-03	0.1663202E-03	0.	0.	0.
875.0	0.4942480E-03	0.1841402E-03	0.	0.	0.
925.0	0.5538986E-03	0.2910603E-03	0.	0.	0.
975.0	0.6945036E-03	0.3682804E-03	0.	0.	0.
	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 0.9999999E 00

PROTON ON O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ANGULAR DISTRIBUTION OF EMITTED CASCADE PARTICLES

(FRACTION IN EACH INTERVAL)/(DELTA MU)

MU IS COSINE THETA AND SPECIFIES THE CENTER OF THE INTERVAL

MU	PROTON	NEUTRON	PI+	PIO	PI-
0.975	0.4345974E 01	0.3795664E 01	0.1631321E 01	0.1699029E 01	0.1827957E 01
0.925	0.1887516E 01	0.1930502E 01	0.1663948E 01	0.1990291E 01	0.1075269E 01
0.875	0.1329357E 01	0.1294921E 01	0.8809135E 00	0.1165048E 01	0.4301075E-00
0.825	0.1043886E 01	0.1063261E 01	0.9135400E 00	0.1019417E 01	0.8602151E 00
0.775	0.7498935E 00	0.9444610E 00	0.1011419E 01	0.6310680E 00	0.7526882E 00
0.725	0.7925011E 00	0.7306207E 00	0.8482871E 00	0.9223301E 00	0.6451613E 00
0.675	0.6902429E 00	0.7187407E 00	0.6199021E 00	0.6310680E 00	0.5376344E 00
0.625	0.6220707E 00	0.6296406E 00	0.6525285E 00	0.5339806E 00	0.3225806E-00
0.575	0.7158074E 00	0.5405405E 00	0.4567700E-00	0.6310680E 00	0.5376344E 00
0.525	0.6646783E 00	0.6237006E 00	0.6525285E 00	0.3883495E-00	0.9677419E 00
0.475	0.5879847E 00	0.6118206E 00	0.3915171E-00	0.4854369E-00	0.7526882E 00
0.425	0.5709416E 00	0.5464806E 00	0.4567700E-00	0.3883495E-00	0.4301075E-00
0.375	0.4729442E-00	0.5108405E 00	0.3588907E-00	0.3883495E-00	0.2150538E-00
0.325	0.4985087E-00	0.5524206E 00	0.3588907E-00	0.3883495E-00	0.5376344E 00
0.275	0.3877290E-00	0.3623404E-00	0.5220228E 00	0.2912621E-00	0.3225806E-00
0.225	0.4857265E-00	0.4217404E-00	0.5220228E 00	0.3883495E-00	0.4301075E-00
0.175	0.3365999E-00	0.3623404E-00	0.4241436E-00	0.2912621E-00	0.5376344E 00
0.125	0.3536429E-00	0.3326403E-00	0.4241436E-00	0.1941748E-00	0.8602151E 00
0.075	0.3067746E-00	0.3207603E-00	0.6199021E 00	0.1941748E-00	0.3225806E-00
0.025	0.3323392E-00	0.3682804E-00	0.4241436E-00	0.6310680E 00	0.4301075E-00
-0.025	0.3025138E-00	0.2494802E-00	0.4241436E-00	0.2427184E-00	0.5376344E 00
-0.075	0.2215594E-00	0.3326403E-00	0.2936378E-00	0.4368932E-00	0.3225806E-00
-0.125	0.2002556E-00	0.2435402E-00	0.3915171E-00	0.4368932E-00	0.3225806E-00
-0.175	0.2172987E-00	0.2613603E-00	0.3588907E-00	0.6310680E 00	0.3225806E-00
-0.225	0.2002556E-00	0.1900802E-00	0.3262643E-00	0.3398058E-00	0.3225806E-00
-0.275	0.1661696E-00	0.2316602E-00	0.5220228E 00	0.3398058E-00	0.3225806E-00
-0.325	0.1491265E-00	0.1485001E-00	0.3262643E-00	0.2912621E-00	0.4301075E-00
-0.375	0.1406050E-00	0.1485001E-00	0.2610114E-00	0.5825243E 00	0.4301075E-00
-0.425	0.1576481E-00	0.1722602E-00	0.2936378E-00	0.2427184E-00	0.1075269E-00
-0.475	0.1235620E-00	0.1485001E-00	0.2936378E-00	0.1941748E-00	0.3225806E-00
-0.525	0.1150405E-00	0.1663202E-00	0.2283850E-00	0.3398058E-00	0.6451613E 00
-0.575	0.1235620E-00	0.1603802E-00	0.2610114E-00	0.4368932E-00	0.3225806E-00
-0.625	0.1065190E-00	0.1188001E-00	0.2936378E-00	0.2427184E-00	0.3225806E-00
-0.675	0.1363443E-00	0.1366201E-00	0.2283850E-00	0.1941748E-00	0.5376344E 00
-0.725	0.1107797E-00	0.1366201E-00	0.2610114E-00	0.1456311E-00	0.4301075E-00
-0.775	0.6817213E-01	0.1069201E-00	0.2610114E-00	0.2912621E-00	0.1075269E-00
-0.825	0.7243289E-01	0.7128007E-01	0.2936378E-00	0.4368932E-00	0.4301075E-00
-0.875	0.5965062E-01	0.1188001E-00	0.3262643E-00	0.2912621E-00	0.4301075E-00
-0.925	0.8521517E-01	0.1306801E-00	0.3588907E-00	0.4854369E-00	0.3225806E-00
-0.975	0.6817213E-01	0.6534007E-01	0.1631321E-00	0.1456311E-00	0.2150538E-00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	0. TO 10.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
6.3258E-01	7.0700E-01	4.0932E-01	2.9768E-01	5.5816E-01	2.6047E-01	2.9768E-01	3.3490E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
4.4653E-01	4.0932E-01	4.4653E-01	3.3490E-01	6.3258E-01	3.7211E-01	5.2095E-01	4.4653E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
6.6979E-01	5.5816E-01	5.5816E-01	6.3258E-01	2.6047E-01	1.4884E-01	4.8374E-01	1.1907E 00
INTERVAL 25							
4.0187E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	10.00 TO 30.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
6.5201E-01	2.9983E-01	3.1411E-01	3.2363E-01	2.9031E-01	2.3320E-01	2.0941E-01	1.8561E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.4748E-01	1.5705E-01	1.9513E-01	1.5705E-01	1.7133E-01	1.3802E-01	1.6657E-01	1.1898E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.1898E-01	1.5705E-01	1.6181E-01	2.1892E-01	2.1417E-01	3.3791E-01	4.3309E-01	3.9026E-01
INTERVAL 25							
1.0946E-01							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.6251E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.626571E 03 MEV FOR CASCADE PROTON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2401E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.459746E 03 MEV FOR CASCADE PROTON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	30.00 TO 90.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
5.3396E-01	2.7547E-01	1.8800E-01	1.4491E-01	9.2040E-02	7.5068E-02	5.6138E-02	3.5249E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.8722E-02	2.5458E-02	1.7625E-02	8.4860E-03	1.3708E-02	9.7915E-03	7.1804E-03	9.1387E-03
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
7.1804E-03	1.3055E-03	1.9583E-03	1.3055E-03	1.3055E-03	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	90.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.6117E-01	6.3315E-02	2.6570E-02	1.7525E-02	5.6531E-03	5.6531E-04	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.6136E 02 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.121549E 03 MEV FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1499E 02 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.407541E 02 MEV FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.069E 02	7.240E 01	6.239E 01	4.975E 01	3.073E 01	1.698E 01	1.224E 01	7.292E 00	8.249E 00

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.447E 02	4.610E 01	1.215E 01	1.594E 00	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.736E 02	1.211E 01	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
7.9564E 01	1.1707E 02	5.3279E 01	3.0263E 01	1.6765E 01	7.8143E 00	2.9836E 00	1.2787E 00
8	9	10	11	12	13	14	15
1.1366E 00	1.4208E-01	1.4208E-01	0.	0.	0.	0.	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
1.9365E 02	1.0500E 02	1.1650E 01	1.4208E-01	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
2.3145E 02	7.8996E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PROTONS	0.36387E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.1875E 01	0.2735E 01	0.2890E 01	0.8453E 01	0.9311E 01	0.2494E 01	0.2550E 01	0.1432E 01	0.7499E 00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	0. TO 10.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.1907E 00	4.0932E-01	2.6047E-01	2.2326E-01	1.1163E-01	2.2326E-01	7.4421E-02	1.8605E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.9768E-01	2.2326E-01	4.4653E-01	1.4884E-01	3.3490E-01	4.8374E-01	5.9537E-01	8.5584E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
7.4421E-01	9.6748E-01	5.5816E-01	2.2326E-01	3.7211E-02	0.	7.4421E-02	2.6047E-01
INTERVAL 25							
1.6745E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	10.00 TO 30.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
6.7581E-01	3.1411E-01	2.2368E-01	2.0465E-01	1.9989E-01	1.5230E-01	1.2374E-01	1.7609E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.1898E-01	1.4278E-01	1.7133E-01	1.2850E-01	1.0470E-01	1.2374E-01	7.6148E-02	1.2374E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
7.1388E-02	7.1388E-02	9.0425E-02	1.1422E-01	1.0470E-01	1.0470E-01	1.3802E-01	1.5705E-01
INTERVAL 25							
3.3315E-02							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.4242E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.540842E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1578E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.364270E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	30.00 TO 90.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.3605E-01	2.0170E-01	1.1554E-01	7.6374E-02	6.3971E-02	5.8749E-02	3.9166E-02	2.8069E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.5666E-02	2.0236E-02	1.3708E-02	8.4860E-03	8.4860E-03	3.9166E-03	3.9166E-03	6.5277E-04
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
3.2638E-03	2.6111E-03	1.3055E-03	6.5277E-04	1.3055E-03	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	90.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.2556E-01	5.5400E-02	1.9221E-02	9.6103E-03	6.2184E-03	1.1306E-03	5.6531E-04	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.4415E 02 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.112655E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1271E 02 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.397153E 02 MEV FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE NEUTRON — FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
8.624E 01	5.951E 01	4.326E 01	3.624E 01	2.324E 01	1.365E 01	1.088E 01	7.553E 00	6.374E 00

TYPE OF CASCADE PARTICLE NEUTRON — FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.155E 02	3.477E 01	7.650E 00	1.316E 00	6.511E-02	0.	8.500E-02	0.	0.

TYPE OF CASCADE PARTICLE NEUTRON — FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
6.337E 01	4.688E 00	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
6.6919E 01	1.0258E 02	4.2766E 01	2.1596E 01	1.0940E 01	6.8198E 00	2.2733E 00	7.1039E-01
8	9	10	11	12	13	14	15
1.4208E-01	1.4208E-01	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
1.5984E 02	9.2635E 01	2.4153E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
2.2576E 02	2.9126E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
NEUTRONS	0.26671E-00		

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	0. TO 25.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.8270E-02	1.2067E-02	1.8101E-02	4.8270E-02	1.2067E-02	4.2236E-02	3.6202E-02	3.6202E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
3.0169E-02	4.2236E-02	4.2236E-02	8.4472E-02	6.0337E-02	2.4135E-02	0.	1.2067E-02
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
6.0337E-03	0.	6.0337E-03	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	25.00 TO 75.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.5319E-02	3.4050E-02	3.3177E-02	2.0954E-02	2.0954E-02	1.4842E-02	2.2700E-02	1.7462E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.2223E-02	1.1350E-02	4.3654E-03	2.6193E-03	1.7462E-03	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2245E 02 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.327957E 03 MEV FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.8871E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.177480E 03 MEV FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	75.00 TO 130.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.6993E-02	4.5771E-02	3.0723E-02	1.0032E-02	2.5080E-03	1.8810E-03	1.2540E-03	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	130.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.2729E-02	4.1147E-02	9.4953E-03	1.5826E-03	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5167E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.708738E 02 MEV FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3798E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.473333E 02 MEV FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM	0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
	7.124E 00	7.162E 00	6.460E 00	5.959E 00	5.469E 00	5.058E 00	3.485E 00	4.297E 00	3.000E 00

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM	0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
	1.650E 01	7.813E 00	2.720E 00	1.386E-01	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM	0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
	0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
1.9181E 01	6.3793E 01	1.8470E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
6.5214E 01	1.9607E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
8.4821E 01	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI +	0.49266E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.1875E 01	0.2735E 01	0.2890E 01	0.8453E 01	0.9311E 01	0.2494E 01	0.2550E 01	0.1432E 01	0.7499E 00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	0. TO 25.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.2067E-02	1.8101E-02	3.0169E-02	1.2067E-02	3.0169E-02	4.8270E-02	3.0169E-02	3.0169E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
3.0169E-02	3.0169E-02	7.2405E-02	2.4135E-02	3.0169E-02	2.4135E-02	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
6.0337E-03	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	25.00 TO 75.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.9208E-02	2.2700E-02	1.4842E-02	1.7462E-02	1.3969E-02	1.3969E-02	1.0477E-02	1.5716E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
6.1116E-03	7.8578E-03	2.6193E-03	0.	8.7308E-04	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1714E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.313521E 03 MEV FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5832E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.173533E 03 MEV FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	75.00 TO 130.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.6334E-02	3.3858E-02	1.1913E-02	4.3890E-03	3.7620E-03	1.2540E-03	6.2701E-04	6.2701E-04
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	130.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.0069E-02	2.6903E-02	6.3302E-03	3.1651E-03	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3311E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.684848E 02 MEV FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2659E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.495238E 02 MEV FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
4.499E 00	5.469E 00	4.505E 00	3.257E 00	3.516E 00	3.395E 00	2.465E 00	3.516E 00	2.250E 00

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.237E 01	5.469E 00	1.360E 00	1.386E-01	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
1.2787E 01	4.2766E 01	1.2787E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
4.3618E 01	1.3213E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
5.6831E 01	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI 0 0.49515E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.1875E 01	0.2735E 01	0.2890E 01	0.8453E 01	0.9311E 01	0.2494E 01	0.2550E 01	0.1432E 01	0.7499E 00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	0. TO 25.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.2067E-02	3.6202E-02	0.	6.0337E-03	0.	1.2067E-02	2.4135E-02	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.8101E-02	2.4135E-02	6.0337E-03	0.	6.0337E-03	6.0337E-03	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	25.00 TO 75.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.2223E-02	1.3969E-02	7.8578E-03	1.0477E-02	6.1116E-03	8.7308E-04	1.7462E-03	3.4923E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.6193E-03	8.7308E-04	8.7308E-04	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.6034E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.240800E 03 MEV FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2445E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.126286E 03 MEV FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	75.00 TO 130.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.5675E-02	1.4421E-02	8.7781E-03	1.2540E-03	6.2701E-04	0.	6.2701E-04	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
6.2701E-04	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	130.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.8991E-02	1.5826E-02	1.5826E-03	0.	1.5826E-03	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1680E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.647761E 02 MEV FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1519E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.466667E 02 MEV FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
2.250E 00	2.344E 00	2.380E 00	1.663E 00	1.953E 00	1.386E 00	1.870E 00	1.432E 00	7.499E-01

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
4.499E 00	1.042E 00	1.700E-01	1.386E-01	6.511E-02	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
3.5520E 00	2.2022E 01	4.2623E-01	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
2.2448E 01	3.5520E 00	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
2.6000E 01	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	O	16	8	06000	1.11	852.5	02289

NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI - 0.23118E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.1875E 01	0.2735E 01	0.2890E 01	0.8453E 01	0.9311E 01	0.2494E 01	0.2550E 01	0.1432E 01	0.7499E 00

CASE NUMBER 16 81000 2

A= 16
Z= 8
KINETIC ENERGY (MEV)= 1000.00
PROTON
GEOMETRIC CROSS SECTION (MB)= 852.47
CUTOFF ENERGY (MEV)= 1.11
6000 CASE HISTORIES
INELASTIC CROSS SECTION (MB) 325.22

AVERAGE EVAPORATION YIELD PER INELASTIC EVENT

NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
1.1135867	0.8414155	0.0913062	0.0249017	0.0288335	0.3407602

CASE NUMBER 16 81000 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
16	9	1	0.14
	8	50	7.10
	7	1	0.14
15	9	3	0.43
	8	282	40.07
	7	312	44.33
14	9	1	0.14
	8	22	3.13
	7	267	37.93
	6	32	4.55
13	7	46	6.54
	6	127	18.04
	5	1	0.14
12	7	8	1.14
	6	152	21.60
	5	11	1.56
	4	3	0.43
11	7	3	0.43
	6	14	1.99
	5	29	4.12
	4	7	0.99
10	6	1	0.14
	5	43	6.11
	4	3	0.43
	3	8	1.14
9	6	1	0.14
	5	9	1.28
	4	10	1.42
	3	3	0.43
	2	1	0.14
8	3	9	1.28
7	4	4	0.57
	3	8	1.14
	2	71	10.09
6	4	1	0.14
	3	37	5.26
	2	2	0.28
	1	1	0.14
5	3	13	1.85
	2	72	10.23
	1	22	3.13
4	3	25	3.55
	2	70	9.95
	1	11	1.56
3	2	10	1.42
	1	9	1.28
2	1	59	8.38
1	1	172	24.44

MOMENTS OF THE ENERGY DISTRIBUTIONS FOR THE FOLLOWING EVAPORATION PARTICLES

	NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
1ST MOM.	8.11056E 00	9.34402E 00	1.20037E 01	1.15434E 01	1.26527E 01	1.36861E 01
2ND MOM.	1.61264E 02	1.81220E 02	2.49396E 02	2.16780E 02	2.45220E 02	4.18114E 02
3RD MOM.	5.55664E 03	6.16327E 03	7.27518E 03	5.86488E 03	6.43503E 03	2.11824E 04

NORMALIZED EVAPORATION NEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.162907	0.150376	0.137845	0.183793	0.179616	0.112782	0.183793	0.154553	0.129490	0.133667
1	0.158730	0.146199	0.129490	0.112782	0.104428	0.125313	0.096074	0.100251	0.121136	0.104428
2	0.129490	0.125313	0.091896	0.146199	0.096074	0.096074	0.087719	0.087719	0.087719	0.104428
3	0.096074	0.058480	0.096074	0.142022	0.083542	0.112782	0.079365	0.054302	0.087719	0.096074
4	0.071011	0.066834	0.066834	0.079365	0.083542	0.096074	0.096074	0.096074	0.062657	0.104428
5	0.066834	0.054302	0.058480	0.062657	0.066834	0.037594	0.041771	0.096074	0.041771	0.025063
6	0.050125	0.050125	0.041771	0.037594	0.058480	0.058480	0.054302	0.025063	0.054302	0.083542
7	0.062657	0.041771	0.050125	0.050125	0.041771	0.041771	0.037594	0.045948	0.037594	0.037594
8	0.037594	0.037594	0.033417	0.045948	0.025063	0.029240	0.033417	0.045948	0.033417	0.066834
9	0.041771	0.029240	0.033417	0.050125	0.045948	0.025063	0.045948	0.025063	0.045948	0.029240
10	0.025063	0.029240	0.033417	0.054302	0.037594	0.025063	0.016708	0.041771	0.008354	0.041771
11	0.016708	0.025063	0.029240	0.029240	0.041771	0.066834	0.037594	0.025063	0.020886	0.029240
12	0.012531	0.025063	0.025063	0.020886	0.012531	0.041771	0.020886	0.016708	0.029240	0.025063
13	0.012531	0.016708	0.020886	0.012531	0.025063	0.008354	0.008354	0.012531	0.029240	0.012531
14	0.033417	0.025063	0.029240	0.025063	0.037594	0.020886	0.008354	0.012531	0.012531	0.008354
15	0.012531	0.029240	0.012531	0.016708	0.008354	0.016708	0.025063	0.012531	0.025063	0.008354
16	0.016708	0.020886	0.025063	0.012531	0.020886	0.004177	0.025063	0.016708	0.016708	0.008354
17	0.004177	0.004177	0.025063	0.020886	0.008354	0.008354	0.	0.004177	0.012531	0.016708
18	0.008354	0.016708	0.016708	0.008354	0.016708	0.004177	0.	0.020886	0.004177	0.012531
19	0.004177	0.012531	0.004177	0.	0.004177	0.004177	0.020886	0.004177	0.012531	0.008354
20	0.008354	0.004177	0.004177	0.008354	0.004177	0.012531	0.004177	0.012531	0.008354	0.012531
21	0.016708	0.012531	0.004177	0.016708	0.012531	0.008354	0.012531	0.	0.004177	0.004177
22	0.012531	0.004177	0.012531	0.004177	0.004177	0.	0.012531	0.004177	0.020886	0.004177
23	0.	0.	0.004177	0.004177	0.008354	0.	0.004177	0.004177	0.016708	0.008354
24	0.008354	0.008354	0.	0.008354	0.008354	0.008354	0.004177	0.008354	0.004177	0.

NORMALIZED EVAPORATION PROTON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.011179	0.027949	0.044718	0.011179	0.050307	0.078256	0.128563
1	0.134153	0.106205	0.095025	0.072666	0.128563	0.128563	0.117384	0.156512	0.100615	0.134153
2	0.117384	0.106205	0.111794	0.111794	0.128563	0.111794	0.100615	0.162102	0.117384	0.078256
3	0.055897	0.095025	0.106205	0.095025	0.156512	0.111794	0.117384	0.072666	0.162102	0.078256
4	0.089435	0.072666	0.089435	0.083846	0.106205	0.089435	0.078256	0.061487	0.095025	0.072666
5	0.050307	0.078256	0.055897	0.072666	0.072666	0.061487	0.055897	0.117384	0.072666	0.072666
6	0.027949	0.050307	0.089435	0.039128	0.078256	0.078256	0.100615	0.078256	0.044718	0.027949
7	0.055897	0.100615	0.055897	0.055897	0.039128	0.072666	0.067077	0.050307	0.033538	0.061487
8	0.027949	0.055897	0.067077	0.039128	0.033538	0.072666	0.044718	0.072666	0.027949	0.050307
9	0.022359	0.022359	0.061487	0.044718	0.044718	0.016769	0.044718	0.016769	0.033538	0.022359
10	0.033538	0.022359	0.044718	0.050307	0.022359	0.027949	0.027949	0.033538	0.022359	0.033538
11	0.033538	0.044718	0.027949	0.039128	0.033538	0.027949	0.044718	0.044718	0.011179	0.044718
12	0.033538	0.022359	0.039128	0.016769	0.027949	0.039128	0.033538	0.050307	0.011179	0.016769
13	0.044718	0.011179	0.039128	0.027949	0.039128	0.033538	0.022359	0.033538	0.039128	0.016769
14	0.022359	0.005590	0.033538	0.039128	0.016769	0.022359	0.027949	0.022359	0.016769	0.005590
15	0.022359	0.022359	0.011179	0.022359	0.022359	0.011179	0.005590	0.	0.022359	0.011179
16	0.022359	0.050307	0.011179	0.022359	0.022359	0.033538	0.011179	0.027949	0.022359	0.011179
17	0.011179	0.005590	0.011179	0.011179	0.011179	0.022359	0.011179	0.005590	0.033538	0.027949
18	0.011179	0.022359	0.011179	0.022359	0.005590	0.016769	0.022359	0.005590	0.016769	0.033538
19	0.011179	0.005590	0.022359	0.011179	0.011179	0.	0.016769	0.016769	0.011179	0.016769
20	0.005590	0.005590	0.005590	0.022359	0.011179	0.016769	0.016769	0.005590	0.016769	0.011179
21	0.011179	0.011179	0.011179	0.011179	0.011179	0.011179	0.005590	0.005590	0.011179	0.005590
22	0.022359	0.011179	0.005590	0.	0.005590	0.011179	0.005590	0.005590	0.016769	0.
23	0.016769	0.011179	0.005590	0.	0.	0.	0.	0.005590	0.005590	0.
24	0.005590	0.005590	0.005590	0.	0.016769	0.005590	0.005590	0.	0.	0.005590

NORMALIZED EVAPORATION DEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.019417	0.029126	0.038835	0.077670	0.106796	0.048544	0.038835	0.029126	0.058252	0.097087
5	0.077670	0.038835	0.058252	0.087379	0.106796	0.048544	0.058252	0.067961	0.009709	0.029126
10	0.058252	0.038835	0.009709	0.029126	0.009709	0.038835	0.029126	0.048544	0.009709	0.029126
15	0.019417	0.009709	0.029126	0.048544	0.009709	0.038835	0.009709	0.038835	0.038835	0.009709
20	0.019417	0.009709	0.009709	0.	0.019417	0.029126	0.029126	0.009709	0.009709	0.009709
25	0.	0.019417	0.	0.	0.009709	0.019417	0.009709	0.009709	0.	0.009709
30	0.	0.	0.	0.019417	0.	0.019417	0.009709	0.	0.	0.
35	0.009709	0.009709	0.	0.	0.	0.009709	0.	0.	0.	0.
40	0.	0.	0.	0.	0.	0.	0.	0.009709	0.	0.
45	0.	0.	0.009709	0.	0.	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION TRITON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.035088	0.035088	0.035088	0.105263	0.070175	0.	0.	0.070175	0.105263
5	0.140351	0.035088	0.070175	0.035088	0.035088	0.105263	0.105263	0.	0.	0.035088
10	0.070175	0.105263	0.	0.	0.	0.105263	0.140351	0.	0.	0.035088
15	0.035088	0.105263	0.	0.	0.	0.035088	0.	0.	0.035088	0.035088
20	0.035088	0.035088	0.	0.	0.035088	0.035088	0.035088	0.	0.	0.
25	0.	0.	0.	0.	0.	0.	0.	0.035088	0.	0.
30	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
35	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
40	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
45	0.035088	0.	0.035088	0.	0.	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION HE3 SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.061538	0.030769	0.092308	0.030769	0.030769	0.030769	0.092308
5	0.092308	0.	0.092308	0.123077	0.030769	0.030769	0.153846	0.030769	0.030769	0.061538
10	0.092308	0.061538	0.	0.030769	0.092308	0.	0.061538	0.	0.	0.030769
15	0.030769	0.	0.061538	0.	0.	0.061538	0.030769	0.	0.092308	0.092308
20	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
25	0.	0.	0.061538	0.	0.030769	0.030769	0.	0.	0.092308	0.
30	0.	0.	0.	0.	0.	0.030769	0.	0.	0.	0.
35	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
40	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
45	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION ALPHA SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.018817	0.077957	0.123656	0.126344	0.104839	0.107527	0.077957
5	0.061828	0.059140	0.077957	0.069892	0.061828	0.091398	0.048387	0.048387	0.032258	0.051075
10	0.029570	0.018817	0.016129	0.026882	0.048387	0.018817	0.029570	0.018817	0.034946	0.013441
15	0.037634	0.024194	0.010753	0.013441	0.026882	0.034946	0.013441	0.016129	0.026882	0.016129
20	0.002688	0.010753	0.005376	0.016129	0.018817	0.	0.013441	0.002688	0.005376	0.016129
25	0.008065	0.010753	0.	0.010753	0.	0.010753	0.002688	0.010753	0.005376	0.010753
30	0.	0.013441	0.	0.010753	0.010753	0.	0.008065	0.	0.	0.
35	0.010753	0.	0.005376	0.	0.005376	0.010753	0.005376	0.	0.	0.005376
40	0.005376	0.005376	0.	0.	0.002688	0.	0.	0.	0.005376	0.
45	0.005376	0.002688	0.	0.	0.005376	0.	0.005376	0.	0.	0.

INPUT

FROM CARDS

USED FILE 1 INCIDENT PARTICLE PROTON INCIDENT KINETIC ENERGY 2000.000 MEV

TOTAL NUMBER OF INCIDENT PARTICLES 6000 TARGET SYMBOL O

SIZE OF HISTOGRAMS FOR OUTGOING K.E. 25 FOR PROT, 25 FOR NEUT, 25 FOR PI+, 25 FOR PIO, 25 FOR PI-.

CROSS SECTIONS WERE CALCULATED FOR AS MANY AS 9 EMITTED PARTICLE COMBINATIONS.

201.000 MEV INTERVAL WAS USED IN CALCULATING HISTOGRAM FOR N(E*)DE FOR TOTAL REACTION

DELTAS FOR OUTGOING KINETIC ENERGY DISTRIBUTION IN MEV

	-.6 MU -.4 0 (K.E.) 10D	-.1 MU +.1 0 (K.E.) 10D	+.4 MU +.6 0 (K.E.) 10D	+.9 MU +.95 0 (K.E.) 20D	+.95 MU +1.0 0 (K.E.) 20D
PROTONS	200.0000	200.0000	200.0000	100.0000	100.0000
NEUTRONS	200.0000	200.0000	200.0000	100.0000	100.0000
PI+	200.0000	200.0000	200.0000	100.0000	100.0000
PIO	200.0000	200.0000	200.0000	100.0000	100.0000
PI-	200.0000	200.0000	200.0000	100.0000	100.0000

D = DELTA, RESPECTIVE ENERGY INTERVALS OF HISTOGRAMS

OUTGOING COMBINATIONS	10000	01000	00100	00010	00001	01001	10100	11000	11001
INTERVAL FOR N(E*)DE IN MEV	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000

FROM RECORD 1

6000 INCIDENT PROTON HIT O TARGET WITH 16.000 MASS AND 8.000 ATOMIC NUMBER AT 2000.000MEV.

FROM RECORD N

THERE WERE 2456. INCIDENT PARTICLE COLLISIONS CREATING 2456 ESCAPING PARTICLE RECORDS. THE GEOMETRIC CROSS SECTION WAS 852.4694672 MB. THE INELASTIC CROSS SECTION WAS 348.9441681 MB. THE CUT OFF ENERGY WAS 1.1066737 MEV.

PROTON ON O INC. K.E. (MEV) IS 2000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

MOMENTUM OF COMPOUND NUCLEUS 2785.731201MEV/C EXCITATION ENERGY OF COMPOUND NUCLEUS 2006.915176MEV

THE MASS OF THE RESIDUAL NUCLEUS WAS ZERO 3 TIMES, WAS MINUS 7 TIMES CUT OFF ENERGY 1.106674MEV

FOR 344 INCIDENT PARTICLE COLLISIONS THERE WERE MORE THAN 9 OUT GOING PARTICLES

EMITTED CASCADE PARTICLES

	PROTONS	NEUTRONS	PI+	PIO	PI-
AVERAGE NO.	0.2388436E 01	0.1861563E 01	0.4100163E-00	0.3171824E-00	0.2259772E-00
VARIANCE	0.3061658E 01	0.3177089E 01	0.3078638E-00	0.3305842E-00	0.2042275E-00
AV. K.E. (MEV)	0.4158400E 03	0.2942929E 03	0.2431916E 03	0.2314290E 03	0.2076482E 03
VARIANCE	0.3681386E 06	0.2196216E 06	0.5279240E 05	0.5174985E 05	0.4681869E 05

RESIDUAL NUCLEUS

OUTGOING COMBINATION	CO	C1	ARM	AREE	AAR
TOTAL CASCADE	0.0373230	0.0745509	275.7421455	53.0770903	12.6730455
10000	0.0099994	0.0742410	208.9309750	17.6283438	16.0000000
01000	0.0108745	0.0818723	230.2527733	18.1224322	16.0000000
00100	0.	0.	0.	0.	17.0000000
00010	0.	0.	0.	0.	17.0000000
00001	0.	0.	0.	0.	17.0000000
01001	0.	0.	0.	0.	16.0000000
10100	0.0441803	0.0046623	123.9541779	8.7282900	16.0000000
11000	0.0069585	0.0397818	133.0290337	10.3242297	15.0000000
11001	0.0309801	0.0851252	285.5256081	59.3606839	15.0000000

CO = (SUM OF PARALLEL RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

C1 = (SUM OF PERPENDICULAR RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

ARM = AVERAGE RESIDUAL MOMENTUM IN MEV/C

AREE = AVERAGE RESIDUAL EXCITATION ENERGY IN MEV

AAR = AVERAGE MASS OF RESIDUAL NUCLEUS FOR TOTAL CASCADE
AAR = MASS OF RESIDUAL NUCLEUS FOR DESIGNATED OUTGOING COMBINATIONS

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PROTON ON O        INC. K.E. (MEV) IS  2000.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

                    ANGULAR DISTRIBUTION OF THE CASCADE NUCLEUS  (FRACTION IN DELTA MU)/(DELTA MU)

       -0.9000000E 00        -0.7000000E 00        -0.5000000E 00        -0.3000000E-00        -0.1000000E-00
                0.1000000E-00         0.3000000E-00         0.5000000E 00         0.7000000E 00         0.9000000E 00

             TOTAL CASCADE                              RATIO OF FORWARD /BACKWARD     0.2650746E 01
        0.1750814E-00         0.2341205E-00         0.2259772E-00         0.3155537E-00         0.4132736E-00
                0.7003257E 00         0.5944625E 00         0.6026059E 00         0.7614006E 00         0.9568404E 00

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.4655172E 01         0.3448276E-00         0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.4583333E 01         0.4166667E-00         0.                    0.                    0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.5000000E 01

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.1628966E 01
        0.2745098E-00         0.2941176E-00         0.4313725E-00         0.4509804E-00         0.4509804E-00
                0.8235294E 00         0.6274510E 00         0.5294118E 00         0.5098039E 00         0.6078431E 00

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.2500000E 01         0.                    0.                    0.                    0.2500000E 01
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PROTON ON O        INC. K.E. (MEV) IS  2000.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

      EXCITATION ENERGY DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS (FRACTION PER UNIT EN.)    (DE=DELTA E(MEV))

DEA IS  0.2010000E 03   DEB IS  0.2500000E 02   DEC IS  0.2500000E 02   DED IS  0.2500000E 02   DEE IS  0.2500000E 02
  DEF IS  0.2500000E 02   DEG IS  0.2500000E 02   DEH IS  0.2500000E 02   DEI IS  0.2500000E 02   DEJ IS  0.2500000E 02

            TOTAL CASCADE                        (SUM OVER HISTOGRAM)X(DEA)        0.9959283E 00      0 OFL
        0.4736091E-02          0.2045959E-03        0.1417991E-04          0.                    0.
                0.                     0.                   0.                    0.                    0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEB)        0.1000000E 01      0 OFL
        0.2988506E-01          0.9655172E-02        0.4597701E-03          0.                    0.
                0.                     0.                   0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEC)        0.1000000E 01      0 OFL
        0.3166667E-01          0.8333333E-02        0.                    0.                    0.
                0.                     0.                   0.                    0.                    0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DED)        0.                 0 OFL
        0.                     0.                   0.                    0.                    0.
                0.                     0.                   0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEE)        0.                 0 OFL
        0.                     0.                   0.                    0.                    0.
                0.                     0.                   0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEF)        0.                 0 OFL
        0.                     0.                   0.                    0.                    0.
                0.                     0.                   0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEG)        0.                 0 OFL
        0.                     0.                   0.                    0.                    0.
                0.                     0.                   0.                    0.                    0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEH)        0.1000000E 01      0 OFL
        0.4000000E-01          0.                   0.                    0.                    0.
                0.                     0.                   0.                    0.                    0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEI)        0.1000000E 01      0 OFL
        0.3513725E-01          0.4235294E-02        0.1568627E-03          0.3137255E-03         0.1568627E-03
                0.                     0.                   0.                    0.                    0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEJ)        0.1000000E 01      0 OFL
        0.                     0.2000000E-01        0.                    0.2000000E-01         0.
                0.                     0.                   0.                    0.                    0.
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DESCRIPTION OF THE FOLLOWING MOMENTUM DISTRIBUTIONS

THE FIRST GROUP OF NUMBERS BELOW THE TITLES SPECIFY THE MIDPOINTS OF THE MOMENTUM INTERVALS.
THE MOMENTUM IS THE NUMBER INDICATED (MEV/C).

THE SUBSEQUENT GROUPS OF NUMBERS ARE THE FRACTION OF THE TOTAL IN EACH INTERVAL DIVIDED BY DELTA P.

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PROTON ON O        INC. K.E. (MEV) IS  2000.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

                          THE MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

  0.1392866E 03   0.4178597E 03   0.6964328E 03   0.9750059E 03   0.1253579E 04   0.1532152E 04   0.1810725E 04
        0.2089298E 04   0.2367871E 04   0.2646444E 04   0.2925018E 04   0.3203591E 04   0.3482164E 04   0.3760737E 04

            TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.9959283E 00      0 OFL
  0.2170495E-02   0.1037745E-02   0.2820913E-03   0.7161904E-04   0.1023129E-04   0.2923226E-05   0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.2805760E-02   0.7839622E-03   0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.2542720E-02   0.1047002E-02   0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.3589722E-02   0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.3308175E-02   0.2674695E-03   0.1407734E-04   0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.1794861E-02   0.1794861E-02   0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
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PROTON ON O        INC. K.E. (MEV) IS  2000.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

                    THE PERPENDICULAR MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

   0.1392866E 03   0.4178597E 03   0.6964328E 03   0.9750059E 03   0.1253579E 04   0.1532152E 04   0.1810725E 04
         0.2089298E 04   0.2367871E 04   0.2646444E 04   0.2925018E 04   0.3203591E 04   0.3482164E 04   0.3760737E 04

            TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.2656335E-02   0.7616785E-03   0.1526292E-03   0.1907865E-04   0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.2847021E-02   0.7427011E-03   0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.2542720E-02   0.1047002E-02   0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.3589722E-02   0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.3406716E-02   0.1689281E-03   0.1407734E-04   0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.1794861E-02   0.1794861E-02   0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.
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PROTON ON O INC. K.E. (MEV) IS 2000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

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-0.3760737E 04  -0.3482164E 04  -0.3203591E 04  -0.2925018E 04  -0.2646444E 04  -0.2367871E 04  -0.2089298E 04
      -0.1810725E 04  -0.1532152E 04  -0.1253579E 04  -0.9750059E 03  -0.6964328E 03  -0.4178597E 03  -0.1392866E 03
 0.1392866E 03   0.4178597E 03   0.6964328E 03   0.9750059E 03   0.1253579E 04   0.1532152E 04   0.1810725E 04
       0.2089298E 04   0.2367871E 04   0.2646444E 04   0.2925018E 04   0.3203591E 04   0.3482164E 04   0.3760737E 04

          TOTAL CASCADE                        (SUM OVER HISTOGRAM)(DELTA P)     0.9959283E 00      0 OFL     0 UFL
 0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
 0.2053566E-02   0.4224062E-03   0.9500485E-04   0.1900097E-04   0.5846452E-05   0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL     0 UFL
 0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
 0.3589722E-02   0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL     0 UFL
 0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
 0.3589722E-02   0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL     0 UFL
 0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
 0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL     0 UFL
 0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
 0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL     0 UFL
 0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
 0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
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PROTON ON O        INC. K.E. (MEV) IS  2000.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

                        THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

  -0.3760737E 04  -0.3482164E 04  -0.3203591E 04  -0.2925018E 04  -0.2646444E 04  -0.2367871E 04  -0.2089298E 04
        -0.1810725E 04  -0.1532152E 04  -0.1253579E 04  -0.9750059E 03  -0.6964328E 03  -0.4178597E 03  -0.1392866E 03
   0.1392866E 03   0.4178597E 03   0.6964328E 03   0.9750059E 03   0.1253579E 04   0.1532152E 04   0.1810725E 04
         0.2089298E 04   0.2367871E 04   0.2646444E 04   0.2925018E 04   0.3203591E 04   0.3482164E 04   0.3760737E 04

            TOTAL CASCADE                        (SUM OVER HISTOGRAM)(DELTA P)     0.9959283E 00      0 OFL      0 UFL
   0.              0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.2923226E-05   0.3654033E-04   0.9398172E-03
   0.2053566E-02   0.4224062E-03   0.9500485E-04   0.1900097E-04   0.5846452E-05   0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PI0   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
   0.              0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.              0.
   0.              0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PI0   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.              0.
   0.3589722E-02   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PI0   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.              0.1365502E-02
   0.2167910E-02   0.5630936E-04   0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PI0   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.              0.
   0.3589722E-02   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.
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PROTON ON O INC. K.E. (MEV) IS 2000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PIO 5TH IS NO. OF PI-

24201	0.14207824E-00	24210	0.14207824E-00	25020	0.14207824E-00	25200	0.14207824E-00
26001	0.28415649E-00	26010	0.14207824E-00	26100	0.14207824E-00	27000	0.14207824E-00
33021	0.14207824E-00	33030	0.14207824E-00	33111	0.42623473E-00	33120	0.14207824E-00
33201	0.28415649E-00	34011	0.14207824E-00	34101	0.28415649E-00	34110	0.28415649E-00
35001	0.28415649E-00	35100	0.28415649E-00	36000	0.28415649E-00	42111	0.42623473E-00
42201	0.14207824E-00	43011	0.14207824E-00	43020	0.14207824E-00	43101	0.85246946E 00
43200	0.42623473E-00	44001	0.42623473E-00	44010	0.42623473E-00	44100	0.85246946E 00
45000	0.28415649E-00	52101	0.42623473E-00	52110	0.14207824E-00	53001	0.28415649E-00
53010	0.42623473E-00	53100	0.14207824E-00	54000	0.56831297E 00	60111	0.14207824E-00
60210	0.14207824E-00	61101	0.42623473E-00	62010	0.14207824E-00	62100	0.14207824E-00
63000	0.14207824E-00	71100	0.14207824E-00	81000	0.28415649E-00	14120	0.14207824E-00
16100	0.14207824E-00	22112	0.28415649E-00	23030	0.14207824E-00	23201	0.14207824E-00
24011	0.14207824E-00	24101	0.28415649E-00	24110	0.42623473E-00	25001	0.14207824E-00
25100	0.28415649E-00	26000	0.56831297E 00	32021	0.14207824E-00	32030	0.14207824E-00
32102	0.14207824E-00	32111	0.14207824E-00	32201	0.14207824E-00	33002	0.28415649E-00
33011	0.14207824E-00	33020	0.14207824E-00	33101	0.14207824E 01	33110	0.28415649E-00
34001	0.42623473E-00	34010	0.28415649E-00	34100	0.99454770E 00	35000	0.28415649E-00
41111	0.14207824E-00	42011	0.14207824E-00	42020	0.42623473E-00	42101	0.12787041E 01
42110	0.56831297E 00	42200	0.14207824E-00	43001	0.14207824E-00	43010	0.85246946E 00
43100	0.71039122E 00	44000	0.28415649E-00	51101	0.28415649E-00	51110	0.42623473E-00
52001	0.28415649E-00	52010	0.85246946E 00	52100	0.42623473E-00	53000	0.42623473E-00
61010	0.42623473E-00	62000	0.71039122E 00	71000	0.14207824E-00	13111	0.28415649E-00
14101	0.42623473E-00	14110	0.28415649E-00	15010	0.14207824E-00	15100	0.42623473E-00
22030	0.14207824E-00	22102	0.14207824E-00	22111	0.42623473E-00	22201	0.28415649E-00
23002	0.14207824E-00	23011	0.42623473E-00	23101	0.14207824E 01	23110	0.71039122E 00
23200	0.14207824E-00	24001	0.14207824E-00	24010	0.99454770E 00	24100	0.85246946E 00

PROTON ON O INC. K.E. (MEV) IS 2000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PIO 5TH IS NO. OF PI-

CONTINUED

25000	0.14207824E-00	31102	0.14207824E-00	31201	0.28415649E-00	32011	0.56831297E 00
32101	0.14207824E 01	32110	0.11366259E 01	33001	0.42623473E-00	33010	0.99454770E 00
33100	0.19890954E 01	34000	0.56831297E 00	41002	0.14207824E-00	41011	0.28415649E-00
41020	0.28415649E-00	41101	0.56831297E 00	41110	0.56831297E 00	42001	0.71039122E 00
42010	0.99454770E 00	42100	0.11366259E 01	43000	0.14207824E-00	50110	0.14207824E-00
51001	0.42623473E-00	52000	0.14207824E-00	60010	0.14207824E-00	70000	0.14207824E-00
03201	0.14207824E-00	04020	0.14207824E-00	04110	0.14207824E-00	04200	0.14207824E-00
12111	0.28415649E-00	12201	0.14207824E-00	13011	0.14207824E-00	13020	0.28415649E-00
13101	0.56831297E 00	13110	0.11366259E 01	13200	0.42623473E-00	14010	0.42623473E-00
14100	0.85246946E 00	21102	0.28415649E-00	21201	0.28415649E-00	22011	0.14207824E-00
22020	0.99454770E 00	22101	0.11366259E 01	22110	0.85246946E 00	22200	0.14207824E-00
23001	0.28415649E-00	23010	0.12787041E 01	23100	0.15628606E 01	24000	0.85246946E 00
30030	0.14207824E-00	30111	0.14207824E-00	31011	0.28415649E-00	31020	0.42623473E-00
31101	0.17049389E 01	31110	0.12787041E 01	31200	0.14207824E-00	32001	0.12787041E 01
32010	0.11366259E 01	32100	0.14207824E 01	33000	0.12787041E 01	40002	0.14207824E-00
40101	0.14207824E-00	40110	0.14207824E-00	41001	0.71039122E 00	41010	0.28415649E-00
41100	0.56831297E 00	42000	0.15628606E 01	50001	0.14207824E-00	51000	0.42623473E-00
60000	0.14207824E-00	02210	0.14207824E-00	03020	0.14207824E-00	03101	0.14207824E-00
03110	0.28415649E-00	03200	0.28415649E-00	04100	0.28415649E-00	05000	0.14207824E-00
11111	0.14207824E-00	11201	0.28415649E-00	12011	0.28415649E-00	12020	0.28415649E-00
12101	0.19890954E 01	12110	0.21311736E 01	12200	0.42623473E-00	13001	0.42623473E-00
13010	0.71039122E 00	13100	0.21311736E 01	14000	0.99454770E 00	20111	0.14207824E-00
21011	0.71039122E 00	21020	0.18470171E 01	21101	0.28415648E 01	21110	0.28415648E 01
21200	0.14207824E-00	22001	0.42623473E-00	22010	0.22732519E 01	22100	0.28415648E 01
23000	0.18470171E 01	30002	0.14207824E-00	30011	0.28415649E-00	30020	0.28415649E-00
30101	0.42623473E-00	31001	0.99454770E 00	31010	0.99454770E 00	31100	0.19890954E 01

PROTON ON O INC. K.E. (MEV) IS 2000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PIC 5TH IS NO. OF PI-

CONTINUED

32000	0.25574083E 01	40001	0.28415649E-00	40010	0.28415649E-00	40100	0.14207824E-00
41000	0.18470171E 01	50000	0.14207824E-00	02020	0.14207824E-00	02101	0.14207824E-00
02110	0.42623473E-00	02200	0.42623473E-00	03100	0.14207824E-00	04000	0.28415649E-00
11020	0.18470171E 01	11101	0.69618338E 01	11110	0.65355991E 01	12001	0.28415649E-00
12010	0.17049389E 01	12100	0.41202690E 01	13000	0.12787041E 01	20002	0.14207824E-00
20011	0.56831297E 00	20020	0.19890954E 01	20101	0.18470171E 01	20110	0.14207824E-00
21001	0.15628606E 01	21010	0.29836430E 01	21100	0.53989732E 01	22000	0.25574083E 01
30001	0.71039122E 00	30010	0.71039122E 00	31000	0.41202690E 01	40000	0.56831297E 00
02001	0.14207824E-00	02100	0.18470171E 01	03000	0.28415649E-00	11001	0.28415649E-00
11010	0.59672861E 01	11100	0.14776137E 02	12000	0.55410514E 01	20001	0.99454770E 00
20010	0.26994865E 01	20100	0.42623473E-00	21000	0.12076651E 02	30000	0.39781908E 01
01010	0.71039122E 00	01100	0.42623473E-00	02000	0.19890954E 01	10001	0.42623473E-00
10010	0.17049389E 01	10100	0.11366259E 01	11000	0.36229952E 02	20000	0.31115135E 02
01000	0.34098778E 01	10000	0.12360807E 02				

PROTON ON O INC. K.E. (MEV) IS 2000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 1.00 TO 0.95
(THETA FROM 0 DEG. 0 MIN. TO 18 DEG. 12 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.192E-01	50.0	0.263E-01	50.0	0.896E-02	50.0	0.128E-01	50.0	0.159E-01
150.0	0.113E-01	150.0	0.151E-01	150.0	0.746E-02	150.0	0.106E-01	150.0	0.127E-01
250.0	0.715E-02	250.0	0.113E-01	250.0	0.269E-01	250.0	0.213E-01	250.0	0.190E-01
350.0	0.458E-02	350.0	0.790E-02	350.0	0.164E-01	350.0	0.234E-01	350.0	0.222E-01
450.0	0.515E-02	450.0	0.766E-02	450.0	0.343E-01	450.0	0.191E-01	450.0	0.952E-02
550.0	0.486E-02	550.0	0.814E-02	550.0	0.358E-01	550.0	0.340E-01	550.0	0.444E-01
650.0	0.701E-02	650.0	0.623E-02	650.0	0.254E-01	650.0	0.255E-01	650.0	0.349E-01
750.0	0.515E-02	750.0	0.814E-02	750.0	0.239E-01	750.0	0.128E-01	750.0	0.190E-01
850.0	0.687E-02	850.0	0.790E-02	850.0	0.119E-01	850.0	0.170E-01	850.0	0.635E-02
950.0	0.644E-02	950.0	0.671E-02	950.0	0.299E-02	950.0	0.638E-02	950.0	0.952E-02
1050.0	0.615E-02	1050.0	0.743E-02	1050.0	0.299E-02	1050.0	0.851E-02	1050.0	0.317E-02
1150.0	0.572E-02	1150.0	0.766E-02	1150.0	0.149E-02	1150.0	0.638E-02	1150.0	0.
1250.0	0.601E-02	1250.0	0.743E-02	1250.0	0.	1250.0	0.	1250.0	0.
1350.0	0.701E-02	1350.0	0.814E-02	1350.0	0.	1350.0	0.	1350.0	0.
1450.0	0.515E-02	1450.0	0.647E-02	1450.0	0.149E-02	1450.0	0.213E-02	1450.0	0.317E-02
1550.0	0.458E-02	1550.0	0.838E-02	1550.0	0.	1550.0	0.	1550.0	0.
1650.0	0.100E-01	1650.0	0.141E-01	1650.0	0.	1650.0	0.	1650.0	0.
1750.0	0.126E-01	1750.0	0.766E-02	1750.0	0.	1750.0	0.	1750.0	0.
1850.0	0.217E-01	1850.0	0.105E-01	1850.0	0.	1850.0	0.	1850.0	0.
1950.0	0.433E-01	1950.0	0.168E-01	1950.0	0.	1950.0	0.	1950.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON O INC. K.E. (MEV) IS 2000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.95 TO 0.90
(THETA FROM 18 DEG. 12 MIN. TO 25 DEG. 51 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.400E-01	50.0	0.585E-01	50.0	0.301E-01	50.0	0.789E-02	50.0	0.226E-01
150.0	0.277E-01	150.0	0.330E-01	150.0	0.645E-02	150.0	0.263E-01	150.0	0.113E-01
250.0	0.157E-01	250.0	0.140E-01	250.0	0.323E-01	250.0	0.447E-01	250.0	0.415E-01
350.0	0.149E-01	350.0	0.120E-01	350.0	0.387E-01	350.0	0.263E-01	350.0	0.264E-01
450.0	0.111E-01	450.0	0.100E-01	450.0	0.301E-01	450.0	0.316E-01	450.0	0.415E-01
550.0	0.140E-01	550.0	0.950E-02	550.0	0.280E-01	550.0	0.421E-01	550.0	0.151E-01
650.0	0.979E-02	650.0	0.700E-02	650.0	0.151E-01	650.0	0.158E-01	650.0	0.264E-01
750.0	0.809E-02	750.0	0.900E-02	750.0	0.108E-01	750.0	0.	750.0	0.377E-02
850.0	0.596E-02	850.0	0.550E-02	850.0	0.215E-02	850.0	0.263E-02	850.0	0.377E-02
950.0	0.596E-02	950.0	0.700E-02	950.0	0.430E-02	950.0	0.	950.0	0.377E-02
1050.0	0.298E-02	1050.0	0.850E-02	1050.0	0.215E-02	1050.0	0.	1050.0	0.
1150.0	0.426E-02	1150.0	0.700E-02	1150.0	0.	1150.0	0.	1150.0	0.377E-02
1250.0	0.511E-02	1250.0	0.900E-02	1250.0	0.	1250.0	0.	1250.0	0.
1350.0	0.468E-02	1350.0	0.350E-02	1350.0	0.	1350.0	0.263E-02	1350.0	0.
1450.0	0.851E-02	1450.0	0.150E-02	1450.0	0.	1450.0	0.	1450.0	0.
1550.0	0.979E-02	1550.0	0.350E-02	1550.0	0.	1550.0	0.	1550.0	0.
1650.0	0.851E-02	1650.0	0.150E-02	1650.0	0.	1650.0	0.	1650.0	0.
1750.0	0.298E-02	1750.0	0.	1750.0	0.	1750.0	0.	1750.0	0.
1850.0	0.	1850.0	0.	1850.0	0.	1850.0	0.	1850.0	0.
1950.0	0.	1950.0	0.	1950.0	0.	1950.0	0.	1950.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON O INC. K.E. (MEV) IS 2000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.60 TO 0.40
(THETA FROM 53 DEG. 8 MIN. TO 66 DEG. 25 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
100.0	0.199E-01	100.0	0.204E-01	100.0	0.164E-01	100.0	0.142E-01	100.0	0.210E-01
300.0	0.442E-02	300.0	0.404E-02	300.0	0.645E-02	300.0	0.923E-02	300.0	0.402E-02
500.0	0.575E-03	500.0	0.439E-03	500.0	0.134E-02	500.0	0.154E-02	500.0	0.
700.0	0.359E-04	700.0	0.132E-03	700.0	0.538E-03	700.0	0.	700.0	0.
900.0	0.359E-04	900.0	0.	900.0	0.269E-03	900.0	0.	900.0	0.
1100.0	0.	1100.0	0.	1100.0	0.	1100.0	0.	1100.0	0.
1300.0	0.	1300.0	0.	1300.0	0.	1300.0	0.	1300.0	0.
1500.0	0.	1500.0	0.	1500.0	0.	1500.0	0.	1500.0	0.
1700.0	0.	1700.0	0.	1700.0	0.	1700.0	0.	1700.0	0.
1900.0	0.	1900.0	0.	1900.0	0.	1900.0	0.	1900.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	0.100E 01	N IS	1.000E 00

PROTON ON O INC. K.E. (MEV) IS 2000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.10 TO -0.10
(THETA FROM 84 DEG. 16 MIN. TO 95 DEG. 44 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
100.0	0.246E-01	100.0	0.244E-01	100.0	0.212E-01	100.0	0.240E-01	100.0	0.221E-01
300.0	0.350E-03	300.0	0.610E-03	300.0	0.346E-02	300.0	0.980E-03	300.0	0.288E-02
500.0	0.	500.0	0.	500.0	0.385E-03	500.0	0.	500.0	0.
700.0	0.	700.0	0.	700.0	0.	700.0	0.	700.0	0.
900.0	0.	900.0	0.	900.0	0.	900.0	0.	900.0	0.
1100.0	0.	1100.0	0.	1100.0	0.	1100.0	0.	1100.0	0.
1300.0	0.	1300.0	0.	1300.0	0.	1300.0	0.	1300.0	0.
1500.0	0.	1500.0	0.	1500.0	0.	1500.0	0.	1500.0	0.
1700.0	0.	1700.0	0.	1700.0	0.	1700.0	0.	1700.0	0.
1900.0	0.	1900.0	0.	1900.0	0.	1900.0	0.	1900.0	0.
N IS	0.100E 01	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON O INC. K.E. (MEV) IS 2000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM -0.40 TO -0.60
(THETA FROM 113 DEG. 35 MIN. TO 126 DEG. 54 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
100.0	0.250E-01	100.0	0.248E-01	100.0	0.236E-01	100.0	0.244E-01	100.0	0.250E-01
300.0	0.	300.0	0.155E-03	300.0	0.136E-02	300.0	0.641E-03	300.0	0.
500.0	0.	500.0	0.	500.0	0.	500.0	0.	500.0	0.
700.0	0.	700.0	0.	700.0	0.	700.0	0.	700.0	0.
900.0	0.	900.0	0.	900.0	0.	900.0	0.	900.0	0.
1100.0	0.	1100.0	0.	1100.0	0.	1100.0	0.	1100.0	0.
1300.0	0.	1300.0	0.	1300.0	0.	1300.0	0.	1300.0	0.
1500.0	0.	1500.0	0.	1500.0	0.	1500.0	0.	1500.0	0.
1700.0	0.	1700.0	0.	1700.0	0.	1700.0	0.	1700.0	0.
1900.0	0.	1900.0	0.	1900.0	0.	1900.0	0.	1900.0	0.
N IS	0.100E 01	N IS	0.100E 01	N IS	1.000E 00	N IS	0.100E 01	N IS	1.000E 00

PROTON ON O INC. K.E. (MEV) IS 2000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PROTONS

0 TO 0.2000000E 04 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PROTONS /DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
40.00	0.5455118E-02	600.00	0.1950503E-03	1080.00	0.1048658E-03	1560.00	0.1027685E-03
120.00	0.1820470E-02	680.00	0.1426174E-03	1160.00	0.9857383E-04	1640.00	0.1614933E-03
200.00	0.9270134E-03	760.00	0.1593960E-03	1240.00	0.1132550E-03	1720.00	0.1321309E-03
280.00	0.4593121E-03	840.00	0.1656879E-03	1320.00	0.1048658E-03	1800.00	0.1845638E-03
360.00	0.3397651E-03	920.00	0.1300336E-03	1400.00	0.1111577E-03	1880.00	0.3229866E-03
440.00	0.2894295E-03	1000.00	0.1153523E-03	1480.00	0.8598993E-04	1960.00	0.5411074E-03
520.00	0.2369966E-03						

PROTON ON O INC. K.E. (MEV) IS 2000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE NEUTRONS

0 TO 0.2000000E 04 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED NEUTRONS/DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
40.00	0.6205807E-02	600.00	0.2008785E-03	1080.00	0.1071352E-03	1560.00	0.1044568E-03
120.00	0.1807907E-02	680.00	0.1526677E-03	1160.00	0.1124920E-03	1640.00	0.1285622E-03
200.00	0.9026141E-03	760.00	0.1955217E-03	1240.00	0.1258839E-03	1720.00	0.9910007E-04
280.00	0.5115706E-03	840.00	0.1339190E-03	1320.00	0.8302979E-04	1800.00	0.5088922E-04
360.00	0.3856867E-03	920.00	0.1071352E-03	1400.00	0.8035141E-04	1880.00	0.1285622E-03
440.00	0.3080137E-03	1000.00	0.1205271E-03	1480.00	0.5892436E-04	1960.00	0.1499893E-03
520.00	0.2383758E-03						

PROTON ON O INC. K.E. (MEV) IS 2000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI+

0 TO 0.2000000E 04 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI+ / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
40.00	0.4047030E-02	600.00	0.3712871E-03	1080.00	0.3712871E-04	1560.00	0.
120.00	0.2128713E-02	680.00	0.4207921E-03	1160.00	0.1237624E-04	1640.00	0.
200.00	0.1410891E-02	760.00	0.2227723E-03	1240.00	0.	1720.00	0.
280.00	0.1113861E-02	840.00	0.1856436E-03	1320.00	0.	1800.00	0.
360.00	0.1051980E-02	920.00	0.6188119E-04	1400.00	0.	1880.00	0.
440.00	0.6435644E-03	1000.00	0.3712871E-04	1480.00	0.1237624E-04	1960.00	0.
520.00	0.7425743E-03						

PROTON ON O INC. K.E. (MEV) IS 2000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PIO

0 TO 0.2000000E 04 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PIO / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
40.00	0.4203680E-02	600.00	0.4282995E-03	1080.00	0.4758883E-04	1560.00	0.
120.00	0.2157360E-02	680.00	0.3013959E-03	1160.00	0.4758883E-04	1640.00	0.
200.00	0.1522843E-02	760.00	0.1110406E-03	1240.00	0.	1720.00	0.
280.00	0.1253173E-02	840.00	0.1903553E-03	1320.00	0.1586294E-04	1800.00	0.
360.00	0.8724620E-03	920.00	0.4758883E-04	1400.00	0.1586294E-04	1880.00	0.
440.00	0.7772843E-03	1000.00	0.1586294E-04	1480.00	0.	1960.00	0.
520.00	0.4917513E-03						

PROTON ON O INC. K.E. (MEV) IS 2000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI-

0 TO 0.2000000E 04 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI- / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
40.00	0.4973118E-02	600.00	0.4928316E-03	1080.00	0.	1560.00	0.
120.00	0.2016129E-02	680.00	0.2688172E-03	1160.00	0.2240143E-04	1640.00	0.
200.00	0.1433692E-02	760.00	0.1344086E-03	1240.00	0.	1720.00	0.
280.00	0.1164875E-02	840.00	0.6720430E-04	1320.00	0.	1800.00	0.
360.00	0.8288531E-03	920.00	0.8960574E-04	1400.00	0.	1880.00	0.
440.00	0.5376344E-03	1000.00	0.4480287E-04	1480.00	0.2240143E-04	1960.00	0.
520.00	0.4032258E-03						

PROTON ON O INC. K.E. (MEV) IS 2000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PARTICLES

0 TO 1000 MEV

N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PARTICLES/DELTA E
K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N IS (SUM OVER HISTOGRAM FROM 1 TO 1000 MEV) (DELTA E)

K.E.	PROTONS N(E)	NEUTRONS N(E)	PI+ N(E)	PIO N(E)	PI- N(E)
25.0	0.6885906E-02	0.7885151E-02	0.4099010E-02	0.4162437E-02	0.5627240E-02
75.0	0.2822148E-02	0.3029784E-02	0.3683168E-02	0.3604061E-02	0.3512545E-02
125.0	0.1684564E-02	0.1744161E-02	0.1782178E-02	0.2081218E-02	0.1792115E-02
175.0	0.1114094E-02	0.9770731E-03	0.1465347E-02	0.1548223E-02	0.1469534E-02
225.0	0.7315436E-03	0.7756589E-03	0.1366337E-02	0.1497462E-02	0.1290323E-02
275.0	0.4429530E-03	0.5313906E-03	0.9504950E-03	0.1294416E-02	0.1254480E-02
325.0	0.3859060E-03	0.4028284E-03	0.1247525E-02	0.1015228E-02	0.9318996E-03
375.0	0.3355705E-03	0.3556889E-03	0.1009901E-02	0.8121827E-03	0.7885305E-03
425.0	0.2751678E-03	0.3128348E-03	0.6138614E-03	0.8883249E-03	0.5376344E-03
475.0	0.2617450E-03	0.2742661E-03	0.7128713E-03	0.4568528E-03	0.4301075E-03
525.0	0.2718121E-03	0.2314120E-03	0.8316832E-03	0.6091371E-03	0.4659498E-03
575.0	0.1812081E-03	0.2056996E-03	0.3762376E-03	0.5076142E-03	0.5017921E-03
625.0	0.1879195E-03	0.2228412E-03	0.4356436E-03	0.4060914E-03	0.4301075E-03
675.0	0.1543624E-03	0.1414185E-03	0.3168317E-03	0.2538071E-03	0.3225806E-03
725.0	0.1442953E-03	0.1714163E-03	0.3168317E-03	0.7614213E-04	0.1433692E-03
775.0	0.1610738E-03	0.1928434E-03	0.2376238E-03	0.1776650E-03	0.1075269E-03
825.0	0.1644295E-03	0.1457039E-03	0.1980198E-03	0.1522843E-03	0.7168459E-04
875.0	0.1577181E-03	0.1199914E-03	0.1188119E-03	0.1522843E-03	0.7168459E-04
925.0	0.1375839E-03	0.1028498E-03	0.5940594E-04	0.	0.1075269E-03
975.0	0.1140940E-03	0.1114206E-03	0.5940594E-04	0.7614213E-04	0.3584229E-04
	N IS 0.8307046E 00	N IS 0.8967216E 00	N IS 0.9940593E 00	N IS 0.9885786E 00	N IS 0.9946235E 00

PROTON ON O INC. K.E. (MEV) IS 2000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ANGULAR DISTRIBUTION OF EMITTED CASCADE PARTICLES

(FRACTION IN EACH INTERVAL)/(DELTA MU)

MU IS COSINE THETA AND SPECIFIES THE CENTER OF THE INTERVAL

MU	PROTON	NEUTRON	PI+	PI0	PI-
0.975	0.4691275E 01	0.3578316E 01	0.2653465E 01	0.2385787E 01	0.2258064E 01
0.925	0.1577181E 01	0.1714163E 01	0.1841584E 01	0.1929934E 01	0.1899642E 01
0.875	0.1130872E 01	0.1182773E 01	0.1386139E 01	0.1269035E 01	0.1648745E 01
0.825	0.9765101E 00	0.1002785E 01	0.1168317E 01	0.1142132E 01	0.9677419E 00
0.775	0.8724832E 00	0.7799443E 00	0.1009901E 01	0.9137056E 00	0.8960573E 00
0.725	0.6510067E 00	0.7070924E 00	0.9306931E 00	0.6091371E 00	0.1075269E 01
0.675	0.6342282E 00	0.7156632E 00	0.6534653E 00	0.8375635E 00	0.6451613E 00
0.625	0.6308725E 00	0.6042426E 00	0.6732673E 00	0.7360406E 00	0.5017921E 00
0.575	0.6812081E 00	0.6728091E 00	0.6138614E 00	0.5583756E 00	0.3942652E-00
0.525	0.6073825E 00	0.6085280E 00	0.4158416E-00	0.4060914E-00	0.6451613E 00
0.475	0.5704698E 00	0.5228198E 00	0.3762376E-00	0.4568528E-00	0.5734767E 00
0.425	0.4765101E-00	0.6385258E 00	0.4356436E-00	0.2284264E-00	0.3942652E-00
0.375	0.5402685E 00	0.4842511E-00	0.4554455E-00	0.4314721E-00	0.5376344E 00
0.325	0.5033557E 00	0.5099636E 00	0.3366337E-00	0.3299492E-00	0.6093190E 00
0.275	0.3892617E-00	0.4028284E-00	0.3366337E-00	0.5076142E 00	0.3942652E-00
0.225	0.3624161E-00	0.4628241E-00	0.3762376E-00	0.3045685E-00	0.3225806E-00
0.175	0.4161074E-00	0.4156846E-00	0.3564356E-00	0.3045685E-00	0.3942652E-00
0.125	0.3053691E-00	0.4113992E-00	0.2376238E-00	0.3553299E-00	0.3225806E-00
0.075	0.3187919E-00	0.3428327E-00	0.3762376E-00	0.3807107E-00	0.2867384E-00
0.025	0.2718121E-00	0.4199700E-00	0.3762376E-00	0.3299492E-00	0.2150538E-00
-0.025	0.3322148E-00	0.3514035E-00	0.3366337E-00	0.3553299E-00	0.3225806E-00
-0.075	0.2751678E-00	0.2914078E-00	0.1980198E-00	0.2284264E-00	0.1075269E-00
-0.125	0.2416107E-00	0.3085494E-00	0.2376238E-00	0.3553299E-00	0.1792115E-00
-0.175	0.2348993E-00	0.2571245E-00	0.3366337E-00	0.3807107E-00	0.4659498E-00
-0.225	0.1946309E-00	0.2271266E-00	0.2970297E-00	0.3045685E-00	0.2508961E-00
-0.275	0.2080537E-00	0.2056996E-00	0.3564356E-00	0.3553299E-00	0.3584229E-00
-0.325	0.1812081E-00	0.2228412E-00	0.1980198E-00	0.4314721E-00	0.2150538E-00
-0.375	0.1744966E-00	0.2399829E-00	0.1782178E-00	0.3807107E-00	0.1433692E-00
-0.425	0.1543624E-00	0.1799871E-00	0.3366337E-00	0.3045685E-00	0.3225806E-00
-0.475	0.1946309E-00	0.1499893E-00	0.2376238E-00	0.2030457E-00	0.2867384E-00
-0.525	0.1577181E-00	0.1799871E-00	0.1584158E-00	0.2538071E-00	0.1792115E-00
-0.575	0.1409396E-00	0.1799871E-00	0.3564356E-00	0.2284264E-00	0.3225806E-00
-0.625	0.1510067E-00	0.1371331E-00	0.1980198E-00	0.1522843E-00	0.2867384E-00
-0.675	0.8389262E-01	0.1628455E-00	0.1584158E-00	0.2791878E-00	0.2867384E-00
-0.725	0.1208054E-00	0.1199914E-00	0.2376238E-00	0.2538071E-00	0.1792115E-00
-0.775	0.1342282E-00	0.1414185E-00	0.2178218E-00	0.1776650E-00	0.1075269E-00
-0.825	0.1308725E-00	0.8999357E-01	0.2376238E-00	0.3553299E-00	0.2867384E-00
-0.875	0.1208054E-00	0.1499893E-00	0.1980198E-00	0.2791878E-00	0.2150538E-00
-0.925	0.9060403E-01	0.1071352E-00	0.3168317E-00	0.1015228E-00	0.2508961E-00
-0.975	0.7046980E-01	0.1199914E-00	0.1980198E-00	0.2030457E-00	0.2508961E-00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	0. TO 10.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
7.2561E-01	5.3955E-01	2.9768E-01	1.3024E-01	1.6745E-01	2.4187E-01	1.4884E-01	2.7908E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.7908E-01	3.7211E-01	3.1629E-01	3.5350E-01	3.9071E-01	3.9071E-01	3.7211E-01	3.9071E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
5.5816E-01	4.2792E-01	3.5350E-01	2.2326E-01	4.2792E-01	2.7908E-01	3.1629E-01	1.6931E 00
INTERVAL 25							
4.7071E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	10.00 TO 30.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
5.5683E-01	3.0697E-01	2.6176E-01	1.4278E-01	1.3088E-01	1.2136E-01	1.2612E-01	1.0708E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
9.2805E-02	9.0425E-02	1.0708E-01	6.6629E-02	6.4250E-02	5.4731E-02	6.1870E-02	6.6629E-02
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
4.2833E-02	6.9009E-02	4.7592E-02	8.8046E-02	1.2850E-01	1.1422E-01	1.6895E-01	1.4992E-01
INTERVAL 25							
1.1898E-02							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1151E 04 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.137402E 04 MEV FOR CASCADE PROTON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2543E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.729760E 03 MEV FOR CASCADE PROTON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	30.00 TO 90.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.8533E-01	1.8343E-01	9.6936E-02	4.8631E-02	3.1986E-02	2.4152E-02	1.6972E-02	1.0771E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
4.5694E-03	5.8749E-03	5.5485E-03	4.8958E-03	2.2847E-03	1.9583E-03	3.2638E-04	1.6319E-03
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
6.5277E-04	3.2638E-04	6.5277E-04	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	90.00 TO 180.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.3771E-01	4.1833E-02	5.3705E-03	8.4797E-04	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.7415E 02 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.148535E 03 MEV FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2286E 02 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.554303E 02 MEV FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 0 TO 500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.481E 02	1.085E 02	8.296E 01	6.388E 01	3.933E 01	2.522E 01	1.793E 01	1.537E 01	1.087E 01

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 500 TO 1500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.744E 02	3.907E 01	3.910E 00	6.929E-02	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 1500 TO 2000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
2.520E 02	3.125E 00	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	C	16	8	06000	1.11	852.5	02456

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 0 TO 500

K EQUALS 0	1	2	3	4	5	6	7
7.7859E 01	1.1579E 02	4.9869E 01	3.5235E 01	2.1454E 01	1.4350E 01	1.0940E 01	6.1094E 00
8	9	10	11	12	13	14	15
2.4153E 00	1.1366E 00	7.1039E-01	2.8416E-01	1.4208E-01	1.4208E-01	1.4208E-01	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 500 TO 1500

K EQUALS 0	1	2	3	4	5	6	7
2.2733E 02	1.0315E 02	6.1094E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 1500 TO 2000

K EQUALS 0	1	2	3	4	5	6	7
2.3770E 02	9.8886E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PROTONS	0.29279E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM								
0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.3750E-00	0.1042E 01	0.2210E 01	0.1019E 02	0.7097E 01	0.2356E 01	0.1360E 01	0.5209E 00	0.7499E 00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	0. TO 10.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
6.8840E-01	3.1629E-01	3.3490E-01	1.8605E-01	2.4187E-01	1.3024E-01	1.4884E-01	7.4421E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.4884E-01	1.8605E-01	3.5350E-01	1.4884E-01	2.2326E-01	2.9768E-01	3.3490E-01	2.6047E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
2.7908E-01	2.4187E-01	2.0466E-01	4.0932E-01	7.2561E-01	5.0234E-01	9.3027E-02	4.4653E-01
INTERVAL 25							
1.0233E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	10.00 TO 30.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
5.5683E-01	2.7128E-01	1.7847E-01	1.2612E-01	9.9944E-02	1.0232E-01	1.1184E-01	9.0425E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
7.6148E-02	9.5185E-02	4.9972E-02	7.1388E-02	7.6148E-02	5.2352E-02	5.2352E-02	7.3768E-02
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
3.5694E-02	4.0453E-02	2.6176E-02	4.0453E-02	2.1417E-02	2.3796E-02	3.3315E-02	5.7111E-02
INTERVAL 25							
2.3796E-03							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.6400E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.113730E 04 MEV FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1892E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.545191E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	C	16	8	06000	1.11	852.5	02456

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	30.00 TO 90.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.2365E-01	1.3578E-01	7.5395E-02	4.0798E-02	2.9048E-02	2.1215E-02	1.1097E-02	1.0771E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
5.5485E-03	7.5068E-03	3.2638E-03	6.5277E-04	3.2638E-04	6.5277E-04	6.5277E-04	6.5277E-04
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
3.2638E-04	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	90.00 TO 180.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.1143E-01	3.6180E-02	3.6745E-03	8.4797E-04	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.6139E 02 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.140247E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2017E 02 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.546188E 02 MEV FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE NEUTRON — FOR THE ENERGY INTERVAL (MEV) 0 TO 500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.264E 02	9.207E 01	6.715E 01	5.204E 01	3.757E 01	2.183E 01	1.640E 01	1.289E 01	1.200E 01

TYPE OF CASCADE PARTICLE NEUTRON — FOR THE ENERGY INTERVAL (MEV) 500 TO 1500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.294E 02	2.943E 01	3.655E 00	6.929E-02	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE NEUTRON — FOR THE ENERGY INTERVAL (MEV) 1500 TO 2000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
9.186E 01	7.813E-01	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 0 TO 500

K EQUALS 0	1	2	3	4	5	6	7
5.5553E 01	1.0429E 02	4.6886E 01	2.8274E 01	2.0601E 01	1.1650E 01	7.8143E 00	3.1257E 00
8	9	10	11	12	13	14	15
3.2678E 00	8.5247E-01	7.1039E-01	2.8416E-01	1.4208E-01	0.	1.4208E-01	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 500 TO 1500

K EQUALS 0	1	2	3	4	5	6	7
1.9905E 02	8.1695E 01	2.8416E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 1500 TO 2000

K EQUALS 0	1	2	3	4	5	6	7
2.4793E 02	3.5662E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
NEUTRONS	0.21041E-00		

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	0. TO 25.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.5253E-02	2.7152E-02	4.2236E-02	8.7489E-02	5.4303E-02	8.4472E-02	1.0257E-01	5.4303E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
7.2405E-02	4.2236E-02	2.1118E-02	1.2067E-02	6.0337E-03	6.0337E-03	3.0169E-03	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	3.0169E-03	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	25.00 TO 75.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.5400E-02	3.6233E-02	2.9685E-02	2.0517E-02	2.7502E-02	1.0040E-02	1.0914E-02	5.2385E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
4.3654E-03	1.7462E-03	3.4923E-03	4.3654E-04	4.3654E-04	4.3654E-04	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5310E 02 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.469091E 03 MEV FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1572E 02 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.252089E 03 MEV FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	75.00 TO 130.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.7025E-02	1.9124E-02	9.4051E-03	4.0755E-03	1.2540E-03	3.1350E-04	3.1350E-04	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	130.00 TO 180.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.5894E-02	1.5034E-02	1.5826E-03	7.9128E-04	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.6521E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.975385E 02 MEV FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5064E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.660000E 02 MEV FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 0 TO 500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
3.112E 01	2.240E 01	1.394E 01	8.523E 00	6.967E 00	6.305E 00	5.185E 00	4.948E 00	5.999E 00

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 500 TO 1500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
3.000E 01	6.902E 00	1.785E 00	6.929E-02	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 1500 TO 2000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 0 TO 500

K EQUALS 0	1	2	3	4	5	6	7
1.9891E 01	1.0343E 02	8.8089E 00	1.4208E-01	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 500 TO 1500

K EQUALS 0	1	2	3	4	5	6	7
1.1025E 02	2.2022E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 1500 TO 2000

K EQUALS 0	1	2	3	4	5	6	7
1.3227E 02	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI +	0.46139E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.3750E-00	0.1042E 01	0.2210E 01	0.1019E 02	0.7097E 01	0.2356E 01	0.1360E 01	0.5209E 00	0.7499E 00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	0. TO 25.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.4135E-02	1.2067E-02	6.0337E-02	7.2405E-02	3.9219E-02	5.4303E-02	6.0337E-02	5.7320E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
3.6202E-02	1.8101E-02	2.7152E-02	9.0506E-03	3.0169E-03	9.0506E-03	9.0506E-03	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
3.0169E-03	3.0169E-03	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	25.00 TO 75.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.3614E-02	2.4446E-02	2.2700E-02	2.1827E-02	1.6589E-02	1.3533E-02	4.8020E-03	3.4923E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
3.0558E-03	4.3654E-04	1.3096E-03	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3982E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.481212E 03 MEV FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1166E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.239760E 03 MEV FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	SYMB.	TARGET A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	0	16	8	06000	1.11	852.5	02456

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	75.00 TO 130.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.1382E-02	1.8183E-02	7.2106E-03	1.5675E-03	1.2540E-03	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	130.00 TO 180.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.7981E-02	1.4243E-02	7.9128E-04	0.	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5568E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.886486E 02 MEV FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.4241E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.638806E 02 MEV FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE — PI 0 — FOR THE ENERGY INTERVAL (MEV) 0 TO 500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.912E 01	1.81CE 01	1.113E 01	6.721E 00	5.730E 00	6.097E 00	3.995E 00	4.427E 00	3.375E 00

TYPE OF CASCADE PARTICLE — PI 0 — FOR THE ENERGY INTERVAL (MEV) 500 TO 1500

LABCRATCRY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
2.175E 01	5.079E 00	5.950E-01	0.	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE — PI 0 — FOR THE ENERGY INTERVAL (MEV) 1500 TO 2000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 0 TO 500

K EQUALS 0	1	2	3	4	5	6	7
1.1224E 01	6.9618E 01	1.1366E 01	1.4208E 00	1.4208E-01	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 500 TO 1500

K EQUALS 0	1	2	3	4	5	6	7
7.8996E 01	1.4776E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 1500 TO 2000

K EQUALS 0	1	2	3	4	5	6	7
9.3772E 01	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI 0	0.42005E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.3750E-00	0.1042E 01	0.2210E 01	0.1019E 02	0.7097E 01	0.2356E 01	0.1360E 01	0.5209E 00	0.7499E 00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	0	16	8	06000	1.11	852.5	02456

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	0. TO 25.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.4135E-02	9.0506E-03	3.0169E-02	3.3185E-02	3.9219E-02	3.3185E-02	3.6202E-02	4.8270E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
3.0169E-02	1.8101E-02	6.0337E-03	1.2067E-02	6.0337E-03	0.	3.0169E-03	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	3.0169E-03	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	25.00 TO 75.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.4487E-02	2.4446E-02	1.7462E-02	1.5716E-02	1.0040E-02	5.6751E-03	2.6193E-03	2.6193E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
8.7308E-04	0.	4.3654E-04	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2655E 02 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.477091E 03 MEV FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.9150E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.194198E 03 MEV FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	75.00 TO 130.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.1037E-02	7.2106E-03	4.3890E-03	1.5675E-03	3.1350E-04	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	130.00 TO 180.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.8486E-02	6.3302E-03	0.	0.	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3561E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.794366E 02 MEV FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2785E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.545455E 02 MEV FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 0 TO 500

LABORATORY ANGLE FROM								
0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.237E 01	1.471E 01	7.905E 00	5.682E 00	3.516E 00	3.534E 00	2.975E 00	3.125E 00	2.625E 00

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 500 TO 1500

LABORATORY ANGLE FROM								
0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.612E 01	2.604E 00	2.550E-01	0.	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 1500 TO 2000

LABORATORY ANGLE FROM								
0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 0 TO 500

LABORATORY ANGLE FROM								
0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.237E 01	1.471E 01	7.905E 00	5.682E 00	3.516E 00	3.534E 00	2.975E 00	3.125E 00	2.625E 00

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 500 TO 1500

LABORATORY ANGLE FROM								
0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.612E 01	2.604E 00	2.550E-01	0.	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 1500 TO 2000

LABORATORY ANGLE FROM								
0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 0 TO 500

K EQUALS 0	1	2	3	4	5	6	7
9.2351E 00	5.9957E 01	4.9727E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 500 TO 1500

K EQUALS 0	1	2	3	4	5	6	7
6.4788E 01	9.3772E 00	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 1500 TO 2000

K EQUALS 0	1	2	3	4	5	6	7
7.4165E 01	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	O	16	8	06000	1.11	852.5	02456

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI -	0.31362E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.3750E-00	0.1042E 01	0.2210E 01	0.1019E 02	0.7097E 01	0.2356E 01	0.1360E 01	0.5209E 00	0.7499E 00

CASE NUMBER 16 82000 2

A= 16
Z= 8
KINETIC ENERGY (MEV)= 2000.00
PROTON
GEOMETRIC CROSS SECTION (MB)= 852.47
CUTOFF ENERGY (MEV)= 1.11
6000 CASE HISTORIES
INELASTIC CROSS SECTION (MB) 348.94

AVERAGE EVAPORATION YIELD PER INELASTIC EVENT

NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
0.9307318	0.8961726	0.1254072	0.0171010	0.0252443	0.4315961

CASE NUMBER 16 82000 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
16	9	2	0.28
	8	57	8.10
	7	4	0.57
15	9	3	0.43
	8	260	36.94
	7	323	45.89
14	8	19	2.70
	7	255	36.23
	6	32	4.55
13	8	3	0.43
	7	56	7.96
	6	121	17.19
	5	1	0.14
12	7	7	0.99
	6	152	21.60
	5	5	0.71
11	7	5	0.71
	6	10	1.42
	5	27	3.84
10	6	2	0.28
	5	55	7.81
	4	4	0.57
9	6	1	0.14
	5	10	1.42
	4	14	1.99
8	3	5	0.71
7	5	1	0.14
	4	3	0.43
	3	11	1.56
6	3	89	12.64
5	3	10	1.42
	2	17	2.42
4	3	49	6.96
	2	48	6.82
	1	2	0.28
3	2	7	0.99
	1	2	0.28
2	1	79	11.22
1	1	299	42.48

MOMENTS OF THE ENERGY DISTRIBUTIONS FOR THE FOLLOWING EVAPORATION PARTICLES

	NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
1ST MOM.	1.09815E 01	1.07307E 01	1.27554E 01	1.26438E 01	1.35676E 01	1.08314E 01
2ND MOM.	2.86502E 02	2.59008E 02	2.78909E 02	2.21910E 02	3.06319E 02	2.50766E 02
3RD MOM.	1.29719E 04	1.14630E 04	8.76769E 03	4.80391E 03	1.00329E 04	9.85440E 03

NORMALIZED EVAPORATION NEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.117016	0.102389	0.117016	0.092638	0.117016	0.102389	0.107265	0.087762	0.097513	0.092638
1	0.073135	0.117016	0.102389	0.121892	0.107265	0.121892	0.092638	0.092638	0.048757	0.117016
2	0.117016	0.082886	0.121892	0.146270	0.087762	0.073135	0.087762	0.102389	0.112140	0.053632
3	0.121892	0.058508	0.073135	0.043881	0.087762	0.112140	0.107265	0.092638	0.087762	0.063384
4	0.063384	0.068259	0.063384	0.058508	0.068259	0.097513	0.078011	0.068259	0.048757	0.048757
5	0.053632	0.068259	0.058508	0.043881	0.073135	0.068259	0.073135	0.053632	0.053632	0.043881
6	0.039005	0.073135	0.063384	0.043881	0.058508	0.024378	0.058508	0.043881	0.068259	0.043881
7	0.043881	0.048757	0.039005	0.043881	0.063384	0.058508	0.039005	0.048757	0.058508	0.048757
8	0.034130	0.014627	0.043881	0.053632	0.073135	0.039005	0.053632	0.053632	0.034130	0.039005
9	0.063384	0.063384	0.029254	0.039005	0.063384	0.014627	0.058508	0.053632	0.034130	0.024378
10	0.034130	0.034130	0.043881	0.024378	0.029254	0.034130	0.053632	0.048757	0.034130	0.039005
11	0.039005	0.029254	0.048757	0.029254	0.014627	0.039005	0.068259	0.034130	0.019503	0.053632
12	0.019503	0.029254	0.009751	0.058508	0.024378	0.034130	0.004876	0.053632	0.043881	0.024378
13	0.024378	0.053632	0.034130	0.029254	0.048757	0.009751	0.014627	0.029254	0.034130	0.009751
14	0.014627	0.014627	0.019503	0.024378	0.009751	0.024378	0.034130	0.009751	0.029254	0.009751
15	0.009751	0.014627	0.004876	0.029254	0.014627	0.014627	0.024378	0.014627	0.019503	0.009751
16	0.014627	0.029254	0.019503	0.014627	0.004876	0.024378	0.014627	0.024378	0.024378	0.024378
17	0.029254	0.014627	0.024378	0.009751	0.034130	0.014627	0.014627	0.014627	0.014627	0.024378
18	0.014627	0.014627	0.024378	0.009751	0.	0.009751	0.009751	0.029254	0.004876	0.009751
19	0.019503	0.024378	0.029254	0.014627	0.009751	0.019503	0.019503	0.014627	0.009751	0.009751
20	0.029254	0.004876	0.019503	0.029254	0.	0.019503	0.014627	0.009751	0.009751	0.004876
21	0.	0.014627	0.014627	0.004876	0.009751	0.004876	0.004876	0.014627	0.009751	0.019503
22	0.014627	0.039005	0.009751	0.009751	0.009751	0.019503	0.004876	0.019503	0.004876	0.004876
23	0.029254	0.019503	0.014627	0.014627	0.009751	0.009751	0.004876	0.	0.014627	0.009751
24	0.014627	0.004876	0.019503	0.004876	0.004876	0.019503	0.	0.019503	0.014627	0.014627

NORMALIZED EVAPORATION PROTON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.005076	0.025381	0.015228	0.025381	0.030457	0.045685	0.086294	0.152284
1	0.106599	0.142132	0.096447	0.131980	0.131980	0.162437	0.167513	0.096447	0.111675	0.157360
2	0.076142	0.081218	0.142132	0.111675	0.086294	0.126904	0.111675	0.081218	0.055838	0.055838
3	0.106599	0.101523	0.096447	0.137056	0.106599	0.055838	0.091371	0.101523	0.076142	0.086294
4	0.096447	0.106599	0.081218	0.081218	0.091371	0.071066	0.081218	0.081218	0.086294	0.071066
5	0.060914	0.081218	0.086294	0.101523	0.101523	0.030457	0.096447	0.071066	0.045685	0.086294
6	0.050761	0.096447	0.045685	0.035533	0.065990	0.045685	0.081218	0.071066	0.050761	0.065990
7	0.071066	0.035533	0.050761	0.081218	0.035533	0.050761	0.060914	0.081218	0.025381	0.020305
8	0.086294	0.060914	0.081218	0.060914	0.055838	0.035533	0.050761	0.050761	0.020305	0.040609
9	0.030457	0.045685	0.030457	0.040609	0.020305	0.045685	0.045685	0.065990	0.050761	0.015228
10	0.045685	0.025381	0.030457	0.025381	0.030457	0.060914	0.045685	0.015228	0.030457	0.055838
11	0.020305	0.035533	0.020305	0.025381	0.040609	0.010152	0.045685	0.020305	0.025381	0.020305
12	0.025381	0.020305	0.010152	0.045685	0.040609	0.020305	0.020305	0.020305	0.025381	0.025381
13	0.020305	0.	0.020305	0.025381	0.040609	0.010152	0.025381	0.035533	0.055838	0.015228
14	0.020305	0.015228	0.015228	0.015228	0.030457	0.035533	0.020305	0.010152	0.035533	0.015228
15	0.025381	0.035533	0.015228	0.010152	0.025381	0.030457	0.035533	0.010152	0.015228	0.015228
16	0.035533	0.015228	0.030457	0.020305	0.015228	0.020305	0.015228	0.015228	0.050761	0.
17	0.035533	0.010152	0.020305	0.020305	0.015228	0.005076	0.020305	0.015228	0.020305	0.005076
18	0.005076	0.025381	0.015228	0.010152	0.015228	0.020305	0.005076	0.010152	0.015228	0.020305
19	0.030457	0.015228	0.010152	0.	0.	0.005076	0.010152	0.025381	0.025381	0.015228
20	0.010152	0.	0.005076	0.	0.020305	0.030457	0.005076	0.005076	0.005076	0.010152
21	0.005076	0.025381	0.010152	0.020305	0.010152	0.010152	0.010152	0.010152	0.005076	0.020305
22	0.020305	0.005076	0.010152	0.005076	0.025381	0.005076	0.020305	0.030457	0.010152	0.015228
23	0.010152	0.005076	0.	0.020305	0.010152	0.005076	0.010152	0.020305	0.005076	0.005076
24	0.015228	0.005076	0.010152	0.010152	0.010152	0.005076	0.005076	0.	0.	0.010152

NORMALIZED EVAPORATION DEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.013115	0.019672	0.026230	0.045902	0.065574	0.078689	0.072131	0.111475	0.052459	0.085246
5	0.032787	0.045902	0.085246	0.019672	0.019672	0.052459	0.026230	0.026230	0.039344	0.078689
10	0.052459	0.032787	0.045902	0.039344	0.052459	0.026230	0.052459	0.039344	0.026230	0.026230
15	0.026230	0.019672	0.019672	0.019672	0.032787	0.013115	0.059016	0.013115	0.032787	0.026230
20	0.019672	0.006557	0.019672	0.013115	0.032787	0.013115	0.013115	0.	0.	0.019672
25	0.013115	0.	0.026230	0.013115	0.	0.006557	0.019672	0.	0.006557	0.
30	0.013115	0.	0.	0.006557	0.006557	0.006557	0.006557	0.	0.006557	0.006557
35	0.006557	0.	0.	0.	0.	0.006557	0.	0.	0.	0.006557
40	0.006557	0.019672	0.006557	0.	0.006557	0.	0.	0.	0.	0.
45	0.	0.	0.	0.	0.	0.	0.013115	0.	0.	0.

NORMALIZED EVAPORATION TRITON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.047619	0.047619	0.047619	0.047619	0.047619	0.047619	0.047619
5	0.047619	0.095238	0.	0.	0.047619	0.190476	0.142857	0.	0.	0.047619
10	0.047619	0.047619	0.	0.047619	0.095238	0.	0.	0.047619	0.095238	0.
15	0.047619	0.047619	0.047619	0.047619	0.	0.047619	0.	0.142857	0.	0.
20	0.047619	0.	0.	0.	0.047619	0.	0.047619	0.	0.047619	0.047619
25	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
30	0.047619	0.	0.	0.	0.	0.	0.	0.	0.	0.
35	0.	0.	0.	0.047619	0.	0.	0.	0.	0.	0.
40	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
45	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION HE3 SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.	0.033333	0.066667	0.133333	0.033333
5	0.133333	0.066667	0.133333	0.066667	0.066667	0.100000	0.100000	0.033333	0.	0.166667
10	0.033333	0.033333	0.066667	0.	0.	0.066667	0.033333	0.	0.100000	0.
15	0.033333	0.	0.	0.033333	0.033333	0.	0.033333	0.	0.	0.066667
20	0.	0.033333	0.	0.	0.	0.	0.033333	0.033333	0.066667	0.
25	0.	0.	0.	0.033333	0.	0.	0.033333	0.	0.	0.
30	0.	0.	0.	0.033333	0.	0.	0.	0.	0.	0.
35	0.	0.	0.	0.	0.	0.033333	0.	0.	0.	0.
40	0.	0.033333	0.	0.	0.	0.	0.	0.	0.	0.
45	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION ALPHA SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.003861	0.027027	0.083012	0.158301	0.169884	0.106178	0.121622	0.084942
5	0.081081	0.090734	0.075290	0.055985	0.057915	0.046332	0.086873	0.034749	0.032819	0.040541
10	0.042471	0.052124	0.019305	0.038610	0.025097	0.021236	0.019305	0.027027	0.007722	0.025097
15	0.013514	0.025097	0.011583	0.017375	0.007722	0.013514	0.017375	0.001930	0.007722	0.021236
20	0.001930	0.011583	0.003861	0.003861	0.003861	0.009653	0.003861	0.009653	0.013514	0.005792
25	0.013514	0.013514	0.009653	0.005792	0.	0.007722	0.011583	0.003861	0.001930	0.003861
30	0.007722	0.007722	0.003861	0.003861	0.	0.005792	0.003861	0.	0.003861	0.003861
35	0.003861	0.	0.	0.	0.	0.	0.011583	0.003861	0.003861	0.
40	0.	0.	0.	0.003861	0.	0.003861	0.007722	0.	0.	0.003861
45	0.003861	0.	0.	0.001930	0.	0.	0.	0.	0.	0.

FROM CARDS

USED FILE 1 INCIDENT PARTICLE PROTON INCIDENT KINETIC ENERGY 750.000 MEV

TOTAL NUMBER OF INCIDENT PARTICLES 6000 TARGET SYMBOL AL

SIZE OF HISTOGRAMS FOR OUTGOING K.E. 25 FOR PROT, 25 FOR NEUT, 25 FOR PI+, 25 FOR PI0, 25 FOR PI-.

CROSS SECTIONS WERE CALCULATED FOR AS MANY AS 9 EMITTED PARTICLE COMBINATIONS.

76.000 MEV INTERVAL WAS USED IN CALCULATING HISTOGRAM FOR N(E*)DE FOR TOTAL REACTION

DELTAS FOR OUTGOING KINETIC ENERGY DISTRIBUTION IN MEV

	-.6 MU -.4 0 (K.E.) 10D	-.1 MU +.1 0 (K.E.) 10D	+.4 MU +.6 0 (K.E.) 10D	+.9 MU +.95 0 (K.E.) 20D	+.95 MU +1.0 0 (K.E.) 20D
PROTONS	75.0000	75.0000	75.0000	37.5000	37.5000
NEUTRONS	75.0000	75.0000	75.0000	37.5000	37.5000
PI+	75.0000	75.0000	75.0000	37.5000	37.5000
PI0	75.0000	75.0000	75.0000	37.5000	37.5000
PI-	75.0000	75.0000	75.0000	37.5000	37.5000

D = DELTA, RESPECTIVE ENERGY INTERVALS OF HISTOGRAMS

OUTGOING COMBINATIONS	10000	01000	00100	00010	00001	01001	10100	11000	11001
INTERVAL FOR N(E*)DE IN MEV	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000

FROM RECORD 1

6000 INCIDENT PROTON HIT AL TARGET WITH 27.000 MASS AND 13.000 ATOMIC NUMBER AT 750.000MEV.

FROM RECORD N

THERE WERE 2725. INCIDENT PARTICLE COLLISIONS CREATING 2725 ESCAPING PARTICLE RECORDS. THE GEOMETRIC CROSS SECTION WAS 1028.2138824 MB. THE INELASTIC CROSS SECTION WAS 466.9804764 MB. THE CUT OFF ENERGY WAS 1.6374597 MEV.

PROTON ON AL INC. K.E. (MEV) IS 750.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

MOMENTUM OF COMPOUND NUCLEUS 1404.497025MEV/C EXCITATION ENERGY OF COMPOUND NUCLEUS 756.915199MEV

THE MASS OF THE RESIDUAL NUCLEUS WAS ZERO 0 TIMES, WAS MINUS 0 TIMES CUT OFF ENERGY 1.637460MEV

FOR 65 INCIDENT PARTICLE COLLISIONS THERE WERE MORE THAN 9 OUT GOING PARTICLES

EMITTED CASCADE PARTICLES

	PROTONS	NEUTRONS	PI+	PIO	PI-
AVERAGE NO.	0.2078532E 01	0.1609908E 01	0.1952294E-00	0.1196330E-00	0.4733945E-01
VARIANCE	0.1736952E 01	0.1972232E 01	0.1607846E-00	0.1075228E-00	0.4583237E-01
AV. K.E. (MEV)	0.1784556E 03	0.1338591E 03	0.1091215E 03	0.1108373E 03	0.8842013E 02
VARIANCE	0.4405489E 05	0.2956148E 05	0.9376874E 04	0.1062505E 05	0.6552315E 04

RESIDUAL NUCLEUS

OUTGOING COMBINATION	CO	C1	ARM	AREE	AAR
TOTAL CASCADE	0.1039187	0.1514158	297.2664261	56.1264396	24.3115594
10000	0.0379837	0.1606256	232.6216908	24.4329591	27.0000000
01000	0.0390189	0.1469221	221.9580364	28.6027658	27.0000000
00100	0.	0.	0.	0.	28.0000000
00010	0.	0.	0.	0.	28.0000000
00001	0.	0.	0.	0.	28.0000000
01001	0.2137239	0.3358222	559.0788498	41.9850006	27.0000000
10100	0.1604266	0.0399050	237.6129150	16.2623873	27.0000000
11000	0.0231036	0.0880099	147.0193844	16.6882067	26.0000000
11001	0.1182903	0.1706770	326.4448051	56.8081641	26.0000000

CO = (SUM OF PARALLEL RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

C1 = (SUM OF PERPENDICULAR RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

ARM = AVERAGE RESIDUAL MOMENTUM IN MEV/C

AREE = AVERAGE RESIDUAL EXCITATION ENERGY IN MEV

AAR = AVERAGE MASS OF RESIDUAL NUCLEUS FOR TOTAL CASCADE
AAR = MASS OF RESIDUAL NUCLEUS FOR DESIGNATED OUTGOING COMBINATIONS

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PROTON ON AL        INC. K.E. (MEV) IS   750.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

                 ANGULAR DISTRIBUTION OF THE CASCADE NUCLEUS  (FRACTION IN DELTA MU)/(DELTA MU)

      -0.9000000E 00        -0.7000000E 00        -0.5000000E 00        -0.3000000E-00        -0.1000000E-00
                0.1000000E-00         0.3000000E-00         0.5000000E 00         0.7000000E 00         0.9000000E 00

          TOTAL CASCADE                                RATIO OF FORWARD /BACKWARD     0.3610829E 01
      0.1211009E-00         0.1706422E-00         0.2018349E-00         0.2183486E-00         0.3724771E-00
                0.5761468E 00         0.6642202E 00         0.6917431E 00         0.8623853E 00         0.1121101E 01

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.2580645E 01         0.2419355E 01         0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.2916667E 01         0.1944444E 01         0.                    0.                    0.1388889E-00

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.5000000E 01         0.                    0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.5000000E 01

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.1775000E 01
      0.2552553E-00         0.3303303E-00         0.3153153E-00         0.3603604E-00         0.5405405E 00
                0.7057057E 00         0.6306306E 00         0.7507508E 00         0.7057057E 00         0.4054054E-00

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.6000000E 01
        0.                    0.                    0.                    0.7142857E 00         0.
                0.                    0.1428571E 01         0.7142857E 00         0.7142857E 00         0.1428571E 01
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PROTON ON AL        INC. K.E. (MEV) IS   750.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

      EXCITATION ENERGY DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS (FRACTION PER UNIT EN.)    (DE=DELTA E(MEV))

DEA IS  0.7600000E 02   DEB IS  0.2500000E 02   DEC IS  0.2500000E 02   DED IS  0.2500000E 02   DEF IS  0.2500000E 02
  DEF IS  0.2500000E 02   DEG IS  0.2500000E 02   DEH IS  0.2500000E 02   DEI IS  0.2500000E 02   DEJ IS  0.2500000E 02

            TOTAL CASCADE                          (SUM OVER HISTOGRAM)X(DEA)        0.1000000E 01      0 OFL
        0.9613713E-02          0.2457750E-02          0.7049734E-03          0.3042009E-03          0.6760019E-04
                0.9657170E-05          0.                     0.                     0.                     0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEB)        0.1000000E 01      0 OFL
        0.2537634E-01          0.9462366E-02          0.4301075E-02          0.8602151E-03          0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEC)        0.9722222E 00      1 OFL
        0.2888889E-01          0.7777778E-02          0.2222222E-02          0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DED)        0.                 0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEE)        0.                 0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEF)        0.                 0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEG)        0.1000000E 01      0 OFL
        0.                     0.4000000E-01          0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEH)        0.1000000E 01      0 OFL
        0.3428571E-01          0.5714286E-02          0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEI)        0.1000000E 01      0 OFL
        0.3303303E-01          0.4204204E-02          0.9609610E-03          0.3603604E-03          0.2402402E-03
                0.4804805E-03          0.6006006E-03          0.                     0.                     0.1201201E-03

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEJ)        0.1000000E 01      0 OFL
        0.1142857E-01          0.1142857E-01          0.5714286E-02          0.5714286E-02          0.
                0.5714286E-02          0.                     0.                     0.                     0.
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DESCRIPTION OF THE FOLLOWING MOMENTUM DISTRIBUTIONS

THE FIRST GROUP OF NUMBERS BELOW THE TITLES SPECIFY THE MIDPOINTS OF THE MOMENTUM INTERVALS.

THE MOMENTUM IS THE NUMBER INDICATED (MEV/C).

THE SUBSEQUENT GROUPS OF NUMBERS ARE THE FRACTION OF THE TOTAL IN EACH INTERVAL DIVIDED BY DELTA P.

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PROTON ON AL       INC. K.E. (MEV) IS   750.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

                                THE MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

   0.7022485E 02   0.2106745E 03   0.3511242E 03   0.4915740E 03   0.6320236E 03   0.7724734E 03   0.9129231E 03
         0.1053373E 04   0.1193822E 04   0.1334272E 04   0.1474722E 04   0.1615172E 04   0.1755621E 04   0.1896071E 04

             TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.1923050E-02   0.2014499E-02   0.1518060E-02   0.8753011E-03   0.3788617E-03   0.2508326E-03   0.9406221E-04
         0.4180543E-04   0.1567703E-04   0.7838517E-05   0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.1837416E-02   0.2909242E-02   0.1760857E-02   0.6124720E-03   0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.1779997E-02   0.3164438E-02   0.1977774E-02   0.              0.1977774E-03   0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.              0.              0.              0.7119987E-02   0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.1017141E-02   0.4068564E-02   0.1017141E-02   0.1017141E-02   0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.4254887E-02   0.2245041E-02   0.3848641E-03   0.1710507E-03   0.4276268E-04   0.2138134E-04   0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.              0.3051423E-02   0.2034282E-02   0.2034282E-02   0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.
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PROTON ON AL       INC. K.E. (MEV) IS   750.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

                        THE PERPENDICULAR MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

   0.7022485E 02   0.2106745E 03   0.3511242E 03   0.4915740E 03   0.6320236E 03   0.7724734E 03   0.9129231E 03
         0.1053373E 04   0.1193822E 04   0.1334272E 04   0.1474722E 04   0.1615172E 04   0.1755621E 04   0.1896071E 04

             TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.2855833E-02   0.2309750E-02   0.1199293E-02   0.5121165E-03   0.1828987E-03   0.4441826E-04   0.1306420E-04
         0.2612839E-05   0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.1990534E-02   0.2985801E-02   0.1837416E-02   0.3062360E-03   0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.1977774E-02   0.3362216E-02   0.1582219E-02   0.1977774E-03   0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.              0.              0.              0.7119987E-02   0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.5085705E-02   0.2034282E-02   0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.4939090E-02   0.1689126E-02   0.3421015E-03   0.1282880E-03   0.2133134E-04   0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.1017141E-02   0.3051423E-02   0.2034282E-02   0.1017141E-02   0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.
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PROTON ON AL        INC. K.E. (MEV) IS   750.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

                          THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

 -0.1896071E 04  -0.1755621E 04  -0.1615172E 04  -0.1474722E 04  -0.1334272E 04  -0.1193822E 04  -0.1053373E 04
       -0.9129231E 03  -0.7724734E 03  -0.6320236E 03  -0.4915740E 03  -0.3511242E 03  -0.2106745E 03  -0.7022485E 02
  0.7022485E 02   0.2106745E 03   0.3511242E 03   0.4915740E 03   0.6320236E 03   0.7724734E 03   0.9129231E 03
       0.1053373E 04   0.1193822E 04   0.1334272E 04   0.1474722E 04   0.1615172E 04   0.1755621E 04   0.1896071E 04

            TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.1567703E-04   0.1410933E-03   0.1387418E-02
  0.2735643E-02   0.1345612E-02   0.7943031E-03   0.3684103E-03   0.1672217E-03   0.9667505E-04   0.4441826E-04
       0.1567703E-04   0.5225678E-05   0.2612839E-05   0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
  0.6660633E-02   0.4593540E-03   0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
  0.6922209E-02   0.              0.1977774E-03   0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
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PROTON ON AL        INC. K.E. (MEV) IS   750.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

                         THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

 -0.1896071E 04  -0.1755621E 04  -0.1615172E 04  -0.1474722E 04  -0.1334272E 04  -0.1193822E 04  -0.1053373E 04
       -0.9129231E 03  -0.7724734E 03  -0.6320236E 03  -0.4915740E 03  -0.3511242E 03  -0.2106745E 03  -0.7022485E 02
  0.7022485E 02   0.2106745E 03   0.3511242E 03   0.4915740E 03   0.6320236E 03   0.7724734E 03   0.9129231E 03
       0.1053373E 04   0.1193822E 04   0.1334272E 04   0.1474722E 04   0.1615172E 04   0.1755621E 04   0.1896071E 04

            TOTAL CASCADE                        (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.1567703E-04   0.1410933E-03   0.1387418E-02
  0.2735643E-02   0.1345612E-02   0.7943031E-03   0.3684103E-03   0.1672217E-03   0.9667505E-04   0.4441826E-04
       0.1567703E-04   0.5225678E-05   0.2612839E-05   0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.7119987E-02   0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
  0.1017141E-02   0.5085705E-02   0.1017141E-02   0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
  0.3955548E-02   0.5131522E-03   0.6414402E-04   0.              0.2138134E-04   0.              0.
       0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
  0.2034282E-02   0.3051423E-02   0.1017141E-02   0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
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PROTON ON AL INC. K.E. (MEV) IS 750.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PI0 5TH IS NO. OF PI-

27000	0.34273796E-00	35010	0.17136898E-00	35100	0.51410694E 00	36000	0.85684490E 00
43110	0.17136898E-00	44001	0.34273796E-00	44100	0.51410694E 00	45000	0.15423208E 01
52020	0.17136898E-00	53001	0.17136898E-00	53010	0.68547592E 00	53100	0.68547592E 00
54000	0.22277967E 01	62010	0.34273796E-00	63000	0.10282138E 01	71001	0.17136898E-00
72000	0.85684490E 00	16100	0.17136898E-00	17000	0.34273796E-00	24101	0.17136898E-00
24200	0.17136898E-00	25001	0.34273796E-00	25010	0.51410694E 00	25100	0.34273796E-00
26000	0.34273796E-00	33110	0.17136898E-00	34001	0.68547592E 00	34010	0.68547592E 00
34100	0.68547592E 00	35000	0.30846416E 01	43010	0.68547592E 00	43100	0.20564277E 01
44000	0.22277967E 01	51020	0.17136898E-00	52010	0.17136898E-00	52100	0.68547592E 00
53000	0.39414865E 01	62000	0.10282138E 01	71000	0.17136898E-00	80000	0.17136898E-00
14200	0.17136898E-00	15010	0.17136898E-00	15100	0.68547592E 00	16000	0.34273796E-00
23011	0.17136898E-00	23110	0.17136898E-00	24001	0.51410694E 00	24010	0.68547592E 00
24100	0.15423208E 01	25000	0.17136898E 01	33001	0.85684490E 00	33010	0.18850587E 01
33100	0.17136898E 01	34000	0.47983314E 01	42001	0.34273796E-00	42010	0.34273796E-00
42100	0.10282138E 01	43000	0.59979142E 01	51001	0.34273796E-00	51010	0.51410694E 00
51100	0.51410694E 00	52000	0.25705346E 01	60100	0.17136898E-00	61000	0.13709518E 01
70000	0.17136898E-00	05100	0.17136898E-00	14001	0.17136898E-00	14010	0.34273796E-00
14100	0.15423208E 01	15000	0.34273796E-00	22002	0.17136898E-00	22110	0.17136898E-00
23001	0.68547592E 00	23010	0.25705346E 01	23100	0.39414865E 01	24000	0.35987485E 01
32001	0.85684490E 00	32010	0.29132726E 01	32100	0.30846416E 01	33000	0.68547592E 01
41001	0.68547592E 00	41010	0.10282138E 01	41100	0.15423208E 01	42000	0.44555934E 01
50001	0.34273796E-00	50010	0.17136898E-00	50100	0.17136898E-00	51000	0.15423208E 01
60000	0.34273796E-00	03110	0.17136898E-00	04010	0.17136898E-00	04100	0.51410694E 00
05000	0.17136898E-00	12101	0.17136898E-00	12110	0.17136898E-00	13001	0.68547592E 00
13010	0.20564277E 01	13100	0.32560106E 01	14000	0.32560106E 01	21020	0.17136898E-00
21110	0.34273796E-00	21200	0.34273796E-00	22001	0.15423208E 01	22010	0.29132726E 01

PROTON ON AL INC. K.E. (MEV) IS 750.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PIO 5TH IS NO. OF PI-

CONTINUED

22100	0.54838073E 01	23000	0.63406523E 01	31001	0.22277967E 01	31010	0.17136898E 01
31100	0.30846416E 01	32000	0.10453507E 02	40001	0.34273796E-00	40010	0.34273796E-00
40100	0.17136898E-00	41000	0.39414865E 01	50000	0.17136898E-00	03010	0.34273796E-00
03100	0.85684490E 00	04000	0.85684490E 00	12001	0.11995828E 01	12010	0.46269624E 01
12100	0.87398179E 01	13000	0.56551763E 01	20110	0.17136898E-00	21001	0.29132726E 01
21010	0.54838073E 01	21100	0.89111868E 01	22000	0.15937315E 02	30001	0.10282139E 01
30010	0.27419037E 01	30100	0.51410694E 00	31000	0.10796245E 02	40000	0.18850587E 01
02010	0.68547592E 00	02100	0.49697004E 01	03000	0.85684490E 00	10101	0.17136898E-00
11001	0.11995828E 01	11010	0.94252939E 01	11100	0.22792074E 02	12000	0.15594577E 02
20001	0.27419037E 01	20010	0.56551763E 01	20100	0.18850587E 01	21000	0.25362609E 02
30000	0.10282139E 02	01001	0.17136898E-00	01010	0.85684490E 00	01100	0.11995828E 01
02000	0.32560106E 01	10001	0.17136898E-00	10010	0.68547592E 00	10100	0.11995828E 01
11000	0.57065870E 02	20000	0.48326052E 02	01000	0.61692832E 01	10000	0.15937315E 02

PROTON ON AL INC. K.E. (MEV) IS 750.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 1.00 TO 0.95
(THETA FROM 0 DEG. 0 MIN. TO 18 DEG. 12 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PI0		PI-	
DELTA E(MEV)	37.5	DELTA E(MEV)	37.5	DELTA E(MEV)	37.5	DELTA E(MEV)	37.5	DELTA E(MEV)	37.5
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
18.7	0.462E-01	18.7	0.766E-01	18.7	0.736E-01	18.7	0.762E-01	18.7	0.114E-00
56.2	0.239E-01	56.2	0.379E-01	56.2	0.	56.2	0.	56.2	0.762E-01
93.7	0.228E-01	93.7	0.253E-01	93.7	0.184E-01	93.7	0.254E-01	93.7	0.381E-01
131.2	0.245E-01	131.2	0.213E-01	131.2	0.184E-01	131.2	0.762E-01	131.2	0.381E-01
168.7	0.169E-01	168.7	0.245E-01	168.7	0.368E-01	168.7	0.	168.7	0.762E-01
206.2	0.212E-01	206.2	0.182E-01	206.2	0.368E-01	206.2	0.	206.2	0.762E-01
243.7	0.174E-01	243.7	0.261E-01	243.7	0.368E-01	243.7	0.762E-01	243.7	0.
281.2	0.223E-01	281.2	0.205E-01	281.2	0.736E-01	281.2	0.508E-01	281.2	0.762E-01
318.7	0.234E-01	318.7	0.340E-01	318.7	0.920E-01	318.7	0.254E-01	318.7	0.
356.2	0.266E-01	356.2	0.427E-01	356.2	0.552E-01	356.2	0.102E-00	356.2	0.
393.7	0.223E-01	393.7	0.316E-01	393.7	0.552E-01	393.7	0.508E-01	393.7	0.
431.2	0.294E-01	431.2	0.221E-01	431.2	0.184E-01	431.2	0.508E-01	431.2	0.381E-01
468.7	0.174E-01	468.7	0.269E-01	468.7	0.184E-01	468.7	0.	468.7	0.
506.2	0.125E-01	506.2	0.119E-01	506.2	0.	506.2	0.	506.2	0.
543.7	0.489E-02	543.7	0.103E-01	543.7	0.	543.7	0.	543.7	0.
581.2	0.120E-01	581.2	0.632E-02	581.2	0.	581.2	0.	581.2	0.
618.7	0.136E-01	618.7	0.237E-02	618.7	0.	618.7	0.	618.7	0.
656.2	0.353E-01	656.2	0.261E-01	656.2	0.	656.2	0.	656.2	0.
693.7	0.647E-01	693.7	0.292E-01	693.7	0.	693.7	0.	693.7	0.
731.2	0.761E-01	731.2	0.395E-01	731.2	0.	731.2	0.	731.2	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON AL INC. K.E. (MEV) IS 750.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.95 TO 0.90
(THETA FROM 18 DEG. 12 MIN. TO 25 DEG. 51 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	37.5	DELTA E(MEV)	37.5	DELTA E(MEV)	37.5	DELTA E(MEV)	37.5	DELTA E(MEV)	37.5
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
18.7	0.767E-01	18.7	0.116E-00	18.7	0.368E-01	18.7	0.213E-01	18.7	0.133E-00
56.2	0.486E-01	56.2	0.613E-01	56.2	0.552E-01	56.2	0.	56.2	0.133E-00
93.7	0.359E-01	93.7	0.385E-01	93.7	0.	93.7	0.	93.7	0.
131.2	0.262E-01	131.2	0.371E-01	131.2	0.184E-01	131.2	0.	131.2	0.133E-00
168.7	0.291E-01	168.7	0.271E-01	168.7	0.920E-01	168.7	0.640E-01	168.7	0.
206.2	0.253E-01	206.2	0.371E-01	206.2	0.368E-01	206.2	0.853E-01	206.2	0.
243.7	0.204E-01	243.7	0.257E-01	243.7	0.552E-01	243.7	0.853E-01	243.7	0.
281.2	0.175E-01	281.2	0.214E-01	281.2	0.552E-01	281.2	0.640E-01	281.2	0.
318.7	0.194E-01	318.7	0.242E-01	318.7	0.920E-01	318.7	0.853E-01	318.7	0.133E-00
356.2	0.243E-01	356.2	0.185E-01	356.2	0.552E-01	356.2	0.640E-01	356.2	0.
393.7	0.389E-02	393.7	0.114E-01	393.7	0.184E-01	393.7	0.427E-01	393.7	0.
431.2	0.126E-01	431.2	0.856E-02	431.2	0.184E-01	431.2	0.213E-01	431.2	0.
468.7	0.680E-02	468.7	0.570E-02	468.7	0.	468.7	0.	468.7	0.
506.2	0.680E-02	506.2	0.570E-02	506.2	0.	506.2	0.	506.2	0.
543.7	0.233E-01	543.7	0.185E-01	543.7	0.	543.7	0.	543.7	0.
581.2	0.427E-01	581.2	0.257E-01	581.2	0.	581.2	0.	581.2	0.
618.7	0.563E-01	618.7	0.242E-01	618.7	0.	618.7	0.	618.7	0.
656.2	0.437E-01	656.2	0.185E-01	656.2	0.	656.2	0.	656.2	0.
693.7	0.971E-02	693.7	0.570E-02	693.7	0.	693.7	0.	693.7	0.
731.2	0.389E-02	731.2	0.285E-02	731.2	0.	731.2	0.	731.2	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON AL INC. K.E. (MEV) IS 750.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.60 TO 0.40
(THETA FROM 53 DEG. 8 MIN. TO 66 DEG. 25 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
37.5	0.377E-01	37.5	0.399E-01	37.5	0.219E-01	37.5	0.318E-01	37.5	0.190E-01
112.5	0.158E-01	112.5	0.153E-01	112.5	0.262E-01	112.5	0.242E-01	112.5	0.333E-01
187.5	0.813E-02	187.5	0.730E-02	187.5	0.142E-01	187.5	0.606E-02	187.5	0.952E-02
262.5	0.351E-02	262.5	0.301E-02	262.5	0.437E-02	262.5	0.455E-02	262.5	0.476E-02
337.5	0.128E-02	337.5	0.812E-03	337.5	0.	337.5	0.	337.5	0.
412.5	0.171E-03	412.5	0.348E-03	412.5	0.	412.5	0.	412.5	0.
487.5	0.856E-04	487.5	0.	487.5	0.	487.5	0.	487.5	0.
562.5	0.	562.5	0.	562.5	0.	562.5	0.	562.5	0.
637.5	0.	637.5	0.	637.5	0.	637.5	0.	637.5	0.
712.5	0.	712.5	0.	712.5	0.	712.5	0.	712.5	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON AL INC. K.E. (MEV) IS 750.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.10 TO -0.10
(THETA FROM 84 DEG. 16 MIN. TO 95 DEG. 44 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
37.5	0.532E-01	37.5	0.562E-01	37.5	0.397E-01	37.5	0.559E-01	37.5	0.333E-01
112.5	0.111E-01	112.5	0.749E-02	112.5	0.190E-01	112.5	0.108E-01	112.5	0.333E-01
187.5	0.235E-02	187.5	0.250E-02	187.5	0.635E-02	187.5	0.	187.5	0.
262.5	0.	262.5	0.499E-03	262.5	0.159E-02	262.5	0.	262.5	0.
337.5	0.	337.5	0.	337.5	0.	337.5	0.	337.5	0.
412.5	0.	412.5	0.	412.5	0.	412.5	0.	412.5	0.
487.5	0.	487.5	0.	487.5	0.	487.5	0.	487.5	0.
562.5	0.	562.5	0.	562.5	0.	562.5	0.	562.5	0.
637.5	0.	637.5	0.	637.5	0.	637.5	0.	637.5	0.
712.5	0.	712.5	0.	712.5	0.	712.5	0.	712.5	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	0.100E 01

PROTON ON AL INC. K.E. (MEV) IS 750.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM -0.40 TO -0.60
(THETA FROM 113 DEG. 35 MIN. TO 126 DEG. 54 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PI0		PI-	
DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
37.5	0.570E-01	37.5	0.595E-01	37.5	0.624E-01	37.5	0.606E-01	37.5	0.533E-01
112.5	0.920E-02	112.5	0.560E-02	112.5	0.430E-02	112.5	0.606E-02	112.5	0.133E-01
187.5	0.460E-03	187.5	0.153E-02	187.5	0.	187.5	0.	187.5	0.
262.5	0.	262.5	0.	262.5	0.	262.5	0.	262.5	0.
337.5	0.	337.5	0.	337.5	0.	337.5	0.	337.5	0.
412.5	0.	412.5	0.	412.5	0.	412.5	0.	412.5	0.
487.5	0.	487.5	0.	487.5	0.	487.5	0.	487.5	0.
562.5	0.	562.5	0.	562.5	0.	562.5	0.	562.5	0.
637.5	0.	637.5	0.	637.5	0.	637.5	0.	637.5	0.
712.5	0.	712.5	0.	712.5	0.	712.5	0.	712.5	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	0.100E 01

PROTON ON AL INC. K.E. (MEV) IS 750.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PROTONS

0 TO 0.7500000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PROTONS /DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
15.00	0.9804614E-02	225.00	0.7944915E-03	405.00	0.4001883E-03	585.00	0.4178437E-03
45.00	0.4272599E-02	255.00	0.7709510E-03	435.00	0.5708569E-03	615.00	0.4001883E-03
75.00	0.3013183E-02	285.00	0.6061676E-03	465.00	0.3766478E-03	645.00	0.5002354E-03
105.00	0.2212806E-02	315.00	0.6650188E-03	495.00	0.3648776E-03	675.00	0.6061676E-03
135.00	0.1771422E-02	345.00	0.6238230E-03	525.00	0.3589925E-03	705.00	0.6591337E-03
165.00	0.1447740E-02	375.00	0.5532015E-03	555.00	0.3295669E-03	735.00	0.6591337E-03
195.00	0.1153484E-02						

PROTON ON AL INC. K.E. (MEV) IS 750.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE NEUTRONS

0 TO 0.7500000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED NEUTRONS/DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
15.00	0.1191399E-01	225.00	0.7978117E-03	405.00	0.4482942E-03	585.00	0.2431426E-03
45.00	0.4741281E-02	255.00	0.6838386E-03	435.00	0.3267229E-03	615.00	0.1367677E-03
75.00	0.3039283E-02	285.00	0.6002584E-03	465.00	0.3571157E-03	645.00	0.2355444E-03
105.00	0.2446623E-02	315.00	0.5622673E-03	495.00	0.2735355E-03	675.00	0.2355444E-03
135.00	0.1701998E-02	345.00	0.6534458E-03	525.00	0.2279462E-03	705.00	0.2963301E-03
165.00	0.1261302E-02	375.00	0.5318745E-03	555.00	0.2507408E-03	735.00	0.3267229E-03
195.00	0.1040954E-02						

PROTON ON AL INC. K.E. (MEV) IS 750.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI+

0 TO 0.7500000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI+ / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
15.00	0.6077694E-02	225.00	0.1629073E-02	405.00	0.1253133E-03	585.00	0.
45.00	0.8333333E-02	255.00	0.1315789E-02	435.00	0.1253133E-03	615.00	0.
75.00	0.5325815E-02	285.00	0.8771930E-03	465.00	0.6265664E-04	645.00	0.
105.00	0.2568922E-02	315.00	0.1127820E-02	495.00	0.	675.00	0.
135.00	0.1879699E-02	345.00	0.4385965E-03	525.00	0.	705.00	0.
165.00	0.1879699E-02	375.00	0.2506266E-03	555.00	0.	735.00	0.
195.00	0.1315789E-02						

PROTON ON AL INC. K.E. (MEV) IS 750.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PIO

0 TO 0.7500000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PIO / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
15.00	0.5930470E-02	225.00	0.1533742E-02	405.00	0.6134969E-03	585.00	0.
45.00	0.8384458E-02	255.00	0.1226994E-02	435.00	0.3067485E-03	615.00	0.
75.00	0.5725971E-02	285.00	0.5112474E-03	465.00	0.	645.00	0.
105.00	0.2862986E-02	315.00	0.6134969E-03	495.00	0.	675.00	0.
135.00	0.1942740E-02	345.00	0.7157464E-03	525.00	0.	705.00	0.
165.00	0.1431493E-02	375.00	0.5112474E-03	555.00	0.	735.00	0.
195.00	0.1022495E-02						

PROTON ON AL INC. K.E. (MEV) IS 750.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI-

0 TO 0.7500000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI- / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
15.00	0.8785530E-02	225.00	0.2067183E-02	405.00	0.	585.00	0.
45.00	0.7235142E-02	255.00	0.5167959E-03	435.00	0.2583979E-03	615.00	0.
75.00	0.5167959E-02	285.00	0.7751938E-03	465.00	0.	645.00	0.
105.00	0.3875969E-02	315.00	0.	495.00	0.	675.00	0.
135.00	0.2325581E-02	345.00	0.2583979E-03	525.00	0.	705.00	0.
165.00	0.7751938E-03	375.00	0.	555.00	0.	735.00	0.
195.00	0.1291990E-02						

PROTON ON AL INC. K.E. (MEV) IS 750.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PARTICLES

0 TO 1000 MEV

N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PARTICLES/DELTA E
K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N IS (SUM OVER HISTOGRAM FROM 1 TO 1000 MEV) (DELTA E)

K.E.	PROTONS N(E)	NEUTRONS N(E)	PI+ N(E)	PI0 N(E)	PI- N(E)
25.0	0.7715395E-02	0.9268293E-02	0.7406015E-02	0.6809816E-02	0.8372093E-02
75.0	0.3022599E-02	0.3127422E-02	0.4887218E-02	0.5828221E-02	0.4961240E-02
125.0	0.1906780E-02	0.1910189E-02	0.2218045E-02	0.2269939E-02	0.3100775E-02
175.0	0.1355932E-02	0.1157967E-02	0.1541353E-02	0.1288344E-02	0.9302326E-03
225.0	0.8121469E-03	0.8160474E-03	0.1541353E-02	0.1288344E-02	0.1550388E-02
275.0	0.6956215E-03	0.6564851E-03	0.1127819E-02	0.8598957E-03	0.7751938E-03
325.0	0.6532486E-03	0.6063369E-03	0.9022556E-03	0.7361963E-03	0.1550388E-03
375.0	0.5190678E-03	0.5607477E-03	0.2631579E-03	0.5521472E-03	0.
425.0	0.5155367E-03	0.3464782E-03	0.7518797E-04	0.3680982E-03	0.1550388E-03
475.0	0.3566384E-03	0.3282425E-03	0.3759398E-04	0.	0.
525.0	0.3354520E-03	0.2735354E-03	0.	0.	0.
575.0	0.4166667E-03	0.2097105E-03	0.	0.	0.
625.0	0.4731638E-03	0.1641213E-03	0.	0.	0.
675.0	0.5437853E-03	0.2735354E-03	0.	0.	0.
725.0	0.6779661E-03	0.3008890E-03	0.	0.	0.
775.0	0.	0.	0.	0.	0.
825.0	0.	0.	0.	0.	0.
875.0	0.	0.	0.	0.	0.
925.0	0.	0.	0.	0.	0.
975.0	0.	0.	0.	0.	0.
	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 1.0000000E 00

PROTON ON AL INC. K.E. (MEV) IS 750.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ANGULAR DISTRIBUTION OF EMITTED CASCADE PARTICLES

(FRACTION IN EACH INTERVAL)/(DELTA MU)

MU IS COSINE THETA AND SPECIFIES THE CENTER OF THE INTERVAL

MU	PROTON	NEUTRON	PI+	PIO	PI-
0.975	0.3463983E 01	0.3077274E 01	0.1090226E 01	0.1288344E 01	0.2170543E 01
0.925	0.1938559E 01	0.1705038E 01	0.1090226E 01	0.1533742E 01	0.6201550E 00
0.875	0.1362994E 01	0.1185320E 01	0.1015038E 01	0.4907975E-00	0.9302326E 00
0.825	0.1024011E 01	0.1126054E 01	0.7894737E 00	0.6748466E 00	0.6201550E 00
0.775	0.9322034E 00	0.1053111E 01	0.6766917E 00	0.4907975E-00	0.6201550E 00
0.725	0.8898305E 00	0.8707545E 00	0.6766917E 00	0.7975460E 00	0.3100775E-00
0.675	0.7697740E 00	0.7841349E 00	0.6390977E 00	0.4907975E-00	0.3100775E-00
0.625	0.7203390E 00	0.7020743E 00	0.6015038E 00	0.6134969E 00	0.3100775E-00
0.575	0.7203390E 00	0.6610440E 00	0.4887218E-00	0.6748466E 00	0.7751938E 00
0.525	0.7026836E 00	0.7294279E 00	0.6390977E 00	0.1226994E-00	0.3100775E-00
0.475	0.6355932E 00	0.6428083E 00	0.5639098E 00	0.7361963E 00	0.7751938E 00
0.425	0.6920904E 00	0.5881012E 00	0.6015038E 00	0.1165644E 01	0.3100775E-00
0.375	0.5579096E 00	0.5379530E 00	0.2631579E-00	0.1840491E-00	0.6201550E 00
0.325	0.5296610E 00	0.4878049E-00	0.5639098E 00	0.5521472E 00	0.4651163E-00
0.275	0.4237288E-00	0.4285389E-00	0.4511278E-00	0.9202454E 00	0.6201550E 00
0.225	0.3884181E-00	0.4239799E-00	0.7142857E 00	0.3067485E-00	0.6201550E 00
0.175	0.3707627E-00	0.4467746E-00	0.5263158E 00	0.4907975E-00	0.7751938E 00
0.125	0.3142655E-00	0.4285389E-00	0.2631579E-00	0.4294479E-00	0.6201550E 00
0.075	0.3531073E-00	0.2826533E-00	0.3383459E-00	0.5521472E 00	0.7751938E 00
0.025	0.2612994E-00	0.3008890E-00	0.2631579E-00	0.4907975E-00	0.1085271E 01
-0.025	0.2436441E-00	0.3145658E-00	0.4887218E-00	0.5521472E 00	0.4651163E-00
-0.075	0.2436441E-00	0.3191247E-00	0.4887218E-00	0.3067485E-00	0.4651163E-00
-0.125	0.1942090E-00	0.2780944E-00	0.2255639E-00	0.4907975E-00	0.1550388E-00
-0.175	0.2048023E-00	0.2416230E-00	0.3759398E-00	0.2453988E-00	0.1550388E-00
-0.225	0.2083333E-00	0.2872122E-00	0.4511278E-00	0.4294479E-00	0.4651163E-00
-0.275	0.1765537E-00	0.1504445E-00	0.4887218E-00	0.3680982E-00	0.1550388E-00
-0.325	0.1765537E-00	0.2416230E-00	0.4135338E-00	0.4907975E-00	0.9302326E 00
-0.375	0.1906780E-00	0.1686802E-00	0.4135338E-00	0.4907975E-00	0.6201550E 00
-0.425	0.1730226E-00	0.1777980E-00	0.1879699E-00	0.1840491E-00	0.1550388E-00
-0.475	0.1129944E-00	0.1732391E-00	0.3383459E-00	0.3680982E-00	0.3100775E-00
-0.525	0.1235876E-00	0.1458856E-00	0.2631579E-00	0.4294479E-00	0.3100775E-00
-0.575	0.1024011E-00	0.1002963E-00	0.3759398E-00	0.3680982E-00	0.
-0.625	0.9887006E-01	0.9573741E-01	0.4511278E-00	0.2453988E-00	0.3100775E-00
-0.675	0.1165254E-00	0.1367677E-00	0.3383459E-00	0.3067485E-00	0.
-0.725	0.1094633E-00	0.1641213E-00	0.4135338E-00	0.4294479E-00	0.1550388E-00
-0.775	0.1024011E-00	0.1367677E-00	0.1127819E-00	0.4907975E-00	0.7751938E 00
-0.825	0.9533898E-01	0.1094142E-00	0.6015038E 00	0.1226994E-00	0.3100775E-00
-0.875	0.7768362E-01	0.1322088E-00	0.5263158E 00	0.2453988E-00	0.1550388E-00
-0.925	0.9887006E-01	0.1048553E-00	0.4135338E-00	0.3067485E-00	0.3100775E-00
-0.975	0.9887006E-01	0.5926601E-01	0.3759398E-00	0.1226994E-00	0.1550388E-00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	0. TO 10.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
9.5748E-01	6.5827E-01	6.5827E-01	8.3780E-01	5.3858E-01	5.9843E-01	5.3858E-01	7.1811E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
7.1811E-01	7.1811E-01	7.7795E-01	5.3858E-01	1.2567E 00	5.9843E-01	1.3764E 00	9.5748E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
5.9843E-01	7.1811E-01	3.5906E-01	0.	5.9843E-02	1.1969E-01	2.9921E-01	1.9150E 00
INTERVAL 25							
4.6079E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	10.00 TO 30.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.3241E 00	6.8119E-01	6.1231E-01	4.7454E-01	4.8985E-01	4.2096E-01	3.9800E-01	3.3677E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
3.5973E-01	2.9085E-01	3.2912E-01	3.6739E-01	2.9850E-01	2.2196E-01	2.5208E-01	1.8369E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.9900E-01	2.4492E-01	2.9085E-01	4.7454E-01	4.8985E-01	6.1231E-01	7.5008E-01	6.1231E-01
INTERVAL 25							
2.6798E-01							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.6337E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.431771E 03 MEV FOR CASCADE PROTON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3325E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.340877E 03 MEV FOR CASCADE PROTON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	30.00 TO 90.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.0098E 00	4.9445E-01	3.6638E-01	2.5930E-01	2.0786E-01	1.8161E-01	1.4067E-01	8.2933E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
7.5585E-02	5.5639E-02	5.9838E-02	5.1440E-02	3.5693E-02	3.0444E-02	2.9394E-02	2.5195E-02
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
2.7294E-02	1.7846E-02	1.2597E-02	9.4481E-03	3.1494E-03	3.1494E-03	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	90.00 TO 180.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.6912E-01	1.4092E-01	6.5458E-02	4.8184E-02	2.7274E-02	7.2731E-03	9.0914E-04	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.9536E 02 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.112470E 03 MEV FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2277E 02 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.374192E 02 MEV FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE — PROTON — FOR THE ENERGY INTERVAL (MEV) 0 TO 187

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.316E 02	1.049E 02	8.991E 01	7.522E 01	4.186E 01	2.741E 01	1.722E 01	1.282E 01	1.538E 01

TYPE OF CASCADE PARTICLE — PROTON — FOR THE ENERGY INTERVAL (MEV) 187 TO 562

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.777E 02	7.445E 01	2.819E 01	5.265E 00	2.356E-01	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE — PROTON — FOR THE ENERGY INTERVAL (MEV) 562 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.881E 02	2.372E 01	2.050E-01	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 0 TO 187

K EQUALS 0	1	2	3	4	5	6	7
1.1088E 02	1.6640E 02	8.1229E 01	4.2671E 01	2.3306E 01	1.3710E 01	4.7983E 00	2.0564E 00
8	9	10	11	12	13	14	15
3.4274E-01	1.7137E-01	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 187 TO 562

K EQUALS 0	1	2	3	4	5	6	7
2.6631E 02	1.5149E 02	2.7762E 01	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 562 TO 750

K EQUALS 0	1	2	3	4	5	6	7
3.4805E 02	9.7509E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PROTONS	0.31585E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM								
0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.5427E 01	0.4084E 01	0.4613E 01	0.1588E 02	0.1610E 02	0.5516E 01	0.3588E 01	0.2199E 01	0.9045E 00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	0. TO 10.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.2567E 00	8.3780E-01	5.3858E-01	4.1890E-01	2.9921E-01	2.9921E-01	4.1890E-01	5.3858E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
7.1811E-01	6.5827E-01	1.0173E 00	1.2567E 00	1.2567E 00	1.3764E 00	1.0173E 00	1.4362E 00
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
3.5906E-01	4.7874E-01	4.1890E-01	2.3937E-01	0.	5.9843E-02	1.1969E-01	7.7795E-01
INTERVAL 25							
1.9748E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	10.00 TO 30.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.2705E 00	6.8885E-01	4.2096E-01	4.6689E-01	3.2912E-01	3.5208E-01	3.3677E-01	2.2962E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.7554E-01	2.1431E-01	2.4492E-01	2.6788E-01	2.2196E-01	1.4542E-01	9.1846E-02	1.0715E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.2246E-01	9.9500E-02	1.6073E-01	1.6073E-01	1.3012E-01	2.2962E-01	2.2196E-01	1.9900E-01
INTERVAL 25							
7.6539E-02							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5332E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.372374E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2119E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.248272E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	30.00 TO 90.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
9.4376E-01	3.7897E-01	2.8134E-01	2.2780E-01	1.6482E-01	1.1443E-01	8.7132E-02	6.8236E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
4.3041E-02	4.1991E-02	2.6245E-02	3.1494E-02	2.0996E-02	1.7946E-02	1.4697E-02	9.4481E-03
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.4697E-02	9.4481E-03	5.2489E-03	7.3485E-03	1.0498E-03	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	90.00 TO 180.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.3821E-01	1.4455E-01	6.1822E-02	3.3638E-02	1.7274E-02	5.4548E-03	2.7274E-03	9.0914E-04
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
9.0914E-04	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.7530E 02 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.947240E 02 MEV FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2116E 02 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.360696E 02 MEV FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE NEUTRON — FOR THE ENERGY INTERVAL (MEV) 0 TO 187

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.302E 02	9.298E 01	7.443E 01	5.892E 01	3.738E 01	2.449E 01	1.528E 01	1.461E 01	7.688E 00

TYPE OF CASCADE PARTICLE NEUTRON — FOR THE ENERGY INTERVAL (MEV) 187 TO 562

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.479E 02	4.806E 01	1.722E 01	3.092E 00	5.497E-01	0.	0.	1.571E-01	0.

TYPE OF CASCADE PARTICLE NEUTRON — FOR THE ENERGY INTERVAL (MEV) 562 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
6.603E 01	8.482E 00	2.050E-01	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 0 TO 187

K EQUALS 0	1	2	3	4	5	6	7
8.1914E 01	1.4087E 02	7.4203E 01	3.7873E 01	2.0564E 01	1.0282E 01	2.3992E 00	2.2278E 00
8	9	10	11	12	13	14	15
5.1411E-01	1.7137E-01	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 187 TO 562

K EQUALS 0	1	2	3	4	5	6	7
2.3220E 02	1.3281E 02	5.8265E 00	1.7137E-01	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 562 TO 750

K EQUALS 0	1	2	3	4	5	6	7
3.3640E 02	3.4617E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
NEUTRONS	0.20903E-00		

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	0. TO 25.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.8518E-02	3.8814E-02	9.7035E-03	0.	1.9407E-02	4.8518E-02	3.8814E-02	2.9111E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
4.8518E-02	2.9111E-02	7.7628E-02	5.8221E-02	2.9111E-02	1.9407E-02	1.9407E-02	9.7035E-03
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	25.00 TO 75.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.6678E-02	2.9486E-02	4.7740E-02	3.9315E-02	2.6678E-02	2.6678E-02	2.1062E-02	2.8082E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.1062E-02	1.5445E-02	1.4041E-02	1.4041E-03	1.4041E-03	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1572E 02 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.238333E 03 MEV FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.8972E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.144014E 03 MEV FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	75.00 TO 130.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
5.1426E-02	7.7644E-02	3.0251E-02	1.2100E-02	8.0669E-03	6.0501E-03	2.0167E-03	3.0251E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.0084E-03	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	130.00 TO 180.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
5.5992E-02	7.8898E-02	5.0902E-02	2.5451E-03	2.5451E-03	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5748E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.585789E 02 MEV FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5726E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.462000E 02 MEV FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 0 TO 187

LABORATORY ANGLE FROM								
0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
4.523E 00	5.026E 00	7.176E 00	6.853E 00	4.948E 00	5.516E 00	5.023E 00	6.911E 00	4.523E 00

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 187 TO 562

LABORATORY ANGLE FROM								
0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.266E 01	7.382E 00	1.845E 00	8.357E-01	2.356E-01	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 562 TO 750

LABORATORY ANGLE FROM								
0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 0 TO 187

K EQUALS 0	1	2	3	4	5	6	7
1.8165E 01	7.1289E 01	8.5684E-01	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 187 TO 562

K EQUALS 0	1	2	3	4	5	6	7
7.2146E 01	1.8165E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 562 TO 750

K EQUALS 0	1	2	3	4	5	6	7
9.0311E 01	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI +	0.49812E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM									
0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.5427E 01	0.4084E 01	0.4613E 01	0.1588E 02	0.1610E 02	0.5516E 01	0.3588E 01	0.2199E 01	0.9045E 00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	0. TO 25.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.8814E-02	0.	0.	9.7035E-03	2.9111E-02	1.9407E-02	9.7035E-03	4.8518E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
4.8518E-02	1.9407E-02	3.8814E-02	3.8814E-02	3.8814E-02	4.8518E-02	1.9407E-02	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	25.00 TO 75.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.2456E-02	3.3699E-02	3.0890E-02	1.8253E-02	1.8253E-02	9.8287E-03	1.1233E-02	1.4041E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
9.8287E-03	4.2123E-03	2.8082E-03	4.2123E-03	1.4041E-03	1.4041E-03	1.4041E-03	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1223E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.264286E 03 MEV FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5518E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.126527E 03 MEV FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	75.00 TO 130.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.9242E-02	4.3359E-02	2.8234E-02	1.1092E-02	3.0251E-03	5.0418E-03	1.0084E-02	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	130.00 TO 180.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.2906E-02	3.8176E-02	1.5271E-02	7.6353E-03	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3630E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.587500E 02 MEV FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2520E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.477273E 02 MEV FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 0 TO 187

LABORATORY ANGLE FROM	0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
	3.618E 00	2.199E 00	3.486E 00	5.349E 00	4.005E 00	3.426E 00	3.383E 00	2.354E 00	9.045E-01

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 187 TO 562

LABORATORY ANGLE FROM	0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
	8.141E 00	4.869E 00	1.230E 00	2.507E-01	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 562 TO 750

LABORATORY ANGLE FROM	0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
	0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 0 TO 187

K EQUALS 0	1	2	3	4	5	6	7
1.0796E 01	4.4213E 01	3.4274E-01	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 187 TO 562

K EQUALS 0	1	2	3	4	5	6	7
4.4385E 01	1.0968E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 562 TO 750

K EQUALS 0	1	2	3	4	5	6	7
5.5352E 01	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI 0	0.43558E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.5427E 01	0.4084E 01	0.4613E 01	0.1588E 02	0.1610E 02	0.5516E 01	0.3588E 01	0.2199E 01	0.9045E 00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	0. TO 25.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.8814E-02	9.7035E-03	9.7035E-03	1.9407E-02	9.7035E-03	1.9407E-02	9.7035E-03	9.7035E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
9.7035E-03	9.7035E-03	0.	9.7035E-03	0.	0.	9.7035E-03	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	25.00 TO 75.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
7.0205E-03	9.8287E-03	9.8287E-03	5.6164E-03	9.8287E-03	1.4041E-03	5.6164E-03	9.8287E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.4041E-03	2.8082E-03	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.4949E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.152647E 03 MEV FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1896E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.125000E 03 MEV FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	75.00 TO 130.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.0167E-02	1.6134E-02	1.0084E-02	8.0669E-03	1.0084E-03	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	130.00 TO 180.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.2725E-02	1.0180E-02	5.0902E-03	2.5451E-03	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1664E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.499091E 02 MEV FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.9162E 00 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.425000E 02 MEV FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 0 TO 187

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
4.070E 00	1.571E 00	1.128E 00	1.755E 00	1.963E 00	1.504E 00	8.201E-01	1.099E 00	4.523E-01

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 187 TO 562

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
2.714E 00	9.424E-01	3.076E-01	3.343E-01	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 562 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 0 TO 187

K EQUALS 0	1	2	3	4	5	6	7
3.2560E 00	1.8508E 01	1.7137E-01	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 187 TO 562

K EQUALS 0	1	2	3	4	5	6	7
1.8679E 01	3.2560E 00	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 562 TO 750

K EQUALS 0	1	2	3	4	5	6	7
2.1935E 01	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	AL	27	13	06000	1.64	1028.2	02725

NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI - 0.20930E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.5427E 01	0.4084E 01	0.4613E 01	0.1588E 02	0.1610E 02	0.5516E 01	0.3588E 01	0.2199E 01	0.9045E 00

CASE NUMBER 27 13 750 2

A= 27
Z= 13
KINETIC ENERGY (MEV)= 750.00
PROTON
GEOMETRIC CROSS SECTION (MB)= 1028.21
CUTOFF ENERGY (MEV)= 1.64
6000 CASE HISTORIES
INELASTIC CROSS SECTION (MB) 466.98

AVERAGE EVAPORATION YIELD PER INELASTIC EVENT

NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
1.1262385	1.2209174	0.1860550	0.0411009	0.0620183	0.3849541

CASE NUMBER 27 13 750 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
27	14	8	1.37
	13	35	6.00
	12	3	0.51
26	14	3	0.51
	13	300	51.41
	12	324	55.52
25	14	1	0.17
	13	24	4.11
	12	210	35.99
	11	29	4.97
	10	1	0.17
24	13	3	0.51
	12	201	34.45
	11	39	6.68
23	12	15	2.57
	11	140	23.99
	9	5	0.86
22	11	108	18.51
	10	16	2.74
	9	25	4.28
21	11	11	1.89
	10	95	16.28
	9	2	0.34
	8	4	0.69
20	10	119	20.39
	9	6	1.03
	7	1	0.17
19	10	2	0.34
	9	19	3.26
18	9	25	4.28
	7	83	14.22
17	9	1	0.17
	8	18	3.08
	7	1	0.17
	6	50	8.57
16	9	1	0.17
	8	123	21.08
	7	3	0.51
	5	18	3.08
15	8	7	1.20
	7	78	13.37
	6	1	0.17
14	7	112	19.19
	6	3	0.51
	5	18	3.08
13	7	9	1.54
	6	67	11.48
	5	1	0.17
12	7	3	0.51
	6	64	10.97
	5	5	0.86
11	7	1	0.17
	6	5	0.86
	5	20	3.43
	4	1	0.17

CASE NUMBER 27 13 750 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
10	5	23	3.94
	4	1	0.17
	3	5	0.86
9	5	2	0.34
	4	2	0.34
	3	2	0.34
8	3	5	0.86
7	4	2	0.34
	3	3	0.51
6	3	31	5.31
5	3	2	0.34
	2	8	1.37
4	3	12	2.06
	2	11	1.89
3	2	3	0.51
2	1	14	2.40
1	1	18	3.08

CASE NUMBER 27 13 750 2

MOMENTS OF THE ENERGY DISTRIBUTIONS FOR THE FOLLOWING EVAPORATION PARTICLES

	NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
1ST MOM.	6.89063E 00	8.44900E 00	1.07628E 01	1.07733E 01	1.19417E 01	9.09623E 00
2ND MOM.	1.03347E 02	1.33044E 02	1.78426E 02	1.87025E 02	1.99559E 02	1.33877E 02
3RD MOM.	2.46567E 03	3.52848E 03	4.03896E 03	4.35879E 03	4.49436E 03	3.03387E 03

NORMALIZED EVAPORATION NEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.091062	0.134907	0.131535	0.151771	0.175379	0.175379	0.155143	0.148398	0.138280	0.138280
1	0.131535	0.134907	0.131535	0.131535	0.104553	0.175379	0.134907	0.141653	0.118044	0.118044
2	0.148398	0.131535	0.128162	0.121417	0.118044	0.118044	0.111298	0.077572	0.114671	0.107926
3	0.101180	0.094435	0.107926	0.111298	0.114671	0.094435	0.064081	0.107926	0.091062	0.077572
4	0.074199	0.074199	0.114671	0.077572	0.084317	0.080944	0.074199	0.057336	0.084317	0.074199
5	0.060708	0.087690	0.070826	0.047218	0.053963	0.070826	0.037099	0.050590	0.050590	0.040472
6	0.074199	0.050590	0.030354	0.060708	0.047218	0.084317	0.053963	0.053963	0.033727	0.043845
7	0.053963	0.040472	0.047218	0.057336	0.016863	0.053963	0.040472	0.030354	0.037099	0.047218
8	0.026981	0.060708	0.006745	0.057336	0.047218	0.067454	0.016863	0.060708	0.026981	0.026981
9	0.023609	0.053963	0.023609	0.023609	0.023609	0.030354	0.033727	0.023609	0.040472	0.050590
10	0.050590	0.043845	0.023609	0.040472	0.016863	0.026981	0.040472	0.010118	0.010118	0.023609
11	0.030354	0.023609	0.026981	0.043845	0.026981	0.020236	0.030354	0.020236	0.020236	0.030354
12	0.030354	0.020236	0.023609	0.040472	0.010118	0.033727	0.013491	0.023609	0.037099	0.016863
13	0.013491	0.013491	0.020236	0.020236	0.023609	0.023609	0.016863	0.013491	0.013491	0.006745
14	0.013491	0.010118	0.010118	0.003373	0.006745	0.020236	0.013491	0.010118	0.030354	0.020236
15	0.006745	0.013491	0.016863	0.013491	0.006745	0.026981	0.023609	0.020236	0.033727	0.016863
16	0.006745	0.010118	0.006745	0.013491	0.026981	0.016863	0.020236	0.023609	0.006745	0.016863
17	0.023609	0.016863	0.010118	0.010118	0.013491	0.006745	0.020236	0.010118	0.010118	0.010118
18	0.003373	0.020236	0.003373	0.006745	0.003373	0.013491	0.013491	0.006745	0.006745	0.013491
19	0.010118	0.006745	0.006745	0.	0.006745	0.016863	0.006745	0.013491	0.006745	0.010118
20	0.010118	0.006745	0.016863	0.006745	0.010118	0.013491	0.006745	0.003373	0.006745	0.013491
21	0.006745	0.006745	0.003373	0.010118	0.010118	0.003373	0.003373	0.006745	0.006745	0.013491
22	0.010118	0.006745	0.010118	0.010118	0.006745	0.003373	0.010118	0.003373	0.003373	0.
23	0.	0.003373	0.010118	0.006745	0.010118	0.003373	0.	0.010118	0.	0.
24	0.	0.	0.003373	0.003373	0.	0.003373	0.006745	0.003373	0.003373	0.003373

NORMALIZED EVAPORATION PROTON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.006264	0.003132	0.003132	0.003132	0.012527	0.021923	0.025055
1	0.043846	0.046978	0.040714	0.106483	0.100219	0.122142	0.134670	0.103351	0.140933	0.122142
2	0.125274	0.112747	0.109615	0.140933	0.100219	0.093956	0.125274	0.134670	0.122142	0.100219
3	0.106483	0.140933	0.122142	0.125274	0.128406	0.081428	0.097087	0.090824	0.075164	0.106483
4	0.119010	0.137801	0.100219	0.103351	0.084560	0.122142	0.093956	0.122142	0.072033	0.065769
5	0.128406	0.081428	0.075164	0.078296	0.081428	0.097087	0.106483	0.106483	0.075164	0.072033
6	0.093956	0.081428	0.068901	0.046978	0.046978	0.068901	0.081428	0.062637	0.078296	0.062637
7	0.087692	0.056373	0.056373	0.100219	0.090824	0.059505	0.059505	0.065769	0.056373	0.037582
8	0.068901	0.037582	0.046978	0.053241	0.037582	0.081428	0.046978	0.059505	0.059505	0.034450
9	0.040714	0.050110	0.050110	0.040714	0.031319	0.056373	0.034450	0.021923	0.053241	0.031319
10	0.028187	0.031319	0.031319	0.037582	0.046978	0.046978	0.031319	0.037582	0.040714	0.028187
11	0.050110	0.021923	0.028187	0.043846	0.025055	0.018791	0.021923	0.025055	0.043846	0.018791
12	0.043846	0.031319	0.021923	0.034450	0.021923	0.043846	0.040714	0.003132	0.028187	0.034450
13	0.028187	0.025055	0.028187	0.012527	0.015659	0.015659	0.034450	0.028187	0.021923	0.012527
14	0.031319	0.025055	0.028187	0.043846	0.015659	0.031319	0.009396	0.015659	0.021923	0.015659
15	0.021923	0.025055	0.018791	0.031319	0.006264	0.012527	0.025055	0.034450	0.006264	0.037582
16	0.012527	0.009396	0.012527	0.034450	0.018791	0.006264	0.021923	0.015659	0.018791	0.025055
17	0.006264	0.012527	0.012527	0.018791	0.018791	0.006264	0.021923	0.012527	0.012527	0.009396
18	0.	0.018791	0.	0.009396	0.015659	0.003132	0.021923	0.	0.009396	0.009396
19	0.015659	0.006264	0.012527	0.012527	0.006264	0.009396	0.012527	0.009396	0.012527	0.018791
20	0.	0.006264	0.021923	0.012527	0.006264	0.006264	0.006264	0.018791	0.003132	0.015659
21	0.006264	0.009396	0.006264	0.006264	0.006264	0.006264	0.009396	0.009396	0.009396	0.009396
22	0.012527	0.006264	0.012527	0.003132	0.	0.006264	0.003132	0.015659	0.006264	0.
23	0.006264	0.006264	0.	0.003132	0.009396	0.009396	0.003132	0.003132	0.003132	0.015659
24	0.006264	0.006264	0.006264	0.003132	0.003132	0.006264	0.006264	0.003132	0.	0.009396

NORMALIZED EVAPORATION DEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.027668	0.047431	0.055336	0.067194	0.055336	0.083004	0.079051	0.059289
5	0.098814	0.071146	0.075099	0.063241	0.090909	0.055336	0.071146	0.055336	0.047431	0.075099
10	0.043478	0.031621	0.051383	0.039526	0.023715	0.043478	0.039526	0.023715	0.027668	0.039526
15	0.015810	0.059289	0.011858	0.027668	0.031621	0.003953	0.027668	0.023715	0.003953	0.007905
20	0.007905	0.027668	0.003953	0.023715	0.011858	0.003953	0.	0.015810	0.019763	0.011858
25	0.007905	0.011858	0.003953	0.003953	0.015810	0.	0.003953	0.	0.003953	0.003953
30	0.003953	0.007905	0.003953	0.	0.003953	0.003953	0.007905	0.	0.007905	0.
35	0.	0.	0.003953	0.003953	0.	0.	0.	0.003953	0.003953	0.
40	0.	0.	0.	0.	0.003953	0.	0.	0.	0.	0.
45	0.	0.	0.003953	0.	0.	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION TRITON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.071429	0.089286	0.107143	0.071429	0.071429	0.089286	0.071429
5	0.	0.053571	0.089286	0.125000	0.107143	0.089286	0.053571	0.053571	0.089286	0.071429
10	0.	0.053571	0.	0.	0.017857	0.053571	0.035714	0.017857	0.017857	0.017857
15	0.	0.	0.	0.	0.053571	0.	0.071429	0.017857	0.035714	0.035714
20	0.	0.017857	0.035714	0.	0.	0.017857	0.	0.035714	0.	0.
25	0.	0.	0.	0.035714	0.017857	0.	0.017857	0.	0.017857	0.
30	0.	0.	0.	0.	0.	0.	0.	0.017857	0.	0.
35	0.	0.017857	0.	0.	0.017857	0.	0.	0.017857	0.	0.
40	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
45	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION HE3 SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.011834	0.011834	0.047337	0.035503	0.130178
5	0.130178	0.118343	0.047337	0.047337	0.082840	0.082840	0.047337	0.082840	0.035503	0.071006
10	0.082840	0.059172	0.011834	0.035503	0.059172	0.047337	0.082840	0.	0.082840	0.023669
15	0.035503	0.047337	0.035503	0.035503	0.047337	0.035503	0.035503	0.011834	0.023669	0.035503
20	0.023669	0.035503	0.	0.	0.011834	0.	0.	0.	0.	0.
25	0.	0.	0.	0.011834	0.	0.011834	0.	0.	0.011834	0.
30	0.	0.	0.	0.	0.	0.	0.011834	0.011834	0.	0.
35	0.	0.	0.	0.011834	0.	0.	0.011834	0.	0.011834	0.011834
40	0.	0.	0.	0.011834	0.	0.	0.	0.	0.	0.
45	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION ALPHA SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.003824	0.	0.	0.011472	0.034417	0.045889	0.139579	0.128107	0.141491	0.124283
5	0.133843	0.114723	0.099426	0.070746	0.076482	0.074570	0.070746	0.038241	0.036329	0.066922
10	0.042065	0.045889	0.032505	0.036329	0.026769	0.034417	0.024857	0.022945	0.028681	0.017208
15	0.009560	0.022945	0.013384	0.011472	0.021033	0.003824	0.007648	0.007648	0.011472	0.003824
20	0.015296	0.005736	0.005736	0.003824	0.015296	0.015296	0.001912	0.013384	0.009560	0.005736
25	0.001912	0.007648	0.001912	0.001912	0.007648	0.	0.001912	0.005736	0.003824	0.
30	0.001912	0.013384	0.	0.001912	0.001912	0.003824	0.	0.	0.	0.
35	0.001912	0.	0.	0.003824	0.	0.	0.001912	0.003824	0.	0.
40	0.	0.	0.	0.	0.	0.	0.001912	0.	0.	0.001912
45	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.001912

INPUT

FROM CARDS

USED FILE 1 INCIDENT PARTICLE PROTON INCIDENT KINETIC ENERGY 1000.000 MEV

TOTAL NUMBER OF INCIDENT PARTICLES 6000 TARGET SYMBOL AL

SIZE OF HISTOGRAMS FOR OUTGOING K.E. 25 FOR PROT, 25 FOR NEUT, 25 FOR PI+, 25 FOR PIO, 25 FOR PI-.

CROSS SECTIONS WERE CALCULATED FOR AS MANY AS 9 EMITTED PARTICLE COMBINATIONS.

101.000 MEV INTERVAL WAS USED IN CALCULATING HISTOGRAM FOR N(E*)DE FOR TOTAL REACTION

DELTAS FOR OUTGOING KINETIC ENERGY DISTRIBUTION IN MEV

	-.6 MU -.4 0 (K.E.) 10D	-.1 MU +.1 0 (K.E.) 10D	+.4 MU +.6 0 (K.E.) 10D	+.9 MU +.95 0 (K.E.) 20D	+.95 MU +1.0 0 (K.E.) 20D
PROTONS	100.0000	100.0000	100.0000	50.0000	50.0000
NEUTRONS	100.0000	100.0000	100.0000	50.0000	50.0000
PI+	100.0000	100.0000	100.0000	50.0000	50.0000
PIO	100.0000	100.0000	100.0000	50.0000	50.0000
PI-	100.0000	100.0000	100.0000	50.0000	50.0000

D = DELTA, RESPECTIVE ENERGY INTERVALS OF HISTOGRAMS

OUTGOING COMBINATIONS	10000	01000	00100	00010	00001	01001	10100	11000	11001
INTERVAL FOR N(E*)DE IN MEV	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000

FROM RECORD 1

6000 INCIDENT PROTON HIT AL TARGET WITH 27.000 MASS AND 13.000 ATOMIC NUMBER AT 1000.000MEV.

FROM RECORD N

THERE WERE 2740. INCIDENT PARTICLE COLLISIONS CREATING 2740 ESCAPING PARTICLE RECORDS. THE GEOMETRIC CROSS SECTION WAS 1028.2138824 MB. THE INELASTIC CROSS SECTION WAS 469.5510101 MB. THE CUT OFF ENERGY WAS 1.6374597 MEV.

PROTON ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

MOMENTUM OF COMPOUND NUCLEUS 1697.100250MEV/C EXCITATION ENERGY OF COMPOUND NUCLEUS 1006.915207MEV

THE MASS OF THE RESIDUAL NUCLEUS WAS ZERO 0 TIMES, WAS MINUS 0 TIMES CUT OFF ENERGY 1.637460MEV

FOR 164 INCIDENT PARTICLE COLLISIONS THERE WERE MORE THAN 9 OUT GOING PARTICLES

EMITTED CASCADE PARTICLES

	PROTONS	NEUTRONS	PI+	PI0	PI-
AVERAGE NO.	0.2290876E 01	0.1861314E 01	0.2627737E-00	0.1653285E-00	0.8686131E-01
VARIANCE	0.2342763E 01	0.2530401E 01	0.2156215E-00	0.1540534E-00	0.8223613E-01
AV. K.E. (MEV)	0.2063908E 03	0.1606447E 03	0.1423307E 03	0.1374167E 03	0.1046501E 03
VARIANCE	0.7582827E 05	0.5134618E 05	0.1871058E 05	0.1829889E 05	0.1206103E 05

RESIDUAL NUCLEUS

OUTGOING COMBINATION	CO	C1	ARM	AREE	AAR
TOTAL CASCADE	0.0954881	0.1376619	326.8881149	65.9037924	23.8478100
10000	0.0290700	0.1294294	227.3499107	27.4327619	27.0000000
01000	0.0304216	0.1343499	234.4845791	28.0660281	27.0000000
00100	0.	0.	0.	0.	28.0000000
00010	0.	0.	0.	0.	28.0000000
00001	0.	0.	0.	0.	28.0000000
01001	0.1264202	0.1122504	286.9164658	43.2628989	27.0000000
10100	0.1129661	0.0246639	203.2502251	15.3484037	27.0000000
11000	0.0213155	0.0744582	151.3644695	15.6419444	26.0000000
11001	0.1041696	0.1849124	371.2399254	86.7137928	26.0000000

CO = (SUM OF PARALLEL RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

C1 = (SUM OF PERPENDICULAR RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

ARM = AVERAGE RESIDUAL MOMENTUM IN MEV/C

AREE = AVERAGE RESIDUAL EXCITATION ENERGY IN MEV

AAR = AVERAGE MASS OF RESIDUAL NUCLEUS FOR TOTAL CASCADE
AAR = MASS OF RESIDUAL NUCLEUS FOR DESIGNATED OUTGOING COMBINATIONS

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PROTON ON AL        INC. K.E. (MEV) IS  1000.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

                    ANGULAR DISTRIBUTION OF THE CASCADE NUCLEUS  (FRACTION IN DELTA MU)/(DELTA MU)

        -0.9000000E 00        -0.7000000E 00        -0.5000000E 00        -0.3000000E-00        -0.1000000E-00
                0.1000000E-00         0.3000000E-00         0.5000000E 00         0.7000000E 00         0.9000000E 00

             TOTAL CASCADE                                RATIO OF FORWARD /BACKWARD     0.3740484E 01
        0.1204379E-00         0.1295620E-00         0.1770073E-00         0.2627737E-00         0.3649635E-00
                0.5583942E 00         0.6587591E 00         0.7116788E 00         0.8722628E 00         0.1144161E 01

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.2800000E 01         0.2066667E 01         0.                    0.6666667E-01         0.6666667E-01

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.2758621E 01         0.2241379E 01         0.                    0.                    0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.5000000E 01         0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.2941176E-00         0.                    0.4705882E 01

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.2120000E 01
        0.2564102E-00         0.1923077E-00         0.3044872E-00         0.3205128E-00         0.5288461E 00
                0.5608974E 00         0.8012820E 00         0.8814102E 00         0.5769231E 00         0.5769231E 00

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.2500000E 01         0.                    0.2500000E 01         0.
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PROTON ON AL        INC. K.E. (MEV) IS  1000.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

      EXCITATION ENERGY DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS (FRACTION PER UNIT EN.)    (DE=DELTA E(MEV))

DEA IS  0.1010000E 03   DEB IS  0.2500000E 02   DEC IS  0.2500000E 02   DED IS  0.2500000E 02   DEE IS  0.2500000E 02
  DEF IS  0.2500000E 02   DEG IS  0.2500000E 02   DEH IS  0.2500000E 02   DEI IS  0.2500000E 02   DEJ IS  0.2500000E 02

            TOTAL CASCADE                          (SUM OVER HISTOGRAM)X(DEA)        0.1000000E 01      0 OFL
        0.7526921E-02          0.1723639E-02          0.5095035E-03          0.1047915E-03          0.3613500E-04
                0.                     0.                     0.                     0.                     0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEB)        0.1000000E 01      0 OFL
        0.2400000E-01          0.9066667E-02          0.6400000E-02          0.                     0.
                0.                     0.5333333E-03          0.                     0.                     0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEC)        0.1000000E 01      0 OFL
        0.2068966E-01          0.1655172E-01          0.1379310E-02          0.1379310E-02          0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DED)        0.                     0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEE)        0.                     0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEF)        0.                     0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEG)        0.1000000E 01      0 OFL
        0.                     0.4000000E-01          0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEH)        0.1000000E 01      0 OFL
        0.3294118E-01          0.7058823E-02          0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEI)        0.1000000E 01      0 OFL
        0.3294872E-01          0.3974359E-02          0.1666667E-02          0.2564102E-03          0.3846154E-03
                0.5128205E-03          0.                     0.2564102E-03          0.                     0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEJ)        0.1000000E 01      0 OFL
        0.                     0.1500000E-01          0.5000000E-02          0.5000000E-02          0.5000000E-02
                0.5000000E-02          0.5000000E-02          0.                     0.                     0.
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DESCRIPTION OF THE FOLLOWING MOMENTUM DISTRIBUTIONS

THE FIRST GROUP OF NUMBERS BELOW THE TITLES SPECIFY THE MIDPOINTS OF THE MOMENTUM INTERVALS.

THE MOMENTUM IS THE NUMBER INDICATED (MEV/C).

THE SUBSEQUENT GROUPS OF NUMBERS ARE THE FRACTION OF THE TOTAL IN EACH INTERVAL DIVIDED BY DELTA P.

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PROTON ON AL        INC. K.E. (MEV) IS  1000.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

                                THE MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

   0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
         0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

            TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.1860193E-02   0.1784925E-02   0.1120417E-02   0.5462301E-03   0.3376304E-03   0.1397833E-03   0.6021434E-04
         0.2795666E-04   0.1075256E-04   0.4301025E-05   0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.1807004E-02   0.2985485E-02   0.1099915E-02   0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIC   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.1422304E-02   0.3860540E-02   0.2031863E-03   0.4063727E-03   0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIC   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.              0.5892404E-02   0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.1386448E-02   0.4505956E-02   0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.4098242E-02   0.1473101E-02   0.2644027E-03   0.3777182E-04   0.1883591E-04   0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.7365505E-03   0.2209651E-02   0.2209651E-02   0.              0.7365505E-03   0.              0.
         0.              0.              0.              0.              0.              0.              0.
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PROTON ON AL        INC. K.E. (MEV) IS  1000.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

                    THE PERPENDICULAR MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

  0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
        0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

            TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.2685990E-02   0.1812882E-02   0.9010647E-03   0.3483830E-03   0.1010741E-03   0.2580615E-04   0.6451537E-05
        0.8602049E-05   0.2150512E-05   0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.1885569E-02   0.3221181E-02   0.7856538E-03   0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.1422304E-02   0.3860540E-02   0.2031863E-03   0.4063727E-03   0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.              0.5892404E-02   0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.5545792E-02   0.3466120E-03   0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.4551504E-02   0.1038725E-02   0.2455168E-03   0.5665773E-04   0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.7365505E-03   0.2946202E-02   0.1473101E-02   0.7365505E-03   0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
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PROTON ON AL        INC. K.E. (MEV) IS  1000.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

                        THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

 -0.2291085E 04  -0.2121375E 04  -0.1951665E 04  -0.1781955E 04  -0.1612245E 04  -0.1442535E 04  -0.1272825E 04
        -0.1103115E 04  -0.9334051E 03  -0.7636951E 03  -0.5939851E 03  -0.4242751E 03  -0.2545650E 03  -0.8485501E 02
  0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
        0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

            TOTAL CASCADE                        (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.1290307E-04   0.7741844E-04   0.1152675E-02
  0.2490293E-02   0.1068805E-02   0.5741868E-03   0.3053727E-03   0.1268802E-03   0.4946178E-04   0.1290307E-04
        0.1505359E-04   0.4301025E-05   0.2150512E-05   0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
  0.5813838E-02   0.7856538E-04   0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
  0.5486031E-02   0.4063727E-03   0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
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PROTON ON AL        INC. K.E. (MEV) IS  1000.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF FN.

                         THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

 -0.2291085E 04  -0.2121375E 04  -0.1951665E 04  -0.1781955E 04  -0.1612245E 04  -0.1442535E 04  -0.1272825E 04
       -0.1103115E 04  -0.9334051E 03  -0.7636951E 03  -0.5939851E 03  -0.4242751E 03  -0.2545650E 03  -0.8485501E 02
  0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
        0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

            TOTAL CASCADE                        (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.1290307E-04   0.7741844E-04   0.1152675E-02
  0.2490293E-02   0.1068805E-02   0.5741868E-03   0.3053727E-03   0.1268802E-03   0.4946178E-04   0.1290307E-04
        0.1505359E-04   0.4301025E-05   0.2150512E-05   0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.              0.
  0.              0.5892404E-02   0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.              0.
  0.1386448E-02   0.4505956E-02   0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.1888591E-04   0.1869705E-02
  0.3626095E-02   0.3777182E-03   0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.              0.
  0.3682752E-02   0.1473101E-02   0.              0.7365505E-03   0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
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PROTON ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PIO 5TH IS NO. OF PI-

17010	0.34273796E-00	25002	0.17136898E-00	25200	0.34273796E-00	26001	0.68547592E 00
26010	0.17136898E-00	26100	0.34273796E-00	34101	0.17136898E-00	34110	0.34273796E-00
34200	0.17136898E-00	35001	0.17136898E-00	35010	0.85684490E 00	35100	0.68547592E 00
36000	0.85684490E 00	43011	0.17136898E-00	43101	0.34273796E-00	43110	0.17136898E-00
43200	0.17136898E-00	44001	0.51410694E 00	44010	0.10282138E 01	44100	0.17136898E 01
45000	0.68547592E 00	52020	0.17136898E-00	52110	0.17136898E-00	52200	0.17136898E-00
53001	0.34273796E-00	53010	0.68547592E 00	53100	0.11995828E 01	54000	0.29132726E 01
62001	0.34273796E-00	62010	0.17136898E-00	62100	0.17136898E-00	63000	0.11995828E 01
71010	0.34273796E-00	72000	0.34273796E-00	81000	0.34273796E-00	16010	0.17136898E-00
23210	0.17136898E-00	24011	0.17136898E-00	24020	0.34273796E-00	24101	0.17136898E-00
25001	0.17136898E-00	25010	0.51410694E 00	25100	0.15423208E 01	26000	0.68547592E 00
32030	0.17136898E-00	32111	0.17136898E-00	33002	0.17136898E-00	33011	0.17136898E-00
33020	0.17136898E-00	33101	0.17136898E-00	33110	0.17136898E-00	34001	0.68547592E 00
34010	0.13709518E 01	34100	0.20564277E 01	35000	0.23991657E 01	42101	0.68547592E 00
42110	0.51410694E 00	42200	0.17136898E-00	43001	0.10282138E 01	43010	0.11995828E 01
43100	0.17136898E 01	44000	0.30846416E 01	51020	0.17136898E-00	51101	0.17136898E-00
52001	0.10282138E 01	52010	0.85684490E 00	52100	0.13709518E 01	53000	0.30846416E 01
61001	0.34273796E-00	61010	0.17136898E-00	62000	0.17136898E 01	71000	0.51410694E 00
14011	0.17136898E-00	14101	0.17136898E-00	14200	0.17136898E-00	15010	0.68547592E 00
15100	0.34273796E-00	23020	0.51410694E 00	23101	0.34273796E-00	23110	0.34273796E-00
23200	0.34273796E-00	24001	0.51410694E 00	24010	0.13709518E 01	24100	0.18850587E 01
25000	0.27419037E 01	32011	0.34273796E-00	32020	0.34273796E-00	32101	0.68547592E 00
32110	0.51410694E 00	32200	0.17136898E-00	33001	0.10282138E 01	33010	0.68547592E 00
33100	0.41128554E 01	34000	0.39414865E 01	41002	0.17136898E-00	41011	0.34273796E-00
41020	0.17136898E-00	41110	0.85684490E 00	41200	0.34273796E-00	42001	0.13709518E 01
42010	0.15423208E 01	42100	0.18850587E 01	43000	0.32560106E 01	51001	0.34273796E-00

PROTON ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PIO 5TH IS NO. OF PI-

CONTINUED

51010	0.34273796E-00	51100	0.34273796E-00	52000	0.20564277E 01	61000	0.13709518E 01
70000	0.34273796E-00	05001	0.17136898E-00	05010	0.17136898E-00	06000	0.17136898E-00
13101	0.51410694E 00	13110	0.34273796E-00	13200	0.51410694E 00	14001	0.34273796E-00
14010	0.10282138E 01	14100	0.27419037E 01	15000	0.10282138E 01	21021	0.17136898E-00
22002	0.17136898E-00	22101	0.68547592E 00	22110	0.34273796E-00	22200	0.51410694E 00
23001	0.13709518E 01	23010	0.20564277E 01	23100	0.41128554E 01	24000	0.30846416E 01
31011	0.17136898E-00	31101	0.17136898E-00	31110	0.68547592E 00	31200	0.34273796E-00
32001	0.15423208E 01	32010	0.23991657E 01	32100	0.29132726E 01	33000	0.54838073E 01
40101	0.17136898E-00	40110	0.17136898E-00	41001	0.11995828E 01	41010	0.11995828E 01
41100	0.11995828E 01	42000	0.49697004E 01	51000	0.13709518E 01	60000	0.17136898E-00
04100	0.17136898E-00	11030	0.17136898E-00	12101	0.10282138E 01	12110	0.17136898E-00
12200	0.17136898E-00	13001	0.17136898E-00	13010	0.13709518E 01	13100	0.39414865E 01
14000	0.85684490E 00	21011	0.51410694E 00	21020	0.51410694E 00	21101	0.51410694E 00
21110	0.15423208E 01	22001	0.13709518E 01	22010	0.41128554E 01	22100	0.47983314E 01
23000	0.37701175E 01	30101	0.17136898E-00	31001	0.11995828E 01	31010	0.35987485E 01
31100	0.30846416E 01	32000	0.63406523E 01	40001	0.51410694E 00	40010	0.68547592E 00
40100	0.34273796E-00	41000	0.61692832E 01	50000	0.11995828E 01	02101	0.17136898E-00
02110	0.17136898E-00	02200	0.17136898E-00	03010	0.68547592E 00	03100	0.85684490E 00
04000	0.51410694E 00	11101	0.85684490E 00	11110	0.11995828E 01	11200	0.17136898E-00
12001	0.85684490E 00	12010	0.44555934E 01	12100	0.71974971E 01	13000	0.51410694E 01
20101	0.51410694E 00	21001	0.27419037E 01	21010	0.53124383E 01	21100	0.75402351E 01
22000	0.12167197E 02	30001	0.34273796E-00	30010	0.85684490E 00	30100	0.68547592E 00
31000	0.68547592E 01	40000	0.11995828E 01	02001	0.17136898E-00	02010	0.34273796E-00
02100	0.34273796E 01	03000	0.10282138E 01	11001	0.13709518E 01	11010	0.82257109E 01
11100	0.21935229E 02	12000	0.13195411E 02	20001	0.32560106E 01	20010	0.53124383E 01
20100	0.17136898E 01	21000	0.19021957E 02	30000	0.54838073E 01	01001	0.17136898E-00

PROTON ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PI0 5TH IS NO. OF PI-

CONTINUED

01010	0.68547592E 00	01100	0.20564277E 01	02000	0.27419037E 01	10001	0.34273796E-00
10010	0.10282138E 01	10100	0.29132726E 01	11000	0.53467121E 02	20000	0.38558020E 02
01000	0.49697004E 01	10000	0.12852673E 02				

PROTON ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 1.00 TO 0.95
(THETA FROM 0 DEG. 0 MIN. TO 18 DEG. 12 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PI0		PI-	
DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
25.0	0.372E-01	25.0	0.600E-01	25.0	0.254E-01	25.0	0.105E-01	25.0	0.333E-01
75.0	0.213E-01	75.0	0.316E-01	75.0	0.190E-01	75.0	0.211E-01	75.0	0.
125.0	0.162E-01	125.0	0.187E-01	125.0	0.635E-02	125.0	0.316E-01	125.0	0.667E-01
175.0	0.209E-01	175.0	0.198E-01	175.0	0.254E-01	175.0	0.105E-01	175.0	0.667E-01
225.0	0.191E-01	225.0	0.123E-01	225.0	0.254E-01	225.0	0.526E-01	225.0	0.667E-01
275.0	0.119E-01	275.0	0.112E-01	275.0	0.317E-01	275.0	0.526E-01	275.0	0.333E-01
325.0	0.152E-01	325.0	0.198E-01	325.0	0.317E-01	325.0	0.316E-01	325.0	0.
375.0	0.137E-01	375.0	0.107E-01	375.0	0.635E-01	375.0	0.211E-01	375.0	0.
425.0	0.137E-01	425.0	0.139E-01	425.0	0.571E-01	425.0	0.316E-01	425.0	0.667E-01
475.0	0.162E-01	475.0	0.134E-01	475.0	0.571E-01	475.0	0.632E-01	475.0	0.333E-01
525.0	0.101E-01	525.0	0.166E-01	525.0	0.190E-01	525.0	0.421E-01	525.0	0.
575.0	0.134E-01	575.0	0.187E-01	575.0	0.254E-01	575.0	0.105E-01	575.0	0.333E-01
625.0	0.130E-01	625.0	0.252E-01	625.0	0.127E-01	625.0	0.	625.0	0.
675.0	0.105E-01	675.0	0.230E-01	675.0	0.	675.0	0.211E-01	675.0	0.
725.0	0.686E-02	725.0	0.177E-01	725.0	0.	725.0	0.	725.0	0.
775.0	0.614E-02	775.0	0.696E-02	775.0	0.	775.0	0.	775.0	0.
825.0	0.137E-01	825.0	0.102E-01	825.0	0.	825.0	0.	825.0	0.
875.0	0.285E-01	875.0	0.171E-01	875.0	0.	875.0	0.	875.0	0.
925.0	0.556E-01	925.0	0.273E-01	925.0	0.	925.0	0.	925.0	0.
975.0	0.567E-01	975.0	0.257E-01	975.0	0.	975.0	0.	975.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.95 TO 0.90
(THETA FROM 18 DEG. 12 MIN. TO 25 DEG. 51 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
25.0	0.729E-01	25.0	0.968E-01	25.0	0.533E-01	25.0	0.500E-01	25.0	0.105E-00
75.0	0.378E-01	75.0	0.350E-01	75.0	0.889E-02	75.0	0.500E-01	75.0	0.421E-01
125.0	0.254E-01	125.0	0.313E-01	125.0	0.889E-02	125.0	0.375E-01	125.0	0.211E-01
175.0	0.241E-01	175.0	0.323E-01	175.0	0.356E-01	175.0	0.250E-01	175.0	0.421E-01
225.0	0.192E-01	225.0	0.240E-01	225.0	0.178E-01	225.0	0.250E-01	225.0	0.421E-01
275.0	0.165E-01	275.0	0.203E-01	275.0	0.622E-01	275.0	0.375E-01	275.0	0.211E-01
325.0	0.158E-01	325.0	0.203E-01	325.0	0.356E-01	325.0	0.125E-01	325.0	0.421E-01
375.0	0.165E-01	375.0	0.147E-01	375.0	0.622E-01	375.0	0.500E-01	375.0	0.
425.0	0.131E-01	425.0	0.203E-01	425.0	0.356E-01	425.0	0.375E-01	425.0	0.421E-01
475.0	0.179E-01	475.0	0.147E-01	475.0	0.267E-01	475.0	0.500E-01	475.0	0.421E-01
525.0	0.117E-01	525.0	0.922E-02	525.0	0.356E-01	525.0	0.250E-01	525.0	0.
575.0	0.103E-01	575.0	0.922E-02	575.0	0.889E-02	575.0	0.	575.0	0.
625.0	0.756E-02	625.0	0.129E-01	625.0	0.	625.0	0.	625.0	0.
675.0	0.124E-01	675.0	0.276E-02	675.0	0.889E-02	675.0	0.	675.0	0.
725.0	0.137E-01	725.0	0.922E-02	725.0	0.	725.0	0.	725.0	0.
775.0	0.309E-01	775.0	0.147E-01	775.0	0.	775.0	0.	775.0	0.
825.0	0.309E-01	825.0	0.203E-01	825.0	0.	825.0	0.	825.0	0.
875.0	0.165E-01	875.0	0.645E-02	875.0	0.	875.0	0.	875.0	0.
925.0	0.687E-02	925.0	0.553E-02	925.0	0.	925.0	0.	925.0	0.
975.0	0.	975.0	0.	975.0	0.	975.0	0.	975.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.60 TO 0.40
(THETA FROM 53 DEG. 8 MIN. TO 66 DEG. 25 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PI0		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.312E-01	50.0	0.344E-01	50.0	0.289E-01	50.0	0.240E-01	50.0	0.304E-01
150.0	0.122E-01	150.0	0.964E-02	150.0	0.105E-01	150.0	0.163E-01	150.0	0.893E-02
250.0	0.513E-02	250.0	0.467E-02	250.0	0.855E-02	250.0	0.673E-02	250.0	0.107E-01
350.0	0.107E-02	350.0	0.700E-03	350.0	0.197E-02	350.0	0.298E-02	350.0	0.
450.0	0.333E-03	450.0	0.389E-03	450.0	0.	450.0	0.	450.0	0.
550.0	0.667E-04	550.0	0.156E-03	550.0	0.	550.0	0.	550.0	0.
650.0	0.	650.0	0.	650.0	0.	650.0	0.	650.0	0.
750.0	0.	750.0	0.	750.0	0.	750.0	0.	750.0	0.
850.0	0.	850.0	0.	850.0	0.	850.0	0.	850.0	0.
950.0	0.	950.0	0.	950.0	0.	950.0	0.	950.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.10 TO -0.10
(THETA FROM 84 DEG. 16 MIN. TO 95 DEG. 44 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.439E-01	50.0	0.459E-01	50.0	0.350E-01	50.0	0.442E-01	50.0	0.417E-01
150.0	0.566E-02	150.0	0.300E-02	150.0	0.121E-01	150.0	0.385E-02	150.0	0.833E-02
250.0	0.482E-03	250.0	0.751E-03	250.0	0.286E-02	250.0	0.192E-02	250.0	0.
350.0	0.	350.0	0.300E-03	350.0	0.	350.0	0.	350.0	0.
450.0	0.	450.0	0.	450.0	0.	450.0	0.	450.0	0.
550.0	0.	550.0	0.	550.0	0.	550.0	0.	550.0	0.
650.0	0.	650.0	0.	650.0	0.	650.0	0.	650.0	0.
750.0	0.	750.0	0.	750.0	0.	750.0	0.	750.0	0.
850.0	0.	850.0	0.	850.0	0.	850.0	0.	850.0	0.
950.0	0.	950.0	0.	950.0	0.	950.0	0.	950.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	0.100E 01

PROTON ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM -0.40 TO -0.60
(THETA FROM 113 DEG. 35 MIN. TO 126 DEG. 54 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.464E-01	50.0	0.469E-01	50.0	0.469E-01	50.0	0.455E-01	50.0	0.462E-01
150.0	0.282E-02	150.0	0.312E-02	150.0	0.306E-02	150.0	0.455E-02	150.0	0.385E-02
250.0	0.769E-03	250.0	0.	250.0	0.	250.0	0.	250.0	0.
350.0	0.	350.0	0.	350.0	0.	350.0	0.	350.0	0.
450.0	0.	450.0	0.	450.0	0.	450.0	0.	450.0	0.
550.0	0.	550.0	0.	550.0	0.	550.0	0.	550.0	0.
650.0	0.	650.0	0.	650.0	0.	650.0	0.	650.0	0.
750.0	0.	750.0	0.	750.0	0.	750.0	0.	750.0	0.
850.0	0.	850.0	0.	850.0	0.	850.0	0.	850.0	0.
950.0	0.	950.0	0.	950.0	0.	950.0	0.	950.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	0.100E 01	N IS	1.000E 00

PROTON ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PROTONS

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PROTONS /DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.8945356E-02	300.00	0.5097977E-03	540.00	0.2110881E-03	780.00	0.2190537E-03
60.00	0.3632308E-02	340.00	0.4500558E-03	580.00	0.2548988E-03	820.00	0.2827784E-03
100.00	0.2361797E-02	380.00	0.4221762E-03	620.00	0.2071053E-03	860.00	0.3226063E-03
140.00	0.1429823E-02	420.00	0.3186236E-03	660.00	0.2469333E-03	900.00	0.3703959E-03
180.00	0.1166959E-02	460.00	0.3186236E-03	700.00	0.2230365E-03	940.00	0.6133503E-03
220.00	0.8762148E-03	500.00	0.3504859E-03	740.00	0.1832085E-03	980.00	0.4739525E-03
260.00	0.6093675E-03						

PROTON ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE NEUTRONS

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED NEUTRONS/DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.1033823E-01	300.00	0.5686275E-03	540.00	0.2254902E-03	780.00	0.1323529E-03
60.00	0.3735294E-02	340.00	0.5343137E-03	580.00	0.2401961E-03	820.00	0.1911765E-03
100.00	0.2102941E-02	380.00	0.3137255E-03	620.00	0.2794118E-03	860.00	0.1421569E-03
140.00	0.1563725E-02	420.00	0.3382353E-03	660.00	0.2156863E-03	900.00	0.2156863E-03
180.00	0.1107843E-02	460.00	0.3235294E-03	700.00	0.2352941E-03	940.00	0.1960784E-03
220.00	0.7401961E-03	500.00	0.2058824E-03	740.00	0.1862745E-03	980.00	0.1862745E-03
260.00	0.6813726E-03						

PROTON ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI+

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI+ / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.6111111E-02	300.00	0.7638889E-03	540.00	0.1736111E-03	780.00	0.
60.00	0.6076389E-02	340.00	0.9722222E-03	580.00	0.1041667E-03	820.00	0.
100.00	0.3263889E-02	380.00	0.7638889E-03	620.00	0.6944445E-04	860.00	0.
140.00	0.1319444E-02	420.00	0.5902778E-03	660.00	0.3472222E-04	900.00	0.
180.00	0.1354167E-02	460.00	0.5555556E-03	700.00	0.	940.00	0.
220.00	0.1319444E-02	500.00	0.2083333E-03	740.00	0.	980.00	0.
260.00	0.1319444E-02						

PROTON ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PIO

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PIO / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.5794702E-02	300.00	0.9381899E-03	540.00	0.1655629E-03	780.00	0.
60.00	0.6456954E-02	340.00	0.3863135E-03	580.00	0.1103752E-03	820.00	0.
100.00	0.3311258E-02	380.00	0.6622517E-03	620.00	0.	860.00	0.
140.00	0.1931567E-02	420.00	0.3311258E-03	660.00	0.1103752E-03	900.00	0.
180.00	0.1324503E-02	460.00	0.5518764E-03	700.00	0.	940.00	0.
220.00	0.1158940E-02	500.00	0.4966887E-03	740.00	0.	980.00	0.
260.00	0.1269316E-02						

PROTON ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI-

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI- / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.8193277E-02	300.00	0.8403361E-03	540.00	0.	780.00	0.
60.00	0.6932773E-02	340.00	0.3151261E-03	580.00	0.1050420E-03	820.00	0.
100.00	0.2310924E-02	380.00	0.4201681E-03	620.00	0.	860.00	0.
140.00	0.2521008E-02	420.00	0.4201681E-03	660.00	0.	900.00	0.
180.00	0.8403361E-03	460.00	0.2100840E-03	700.00	0.	940.00	0.
220.00	0.8403361E-03	500.00	0.1050420E-03	740.00	0.	980.00	0.
260.00	0.9453782E-03						

PROTON ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PARTICLES

0 TO 1000 MEV

N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PARTICLES/DELTA E
K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N IS (SUM OVER HISTOGRAM FROM 1 TO 1000 MEV) (DELTA E)

K.E.	PROTONS N(E)	NEUTRONS N(E)	PI+ N(E)	PIO N(E)	PI- N(E)
25.0	0.8045244E-02	0.9231372E-02	0.6166667E-02	0.6092715E-02	0.8487395E-02
75.0	0.3049227E-02	0.2949020E-02	0.5222222E-02	0.5386313E-02	0.4705882E-02
125.0	0.1691891E-02	0.1717647E-02	0.1777778E-02	0.2251656E-02	0.2016807E-02
175.0	0.1242632E-02	0.1180392E-02	0.1333333E-02	0.1324503E-02	0.1428571E-02
225.0	0.8539111E-03	0.7333333E-03	0.1250000E-02	0.1147903E-02	0.9243697E-03
275.0	0.5607774E-03	0.6549020E-03	0.1111111E-02	0.1147903E-02	0.1008403E-02
325.0	0.4588179E-03	0.5333333E-03	0.7777778E-03	0.6181015E-03	0.4201681E-03
375.0	0.4205831E-03	0.3490196E-03	0.9722222E-03	0.6181015E-03	0.3361344E-03
425.0	0.3186235E-03	0.3333333E-03	0.5833333E-03	0.3973510E-03	0.3361344E-03
475.0	0.3504859E-03	0.2784314E-03	0.3888889E-03	0.5298013E-03	0.2521008E-03
525.0	0.2517126E-03	0.2235294E-03	0.1944444E-03	0.2649007E-03	0.
575.0	0.2421539E-03	0.2313725E-03	0.1388889E-03	0.1324503E-03	0.8403361E-04
625.0	0.2262227E-03	0.2745098E-03	0.5555556E-04	0.	0.
675.0	0.2198502E-03	0.2117647E-03	0.2777778E-04	0.8830022E-04	0.
725.0	0.1816154E-03	0.2039216E-03	0.	0.	0.
775.0	0.2357814E-03	0.1490196E-03	0.	0.	0.
825.0	0.2835750E-03	0.1803922E-03	0.	0.	0.
875.0	0.3409272E-03	0.1529412E-03	0.	0.	0.
925.0	0.5257288E-03	0.2235294E-03	0.	0.	0.
975.0	0.5002390E-03	0.1882353E-03	0.	0.	0.
	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 0.9999999E 00

PROTON ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ANGULAR DISTRIBUTION OF EMITTED CASCADE PARTICLES

(FRACTION IN EACH INTERVAL)/(DELTA MU)

MU IS COSINE THETA AND SPECIFIES THE CENTER OF THE INTERVAL

MU	PROTON	NEUTRON	PI+	PIO	PI-
0.975	0.3530349E 01	0.2929412E 01	0.1750000E 01	0.1677704E 01	0.1008403E 01
0.925	0.1854389E 01	0.1701961E 01	0.1250000E 01	0.1412803E 01	0.1596639E 01
0.875	0.1220328E 01	0.1250980E 01	0.9444444E 00	0.7947020E 00	0.1092437E 01
0.825	0.9686156E 00	0.1019608E 01	0.8611111E 00	0.8830022E 00	0.1092437E 01
0.775	0.8634698E 00	0.9882353E 00	0.1027778E 01	0.7947020E 00	0.5882353E 00
0.725	0.7965589E 00	0.8666667E 00	0.8333333E 00	0.6181015E 00	0.6722689E 00
0.675	0.7678827E 00	0.6235294E 00	0.4722222E-00	0.7064018E 00	0.7563025E 00
0.625	0.7041580E 00	0.6901961E 00	0.6111111E 00	0.5298013E 00	0.3361344E-00
0.575	0.6276884E 00	0.6431373E 00	0.4722222E-00	0.4856512E-00	0.5042017E 00
0.525	0.6977856E 00	0.6627451E 00	0.5833333E 00	0.5739514E 00	0.5042017E 00
0.475	0.5066114E 00	0.6431373E 00	0.6111111E 00	0.3532009E-00	0.6722689E 00
0.425	0.5575912E 00	0.5725490E 00	0.4444444E-00	0.8830022E 00	0.6722689E 00
0.375	0.5129839E 00	0.5686274E 00	0.5833333E 00	0.7505519E 00	0.4201681E-00
0.325	0.4110244E-00	0.6156863E 00	0.4722222E-00	0.3973510E-00	0.1680672E-00
0.275	0.3982794E-00	0.4352941E-00	0.3611111E-00	0.5298013E 00	0.6722689E 00
0.225	0.4620041E-00	0.4274510E-00	0.4444444E-00	0.3090508E-00	0.4201681E-00
0.175	0.3759758E-00	0.4509804E-00	0.3611111E-00	0.3532009E-00	0.5042017E 00
0.125	0.4014657E-00	0.4392157E-00	0.2500000E-00	0.3973510E-00	0.3361344E-00
0.075	0.3568584E-00	0.3294118E-00	0.6666667E 00	0.2207505E-00	0.3361344E-00
0.025	0.3218098E-00	0.3764706E-00	0.4722222E-00	0.3090508E-00	0.3361344E-00
-0.025	0.3409272E-00	0.2705882E-00	0.3611111E-00	0.2649007E-00	0.3361344E-00
-0.075	0.3026924E-00	0.3294118E-00	0.4444444E-00	0.3532009E-00	0.5042017E 00
-0.125	0.2517126E-00	0.2901961E-00	0.2500000E-00	0.3532009E-00	0.5882353E 00
-0.175	0.2867612E-00	0.2156863E-00	0.3611111E-00	0.3532009E-00	0.5042017E 00
-0.225	0.2357814E-00	0.2392157E-00	0.1111111E-00	0.3973510E-00	0.7563025E 00
-0.275	0.2039191E-00	0.2705882E-00	0.3611111E-00	0.3532009E-00	0.8403361E-01
-0.325	0.2262227E-00	0.2627451E-00	0.3055556E-00	0.2207505E-00	0.3361344E-00
-0.375	0.2039191E-00	0.1568627E-00	0.4444444E-00	0.4415011E-00	0.5042017E 00
-0.425	0.1656842E-00	0.2000000E-00	0.3611111E-00	0.7505519E 00	0.8403361E-01
-0.475	0.1497531E-00	0.1843137E-00	0.4722222E-00	0.1324503E-00	0.3361344E-00
-0.525	0.1465668E-00	0.1647059E-00	0.2500000E-00	0.2649007E-00	0.4201681E-00
-0.575	0.1593118E-00	0.2039216E-00	0.2777778E-00	0.3090508E-00	0.2521008E-00
-0.625	0.1656842E-00	0.1215686E-00	0.2777778E-00	0.5739514E 00	0.2521008E-00
-0.675	0.1274494E-00	0.1294118E-00	0.5277778E 00	0.3532009E-00	0.5882353E 00
-0.725	0.1465668E-00	0.1607843E-00	0.2222222E-00	0.4856512E-00	0.1680672E-00
-0.775	0.1083320E-00	0.1215686E-00	0.3611111E-00	0.2649007E-00	0.5042017E 00
-0.825	0.1306356E-00	0.1254902E-00	0.3611111E-00	0.4856512E-00	0.8403361E-01
-0.875	0.1083320E-00	0.8627451E-01	0.1111111E-00	0.3532009E-00	0.2521008E-00
-0.925	0.1115182E-00	0.1019608E-00	0.2777778E-00	0.2207505E-00	0.2521008E-00
-0.975	0.9240083E-01	0.1294118E-00	0.3888889E-00	0.8830022E-01	0.5042017E 00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	0. TO 10.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.6606E 00	5.8347E-01	8.5276E-01	3.5906E-01	5.8347E-01	6.7323E-01	7.1811E-01	5.8347E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
8.9764E-01	7.6299E-01	6.2835E-01	7.1811E-01	5.3858E-01	4.4882E-01	4.9370E-01	5.8347E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
8.0787E-01	7.1811E-01	4.4882E-01	1.7953E-01	3.1417E-01	3.1417E-01	3.1417E-01	2.0646E 00
INTERVAL 25							
4.0394E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	10.00 TO 30.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.1883E 00	5.9700E-01	5.8552E-01	4.2479E-01	4.1331E-01	3.6164E-01	2.9276E-01	2.3536E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.6980E-01	2.6406E-01	2.2962E-01	2.3536E-01	2.9850E-01	1.4925E-01	2.0091E-01	1.4351E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.8369E-01	1.5499E-01	1.9517E-01	2.8702E-01	3.6164E-01	4.2479E-01	4.9367E-01	6.1956E-01
INTERVAL 25							
1.6647E-01							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.8115E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.561239E 03 MEV FOR CASCADE PROTON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3511E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.428450E 03 MEV FOR CASCADE PROTON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	30.00 TO 90.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
9.6449E-01	4.5351E-01	3.0706E-01	1.8266E-01	1.4959E-01	1.0550E-01	6.6924E-02	5.8263E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
3.6218E-02	3.3856E-02	2.0471E-02	1.8109E-02	1.8896E-02	1.3385E-02	1.4172E-02	1.1023E-02
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
9.4481E-03	1.0235E-02	1.5747E-03	7.8734E-04	7.8734E-04	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	90.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
5.2980E-01	1.4933E-01	5.5912E-02	3.0683E-02	1.2273E-02	5.4548E-03	6.8186E-04	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.9908E 02 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.112015E 03 MEV FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3137E 02 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.421217E 02 MEV FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.696E 02	1.230E 02	1.061E 02	7.789E 01	5.576E 01	3.585E 01	2.481E 01	2.073E 01	1.492E 01

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.755E 02	6.644E 01	1.845E 01	1.922E 00	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
2.193E 02	1.681E 01	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.696E 02	1.230E 02	1.061E 02	7.789E 01	5.576E 01	3.585E 01	2.481E 01	2.073E 01	1.492E 01

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.755E 02	6.644E 01	1.845E 01	1.922E 00	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
2.193E 02	1.681E 01	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
9.2711E 01	1.5972E 02	7.5231E 01	5.7237E 01	3.3760E 01	1.7651E 01	8.7398E 00	4.1129E 00
8	9	10	11	12	13	14	15
5.1411E-01	6.8548E-01	1.7137E-01	0.	1.7137E-01	0.	0.	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
2.9030E 02	1.4721E 02	1.3024E 01	1.7137E-01	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
3.4925E 02	1.0145E 02	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PROTONS	0.27545E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.9045E 00	0.2356E 01	0.3793E 01	0.1245E 02	0.1264E 02	0.5098E 01	0.2768E 01	0.1571E 01	0.2261E 01

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	0. TO 10.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.0323E 00	8.9764E-01	8.0787E-01	4.0394E-01	3.1417E-01	3.1417E-01	2.6929E-01	2.2441E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
5.3858E-01	4.4882E-01	2.6929E-01	5.8347E-01	3.5906E-01	5.8347E-01	7.6299E-01	1.3016E 00
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.2567E 00	1.3016E 00	6.7323E-01	1.7953E-01	1.3465E-01	8.9764E-02	8.9764E-02	5.8347E-01
INTERVAL 25							
1.5260E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	10.00 TO 30.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.2457E 00	5.3386E-01	3.6164E-01	3.6164E-01	3.7887E-01	2.4110E-01	2.4684E-01	2.6406E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
3.2146E-01	1.4351E-01	2.5832E-01	1.7795E-01	1.0907E-01	1.4351E-01	1.2055E-01	1.1481E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
8.0365E-02	8.0365E-02	1.0907E-01	1.0907E-01	2.0091E-01	1.5499E-01	2.4110E-01	1.5499E-01
INTERVAL 25							
2.2962E-02							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5978E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.511532E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2471E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.322825E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	30.00 TO 90.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
9.3064E-01	3.8658E-01	2.1731E-01	1.7479E-01	1.1023E-01	7.7947E-02	7.0073E-02	5.0390E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
3.2281E-02	2.2833E-02	1.4172E-02	1.7321E-02	1.1810E-02	6.2987E-03	8.6607E-03	6.2987E-03
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.5747E-03	3.9367E-03	3.1494E-03	3.1494E-03	7.8734E-04	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	90.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.6843E-01	1.0773E-01	4.9094E-02	1.7046E-02	8.8641E-03	2.0454E-03	6.8186E-04	6.8186E-04
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.8601E 02 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.102021E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2618E 02 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.390417E 02 MEV FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE NEUTRON — FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM	0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
	1.456E 02	1.134E 02	8.376E 01	7.254E 01	4.696E 01	3.025E 01	2.153E 01	1.492E 01	1.719E 01

TYPE OF CASCADE PARTICLE NEUTRON — FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM	0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
	1.610E 02	5.010E 01	1.404E 01	1.922E 00	3.927E-01	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE NEUTRON — FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM	0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
	8.231E 01	7.068E 00	1.025E-01	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
7.5231E 01	1.4138E 02	7.3346E 01	4.4556E 01	2.9990E 01	1.5937E 01	5.9979E 00	2.3992E 00
8	9	10	11	12	13	14	15
8.5684E-01	3.4274E-01	6.8548E-01	0.	0.	0.	0.	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
2.5191E 02	1.3367E 02	5.1411E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
3.5165E 02	3.9072E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
NEUTRONS	0.19098E-00		

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	0. TO 25.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.3666E-02	5.0943E-02	7.2776E-03	7.2776E-03	5.0943E-02	3.6388E-02	6.5499E-02	5.0943E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
8.7332E-02	7.2776E-02	6.5499E-02	8.7332E-02	3.6388E-02	3.6388E-02	2.1833E-02	1.4555E-02
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
7.2776E-03	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	25.00 TO 75.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.6335E-02	5.6866E-02	4.7389E-02	2.7380E-02	2.3168E-02	2.8433E-02	2.8433E-02	1.5796E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.6849E-02	1.2637E-02	8.4246E-03	4.2123E-03	1.0531E-03	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2969E 02 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.329412E 03 MEV FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1268E 02 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.164053E 03 MEV FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	75.00 TO 130.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
6.8820E-02	5.8233E-02	2.8738E-02	7.5627E-03	6.8064E-03	4.5376E-03	1.5125E-03	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	130.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
6.6809E-02	7.0626E-02	1.9088E-02	1.9088E-03	1.9088E-03	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.7048E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.648069E 02 MEV FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.6414E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.504762E 02 MEV FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
9.045E 00	9.424E 00	9.329E 00	8.359E 00	8.010E 00	6.519E 00	6.151E 00	5.340E 00	7.236E 00

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
2.714E 01	9.424E 00	2.665E 00	4.179E-01	1.571E-01	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
2.5705E 01	8.7912E 01	4.6270E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
9.2025E 01	2.6219E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
1.1824E 02	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI +	0.45556E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.9045E 00	0.2356E 01	0.3793E 01	0.1245E 02	0.1264E 02	0.5098E 01	0.2768E 01	0.1571E 01	0.2261E 01

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	0. TO 25.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.9111E-02	2.1833E-02	2.1833E-02	2.9111E-02	1.4555E-02	2.9111E-02	3.6388E-02	4.3666E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.9111E-02	2.9111E-02	2.1833E-02	6.5499E-02	5.0943E-02	1.4555E-02	7.2776E-03	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.4555E-02	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	25.00 TO 75.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.9486E-02	4.6335E-02	2.2115E-02	2.0009E-02	1.8955E-02	1.4743E-02	1.8955E-02	1.1584E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
3.1592E-03	8.4246E-03	3.1592E-03	1.0531E-03	2.1062E-03	1.0531E-03	1.0531E-03	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1834E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.320952E 03 MEV FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.8088E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.157083E 03 MEV FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	75.00 TO 130.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.5545E-02	4.0082E-02	2.1932E-02	6.8064E-03	3.0251E-03	2.2688E-03	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	130.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.9629E-02	3.2450E-02	1.3362E-02	5.7265E-03	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.4386E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.666207E 02 MEV FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.4047E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.501887E 02 MEV FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
5.427E 00	7.068E 00	5.844E 00	5.850E 00	3.848E 00	4.764E 00	4.613E 00	4.555E 00	1.357E 00

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.538E 01	4.869E 00	1.333E 00	6.686E-01	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
1.4224E 01	5.7409E 01	2.2278E 00	3.4274E-01	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
5.9465E 01	1.4738E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
7.4203E 01	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI 0	0.38631E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.9045E 00	0.2356E 01	0.3793E 01	0.1245E 02	0.1264E 02	0.5098E 01	0.2768E 01	0.1571E 01	0.2261E 01

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	0. TO 25.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.6388E-02	2.1833E-02	0.	2.1833E-02	2.1833E-02	7.2776E-03	2.1833E-02	7.2776E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.4555E-02	0.	2.9111E-02	7.2776E-03	7.2776E-03	0.	7.2776E-03	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	25.00 TO 75.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.3168E-02	2.4221E-02	8.4246E-03	1.5796E-02	4.2123E-03	7.3716E-03	6.3185E-03	7.3716E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.0531E-03	4.2123E-03	0.	1.0531E-03	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.8151E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.230000E 03 MEV FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.4128E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.132245E 03 MEV FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	75.00 TO 130.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.7226E-02	2.2688E-02	8.3190E-03	4.5376E-03	7.5627E-04	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	130.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.8632E-02	1.9088E-02	5.7265E-03	0.	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2541E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.552381E 02 MEV FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2138E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.428571E 02 MEV FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM	0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
	4.070E 00	5.183E 00	2.870E 00	3.176E 00	2.670E 00	2.340E 00	2.358E 00	1.571E 00	2.714E 00

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM	0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
	2.261E 00	2.513E 00	6.151E-01	1.671E-01	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM	0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
	0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
4.9697E 00	3.4445E 01	6.8548E-01	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
3.5131E 01	4.9697E 00	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
4.0100E 01	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	AL	27	13	06000	1.64	1028.2	02740

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI -	0.22269E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.9045E 00	0.2356E 01	0.3793E 01	0.1245E 02	0.1264E 02	0.5098E 01	0.2769E 01	0.1571E 01	0.2261E 01

CASE NUMBER 27 131000 2

A= 27
Z= 13
KINETIC ENERGY (MEV)= 1000.00
PROTON
GEOMETRIC CROSS SECTION (MB)= 1029.21
CUTOFF ENERGY (MEV)= 1.64
6000 CASE HISTORIES
INELASTIC CROSS SECTION (MB) 469.55

AVERAGE EVAPORATION YIELD PER INELASTIC EVENT

NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
1.2927007	1.3638686	0.2386361	0.0532847	0.0729927	0.4197080

CASE NUMBER 27 131000 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
27	14	7	1.20
	13	30	5.14
	12	6	1.03
26	14	2	0.34
	13	284	48.67
	12	316	54.15
25	13	31	5.31
	12	184	31.53
	11	15	2.57
	10	2	0.34
24	13	2	0.34
	12	163	27.93
	11	28	4.80
23	12	13	2.23
	11	134	22.96
22	11	118	20.22
	10	20	3.43
	9	43	7.37
21	11	4	0.69
	10	77	13.20
	8	2	0.34
20	10	102	17.48
	9	5	0.86
19	9	22	3.77
	7	2	0.34
18	9	25	4.28
	7	81	13.88
17	10	1	0.17
	9	1	0.17
	8	9	1.54
	7	1	0.17
	6	55	9.43
16	8	102	17.48
	7	3	0.51
	6	1	0.17
	5	21	3.60
15	8	9	1.54
	7	64	10.97
	6	4	0.69
14	7	138	23.65
	6	6	1.03
	5	27	4.63
13	7	14	2.40
	6	56	9.60
	5	8	1.37
12	7	1	0.17
	6	75	12.85
	5	13	2.23
11	7	1	0.17
	6	3	0.51
	5	20	3.43
	4	1	0.17
10	5	31	5.31
	3	8	1.37
9	6	2	0.34

CASE NUMBER 27 131000 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
9	5	5	0.86
	4	3	0.51
8	3	6	1.03
7	4	3	0.51
	3	8	1.37
6	3	46	7.88
5	3	4	0.69
	2	9	1.54
4	3	19	3.26
	2	18	3.08
3	2	2	0.34
2	1	23	3.94
1	1	40	6.85

MOMENTS OF THE ENERGY DISTRIBUTIONS FOR THE FOLLOWING EVAPORATION PARTICLES

	NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
1ST MOM.	7.90643E 00	9.44160E 00	1.15039E 01	9.96418E 00	1.43766E 01	9.29456E 00
2ND MOM.	1.35280E 02	1.64810E 02	2.31178E 02	1.64666E 02	3.22115E 02	1.46719E 02
3RD MOM.	3.76627E 03	4.72180E 03	7.36375E 03	3.83170E 03	1.01870E 04	3.81801E 03

NORMALIZED EVAPORATION NEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.074052	0.136256	0.127370	0.130332	0.115521	0.112559	0.139218	0.121445	0.139218	0.100711
1	0.124408	0.115521	0.156991	0.115521	0.088863	0.115521	0.127370	0.142180	0.133294	0.103673
2	0.103673	0.133294	0.100711	0.103673	0.103673	0.088863	0.094787	0.109597	0.077014	0.085900
3	0.100711	0.091825	0.103673	0.145142	0.079976	0.085900	0.091825	0.112559	0.091825	0.079976
4	0.074052	0.047393	0.088863	0.088863	0.106635	0.047393	0.068128	0.068128	0.062204	0.065166
5	0.065166	0.082938	0.056280	0.065166	0.050355	0.082938	0.041469	0.082938	0.082938	0.068128
6	0.077014	0.047393	0.056280	0.079976	0.053318	0.056280	0.065166	0.059242	0.059242	0.074052
7	0.032583	0.056280	0.056280	0.041469	0.044431	0.059242	0.035545	0.047393	0.053318	0.038507
8	0.056280	0.041469	0.047393	0.065166	0.041469	0.032583	0.044431	0.038507	0.029621	0.038507
9	0.026659	0.026659	0.038507	0.041469	0.050355	0.041469	0.032583	0.020735	0.023697	0.035545
10	0.017773	0.026659	0.038507	0.038507	0.023697	0.038507	0.032583	0.032583	0.047393	0.023697
11	0.038507	0.026659	0.032583	0.032583	0.035545	0.035545	0.035545	0.029621	0.017773	0.029621
12	0.017773	0.017773	0.008886	0.017773	0.008886	0.026659	0.014810	0.023697	0.014810	0.020735
13	0.011848	0.011848	0.017773	0.023697	0.029621	0.017773	0.023697	0.035545	0.026659	0.023697
14	0.026659	0.020735	0.017773	0.017773	0.011848	0.017773	0.017773	0.017773	0.026659	0.008886
15	0.011848	0.002962	0.029621	0.017773	0.011848	0.020735	0.017773	0.032583	0.026659	0.023697
16	0.008886	0.023697	0.014810	0.014810	0.026659	0.011848	0.014810	0.011848	0.011848	0.011848
17	0.014810	0.041469	0.014810	0.020735	0.011848	0.014810	0.014810	0.014810	0.014810	0.014810
18	0.005924	0.	0.011848	0.008886	0.011848	0.008886	0.017773	0.005924	0.014810	0.017773
19	0.005924	0.005924	0.011848	0.008886	0.011848	0.008886	0.017773	0.020735	0.020735	0.014810
20	0.008886	0.011848	0.002962	0.008886	0.005924	0.005924	0.020735	0.008886	0.008886	0.011848
21	0.005924	0.014810	0.008886	0.005924	0.014810	0.011848	0.002962	0.005924	0.014810	0.002962
22	0.005924	0.002962	0.008886	0.	0.011848	0.014810	0.005924	0.005924	0.008886	0.011848
23	0.008886	0.008886	0.005924	0.005924	0.008886	0.008886	0.005924	0.002962	0.008886	0.002962
24	0.002962	0.	0.	0.002962	0.005924	0.005924	0.008886	0.005924	0.005924	0.

NORMALIZED EVAPORATION PROTON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MeV)

E										
0	0.	0.	0.	0.002835	0.	0.002835	0.002835	0.014176	0.017012	0.042529
1	0.031188	0.048200	0.039694	0.096399	0.082223	0.087893	0.102070	0.096399	0.113411	0.110576
2	0.124752	0.127587	0.161610	0.099234	0.127587	0.121917	0.090729	0.073717	0.087893	0.184293
3	0.113411	0.093564	0.124752	0.110576	0.099234	0.138928	0.127587	0.093564	0.087893	0.068046
4	0.090729	0.116246	0.093564	0.070682	0.096399	0.090729	0.056705	0.099234	0.113411	0.076552
5	0.079388	0.085058	0.076552	0.059541	0.073717	0.073717	0.085058	0.079388	0.070882	0.070882
6	0.059541	0.065211	0.082223	0.087893	0.062376	0.059541	0.068046	0.053870	0.053870	0.070882
7	0.065211	0.065211	0.065211	0.059541	0.036859	0.059541	0.045364	0.068046	0.042529	0.065211
8	0.082223	0.065211	0.048200	0.059541	0.056705	0.042529	0.048200	0.036859	0.056705	0.025517
9	0.056705	0.053870	0.039694	0.062376	0.025517	0.045364	0.042529	0.051035	0.031188	0.045364
10	0.034023	0.048200	0.048200	0.042529	0.039694	0.045364	0.028353	0.022682	0.031188	0.036859
11	0.031188	0.048200	0.042529	0.048200	0.025517	0.036859	0.039694	0.034023	0.028353	0.031188
12	0.031188	0.017012	0.025517	0.034023	0.022682	0.051035	0.051035	0.025517	0.034023	0.051035
13	0.034023	0.036859	0.031188	0.036859	0.045364	0.028353	0.025517	0.031188	0.028353	0.022682
14	0.028353	0.034023	0.025517	0.019847	0.025517	0.011341	0.028353	0.042529	0.022682	0.011341
15	0.025517	0.022682	0.011341	0.019847	0.011341	0.028353	0.011341	0.022682	0.034023	0.019847
16	0.014176	0.025517	0.011341	0.017012	0.019847	0.019847	0.031188	0.028353	0.025517	0.008506
17	0.014176	0.017012	0.022682	0.019847	0.028353	0.014176	0.008506	0.022682	0.005671	0.014176
18	0.014176	0.008506	0.008506	0.011341	0.002835	0.002835	0.014176	0.014176	0.008506	0.022682
19	0.011341	0.011341	0.011341	0.017012	0.005671	0.011341	0.017012	0.005671	0.025517	0.014176
20	0.014176	0.005671	0.008506	0.	0.014176	0.008506	0.008506	0.017012	0.019847	0.008506
21	0.	0.005671	0.002835	0.019847	0.011341	0.011341	0.014176	0.005671	0.008506	0.014176
22	0.011341	0.017012	0.022682	0.014176	0.017012	0.008506	0.005671	0.011341	0.008506	0.011341
23	0.005671	0.005671	0.005671	0.014176	0.008506	0.011341	0.014176	0.005671	0.011341	0.011341
24	0.011341	0.008506	0.008506	0.008506	0.008506	0.005671	0.005671	0.005671	0.017012	0.014176

NORMALIZED EVAPORATION DEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.006173	0.009259	0.021605	0.055556	0.061728	0.053642	0.061728	0.055556	0.059506	0.067901
5	0.077160	0.074074	0.086420	0.074074	0.067901	0.077160	0.070988	0.043210	0.040123	0.052469
10	0.055556	0.046296	0.033951	0.049383	0.027778	0.037037	0.049383	0.033951	0.027778	0.015432
15	0.024691	0.030864	0.018519	0.027778	0.027778	0.015432	0.012346	0.033951	0.009259	0.012346
20	0.006173	0.018519	0.012346	0.003086	0.012346	0.018519	0.018519	0.003086	0.012346	0.003086
25	0.006173	0.009259	0.003086	0.015432	0.006173	0.006173	0.006173	0.006173	0.006173	0.003086
30	0.006173	0.	0.	0.	0.	0.003086	0.	0.012346	0.003086	0.012346
35	0.003086	0.	0.009259	0.003086	0.	0.003086	0.	0.003086	0.	0.
40	0.	0.	0.003086	0.	0.	0.003086	0.003086	0.	0.	0.003086
45	0.	0.003086	0.	0.	0.	0.003086	0.	0.	0.006173	0.

NORMALIZED EVAPORATION TRITON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.027397	0.095890	0.095890	0.054795	0.082192	0.095890	0.068493	0.109589
5	0.095890	0.068493	0.095890	0.082192	0.054795	0.027397	0.041096	0.095890	0.027397	0.041096
10	0.068493	0.054795	0.041096	0.	0.041096	0.027397	0.054795	0.027397	0.	0.
15	0.027397	0.	0.041096	0.013699	0.041096	0.027397	0.013699	0.	0.	0.013699
20	0.	0.041096	0.	0.013699	0.013699	0.013699	0.	0.	0.027397	0.
25	0.013699	0.027397	0.013699	0.	0.	0.	0.	0.013699	0.	0.
30	0.	0.	0.013699	0.	0.	0.	0.027397	0.	0.	0.
35	0.	0.013699	0.	0.	0.	0.	0.	0.	0.	0.
40	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
45	0.	0.	0.	0.	0.013699	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION HE3 SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.020305	0.	0.030457	0.030457	0.030457	0.071066	0.060914
5	0.091371	0.091371	0.101523	0.020305	0.040609	0.040609	0.060914	0.060914	0.121827	0.030457
10	0.050761	0.030457	0.071066	0.010152	0.050761	0.050761	0.040609	0.030457	0.050761	0.050761
15	0.040609	0.030457	0.030457	0.010152	0.040609	0.020305	0.010152	0.020305	0.020305	0.
20	0.030457	0.030457	0.020305	0.030457	0.010152	0.010152	0.	0.030457	0.020305	0.
25	0.	0.	0.010152	0.010152	0.030457	0.020305	0.020305	0.020305	0.010152	0.010152
30	0.010152	0.	0.	0.	0.010152	0.010152	0.	0.	0.010152	0.
35	0.	0.	0.	0.020305	0.010152	0.010152	0.	0.	0.	0.
40	0.	0.	0.	0.010152	0.	0.	0.	0.	0.010152	0.010152
45	0.	0.	0.	0.010152	0.	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION ALPHA SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.003506	0.	0.	0.015776	0.033304	0.071867	0.115688	0.127958	0.136722	0.133216
5	0.096407	0.108677	0.103418	0.068361	0.094654	0.080631	0.068361	0.049080	0.061350	0.056091
10	0.033304	0.026293	0.043821	0.031551	0.026293	0.031551	0.024540	0.029798	0.019281	0.029798
15	0.031551	0.008764	0.007011	0.015776	0.021034	0.010517	0.014023	0.017528	0.008764	0.007011
20	0.010517	0.012270	0.	0.003506	0.008764	0.008764	0.003506	0.010517	0.005259	0.
25	0.007011	0.003506	0.008764	0.003506	0.005259	0.001753	0.	0.	0.005259	0.
30	0.003506	0.	0.005259	0.	0.	0.	0.001753	0.	0.	0.003506
35	0.	0.008764	0.003506	0.	0.001753	0.	0.001753	0.001753	0.	0.
40	0.003506	0.	0.	0.	0.	0.	0.	0.	0.	0.001753
45	0.	0.	0.	0.	0.	0.	0.001753	0.	0.	0.

INPUT

FROM CARDS

USED FILE 1 INCIDENT PARTICLE PROTON INCIDENT KINETIC ENERGY 2000.000 MEV

TOTAL NUMBER OF INCIDENT PARTICLES 6000 TARGET SYMBOL AL

SIZE OF HISTOGRAMS FOR OUTGOING K.E. 25 FOR PROT, 25 FOR NEUT, 25 FOR PI+, 25 FOR PIO, 25 FOR PI-.

CROSS SECTIONS WERE CALCULATED FOR AS MANY AS 9 EMITTED PARTICLE COMBINATIONS.

201.000 MEV INTERVAL WAS USED IN CALCULATING HISTOGRAM FOR N(E*)DE FOR TOTAL REACTION

DELTAS FOR OUTGOING KINETIC ENERGY DISTRIBUTION IN MEV

	-.6 MU -.4 0 (K.E.) 10D	-.1 MU +.1 0 (K.E.) 10D	+.4 MU +.6 0 (K.E.) 10D	+.9 MU +.95 0 (K.E.) 20D	+.95 MU +1.0 0 (K.E.) 20D
PROTONS	200.0000	200.0000	200.0000	100.0000	100.0000
NEUTRONS	200.0000	200.0000	200.0000	100.0000	100.0000
PI+	200.0000	200.0000	200.0000	100.0000	100.0000
PIO	200.0000	200.0000	200.0000	100.0000	100.0000
PI-	200.0000	200.0000	200.0000	100.0000	100.0000

D = DELTA, RESPECTIVE ENERGY INTERVALS OF HISTOGRAMS

OUTGOING COMBINATIONS	10000	01000	00100	00010	00001	01001	10100	11000	11001
INTERVAL FOR N(E*)DE IN MEV	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000

FROM RECORD 1

6000 INCIDENT PROTON HIT AL TARGET WITH 27.000 MASS AND 13.000 ATOMIC NUMBER AT 2000.000MEV.

FROM RECORD N

THERE WERE 2845. INCIDENT PARTICLE COLLISIONS CREATING 2845 ESCAPING PARTICLE RECORDS. THE GEOMETRIC CROSS SECTION WAS 1028.2138824 MB. THE INELASTIC CROSS SECTION WAS 487.5447502 MB. THE CUT OFF ENERGY WAS 1.6374597 MEV.

PROTON ON AL INC. K.E. (MEV) IS 2000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

MOMENTUM OF COMPOUND NUCLEUS 2785.731201MEV/C EXCITATION ENERGY OF COMPOUND NUCLEUS 2006.915176MEV

THE MASS OF THE RESIDUAL NUCLEUS WAS ZERO 0 TIMES, WAS MINUS 0 TIMES CUT OFF ENERGY 1.637460MEV

FOR 636 INCIDENT PARTICLE COLLISIONS THERE WERE MORE THAN 9 OUT GOING PARTICLES

EMITTED CASCADE PARTICLES

	PROTONS	NEUTRONS	PI+	PI0	PI-
AVERAGE NO.	0.2866432E 01	0.2538137E 01	0.4330404E-00	0.3430580E-00	0.2586995E-00
VARIANCE	0.4540332E 01	0.5648194E 01	0.3418257E-00	0.3350353E-00	0.2318444E-00
AV. K.E. (MEV)	0.3292955E 03	0.2237846E 03	0.2281841E 03	0.2207629E 03	0.1725520E 03
VARIANCE	0.2888568E 06	0.1611166E 06	0.5649219E 05	0.5725498E 05	0.3573826E 05

RESIDUAL NUCLEUS

OUTGOING COMBINATION	C0	C1	ARM	AREE	AAR
TOTAL CASCADE	0.0586312	0.0942838	362.6287880	95.3034897	22.5954304
10000	0.0148899	0.0852594	243.2149849	27.4295902	27.0000000
01000	0.0119712	0.0750816	212.1844406	22.5927944	27.0000000
00100	0.	0.	0.	0.	28.0000000
00010	0.	0.	0.	0.	28.0000000
00001	0.	0.	0.	0.	28.0000000
01001	0.	0.	0.	0.	27.0000000
10100	0.0515748	0.0036804	144.0944061	9.3211581	27.0000000
11000	0.0082147	0.0437626	139.2255249	12.4520801	26.0000000
11001	0.0433125	0.0481053	180.3230743	14.0939213	26.0000000

C0 = (SUM OF PARALLEL RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

C1 = (SUM OF PERPENDICULAR RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

ARM = AVERAGE RESIDUAL MOMENTUM IN MEV/C

AREE = AVERAGE RESIDUAL EXCITATION ENERGY IN MEV

AAR = AVERAGE MASS OF RESIDUAL NUCLEUS FOR TOTAL CASCADE
AAR = MASS OF RESIDUAL NUCLEUS FOR DESIGNATED OUTGOING COMBINATIONS

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PROTON ON AL       INC. K.E. (MEV) IS  2000.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

                    ANGULAR DISTRIBUTION OF THE CASCADE NUCLEUS  (FRACTION IN DELTA MU)/(DELTA MU)

       -0.9000000E 00        -0.7000000E 00        -0.5000000E 00        -0.3000000E-00        -0.1000000E-00
                0.1000000E-00         0.3000000E-00         0.5000000E 00         0.7000000E 00         0.9000000E 00

            TOTAL CASCADE                            RATIO OF FORWARD /BACKWARD     0.2962395E 01
        0.1599297E-00         0.1687170E-00         0.2513181E-00         0.3110721E-00         0.3708260E-00
                0.6045694E 00         0.5623901E 00         0.7697715E 00         0.7838313E 00         0.1017575E 01

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.3769231E 01         0.1153846E 01         0.                    0.                    0.7692308E-01

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.4000000E 01         1.0000000E 00         0.                    0.                    0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.5000000E 01

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.1928571E 01
        0.1219512E-00         0.3252032E-00         0.2642276E-00         0.4065041E-00         0.5894309E 00
                0.1056911E 01         0.7520325E 00         0.4878049E-00         0.5691057E 00         0.4268293E-00

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.5000000E 01          0.
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PROTON ON AL        INC. K.E. (MEV) IS  2000.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

      EXCITATION ENERGY DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS (FRACTION PER UNIT EN.)    (DE=DELTA E(MEV))

DEA IS  0.2010000E 03   DEB IS  0.2500000E 02   DEC IS  0.2500000E 02   DED IS  0.2500000E 02   DEE IS  0.2500000E 02
  DEF IS  0.2500000E 02   DEG IS  0.2500000E 02   DEH IS  0.2500000E 02   DEI IS  0.2500000E 02   DEJ IS  0.2500000E 02

            TOTAL CASCADE                          (SUM OVER HISTOGRAM)X(DEA)        0.1000000E 01       0 OFL
        0.4182952E-02          0.6802543E-03          0.1014261E-03          0.1049235E-04          0.
                0.                     0.                     0.                     0.                     0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEB)        0.1000000E 01       0 OFL
        0.2461538E-01          0.1107692E-01          0.2461538E-02          0.1230769E-02          0.
                0.6153846E-03          0.                     0.                     0.                     0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEC)        0.1000000E 01       0 OFL
        0.2400000E-01          0.1600000E-01          0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DED)        0.                  0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEE)        0.                  0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEF)        0.                  0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEG)        0.                  0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEH)        0.1000000E 01       0 OFL
        0.4000000E-01          0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEI)        0.1000000E 01       0 OFL
        0.3398374E-01          0.4227642E-02          0.1300813E-02          0.3252032E-03          0.
                0.1626016E-03          0.                     0.                     0.                     0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEJ)        0.1000000E 01       0 OFL
        0.4000000E-01          0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.
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DESCRIPTION OF THE FOLLOWING MOMENTUM DISTRIBUTIONS

THE FIRST GROUP OF NUMBERS BELOW THE TITLES SPECIFY THE MIDPOINTS OF THE MOMENTUM INTERVALS.
THE MOMENTUM IS THE NUMBER INDICATED (MEV/C).

THE SUBSEQUENT GROUPS OF NUMBERS ARE THE FRACTION OF THE TOTAL IN EACH INTERVAL DIVIDED BY DELTA P.

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PROTON ON AL       INC. K.E. (MEV) IS  2000.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

                                THE MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

   0.1392866E 03   0.4178597E 03   0.6964328E 03   0.9750059E 03   0.1253579E 04   0.1532152E 04   0.1810725E 04
         0.2089298E 04   0.2367871E 04   0.2646444E 04   0.2925018E 04   0.3203591E 04   0.3482164E 04   0.3760737E 04

              TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.1751330E-02   0.1112877E-02   0.4668531E-03   0.1791706E-03   0.5930296E-04   0.1766471E-04   0.2523530E-05
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.2429965E-02   0.1159756E-02   0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.2871777E-02   0.7179443E-03   0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.3589722E-02   0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.3297874E-02   0.2918473E-03   0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.3589722E-02   0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.
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PROTON ON AL        INC. K.E. (MEV) IS  2000.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

                    THE PERPENDICULAR MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

  0.1392866E 03   0.4178597E 03   0.6964328E 03   0.9750059E 03   0.1253579E 04   0.1532152E 04   0.1810725E 04
        0.2089298E 04   0.2367871E 04   0.2646444E 04   0.2925018E 04   0.3203591E 04   0.3482164E 04   0.3760737E 04

            TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01       0 OFL
  0.2234586E-02   0.1011936E-02   0.2649707E-03   0.6308826E-04   0.1135589E-04   0.3785295E-05   0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01       0 OFL
  0.2429965E-02   0.1159756E-02   0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01       0 OFL
  0.2871777E-02   0.7179443E-03   0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                  0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                  0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                  0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                  0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01       0 OFL
  0.3589722E-02   0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01       0 OFL
  0.3341652E-02   0.2480702E-03   0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01       0 OFL
  0.3589722E-02   0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
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PROTON ON AL        INC. K.E. (MEV) IS  2000.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

                         THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

  -0.3760737E 04  -0.3482164E 04  -0.3203591E 04  -0.2925018E 04  -0.2646444E 04  -0.2367871E 04  -0.2089298E 04
        -0.1810725E 04  -0.1532152E 04  -0.1253579E 04  -0.9750059E 03  -0.6964328E 03  -0.4178597E 03  -0.1392866E 03
   0.1392866E 03   0.4178597E 03   0.6964328E 03   0.9750059E 03   0.1253579E 04   0.1532152E 04   0.1810725E 04
        0.2089298E 04   0.2367871E 04   0.2646444E 04   0.2925018E 04   0.3203591E 04   0.3482164E 04   0.3760737E 04

            TOTAL CASCADE                        (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
   0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.2523530E-05   0.4542354E-04   0.8580003E-03
   0.1795492E-02   0.5766267E-03   0.1955736E-03   0.9084709E-04   0.2145001E-04   0.3785295E-05   0.
        0.            0.            0.            0.            0.            0.            0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
   0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.            0.
   0.3589722E-02   0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
   0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.            0.
   0.3589722E-02   0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
   0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.            0.
   0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
   0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.            0.
   0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
   0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.            0.
   0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.
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PROTON ON AL        INC. K.E. (MEV) IS  2000.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

                         THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

 -0.3760737E 04  -0.3482164E 04  -0.3203591E 04  -0.2925018E 04  -0.2646444E 04  -0.2367871E 04  -0.2089298E 04
       -0.1810725E 04  -0.1532152E 04  -0.1253579E 04  -0.9750059E 03  -0.6964328E 03  -0.4178597E 03  -0.1392866E 03
  0.1392866E 03   0.4178597E 03   0.6964328E 03   0.9750059E 03   0.1253579E 04   0.1532152E 04   0.1810725E 04
        0.2089298E 04   0.2367871E 04   0.2646444E 04   0.2925018E 04   0.3203591E 04   0.3482164E 04   0.3760737E 04

            TOTAL CASCADE                        (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL     0 UFL
  0.              0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.2523530E-05   0.4542354E-04   0.8580003E-03
  0.1795492E-02   0.5766267E-03   0.1955736E-03   0.9084709E-04   0.2145001E-04   0.3785295E-05   0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL     0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL     0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.              0.
  0.3589722E-02   0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL     0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.              0.1225759E-02
  0.2363963E-02   0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL     0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.              0.
  0.3589722E-02   0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
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PROTON ON AL INC. K.E. (MEV) IS 2000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.5 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PIO 5TH IS NO. OF PI-

07200	0.17136898E-00	14202	0.17136898E-00	15111	0.17136898E-00	16011	0.17136898E-00
16101	0.34273796E-00	16200	0.17136898E-00	23121	0.17136898E-00	23211	0.17136898E-00
24012	0.17136898E-00	24111	0.51410694E 00	24201	0.17136898E-00	24210	0.17136898E-00
25011	0.17136898E-00	25020	0.17136898E-00	25101	0.68547592E 00	25110	0.10282138E 01
26001	0.17136898E-00	26010	0.51410694E 00	26100	0.17136898E-00	27000	0.34273796E-00
32022	0.17136898E-00	32112	0.17136898E-00	33021	0.17136898E-00	33102	0.17136898E-00
33201	0.17136898E-00	34011	0.34273796E-00	34020	0.34273796E-00	34101	0.34273796E-00
34110	0.51410694E 00	35001	0.51410694E 00	35010	0.85684489E 00	35100	0.85684489E 00
36000	0.17136898E-00	42012	0.17136898E-00	42030	0.17136898E-00	42111	0.34273796E-00
42201	0.17136898E-00	43011	0.34273796E-00	43101	0.34273796E-00	43110	0.51410694E 00
43200	0.17136898E-00	44001	0.10282138E 01	44010	0.85684489E 00	44100	0.10282138E 01
45000	0.15423208E 01	51300	0.17136898E-00	52011	0.51410694E 00	52020	0.17136898E-00
52101	0.34273796E-00	52110	0.51410694E 00	52200	0.17136898E-00	53001	0.51410694E 00
53010	0.85684489E 00	53100	0.85684489E 00	54000	0.85684489E 00	61101	0.34273796E-00
61110	0.17136898E-00	62001	0.34273796E-00	62010	0.34273796E-00	62100	0.34273796E-00
63000	0.17136898E-00	71010	0.34273796E-00	72000	0.34273796E-00	14111	0.17136898E-00
15101	0.17136898E-00	15110	0.17136898E-00	15200	0.34273796E-00	16001	0.17136898E-00
16100	0.34273796E-00	23030	0.17136898E-00	23111	0.17136898E-00	23120	0.17136898E-00
23201	0.17136898E-00	23210	0.17136898E-00	24020	0.34273796E-00	24101	0.85684489E 00
24110	0.17136898E-00	25010	0.51410694E 00	25100	0.34273796E-00	26000	0.51410694E 00
32021	0.17136898E-00	32111	0.17136898E-00	32120	0.17136898E-00	32201	0.17136898E-00
32210	0.17136898E-00	33002	0.17136898E-00	33011	0.34273796E-00	33020	0.34273796E-00
33101	0.15423208E 01	33110	0.11995828E 01	34001	0.10282138E 01	34010	0.11995828E 01
34100	0.11995828E 01	35000	0.10282138E 01	41021	0.17136898E-00	41030	0.17136898E-00
41102	0.17136898E-00	41111	0.34273796E-00	41201	0.34273796E-00	42002	0.17136898E-00
42011	0.17136898E-00	42101	0.13709518E 01	42110	0.10282138E 01	42200	0.17136898E-00

PROTON ON AL INC. K.E. (MEV) IS 2000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PIO 5TH IS NO. OF PI-

CONTINUED

43001	0.85684489E 00	43010	0.10282138E 01	43100	0.34273796E-00	44000	0.10282138E 01
51002	0.17136898E-00	51101	0.34273796E-00	52001	0.68547592E 00	52010	0.51410694E 00
52100	0.17136898E-00	53000	0.85684489E 00	61001	0.34273796E-00	61010	0.68547592E 00
61100	0.34273796E-00	62000	0.68547592E 00	71000	0.17136898E-00	03202	0.17136898E-00
03211	0.17136898E-00	13111	0.17136898E-00	13120	0.51410694E 00	13201	0.51410694E 00
13210	0.17136898E-00	14101	0.17136898E-00	14110	0.34273796E-00	15100	0.34273796E-00
16000	0.17136898E-00	22102	0.51410694E 00	22111	0.34273796E-00	22201	0.34273796E-00
22210	0.34273796E-00	23011	0.34273796E-00	23020	0.51410694E 00	23101	0.18850587E 01
23110	0.15423208E 01	23200	0.17136898E-00	24001	0.17136898E-00	24010	0.34273796E-00
24100	0.15423208E 01	25000	0.68547592E 00	31021	0.17136898E-00	31102	0.34273796E-00
31111	0.34273796E-00	31120	0.17136898E-00	32011	0.51410694E 00	32020	0.51410694E 00
32101	0.15423208E 01	32110	0.68547592E 00	32200	0.34273796E-00	33001	0.10282138E 01
33010	0.20564277E 01	33100	0.15423208E 01	34000	0.10282138E 01	40102	0.17136898E-00
40111	0.17136898E-00	41011	0.85684489E 00	41020	0.17136898E-00	41101	0.10282138E 01
41110	0.17136898E-00	41200	0.17136898E-00	42001	0.85684489E 00	42010	0.68547592E 00
42100	0.13709518E 01	43000	0.11995828E 01	50101	0.17136898E-00	51001	0.34273796E-00
51010	0.34273796E-00	51100	0.34273796E-00	52000	0.11995828E 01	61000	0.17136898E-00
70000	0.17136898E-00	04020	0.17136898E-00	04200	0.17136898E-00	12111	0.17136898E-00
12120	0.17136898E-00	12201	0.17136898E-00	12210	0.17136898E-00	13011	0.51410694E 00
13101	0.85684489E 00	13110	0.13709518E 01	13200	0.10282138E 01	14010	0.17136898E-00
14100	0.10282138E 01	15000	0.51410694E 00	21102	0.17136898E-00	21111	0.51410694E 00
22011	0.13709518E 01	22020	0.51410694E 00	22101	0.23991656E 01	22110	0.11995828E 01
22200	0.51410694E 00	23001	0.17136898E-00	23010	0.10282138E 01	23100	0.22777967E 01
24000	0.15423208E 01	31020	0.51410694E 00	31101	0.17136897E 01	31110	0.51410694E 00
32001	0.13709518E 01	32010	0.29132726E 01	32100	0.20564277E 01	33000	0.34273795E 01
40011	0.34273796E-00	40101	0.17136898E-00	40200	0.17136898E-00	41001	0.10282138E 01

PROTON ON AL INC. K.E. (MEV) IS 2000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PIO 5TH IS NO. OF PI-

CONTINUED

41010	0.68547592E 00	41100	0.85684489E 00	42000	0.23991656E 01	51000	0.11995828E 01
03110	0.34273796E-00	03200	0.34273796E-00	04100	0.34273796E-00	05000	0.17136898E-00
11201	0.17136898E-00	12011	0.34273796E-00	12020	0.34273796E-00	12101	0.23991656E 01
12110	0.35987485E 01	12200	0.68547592E 00	13001	0.34273796E-00	13010	0.51410694E 00
13100	0.23991656E 01	14000	0.85684489E 00	21011	0.34273796E-00	21020	0.13709518E 01
21101	0.32560106E 01	21110	0.27419036E 01	22001	0.10282138E 01	22010	0.32560106E 01
22100	0.49697003E 01	23000	0.29132726E 01	30011	0.68547592E 00	30020	0.34273796E-00
30101	0.34273796E-00	30110	0.17136898E-00	31001	0.10282138E 01	31010	0.22277967E 01
31100	0.23991656E 01	32000	0.49697003E 01	40010	0.34273796E-00	41000	0.17136897E 01
02020	0.17136898E-00	02110	0.51410694E 00	02200	0.51410694E 00	03100	0.13709518E 01
04000	0.34273796E-00	11011	0.17136898E-00	11020	0.11995828E 01	11101	0.77116035E 01
11110	0.37701175E 01	11200	0.51410694E 00	12001	0.68547592E 00	12010	0.25705346E 01
12100	0.39414865E 01	13000	0.29132726E 01	20011	0.11995828E 01	20020	0.18850587E 01
20101	0.35987485E 01	20110	0.34273796E-00	21001	0.23991656E 01	21010	0.39414865E 01
21100	0.39414865E 01	22000	0.66833901E 01	30001	0.51410694E 00	30010	0.11995828E 01
30100	0.51410694E 00	31000	0.59979142E 01	40000	0.85684489E 00	02010	0.85684489E 00
02100	0.20564277E 01	03000	0.51410694E 00	11001	0.17136898E-00	11010	0.73688661E 01
11100	0.14394994E 02	12000	0.75402350E 01	20001	0.27419036E 01	20010	0.39414865E 01
20100	0.10282138E 01	21000	0.12338566E 02	30000	0.47983313E 01	01010	0.68547592E 00
01100	0.34273796E-00	02000	0.10282138E 01	10001	0.17136898E-00	10010	0.11995828E 01
10100	0.13709518E 01	11000	0.42156769E 02	20000	0.33074212E 02	01000	0.34273795E 01
10000	0.11138983E 02						

PROTON ON AL INC. K.E. (MEV) IS 2000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 1.00 TO 0.95
(THETA FROM 0 DEG. 0 MIN. TO 18 DEG. 12 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.256E-01	50.0	0.406E-01	50.0	0.161E-01	50.0	0.984E-02	50.0	0.462E-01
150.0	0.120E-01	150.0	0.163E-01	150.0	0.121E-01	150.0	0.131E-01	150.0	0.615E-02
250.0	0.934E-02	250.0	0.955E-02	250.0	0.134E-01	250.0	0.148E-01	250.0	0.277E-01
350.0	0.783E-02	350.0	0.722E-02	350.0	0.134E-01	350.0	0.295E-01	350.0	0.246E-01
450.0	0.556E-02	450.0	0.425E-02	450.0	0.295E-01	450.0	0.279E-01	450.0	0.277E-01
550.0	0.568E-02	550.0	0.786E-02	550.0	0.322E-01	550.0	0.230E-01	550.0	0.308E-01
650.0	0.480E-02	650.0	0.849E-02	650.0	0.268E-01	650.0	0.213E-01	650.0	0.123E-01
750.0	0.581E-02	750.0	0.764E-02	750.0	0.215E-01	750.0	0.262E-01	750.0	0.615E-02
850.0	0.758E-02	850.0	0.786E-02	850.0	0.134E-01	850.0	0.131E-01	850.0	0.308E-02
950.0	0.644E-02	950.0	0.701E-02	950.0	0.121E-01	950.0	0.984E-02	950.0	0.923E-02
1050.0	0.707E-02	1050.0	0.786E-02	1050.0	0.537E-02	1050.0	0.492E-02	1050.0	0.308E-02
1150.0	0.657E-02	1150.0	0.531E-02	1150.0	0.134E-02	1150.0	0.	1150.0	0.
1250.0	0.593E-02	1250.0	0.446E-02	1250.0	0.	1250.0	0.	1250.0	0.
1350.0	0.505E-02	1350.0	0.849E-02	1350.0	0.134E-02	1350.0	0.328E-02	1350.0	0.308E-02
1450.0	0.391E-02	1450.0	0.955E-02	1450.0	0.134E-02	1450.0	0.328E-02	1450.0	0.
1550.0	0.581E-02	1550.0	0.870E-02	1550.0	0.	1550.0	0.	1550.0	0.
1650.0	0.101E-01	1650.0	0.998E-02	1650.0	0.	1650.0	0.	1650.0	0.
1750.0	0.111E-01	1750.0	0.743E-02	1750.0	0.	1750.0	0.	1750.0	0.
1850.0	0.182E-01	1850.0	0.870E-02	1850.0	0.	1850.0	0.	1850.0	0.
1950.0	0.356E-01	1950.0	0.127E-01	1950.0	0.	1950.0	0.	1950.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON AL INC. K.E. (MEV) IS 2000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.95 TO 0.90
(THETA FROM 18 DEG. 12 MIN. TO 25 DEG. 51 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.586E-01	50.0	0.680E-01	50.0	0.243E-01	50.0	0.225E-01	50.0	0.240E-01
150.0	0.276E-01	150.0	0.321E-01	150.0	0.191E-01	150.0	0.200E-01	150.0	0.200E-01
250.0	0.192E-01	250.0	0.172E-01	250.0	0.243E-01	250.0	0.175E-01	250.0	0.320E-01
350.0	0.112E-01	350.0	0.101E-01	350.0	0.330E-01	350.0	0.300E-01	350.0	0.480E-01
450.0	0.136E-01	450.0	0.101E-01	450.0	0.435E-01	450.0	0.425E-01	450.0	0.440E-01
550.0	0.899E-02	550.0	0.710E-02	550.0	0.174E-01	550.0	0.325E-01	550.0	0.120E-01
650.0	0.899E-02	650.0	0.523E-02	650.0	0.226E-01	650.0	0.175E-01	650.0	0.160E-01
750.0	0.589E-02	750.0	0.673E-02	750.0	0.348E-02	750.0	0.500E-02	750.0	0.400E-02
850.0	0.496E-02	850.0	0.748E-02	850.0	0.174E-02	850.0	0.250E-02	850.0	0.
950.0	0.589E-02	950.0	0.561E-02	950.0	0.522E-02	950.0	0.250E-02	950.0	0.
1050.0	0.372E-02	1050.0	0.523E-02	1050.0	0.174E-02	1050.0	0.500E-02	1050.0	0.
1150.0	0.713E-02	1150.0	0.523E-02	1150.0	0.174E-02	1150.0	0.250E-02	1150.0	0.
1250.0	0.341E-02	1250.0	0.636E-02	1250.0	0.	1250.0	0.	1250.0	0.
1350.0	0.186E-02	1350.0	0.336E-02	1350.0	0.	1350.0	0.	1350.0	0.
1450.0	0.527E-02	1450.0	0.411E-02	1450.0	0.174E-02	1450.0	0.	1450.0	0.
1550.0	0.620E-02	1550.0	0.224E-02	1550.0	0.	1550.0	0.	1550.0	0.
1650.0	0.589E-02	1650.0	0.224E-02	1650.0	0.	1650.0	0.	1650.0	0.
1750.0	0.124E-02	1750.0	0.748E-03	1750.0	0.	1750.0	0.	1750.0	0.
1850.0	0.310E-03	1850.0	0.748E-03	1850.0	0.	1850.0	0.	1850.0	0.
1950.0	0.	1950.0	0.	1950.0	0.	1950.0	0.	1950.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON AL INC. K.E. (MEV) IS 2000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.60 TO 0.40
(THETA FROM 53 DEG. 8 MIN. TO 66 DEG. 25 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PI0		PI-	
DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
100.0	0.210E-01	100.0	0.209E-01	100.0	0.170E-01	100.0	0.201E-01	100.0	0.203E-01
300.0	0.338E-02	300.0	0.350E-02	300.0	0.682E-02	300.0	0.388E-02	300.0	0.430E-02
500.0	0.580E-03	500.0	0.523E-03	500.0	0.114E-02	500.0	0.485E-03	500.0	0.391E-03
700.0	0.264E-04	700.0	0.826E-04	700.0	0.	700.0	0.485E-03	700.0	0.
900.0	0.264E-04	900.0	0.275E-04	900.0	0.	900.0	0.	900.0	0.
1100.0	0.	1100.0	0.	1100.0	0.	1100.0	0.	1100.0	0.
1300.0	0.	1300.0	0.	1300.0	0.	1300.0	0.	1300.0	0.
1500.0	0.	1500.0	0.	1500.0	0.	1500.0	0.	1500.0	0.
1700.0	0.	1700.0	0.	1700.0	0.	1700.0	0.	1700.0	0.
1900.0	0.	1900.0	0.	1900.0	0.	1900.0	0.	1900.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON AL INC. K.E. (MEV) IS 2000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.10 TO -0.10
(THETA FROM 84 DEG. 16 MIN. TO 95 DEG. 44 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PI0		PI-	
DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
100.0	0.246E-01	100.0	0.245E-01	100.0	0.232E-01	100.0	0.228E-01	100.0	0.231E-01
300.0	0.366E-03	300.0	0.494E-03	300.0	0.183E-02	300.0	0.190E-02	300.0	0.185E-02
500.0	0.	500.0	0.	500.0	0.	500.0	0.316E-03	500.0	0.
700.0	0.	700.0	0.	700.0	0.	700.0	0.	700.0	0.
900.0	0.	900.0	0.	900.0	0.	900.0	0.	900.0	0.
1100.0	0.	1100.0	0.	1100.0	0.	1100.0	0.	1100.0	0.
1300.0	0.	1300.0	0.	1300.0	0.	1300.0	0.	1300.0	0.
1500.0	0.	1500.0	0.	1500.0	0.	1500.0	0.	1500.0	0.
1700.0	0.	1700.0	0.	1700.0	0.	1700.0	0.	1700.0	0.
1900.0	0.	1900.0	0.	1900.0	0.	1900.0	0.	1900.0	0.
N IS	0.100E 01	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON AL INC. K.E. (MEV) IS 2000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM -0.40 TO -0.60
(THETA FROM 113 DEG. 35 MIN. TO 126 DEG. 54 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
100.0	0.248E-01	100.0	0.249E-01	100.0	0.250E-01	100.0	0.234E-01	100.0	0.243E-01
300.0	0.172E-03	300.0	0.831E-04	300.0	0.	300.0	0.160E-02	300.0	0.676E-03
500.0	0.	500.0	0.	500.0	0.	500.0	0.	500.0	0.
700.0	0.	700.0	0.	700.0	0.	700.0	0.	700.0	0.
900.0	0.	900.0	0.	900.0	0.	900.0	0.	900.0	0.
1100.0	0.	1100.0	0.	1100.0	0.	1100.0	0.	1100.0	0.
1300.0	0.	1300.0	0.	1300.0	0.	1300.0	0.	1300.0	0.
1500.0	0.	1500.0	0.	1500.0	0.	1500.0	0.	1500.0	0.
1700.0	0.	1700.0	0.	1700.0	0.	1700.0	0.	1700.0	0.
1900.0	0.	1900.0	0.	1900.0	0.	1900.0	0.	1900.0	0.
N IS	0.100E 01	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON AL INC. K.E. (MEV) IS 2000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PROTONS

0 TO 0.2000000E 04 MEV 0 DEL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PROTONS /DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
40.00	0.6178725E-02	600.00	0.1670754E-03	1080.00	0.1011649E-03	1560.00	0.8277131E-04
120.00	0.1885346E-02	680.00	0.1548130E-03	1160.00	0.1103617E-03	1640.00	0.1241570E-03
200.00	0.8752299E-03	760.00	0.1149601E-03	1240.00	0.7510730E-04	1720.00	0.1164929E-03
280.00	0.4736358E-03	840.00	0.1302882E-03	1320.00	0.7664010E-04	1800.00	0.1241570E-03
360.00	0.3433476E-03	920.00	0.9043532E-04	1400.00	0.6284488E-04	1880.00	0.2237891E-03
440.00	0.2697731E-03	1000.00	0.9809933E-04	1480.00	0.6591048E-04	1960.00	0.3617413E-03
520.00	0.1931330E-03						

PROTON ON AL INC. K.E. (MEV) IS 2000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE NEUTRONS

0 TO 0.2000000E 04 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED NEUTRONS/DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
40.00	0.7055810E-02	600.00	0.1367539E-03	1080.00	0.6751143E-04	1560.00	0.7616674E-04
120.00	0.1878202E-02	680.00	0.1125190E-03	1160.00	0.6751143E-04	1640.00	0.8135992E-04
200.00	0.8153303E-03	760.00	0.1263675E-03	1240.00	0.5885612E-04	1720.00	0.4846974E-04
280.00	0.5175876E-03	840.00	0.1315607E-03	1320.00	0.7789780E-04	1800.00	0.4327656E-04
360.00	0.3219776E-03	920.00	0.1004016E-03	1400.00	0.6924249E-04	1880.00	0.7616674E-04
440.00	0.1938790E-03	1000.00	0.9520842E-04	1480.00	0.6404930E-04	1960.00	0.8482205E-04
520.00	0.1990722E-03						

PROTON ON AL INC. K.E. (MEV) IS 2000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI+

0 TO 0.2000000E 04 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI+ / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
40.00	0.4880276E-02	600.00	0.5478896E-03	1080.00	0.4058442E-04	1560.00	0.
120.00	0.1917614E-02	680.00	0.2232143E-03	1160.00	0.2029221E-04	1640.00	0.
200.00	0.1278409E-02	760.00	0.2333604E-03	1240.00	0.	1720.00	0.
280.00	0.9740260E-03	840.00	0.1116071E-03	1320.00	0.1014610E-04	1800.00	0.
360.00	0.8522727E-03	920.00	0.1420455E-03	1400.00	0.2029221E-04	1880.00	0.
440.00	0.6087662E-03	1000.00	0.4058442E-04	1480.00	0.	1960.00	0.
520.00	0.5986201E-03						

PROTON ON AL INC. K.E. (MEV) IS 2000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PIO

0 TO 0.2000000E 04 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PIO / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
40.00	0.5097336E-02	600.00	0.4354508E-03	1080.00	0.5122951E-04	1560.00	0.
120.00	0.1985143E-02	680.00	0.3073771E-03	1160.00	0.1280738E-04	1640.00	0.
200.00	0.1191086E-02	760.00	0.1921107E-03	1240.00	0.	1720.00	0.
280.00	0.8068648E-03	840.00	0.1408811E-03	1320.00	0.2561475E-04	1800.00	0.
360.00	0.9221312E-03	920.00	0.7684426E-04	1400.00	0.2561475E-04	1880.00	0.
440.00	0.6659836E-03	1000.00	0.5122951E-04	1480.00	0.	1960.00	0.
520.00	0.5122951E-03						

PROTON ON AL INC. K.E. (MEV) IS 2000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI-

0 TO 0.2000000E 04 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI- / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
40.00	0.5859375E-02	600.00	0.2547554E-03	1080.00	0.	1560.00	0.
120.00	0.2072011E-02	680.00	0.1868207E-03	1160.00	0.	1640.00	0.
200.00	0.1137908E-02	760.00	0.5095109E-04	1240.00	0.	1720.00	0.
280.00	0.1103940E-02	840.00	0.3396739E-04	1320.00	0.1698370E-04	1800.00	0.
360.00	0.6963315E-03	920.00	0.3396739E-04	1400.00	0.	1880.00	0.
440.00	0.5434783E-03	1000.00	0.3396739E-04	1480.00	0.	1960.00	0.
520.00	0.4755435E-03						

PROTON ON AL INC. K.E. (MEV) IS 2000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PARTICLES

0 TO 1000 MEV

N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PARTICLES/DELTA E
K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N IS (SUM OVER HISTOGRAM FROM 1 TO 1000 MEV) (DELTA E)

K.E.	PROTONS N(E)	NEUTRONS N(E)	PI+ N(E)	PIO N(E)	PI- N(E)
25.0	0.7894543E-02	0.9272954E-02	0.4983766E-02	0.5450820E-02	0.6440217E-02
75.0	0.2994482E-02	0.3041130E-02	0.3847403E-02	0.3934426E-02	0.4157609E-02
125.0	0.1790313E-02	0.1750450E-02	0.1818182E-02	0.1680328E-02	0.1847826E-02
175.0	0.1042305E-02	0.1005401E-02	0.1363636E-02	0.1454918E-02	0.1195652E-02
225.0	0.6793378E-03	0.6453400E-03	0.1168831E-02	0.9221311E-03	0.1195652E-02
275.0	0.4880441E-03	0.5594793E-03	0.1022727E-02	0.9426229E-03	0.1059783E-02
325.0	0.4022072E-03	0.3988367E-03	0.7305195E-03	0.7786885E-03	0.9239130E-03
375.0	0.3188228E-03	0.2686608E-03	0.9090909E-03	0.8401639E-03	0.5706522E-03
425.0	0.2795831E-03	0.2049578E-03	0.6655844E-03	0.7172131E-03	0.5163043E-03
475.0	0.2207235E-03	0.1828002E-03	0.6493506E-03	0.5942623E-03	0.4619565E-03
525.0	0.2133660E-03	0.2104972E-03	0.4545455E-03	0.4303279E-03	0.5434783E-03
575.0	0.1594114E-03	0.1357153E-03	0.5681818E-03	0.5532787E-03	0.2445652E-03
625.0	0.1545064E-03	0.1301759E-03	0.5357143E-03	0.3278688E-03	0.2717391E-03
675.0	0.1692213E-03	0.1301759E-03	0.2110390E-03	0.2663934E-03	0.2445652E-03
725.0	0.1471490E-03	0.1080183E-03	0.2272727E-03	0.3073770E-03	0.8152174E-04
775.0	0.9564684E-04	0.1274062E-03	0.2272727E-03	0.1844262E-03	0.5434783E-04
825.0	0.1226242E-03	0.1135577E-03	0.1298701E-03	0.1229508E-03	0.
875.0	0.1250766E-03	0.1412547E-03	0.8116883E-04	0.1434426E-03	0.5434783E-04
925.0	0.1005518E-03	0.9970918E-04	0.1948052E-03	0.6147541E-04	0.5434783E-04
975.0	0.9319436E-04	0.8032128E-04	0.3246753E-04	0.8196721E-04	0.2717391E-04
	N IS 0.8745554E 00	N IS 0.9303420E 00	N IS 0.9910713E 00	N IS 0.9897540E 00	N IS 0.9972825E 00

PROTON ON AL INC. K.E. (MEV) IS 2000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ANGULAR DISTRIBUTION OF EMITTED CASCADE PARTICLES

(FRACTION IN EACH INTERVAL)/(DELTA MU)

MU IS COSINE THETA AND SPECIFIES THE CENTER OF THE INTERVAL

MU	PROTON	NEUTRON	PI+	PI0	PI-
0.975	0.3884733E 01	0.2609057E 01	0.2418831E 01	0.2500000E 01	0.1766304E 01
0.925	0.1581852E 01	0.1481789E 01	0.1866883E 01	0.1639344E 01	0.1358696E 01
0.875	0.1231146E 01	0.1166043E 01	0.1217532E 01	0.1209016E 01	0.1195652E 01
0.825	0.9564684E 00	0.8863038E 00	0.1201299E 01	0.1168033E 01	0.1413043E 01
0.775	0.7161251E 00	0.8586068E 00	0.9090909E 00	0.7581967E 00	0.8423913E 00
0.725	0.7136726E 00	0.8502977E 00	0.8116883E 00	0.7172131E 00	0.1114130E 01
0.675	0.6351931E 00	0.7810553E 00	0.6655844E 00	0.6147541E 00	0.7880435E 00
0.625	0.6180257E 00	0.7062724E 00	0.6493506E 00	0.4508197E-00	0.8423913E 00
0.575	0.5885959E 00	0.6287218E 00	0.6006493E 00	0.6352459E 00	0.4891304E-00
0.525	0.5984059E 00	0.6037945E 00	0.5032467E 00	0.4098361E-00	0.4891304E-00
0.475	0.5763335E 00	0.6481097E 00	0.5194805E 00	0.5327869E 00	0.4347826E-00
0.425	0.5616186E 00	0.6342612E 00	0.5194805E 00	0.5327869E 00	0.3260870E-00
0.375	0.5542612E 00	0.6037945E 00	0.4870130E-00	0.6147541E 00	0.3804348E-00
0.325	0.5346413E 00	0.4930065E-00	0.2922078E-00	0.3893443E-00	0.3804348E-00
0.275	0.5052115E 00	0.4874671E-00	0.4545455E-00	0.2254098E-00	0.2989130E-00
0.225	0.4022072E-00	0.5179338E 00	0.2272727E-00	0.5327869E 00	0.3804348E-00
0.175	0.4022072E-00	0.4320731E-00	0.3896104E-00	0.6147541E 00	0.4619555E-00
0.125	0.3384427E-00	0.4182246E-00	0.2110390E-00	0.3278688E-00	0.2717391E-00
0.075	0.3384427E-00	0.4209943E-00	0.4058442E-00	0.4713115E-00	0.3532609E-00
0.025	0.3580625E-00	0.3406730E-00	0.3571429E-00	0.5122951E 00	0.4347826E-00
-0.025	0.3482526E-00	0.3406730E-00	0.3571429E-00	0.3073770E-00	0.2717391E-00
-0.075	0.2942980E-00	0.2991275E-00	0.2110390E-00	0.3278688E-00	0.4076087E-00
-0.125	0.2403433E-00	0.2769699E-00	0.2922078E-00	0.4303279E-00	0.3532609E-00
-0.175	0.2697731E-00	0.3185154E-00	0.3896104E-00	0.3688525E-00	0.2989130E-00
-0.225	0.2378909E-00	0.3185154E-00	0.2597403E-00	0.1639344E-00	0.3532609E-00
-0.275	0.2378909E-00	0.2520427E-00	0.1785714E-00	0.2663934E-00	0.3532609E-00
-0.325	0.1839362E-00	0.2686609E-00	0.3896104E-00	0.2049180E-00	0.2445652E-00
-0.375	0.2256284E-00	0.2409639E-00	0.3571429E-00	0.2663934E-00	0.3532609E-00
-0.425	0.1937462E-00	0.2021881E-00	0.1948052E-00	0.3073770E-00	0.2989130E-00
-0.475	0.1790313E-00	0.1994184E-00	0.3246753E-00	0.2868852E-00	0.2717391E-00
-0.525	0.1741263E-00	0.2243457E-00	0.2435065E-00	0.2254098E-00	0.2173913E-00
-0.575	0.1643164E-00	0.2077275E-00	0.1623377E-00	0.1434426E-00	0.2173913E-00
-0.625	0.1741263E-00	0.1634123E-00	0.2272727E-00	0.2459016E-00	0.3532609E-00
-0.675	0.1643164E-00	0.1883396E-00	0.1785714E-00	0.2459016E-00	0.4076087E-00
-0.725	0.1446965E-00	0.1606426E-00	0.3084416E-00	0.1844262E-00	0.1630435E-00
-0.775	0.1422440E-00	0.1440244E-00	0.2272727E-00	0.2868852E-00	0.1902174E-00
-0.825	0.1397915E-00	0.1938790E-00	0.2272727E-00	0.2254098E-00	0.3260870E-00
-0.875	0.1201717E-00	0.1523335E-00	0.3084416E-00	0.1844262E-00	0.2717391E-00
-0.925	0.1226242E-00	0.1246365E-00	0.1948052E-00	0.1434426E-00	0.3260870E-00
-0.975	0.1471490E-00	0.1551032E-00	0.2597403E-00	0.3278688E-00	0.2989130E-00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	0. TO 10.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.1669E 00	6.0591E-01	5.8347E-01	3.1417E-01	4.4882E-01	3.1417E-01	3.8150E-01	3.3661E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
3.1417E-01	3.8150E-01	5.6102E-01	3.8150E-01	6.5079E-01	5.3858E-01	5.8347E-01	4.9370E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
4.7126E-01	4.0394E-01	4.7126E-01	4.4882E-01	6.5079E-01	3.8150E-01	3.8150E-01	1.9075E 00
INTERVAL 25							
5.1614E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	10.00 TO 30.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.1653E 00	5.9413E-01	3.8461E-01	2.8415E-01	2.4397E-01	2.3249E-01	1.5499E-01	1.5212E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.5786E-01	1.1194E-01	1.3490E-01	1.0333E-01	9.1846E-02	1.0907E-01	1.1481E-01	6.6014E-02
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
7.4625E-02	6.6014E-02	6.3144E-02	9.1846E-02	1.4638E-01	1.6934E-01	1.8369E-01	1.7508E-01
INTERVAL 25							
1.7221E-02							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

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SUM OF DSIG/(DOMEGA X DE) X DE EQUALS  0.1467E 04 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM   0.   TO  10.00 DEG
                    AVERAGE ENERGY EQUALS  0.128553E 04 MEV FOR CASCADE PROTON WITH THETA FROM   0.   TO  10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS  0.4071E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM  10.00 TO  30.00 DEG
                    AVERAGE ENERGY EQUALS  0.612002E 03 MEV FOR CASCADE PROTON WITH THETA FROM  10.00 TO  30.00 DEG
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INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	30.00 TO 90.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
8.8300E-01	3.0391E-01	1.4802E-01	7.5978E-02	4.6847E-02	3.1887E-02	2.1652E-02	1.6140E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.2597E-02	7.4797E-03	5.1177E-03	2.3620E-03	1.1810E-03	1.5747E-03	2.3620E-03	1.5747E-03
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.1810E-03	0.	0.	7.8734E-04	3.9367E-04	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	90.00 TO 180.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.5343E-01	7.6368E-02	1.1932E-02	1.0228E-03	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1251E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.131860E 03 MEV FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.4342E 02 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.552261E 02 MEV FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 0 TO 500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
2.573E 02	1.932E 02	1.351E 02	1.141E 02	7.092E 01	4.805E 01	3.650E 01	2.921E 01	3.030E 01

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 500 TO 1500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
2.320E 02	5.042E 01	6.049E 00	3.343E-01	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 1500 TO 2000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
2.989E 02	4.398E 00	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 0 TO 500

K EQUALS 0	1	2	3	4	5	6	7
8.1572E 01	1.4258E 02	8.0029E 01	5.3124E 01	3.7701E 01	2.7762E 01	2.0736E 01	1.4052E 01
8	9	10	11	12	13	14	15
6.3407E 00	3.0846E 00	3.0846E 00	2.0564E 00	8.5684E-01	5.1411E-01	1.7137E-01	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 500 TO 1500

K EQUALS 0	1	2	3	4	5	6	7
3.2714E 02	1.3949E 02	6.8548E 00	1.7137E-01	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 1500 TO 2000

K EQUALS 0	1	2	3	4	5	6	7
3.5559E 02	1.1807E 02	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PROTONS	0.21704E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.2261E 01	0.3455E 01	0.2665E 01	0.1112E 02	0.7147E 01	0.2841E 01	0.1743E 01	0.1728E 01	0.9045E 00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	0. TO 10.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.1220E 00	4.0394E-01	4.7126E-01	1.7953E-01	2.0197E-01	1.1220E-01	2.4685E-01	2.6929E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
3.3661E-01	3.5906E-01	1.7953E-01	3.8150E-01	2.6929E-01	2.9173E-01	3.8150E-01	3.5906E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
4.4882E-01	5.1614E-01	3.8150E-01	6.2835E-01	7.8543E-01	4.4882E-01	1.5709E-01	5.8347E-01
INTERVAL 25							
1.0772E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	10.00 TO 30.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.0735E 00	4.7071E-01	3.1572E-01	2.0665E-01	1.6073E-01	1.1194E-01	1.6073E-01	1.0046E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
8.0365E-02	1.1768E-01	1.4064E-01	9.1846E-02	1.0333E-01	6.0274E-02	5.7404E-02	4.8793E-02
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
7.1755E-02	4.5923E-02	5.7404E-02	4.5923E-02	3.4442E-02	2.2962E-02	5.1664E-02	5.1664E-02
INTERVAL 25							
2.8702E-03							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.8474E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.108915E 04 MEV FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2948E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.466978E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	30.00 TO 90.00	25	80.0000

INTERVAL .1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
8.9717E-01	2.7793E-01	1.2401E-01	8.4245E-02	4.7634E-02	2.6770E-02	1.8896E-02	1.2597E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
8.6607E-03	6.2987E-03	7.4797E-03	3.5430E-03	2.7557E-03	1.9684E-03	7.8734E-04	3.9367E-04
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	3.9367E-04	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	90.00 TO 180.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.6809E-01	6.7163E-02	8.5232E-03	1.7046E-03	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1217E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.125527E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.4364E 02 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.531000E 02 MEV FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE NEUTRON — FOR THE ENERGY INTERVAL (MEV) 0 TO 500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.958E 02	1.693E 02	1.378E 02	1.091E 02	6.974E 01	4.922E 01	3.701E 01	3.031E 01	2.940E 01

TYPE OF CASCADE PARTICLE NEUTRON — FOR THE ENERGY INTERVAL (MEV) 500 TO 1500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.737E 02	4.492E 01	5.126E 00	1.671E-01	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE NEUTRON — FOR THE ENERGY INTERVAL (MEV) 1500 TO 2000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.049E 02	1.571E 00	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 0 TO 500

K EQUALS 0	1	2	3	4	5	6	7
5.4153E 01	1.3110E 02	7.0090E 01	4.7298E 01	3.4959E 01	2.5363E 01	1.9536E 01	1.0796E 01
8	9	10	11	12	13	14	15
6.8548E 00	7.8830E 00	3.0846E 00	1.3710E 00	1.1996E 00	8.5684E-01	1.7137E-01	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 500 TO 1500

K EQUALS 0	1	2	3	4	5	6	7
2.9407E 02	1.1756E 02	3.0846E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 1500 TO 2000

K EQUALS 0	1	2	3	4	5	6	7
3.7324E 02	4.1471E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
NEUTRONS	0.13461E-00		

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	0. TO 25.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
8.0054E-02	4.7305E-02	6.5499E-02	6.1860E-02	8.3693E-02	1.2009E-01	1.2008E-01	1.1644E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
5.4582E-02	4.7305E-02	3.6388E-02	4.3666E-02	1.0916E-02	7.2776E-03	7.2776E-03	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
3.6388E-03	7.2776E-03	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	25.00 TO 75.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
8.4773E-02	4.5282E-02	4.0544E-02	3.8964E-02	3.0539E-02	1.4217E-02	1.3690E-02	1.1584E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
3.6858E-03	5.2654E-03	5.2654E-04	1.0531E-03	5.2654E-04	1.0531E-03	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02945

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.7307E 02 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.482390E 03 MEV FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2334E 02 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.235668E 03 MEV FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	75.00 TO 130.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
7.8652E-02	2.9116E-02	1.0210E-02	1.8907E-03	1.1344E-03	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	130.00 TO 180.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
8.5897E-02	1.2407E-02	3.8176E-03	0.	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.9680E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.795000E 02 MEV FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.817CE 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.557009E 02 MEV FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 0 TO 500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
3.618E 01	3.424E 01	2.020E 01	1.320E 01	1.147E 01	9.527E 00	7.586E 00	8.167E 00	8.141E 00

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 500 TO 1500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
4.342E 01	9.424E 00	1.743E 00	1.671E-01	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 1500 TO 2000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 0 TO 500

K EQUALS 0	1	2	3	4	5	6	7
2.7076E 01	1.4464E 02	1.5937E 01	1.5423E 00	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 500 TO 1500

K EQUALS 0	1	2	3	4	5	6	7
1.5920E 02	2.9990E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 1500 TO 2000

K EQUALS 0	1	2	3	4	5	6	7
1.8919E 02	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI + 0.37581E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.2261E 01	0.3455E 01	0.2665E 01	0.1112E 02	0.7147E 01	0.2841E 01	0.1743E 01	0.1728E 01	0.9045E 00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	0. TO 25.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.7305E-02	2.9111E-02	3.6388E-02	5.0943E-02	9.4609E-02	1.0189E-01	7.2776E-02	8.0054E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
5.4582E-02	4.0027E-02	2.9111E-02	1.8194E-02	1.4555E-02	1.4555E-02	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
7.2776E-03	7.2776E-03	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	25.00 TO 75.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
6.8977E-02	3.3172E-02	3.4225E-02	2.0009E-02	2.0535E-02	1.2110E-02	1.0531E-02	6.3185E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
4.7389E-03	2.1062E-03	1.5796E-03	5.2654E-04	0.	0.	5.2654E-04	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5589E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.501667E 03 MEV FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1723E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.224841E 03 MEV FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	75.00 TO 130.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
7.1845E-02	2.6469E-02	6.8064E-03	4.1595E-03	2.6469E-03	3.7813E-04	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	130.00 TO 180.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
6.1082E-02	1.3362E-02	0.	0.	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.8984E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.863300E 02 MEV FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5956E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.543590E 02 MEV FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 0 TO 500

LABORATORY ANGLE FROM	0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
	3.166E 01	2.403E 01	1.435E 01	1.295E 01	1.092E 01	6.686E 00	5.844E 00	5.340E 00	7.688E 00

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 500 TO 1500

LABORATORY ANGLE FROM	0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
	3.301E 01	7.225E 00	1.128E 00	8.357E-02	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 1500 TO 2000

LABORATORY ANGLE FROM	0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
	0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 0 TO 500

K EQUALS 0	1	2	3	4	5	6	7
1.7651E 01	1.0591E 02	1.7137E 01	1.5423E 00	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 500 TO 1500

K EQUALS 0	1	2	3	4	5	6	7
1.1979E 02	2.2449E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 1500 TO 2000

K EQUALS 0	1	2	3	4	5	6	7
1.4224E 02	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI 0	0.35963E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.2261E 01	0.3455E 01	0.2665E 01	0.1112E 02	0.7147E 01	0.2841E 01	0.1743E 01	0.1729E 01	0.9045E 00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	0. TO 25.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
5.0943E-02	4.3666E-02	2.9111E-02	4.3666E-02	5.0943E-02	6.5499E-02	4.3666E-02	2.5472E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.4555E-02	3.6388E-03	3.6388E-03	7.2776E-03	7.2776E-03	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
3.6388E-03	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	25.00 TO 75.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
6.0026E-02	3.2645E-02	2.1588E-02	2.3168E-02	1.3163E-02	7.3716E-03	8.4246E-03	4.2123E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
3.6858E-03	1.0531E-03	5.2654E-04	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3144E 02 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.368889E 03 MEV FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1407E 02 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.203353E 03 MEV FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	75.00 TO 130.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
5.6342E-02	1.7016E-02	5.2939E-03	3.4032E-03	7.5627E-04	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	130.00 TO 180.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
6.4900E-02	2.8632E-03	3.8176E-03	0.	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.6625E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.794521E 02 MEV FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5726E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.517333E 02 MEV FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 0 TO 500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
2.216E 01	1.995E 01	1.466E 01	7.772E 00	6.832E 00	6.268E 00	5.126E 00	5.969E 00	6.332E 00

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 500 TO 1500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.176E 01	4.084E 00	8.201E-01	0.	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 1500 TO 2000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 0 TO 500

K EQUALS 0	1	2	3	4	5	6	7
9.7680E 00	9.7852E 01	8.7398E 00	1.7137E-01	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 500 TO 1500

K EQUALS 0	1	2	3	4	5	6	7
1.0625E 02	1.0282E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 1500 TO 2000

K EQUALS 0	1	2	3	4	5	6	7
1.1653E 02	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	AL	27	13	06000	1.64	1028.2	02845

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI -	0.23098E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.2261E 01	0.3455E 01	0.2665E 01	0.1112E 02	0.7147E 01	0.2841E 01	0.1743E 01	0.1729E 01	0.9045E 00

CASE NUMBER 27 132000 2

A= 27
Z= 13
KINETIC ENERGY (MEV)= 2000.00
PROTON
GEOMETRIC CROSS SECTION (MB)= 1028.21
CUTOFF ENERGY (MEV)= 1.64
6000 CASE HISTORIES
INELASTIC CROSS SECTION (MB) 487.54

AVERAGE EVAPORATION YIELD PER INELASTIC EVENT

NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
2.0286225	1.4871705	0.2970123	0.0727592	0.0794376	0.3708260

CASE NUMBER 27 132000 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
27	14	4	0.69
	13	25	4.28
	12	5	0.86
26	14	1	0.17
	13	255	43.70
	12	273	46.78
	11	1	0.17
	10	1	0.17
25	13	19	3.26
	12	123	21.08
	11	18	3.08
	10	46	7.88
	8	1	0.17
24	13	2	0.34
	12	78	13.37
	11	18	3.08
	9	14	2.40
23	12	4	0.69
	11	75	12.85
	9	38	6.51
22	12	1	0.17
	11	50	8.57
	10	9	1.54
	9	66	11.31
	7	12	2.06
21	11	3	0.51
	10	47	8.05
	8	17	2.91
20	10	35	6.00
	9	5	0.86
	7	1	0.17
19	9	15	2.57
	7	3	0.51
18	9	21	3.60
	8	1	0.17
	7	116	19.88
17	8	7	1.20
	6	43	7.37
16	8	62	10.62
	7	2	0.34
	6	2	0.34
	5	19	3.26
15	8	4	0.69
	7	33	5.66
	6	1	0.17
	4	3	0.51
14	7	60	10.28
	6	1	0.17
	5	22	3.77
	3	3	0.51
13	8	1	0.17
	7	7	1.20
	6	34	5.83
	5	2	0.34
	2	2	0.34

CASE NUMBER 27 132000 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
12	6	48	8.23
	5	12	2.06
	4	3	0.51
	1	2	0.34
11	6	5	0.86
	5	17	2.91
	4	4	0.69
10	6	1	0.17
	5	23	3.94
	4	6	1.03
	3	5	0.86
9	5	4	0.69
	4	5	0.86
	3	1	0.17
8	3	6	1.03
7	4	2	0.34
	3	12	2.06
	2	2	0.34
6	3	56	9.60
5	3	6	1.03
	2	17	2.91
	1	1	0.17
4	3	30	5.14
	2	25	4.28
3	2	4	0.69
	1	2	0.34
2	1	42	7.20
1	1	176	30.16

CASE NUMBER 27 132000 2

MOMENTS OF THE ENERGY DISTRIBUTIONS FOR THE FOLLOWING EVAPORATION PARTICLES

	NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
1ST MOM.	1.03304E 01	1.20324E 01	1.32785E 01	1.31198E 01	1.52904E 01	1.24085E 01
2ND MOM.	2.65175E 02	2.77606E 02	3.08731E 02	3.38086E 02	4.16523E 02	3.94831E 02
3RD MOM.	1.36902E 04	1.03219E 04	1.17486E 04	1.39444E 04	1.95056E 04	2.75304E 04

NORMALIZED EVAPORATION NEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.068820	0.066909	0.099407	0.082202	0.087937	0.133818	0.108966	0.107054	0.141464	0.116613
1	0.099407	0.099407	0.099407	0.108966	0.095584	0.108966	0.093672	0.120436	0.097496	0.107054
2	0.101319	0.105142	0.086026	0.122348	0.114701	0.086026	0.078379	0.091761	0.063085	0.099407
3	0.086026	0.101319	0.082202	0.076467	0.093672	0.080291	0.097496	0.091761	0.101319	0.072644
4	0.076467	0.076732	0.073379	0.076467	0.084114	0.080291	0.076467	0.086026	0.086026	0.087937
5	0.074556	0.059262	0.070732	0.063085	0.082202	0.066909	0.055439	0.066909	0.057350	0.070732
6	0.051615	0.059262	0.040145	0.055439	0.066909	0.061174	0.049704	0.061174	0.051615	0.047792
7	0.049704	0.057350	0.053527	0.059262	0.036322	0.045880	0.057350	0.061174	0.042057	0.030587
8	0.076467	0.043969	0.040145	0.045880	0.055439	0.034410	0.038234	0.042057	0.042057	0.053527
9	0.026764	0.034410	0.036322	0.053527	0.038234	0.036322	0.047792	0.051615	0.032499	0.045880
10	0.024852	0.042057	0.043969	0.043969	0.061174	0.043969	0.038234	0.034410	0.036322	0.038234
11	0.032499	0.034410	0.042057	0.024852	0.015293	0.022940	0.042057	0.030587	0.034410	0.032499
12	0.017205	0.030587	0.032499	0.032499	0.045880	0.026764	0.034410	0.015293	0.021028	0.024852
13	0.019117	0.022940	0.026764	0.022940	0.015293	0.036322	0.022940	0.022940	0.017205	0.019117
14	0.036322	0.021028	0.024852	0.019117	0.028675	0.015293	0.015293	0.022940	0.024852	0.019117
15	0.022940	0.028675	0.017205	0.021028	0.022940	0.017205	0.007647	0.015293	0.015293	0.021028
16	0.019117	0.024852	0.005735	0.005735	0.021028	0.013382	0.017205	0.015293	0.015293	0.009558
17	0.021028	0.022940	0.019117	0.009558	0.019117	0.017205	0.026764	0.013382	0.019117	0.017205
18	0.017205	0.015293	0.009558	0.011470	0.013382	0.009558	0.017205	0.021028	0.007647	0.015293
19	0.003823	0.007647	0.011470	0.005735	0.005735	0.007647	0.013382	0.017205	0.013382	0.011470
20	0.019117	0.005735	0.021028	0.015293	0.011470	0.011470	0.019117	0.007647	0.009558	0.005735
21	0.015293	0.001912	0.009558	0.013382	0.015293	0.021028	0.013382	0.007647	0.015293	0.005735
22	0.011470	0.007647	0.011470	0.003823	0.007647	0.019117	0.017205	0.015293	0.013382	0.013382
23	0.007647	0.007647	0.009558	0.017205	0.003823	0.003823	0.005735	0.007647	0.007647	0.011470
24	0.019117	0.009558	0.005735	0.007647	0.011470	0.003823	0.003823	0.009558	0.005735	0.007647

NORMALIZED EVAPORATION PROTON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.002671	0.005342	0.008013	0.010684	0.018697	0.013355	0.026709
1	0.034722	0.034722	0.040064	0.045406	0.072115	0.074786	0.082799	0.077457	0.114850	0.090812
2	0.080128	0.072115	0.098825	0.114850	0.074786	0.090812	0.088141	0.106838	0.080128	0.109509
3	0.104167	0.096154	0.098825	0.048077	0.088141	0.101496	0.074786	0.077457	0.093483	0.074786
4	0.093483	0.064103	0.082799	0.106838	0.072115	0.085470	0.085470	0.096154	0.101496	0.080128
5	0.077457	0.061432	0.096154	0.077457	0.042735	0.061432	0.077457	0.066774	0.080128	0.064103
6	0.074786	0.066774	0.082799	0.061432	0.058761	0.085470	0.056090	0.074786	0.088141	0.069444
7	0.056090	0.069444	0.048077	0.082799	0.048077	0.026709	0.056090	0.069444	0.072115	0.045406
8	0.048077	0.048077	0.056090	0.053419	0.040064	0.064103	0.053419	0.066774	0.061432	0.077457
9	0.056090	0.034722	0.032051	0.058761	0.048077	0.056090	0.050748	0.056090	0.045406	0.042735
10	0.050748	0.037393	0.058761	0.056090	0.040064	0.045406	0.034722	0.040064	0.064103	0.045406
11	0.064103	0.034722	0.029380	0.040064	0.058761	0.042735	0.045406	0.032051	0.024038	0.032051
12	0.032051	0.032051	0.053419	0.026709	0.042735	0.029380	0.034722	0.048077	0.042735	0.029380
13	0.029380	0.040064	0.032051	0.053419	0.018697	0.016026	0.042735	0.042735	0.018697	0.034722
14	0.026709	0.034722	0.024038	0.024038	0.021368	0.008013	0.024038	0.026709	0.034722	0.034722
15	0.045406	0.040064	0.034722	0.026709	0.018697	0.040064	0.021368	0.026709	0.016026	0.037393
16	0.018697	0.024038	0.026709	0.032051	0.026709	0.032051	0.026709	0.024038	0.016026	0.018697
17	0.029380	0.024038	0.026709	0.040064	0.018697	0.024038	0.018697	0.024038	0.010684	0.010684
18	0.018697	0.024038	0.021368	0.010684	0.016026	0.026709	0.016026	0.013355	0.010684	0.010684
19	0.024038	0.010684	0.013355	0.026709	0.010684	0.016026	0.021368	0.018697	0.024038	0.013355
20	0.010684	0.021368	0.005342	0.018697	0.013355	0.024038	0.013355	0.010684	0.013355	0.010684
21	0.013355	0.018697	0.013355	0.005342	0.010684	0.010684	0.008013	0.021368	0.016026	0.010684
22	0.013355	0.016026	0.010684	0.016026	0.008013	0.021368	0.010684	0.013355	0.013355	0.010684
23	0.005342	0.010684	0.018697	0.016026	0.005342	0.013355	0.010684	0.010684	0.013355	0.016026
24	0.008013	0.010684	0.	0.005342	0.008013	0.016026	0.010684	0.002671	0.002671	0.008013

NORMALIZED EVAPORATION DEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.007229	0.024096	0.055422	0.045783	0.036145	0.062651	0.077108	0.062651	0.050602
5	0.069880	0.045783	0.074699	0.069880	0.055422	0.057831	0.069880	0.055422	0.043373	0.043373
10	0.038554	0.036145	0.048193	0.045783	0.038554	0.036145	0.053012	0.031325	0.033735	0.050602
15	0.026506	0.024096	0.021687	0.024096	0.040964	0.021687	0.019277	0.012048	0.019277	0.009639
20	0.014458	0.026506	0.019277	0.009639	0.007229	0.009639	0.021687	0.031325	0.009639	0.004819
25	0.004819	0.009639	0.012048	0.014458	0.016867	0.002410	0.009639	0.004819	0.007229	0.007229
30	0.007229	0.007229	0.007229	0.007229	0.002410	0.007229	0.002410	0.	0.007229	0.009639
35	0.002410	0.004819	0.004819	0.004819	0.002410	0.002410	0.004819	0.002410	0.004819	0.004819
40	0.002410	0.	0.002410	0.002410	0.002410	0.007229	0.002410	0.002410	0.	0.
45	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION TRITON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.019608	0.098039	0.098039	0.098039	0.039216	0.078431	0.078431	0.039216
5	0.058824	0.088235	0.029412	0.098039	0.029412	0.029412	0.029412	0.058824	0.039216	0.029412
10	0.078431	0.009804	0.068627	0.049020	0.049020	0.	0.049020	0.039216	0.049020	0.009804
15	0.049020	0.019608	0.029412	0.009804	0.049020	0.019608	0.	0.029412	0.009804	0.009804
20	0.	0.019608	0.009804	0.	0.009804	0.039216	0.009804	0.019608	0.009804	0.
25	0.019608	0.	0.	0.009804	0.	0.009804	0.	0.	0.	0.
30	0.	0.	0.019608	0.009804	0.	0.	0.	0.009804	0.	0.
35	0.	0.	0.009804	0.019608	0.	0.009804	0.009804	0.	0.019608	0.
40	0.	0.	0.029412	0.	0.	0.	0.	0.	0.	0.009804
45	0.	0.	0.009804	0.	0.	0.009804	0.	0.	0.	0.009804

NORMALIZED EVAPORATION HE3 SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.009050	0.	0.	0.045249	0.036199	0.063348	0.090498
5	0.072398	0.117647	0.081448	0.045249	0.072398	0.045249	0.081448	0.036199	0.063348	0.081448
10	0.045249	0.045249	0.009050	0.054299	0.036199	0.072398	0.045249	0.027149	0.036199	0.027149
15	0.027149	0.018100	0.045249	0.027149	0.009050	0.027149	0.018100	0.027149	0.018100	0.027149
20	0.009050	0.009050	0.009050	0.018100	0.009050	0.	0.009050	0.018100	0.	0.027149
25	0.018100	0.	0.045249	0.	0.	0.036199	0.	0.036199	0.	0.
30	0.009050	0.	0.009050	0.	0.	0.	0.027149	0.	0.018100	0.
35	0.	0.009050	0.	0.	0.	0.018100	0.009050	0.009050	0.	0.
40	0.009050	0.	0.	0.	0.	0.009050	0.	0.009050	0.	0.009050
45	0.009050	0.009050	0.	0.	0.	0.	0.	0.009050	0.	0.

NORMALIZED EVAPORATION ALPHA SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.003918	0.	0.003918	0.011753	0.033301	0.048972	0.107738	0.129285	0.117532	0.129285
5	0.082272	0.090108	0.099902	0.090108	0.076396	0.068560	0.068560	0.066601	0.050930	0.035260
10	0.050930	0.029383	0.035260	0.031342	0.031342	0.037218	0.013712	0.029383	0.015671	0.017630
15	0.017630	0.027424	0.015671	0.009794	0.023506	0.027424	0.013712	0.015671	0.001959	0.015671
20	0.017630	0.003918	0.003918	0.011753	0.	0.005877	0.007835	0.013712	0.007835	0.015671
25	0.007835	0.011753	0.005877	0.009794	0.005877	0.001959	0.001959	0.003918	0.003918	0.003918
30	0.009794	0.	0.009794	0.	0.003918	0.005877	0.001959	0.007835	0.001959	0.001959
35	0.003918	0.	0.	0.	0.	0.	0.005877	0.003918	0.	0.
40	0.	0.001959	0.005877	0.003918	0.	0.	0.	0.	0.	0.001959
45	0.	0.	0.001959	0.	0.003918	0.	0.	0.003918	0.	0.

INPUT

FROM CARDS

USED FILE 1 INCIDENT PARTICLE PROTON INCIDENT KINETIC ENERGY 750.000 MEV

TOTAL NUMBER OF INCIDENT PARTICLES 4000 TARGET SYMBOL PB

SIZE OF HISTOGRAMS FOR OUTGOING K.E. 25 FOR PROT, 25 FOR NEUT, 25 FOR PI+, 25 FOR PIO, 25 FOR PI-.

CROSS SECTIONS WERE CALCULATED FOR AS MANY AS 9 EMITTED PARTICLE COMBINATIONS.

76.000 MEV INTERVAL WAS USED IN CALCULATING HISTOGRAM FOR N(E*)DE FOR TOTAL REACTION

DELTAS FOR OUTGOING KINETIC ENERGY DISTRIBUTION IN MEV

	-.6 MU -.4 0 (K.E.) 10D	-.1 MU +.1 0 (K.E.) 10D	+.4 MU +.6 0 (K.E.) 10D	+.9 MU +.95 0 (K.E.) 20D	+.95 MU +1.0 0 (K.E.) 20D
PROTONS	75.0000	75.0000	75.0000	37.5000	37.5000
NEUTRONS	75.0000	75.0000	75.0000	37.5000	37.5000
PI+	75.0000	75.0000	75.0000	37.5000	37.5000
PIO	75.0000	75.0000	75.0000	37.5000	37.5000
PI-	75.0000	75.0000	75.0000	37.5000	37.5000

D = DELTA, RESPECTIVE ENERGY INTERVALS OF HISTOGRAMS

OUTGOING COMBINATIONS	10000	01000	00100	00010	00001	01001	10100	11000	11001
INTERVAL FOR N(E*)DE IN MEV	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000

FROM RECORD 1

4000 INCIDENT PROTON HIT PB TARGET WITH 207.000 MASS AND 82.000 ATOMIC NUMBER AT 750.000MEV.

FROM RECORD N

THERE WERE 2714. INCIDENT PARTICLE COLLISIONS CREATING 2714 ESCAPING PARTICLE RECORDS. THE GEOMETRIC CROSS SECTION WAS 2455.8685303 MB. THE INELASTIC CROSS SECTION WAS 1666.3067780 MB. THE CUT OFF ENERGY WAS 6.6831360 MEV.

PROTON ON PB INC. K.E. (MEV) IS 750.0 A IS 207. Z IS 82. 4000 INC. HISTORIES 6.7 MEV CUTOFF EN.

MOMENTUM OF COMPOUND NUCLEUS 1404.497025MEV/C EXCITATION ENERGY OF COMPOUND NUCLEUS 756.915199MEV

THE MASS OF THE RESIDUAL NUCLEUS WAS ZERO 0 TIMES, WAS MINUS 0 TIMES CUT OFF ENERGY 6.683136MEV

FOR 27 INCIDENT PARTICLE COLLISIONS THERE WERE MORE THAN 9 OUT GOING PARTICLES

EMITTED CASCADE PARTICLES

	PROTONS	NEUTRONS	PI+	PIO	PI-
AVERAGE NO.	0.1752763E 01	0.2453574E 01	0.1267502E-00	0.1072218E-00	0.6300663E-01
VARIANCE	0.1329810E 01	0.2692207E 01	0.1121584E-00	0.9867297E-01	0.5903680E-01
AV. K.E. (MEV)	0.1358140E 03	0.8730047E 02	0.9037693E 02	0.7786732E 02	0.5343708E 02
VARIANCE	0.3005742E 05	0.1536322E 05	0.7881543E 04	0.6398820E 04	0.3155461E 04

RESIDUAL NUCLEUS

OUTGOING COMBINATION	CO	C1	ARM	AREE	AAR
TOTAL CASCADE	0.3345510	0.2672758	652.2500229	211.3665504	203.7936611
10000	0.0957860	0.2136911	337.8982887	70.1091290	207.0000000
01000	0.1153224	0.2164250	366.3101883	81.8855352	207.0000000
00100	0.	0.	0.	0.	208.0000000
00010	0.	0.	0.	0.	208.0000000
00001	0.	0.	0.	0.	208.0000000
01001	0.	0.	0.	0.	207.0000000
10100	0.2000049	0.0760599	311.5003738	44.6570954	207.0000000
11000	0.1049388	0.1721623	321.3408356	71.8260565	206.0000000
11001	0.6731505	0.3957668	1108.7478639	273.2423630	206.0000000

CO = (SUM OF PARALLEL RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

C1 = (SUM OF PERPENDICULAR RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

ARM = AVERAGE RESIDUAL MOMENTUM IN MEV/C

AREE = AVERAGE RESIDUAL EXCITATION ENERGY IN MEV

AAR = AVERAGE MASS OF RESIDUAL NUCLEUS FOR TOTAL CASCADE
AAR = MASS OF RESIDUAL NUCLEUS FOR DESIGNATED OUTGOING COMBINATIONS

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PROTON ON PB       INC. K.E. (MEV) IS   750.0   A IS  207.   Z IS  82.    4000 INC. HISTORIES        6.7 MEV CUTOFF EN.

                   ANGULAR DISTRIBUTION OF THE CASCADE NUCLEUS  (FRACTION IN DELTA MU)/(DELTA MU)

       -0.9000000E 00        -0.7000000E 00        -0.5000000E 00        -0.3000000E-00        -0.1000000E-00
                0.1000000E-00         0.3000000E-00         0.5000000E 00         0.7000000E 00         0.9000000E 00

            TOTAL CASCADE                                RATIO OF FORWARD /BACKWARD     0.1050000E 02
        0.3316138E-01         0.6263817E-01         0.7000737E-01         0.1068534E-00         0.1621223E-00
                0.3187178E-00         0.4716286E-00         0.6392778E 00         0.1096168E 01         0.2039425E 01

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.1309524E 01         0.2202381E 01         0.9523809E 00         0.2976190E-00         0.2380952E-00

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.1562500E 01         0.1979167E 01         0.1041667E 01         0.2083333E-00         0.2083333E-00

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.4166667E-00         0.4583333E 01

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.2937500E 01
        0.1587302E-00         0.2380952E-00         0.1322751E-00         0.2645503E-00         0.4761905E-00
                0.8201058E 00         0.7142857E 00         0.9259259E 00         0.6349206E 00         0.6349206E 00

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.2000000E 01         0.3000000E 01
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PROTON ON PB        INC. K.E. (MEV) IS   750.0   A IS  207.   Z IS  82.    4000 INC. HISTORIES        6.7 MEV CUTOFF EN.

       EXCITATION ENERGY DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS (FRACTION PER UNIT EN.)    (DE=DELTA E(MEV))

DEA IS  0.7600000E 02   DEB IS  0.2500000E 02   DEC IS  0.2500000E 02   DED IS  0.2500000E 02   DEE IS  0.2500000E 02
  DEF IS  0.2500000E 02   DEG IS  0.2500000E 02   DEH IS  0.2500000E 02   DEI IS  0.2500000E 02   DEJ IS  0.2500000E 02

             TOTAL CASCADE                          (SUM OVER HISTOGRAM)X(DEA)        0.1000000E 01      0 OFL
        0.3199783E-02          0.2302874E-02          0.2104100E-02          0.1774425E-02          0.1619284E-02
                0.1158709E-02          0.6399566E-03          0.2811930E-03          0.6302602E-04          0.1454447E-04

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEB)        0.9642857E 00      3 OFL
        0.1190476E-01          0.8571428E-02          0.5238095E-02          0.4761905E-02          0.1904762E-02
                0.2857143E-02          0.9523810E-03          0.9523810E-03          0.4761905E-03          0.9523810E-03

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEC)        0.9166667E 00      4 OFL
        0.1500000E-01          0.9166667E-02          0.3333333E-02          0.2500000E-02          0.1666667E-02
                0.1666667E-02          0.2500000E-02          0.                     0.8333333E-03          0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DED)        0.                     0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEE)        0.                     0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEF)        0.                     0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEG)        0.                     0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEH)        0.1000000E 01      0 OFL
        0.2666667E-01          0.3333333E-02          0.                     0.3333333E-02          0.
                0.3333333E-02          0.3333333E-02          0.                     0.                     0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEI)        0.9365079E 00     12 OFL
        0.1904762E-01          0.5925926E-02          0.4444444E-02          0.3174603E-02          0.1481481E-02
                0.6349206E-03          0.2116402E-03          0.1269841E-02          0.6349206E-03          0.6349206E-03

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEJ)        0.4000000E-00      3 OFL
        0.                     0.                     0.                     0.8000000E-02          0.
                0.                     0.                     0.8000000E-02          0.                     0.
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DESCRIPTION OF THE FOLLOWING MOMENTUM DISTRIBUTIONS

THE FIRST GROUP OF NUMBERS BELOW THE TITLES SPECIFY THE MIDPOINTS OF THE MOMENTUM INTERVALS.
THE MOMENTUM IS THE NUMBER INDICATED (MEV/C).

THE SUBSEQUENT GROUPS OF NUMBERS ARE THE FRACTION OF THE TOTAL IN EACH INTERVAL DIVIDED BY DELTA P.

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PROTON ON PB        INC. K.E. (MEV) IS   750.0   A IS  207.   Z IS  82.    4000 INC. HISTORIES        6.7 MEV CUTOFF EN.

                                THE MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

   0.7022485E 02   0.2106745E 03   0.3511242E 03   0.4915740E 03   0.6320236E 03   0.7724734E 03   0.9129231E 03
         0.1053373E 04   0.1193822E 04   0.1334272E 04   0.1474722E 04   0.1615172E 04   0.1755621E 04   0.1896071E 04

              TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.6217527E-03   0.8316270E-03   0.8683550E-03   0.9470579E-03   0.8814722E-03   0.7896522E-03   0.6506104E-03
         0.5640372E-03   0.4249955E-03   0.2728366E-03   0.1311715E-03   0.8132630E-04   0.3672801E-04   0.1836400E-04

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.6780940E-03   0.2712376E-02   0.1949520E-02   0.8476175E-03   0.5933322E-03   0.8476175E-04   0.1695235E-03
         0.8476175E-04   0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.7416653E-03   0.2818328E-02   0.1631664E-02   0.5933322E-03   0.2966661E-03   0.7416653E-03   0.1483331E-03
         0.              0.              0.              0.1483331E-03   0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.              0.4746658E-02   0.1186664E-02   0.              0.1186664E-02   0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.2486345E-02   0.1732907E-02   0.9041253E-03   0.8664534E-03   0.4143908E-03   0.1883594E-03   0.2260313E-03
         0.1883594E-03   0.7534377E-04   0.              0.3767189E-04   0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.              0.              0.1423997E-02   0.              0.              0.              0.
         0.1423997E-02   0.1423997E-02   0.              0.2847995E-02   0.              0.              0.
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PROTON ON PB       INC. K.E. (MEV) IS   750.0   A IS  207.   Z IS  82.    4000 INC. HISTORIES        6.7 MEV CUTOFF EN.

                        THE PERPENDICULAR MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

   0.7022485E 02   0.2106745E 03   0.3511242E 03   0.4915740E 03   0.6320236E 03   0.7724734E 03   0.9129231E 03
         0.1053373E 04   0.1193822E 04   0.1334272E 04   0.1474722E 04   0.1615172E 04   0.1755621E 04   0.1896071E 04

             TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.1185790E-02   0.1558317E-02   0.1639643E-02   0.1272363E-02   0.7896522E-03   0.4381127E-03   0.1810166E-03
         0.3672801E-04   0.1049372E-04   0.7870287E-05   0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.8476175E-03   0.3051423E-02   0.1864758E-02   0.9323792E-03   0.2542852E-03   0.1695235E-03   0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.8899983E-03   0.3114994E-02   0.1631664E-02   0.5933322E-03   0.7416653E-03   0.1483331E-03   0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.5339990E-02   0.5933322E-03   0.5933322E-03   0.5933322E-03   0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.2976079E-02   0.1958938E-02   0.8287815E-03   0.8287815E-03   0.3390470E-03   0.1130157E-03   0.7534377E-04
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.              0.1423997E-02   0.              0.2847995E-02   0.1423997E-02   0.              0.1423997E-02
         0.              0.              0.              0.              0.              0.              0.
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PROTON ON PB       INC. K.E. (MEV) IS   750.0   A IS  207.   Z IS  82.    4000 INC. HISTORIES        6.7 MEV CUTOFF EN.

                         THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

 -0.1896071E 04  -0.1755621E 04  -0.1615172E 04  -0.1474722E 04  -0.1334272E 04  -0.1193822E 04  -0.1053373E 04
       -0.9129231E 03  -0.7724734E 03  -0.6320236E 03  -0.4915740E 03  -0.3511242E 03  -0.2106745E 03  -0.7022485E 02
  0.7022485E 02   0.2106745E 03   0.3511242E 03   0.4915740E 03   0.6320236E 03   0.7724734E 03   0.9129231E 03
        0.1053373E 04   0.1193822E 04   0.1334272E 04   0.1474722E 04   0.1615172E 04   0.1755621E 04   0.1896071E 04

            TOTAL CASCADE                        (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL     0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.1311715E-04   0.8657316E-04   0.5194390E-03
  0.1251376E-02   0.9601751E-03   0.8447442E-03   0.7896522E-03   0.7398070E-03   0.5456733E-03   0.4486064E-03
        0.3725269E-03   0.2308618E-03   0.1495355E-03   0.9444345E-04   0.5771544E-04   0.1574057E-04   0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL     0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.              0.
  0.4746658E-02   0.1525711E-02   0.5085705E-03   0.1695235E-03   0.1695235E-03   0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL     0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.              0.
  0.4746658E-02   0.8899983E-03   0.8899983E-03   0.4449992E-03   0.              0.              0.
        0.              0.              0.1483331E-03   0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL     0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL     0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL     0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
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PROTON ON PB        INC. K.E. (MEV) IS   750.0   A IS  207.   Z IS  82.    4000 INC. HISTORIES        6.7 MEV CUTOFF EN.

                         THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

 -0.1896071E 04  -0.1755621E 04  -0.1615172E 04  -0.1474722E 04  -0.1334272E 04  -0.1193822E 04  -0.1053373E 04
       -0.9129231E 03  -0.7724734E 03  -0.6320236E 03  -0.4915740E 03  -0.3511242E 03  -0.2106745E 03  -0.7022485E 02
  0.7022485E 02   0.2106745E 03   0.3511242E 03   0.4915740E 03   0.6320236E 03   0.7724734E 03   0.9129231E 03
        0.1053373E 04   0.1193822E 04   0.1334272E 04   0.1474722E 04   0.1615172E 04   0.1755621E 04   0.1896071E 04

            TOTAL CASCADE                        (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.1311715E-04   0.8657316E-04   0.5194390E-03
  0.1251376E-02   0.9601751E-03   0.8447442E-03   0.7896522E-03   0.7398070E-03   0.5456733E-03   0.4486064E-03
        0.3725269E-03   0.2308618E-03   0.1495355E-03   0.9444345E-04   0.5771544E-04   0.1574057E-04   0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
  0.              0.4746658E-02   0.1186664E-02   0.1186664E-02   0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.7534377E-04   0.1732907E-02
  0.2976079E-02   0.1017141E-02   0.4897345E-03   0.1506875E-03   0.3390470E-03   0.1883594E-03   0.3767189E-04
        0.3767189E-04   0.3767189E-04   0.3767189E-04   0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.1423997E-02   0.              0.              0.1423997E-02   0.1423997E-02
        0.              0.1423997E-02   0.              0.1423997E-02   0.              0.              0.
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PROTON ON PB INC. K.E. (MEV) IS 750.0 A IS 207. Z IS 82. 4000 INC. HISTORIES 6.7 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PIO 5TH IS NO. OF PI-

09000	0.61396712E 00	18000	0.12279342E 01	26001	0.61396712E 00	26100	0.61396712E 00
27000	0.49117369E 01	35010	0.61396712E 00	35100	0.12279342E 01	36000	0.67536382E 01
44001	0.12279342E 01	44100	0.61396712E 00	45000	0.73676054E 01	54000	0.61396711E 01
08000	0.61396712E 00	15101	0.61396712E 00	16001	0.18419013E 01	16010	0.18419013E 01
16100	0.18419013E 01	17000	0.61396711E 01	25001	0.18419013E 01	25010	0.24558684E 01
25100	0.18419013E 01	26000	0.85955396E 01	33110	0.61396712E 00	34001	0.42977698E 01
34010	0.61396712E 00	34100	0.18419013E 01	35000	0.12893309E 02	43001	0.18419013E 01
43010	0.61396712E 00	43100	0.12279342E 01	44000	0.15349177E 02	52001	0.12279342E 01
52010	0.61396712E 00	52100	0.61396712E 00	53000	0.79815725E 01	61100	0.61396712E 00
06001	0.12279342E 01	06010	0.61396712E 00	07000	0.12279342E 01	15001	0.12279342E 01
15010	0.12279342E 01	15100	0.30698355E 01	16000	0.14121243E 02	24001	0.18419013E 01
24010	0.92095067E 01	24100	0.67536382E 01	25000	0.27014553E 02	32020	0.61396712E 00
33001	0.12279342E 01	33010	0.24558684E 01	33100	0.55257040E 01	34000	0.41749763E 02
42001	0.61396712E 00	42010	0.12279342E 01	42100	0.61396712E 00	43000	0.17191079E 02
51100	0.12279342E 01	52000	0.85955396E 01	61000	0.12279342E 01	05001	0.18419013E 01
05010	0.30698355E 01	05100	0.24558684E 01	06000	0.67536382E 01	13020	0.61396712E 00
13101	0.18419013E 01	13110	0.61396712E 00	14001	0.36838027E 01	14010	0.98234738E 01
14100	0.79815725E 01	15000	0.25786619E 02	22011	0.12279342E 01	23001	0.11051407E 02
23010	0.11051407E 02	23100	0.10437441E 02	24000	0.55257040E 02	32001	0.30698355E 01
32010	0.67536382E 01	32100	0.42977698E 01	33000	0.38679928E 02	41001	0.61396712E 00
41100	0.18419013E 01	42000	0.19032981E 02	51000	0.42977698E 01	02120	0.61396712E 00
03101	0.61396712E 00	03110	0.61396712E 00	03200	0.61396712E 00	04001	0.24558684E 01
04010	0.36838027E 01	04100	0.55257040E 01	05000	0.10437441E 02	12011	0.12279342E 01
12101	0.61396712E 00	12110	0.12279342E 01	13001	0.79815725E 01	13010	0.85955396E 01
13100	0.14735211E 02	14000	0.55257040E 02	21011	0.61396712E 00	21101	0.61396712E 00
22001	0.10437441E 02	22010	0.18419013E 02	22100	0.18419013E 02	23000	0.71834152E 02

PROTON ON PB INC. K.E. (MEV) IS 750.0 A IS 207. Z IS 82. 4000 INC. HISTORIES 6.7 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PIO 5TH IS NO. OF PI-

CONTINUED

31001	0.42977698E 01	31010	0.73676054E 01	31100	0.55257040E 01	32000	0.44819599E 02
40001	0.61396712E 00	40010	0.61396712E 00	40100	0.61396712E 00	41000	0.98234738E 01
50000	0.18419013E 01	03001	0.24558684E 01	03010	0.61396711E 01	03100	0.11051407E 02
04000	0.21488849E 02	12001	0.73676054E 01	12010	0.12893309E 02	12100	0.12893309E 02
13000	0.56484974E 02	20101	0.61396712E 00	20200	0.61396712E 00	21001	0.79815725E 01
21010	0.98234738E 01	21100	0.16577112E 02	22000	0.72448120E 02	30001	0.18419013E 01
30010	0.49117369E 01	30100	0.61396712E 00	31000	0.27628520E 02	40000	0.24558684E 01
02001	0.24558684E 01	02010	0.55257040E 01	02100	0.12893309E 02	03000	0.22102816E 02
10020	0.61396712E 00	11001	0.30698355E 01	11010	0.20874882E 02	11100	0.31312323E 02
12000	0.77359857E 02	20001	0.30698355E 01	20010	0.67536362E 01	20100	0.24558684E 01
21000	0.58940843E 02	30000	0.15349177E 02	01010	0.49117369E 01	01100	0.42977698E 01
02000	0.23944718E 02	10001	0.30698355E 01	10010	0.49117369E 01	10100	0.73676054E 01
11000	0.11603978E 03	20000	0.63238613E 02	01000	0.29470421E 02	10000	0.51573238E 02

PROTON ON PB INC. K.E. (MEV) IS 750.0 A IS 207. Z IS 82. 4000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 1.00 TO 0.95
(THETA FROM 0 DEG. 0 MIN. TO 18 DEG. 12 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PI0		PI-	
DELTA E(MEV)	37.5	DELTA E(MEV)	37.5	DELTA E(MEV)	37.5	DELTA E(MEV)	37.5	DELTA E(MEV)	37.5
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
18.7	0.781E-01	18.7	0.129E-00	18.7	0.107E-00	18.7	0.160E-00	18.7	0.133E-00
56.2	0.332E-01	56.2	0.804E-01	56.2	0.	56.2	0.	56.2	0.133E-00
93.7	0.176E-01	93.7	0.493E-01	93.7	0.	93.7	0.	93.7	0.
131.2	0.205E-01	131.2	0.210E-01	131.2	0.	131.2	0.	131.2	0.
168.7	0.195E-01	168.7	0.201E-01	168.7	0.267E-01	168.7	0.	168.7	0.
206.2	0.322E-01	206.2	0.256E-01	206.2	0.533E-01	206.2	0.533E-01	206.2	0.
243.7	0.274E-01	243.7	0.210E-01	243.7	0.133E-00	243.7	0.	243.7	0.267E-00
281.2	0.195E-01	281.2	0.210E-01	281.2	0.533E-01	281.2	0.213E-00	281.2	0.
318.7	0.166E-01	318.7	0.210E-01	318.7	0.533E-01	318.7	0.	318.7	0.
356.2	0.254E-01	356.2	0.228E-01	356.2	0.533E-01	356.2	0.533E-01	356.2	0.
393.7	0.234E-01	393.7	0.128E-01	393.7	0.533E-01	393.7	0.533E-01	393.7	0.
431.2	0.195E-01	431.2	0.174E-01	431.2	0.	431.2	0.	431.2	0.
468.7	0.684E-02	468.7	0.913E-02	468.7	0.	468.7	0.	468.7	0.
506.2	0.147E-01	506.2	0.128E-01	506.2	0.	506.2	0.	506.2	0.
543.7	0.137E-01	543.7	0.457E-02	543.7	0.	543.7	0.	543.7	0.
581.2	0.977E-02	581.2	0.913E-03	581.2	0.	581.2	0.	581.2	0.
618.7	0.977E-02	618.7	0.100E-01	618.7	0.	618.7	0.	618.7	0.
656.2	0.332E-01	656.2	0.119E-01	656.2	0.	656.2	0.	656.2	0.
693.7	0.567E-01	693.7	0.146E-01	693.7	0.	693.7	0.	693.7	0.
731.2	0.557E-01	731.2	0.283E-01	731.2	0.	731.2	0.	731.2	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	0.100E 01	N IS	0.100E 01	N IS	1.000E 00

PROTON ON PB INC. K.E. (MEV) IS 750.0 A IS 207. Z IS 82. 4000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.95 TO 0.90
(THETA FROM 18 DEG. 12 MIN. TO 25 DEG. 51 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PI0		PI-	
DELTA E(MEV)	37.5	DELTA E(MEV)	37.5	DELTA E(MEV)	37.5	DELTA E(MEV)	37.5	DELTA E(MEV)	37.5
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
18.7	0.115E-00	18.7	0.194E-00	18.7	0.711E-01	18.7	0.	18.7	0.
56.2	0.499E-01	56.2	0.874E-01	56.2	0.	56.2	0.	56.2	0.178E-00
93.7	0.438E-01	93.7	0.481E-01	93.7	0.107E-00	93.7	0.	93.7	0.
131.2	0.408E-01	131.2	0.431E-01	131.2	0.	131.2	0.	131.2	0.
168.7	0.242E-01	168.7	0.203E-01	168.7	0.	168.7	0.	168.7	0.
206.2	0.212E-01	206.2	0.190E-01	206.2	0.356E-01	206.2	0.593E-01	206.2	0.
243.7	0.302E-01	243.7	0.291E-01	243.7	0.356E-01	243.7	0.178E-00	243.7	0.178E-00
281.2	0.272E-01	281.2	0.152E-01	281.2	0.107E-00	281.2	0.119E-00	281.2	0.178E-00
318.7	0.181E-01	318.7	0.633E-02	318.7	0.107E-00	318.7	0.593E-01	318.7	0.
356.2	0.106E-01	356.2	0.139E-01	356.2	0.356E-01	356.2	0.119E-00	356.2	0.
393.7	0.166E-01	393.7	0.633E-02	393.7	0.356E-01	393.7	0.	393.7	0.
431.2	0.907E-02	431.2	0.760E-02	431.2	0.	431.2	0.	431.2	0.
468.7	0.166E-01	468.7	0.507E-02	468.7	0.	468.7	0.	468.7	0.
506.2	0.453E-02	506.2	0.507E-02	506.2	0.	506.2	0.	506.2	0.
543.7	0.166E-01	543.7	0.507E-02	543.7	0.	543.7	0.	543.7	0.
581.2	0.181E-01	581.2	0.633E-02	581.2	0.	581.2	0.	581.2	0.
618.7	0.347E-01	618.7	0.887E-02	618.7	0.	618.7	0.	618.7	0.
656.2	0.272E-01	656.2	0.887E-02	656.2	0.	656.2	0.	656.2	0.
693.7	0.755E-02	693.7	0.380E-02	693.7	0.	693.7	0.	693.7	0.
731.2	0.151E-02	731.2	0.	731.2	0.	731.2	0.	731.2	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON PB INC. K.E. (MEV) IS 750.0 A IS 207. Z IS 82. 4000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.60 TO 0.40
(THETA FROM 53 DEG. 8 MIN. TO 66 DEG. 25 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
37.5	0.353E-01	37.5	0.466E-01	37.5	0.359E-01	37.5	0.385E-01	37.5	0.458E-01
112.5	0.159E-01	112.5	0.119E-01	112.5	0.188E-01	112.5	0.205E-01	112.5	0.167E-01
187.5	0.104E-01	187.5	0.491E-02	187.5	0.103E-01	187.5	0.769E-02	187.5	0.417E-02
262.5	0.309E-02	262.5	0.246E-02	262.5	0.171E-02	262.5	0.	262.5	0.
337.5	0.170E-02	337.5	0.772E-03	337.5	0.	337.5	0.	337.5	0.
412.5	0.299E-03	412.5	0.	412.5	0.	412.5	0.	412.5	0.
487.5	0.	487.5	0.702E-04	487.5	0.	487.5	0.	487.5	0.
562.5	0.	562.5	0.	562.5	0.	562.5	0.	562.5	0.
637.5	0.	637.5	0.	637.5	0.	637.5	0.	637.5	0.
712.5	0.	712.5	0.	712.5	0.	712.5	0.	712.5	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON PB INC. K.E. (MEV) IS 750.0 A IS 207. Z IS 82. 4000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.10 TO -0.10
(THETA FROM 84 DEG. 16 MIN. TO 95 DEG. 44 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS DELTA E(MEV) 75.0		NEUTRONS DELTA E(MEV) 75.0		PI+ DELTA E(MEV) 75.0		PIO DELTA E(MEV) 75.0		PI- DELTA E(MEV) 75.0	
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
37.5	0.528E-01	37.5	0.547E-01	37.5	0.485E-01	37.5	0.469E-01	37.5	0.593E-01
112.5	0.110E-01	112.5	0.947E-02	112.5	0.162E-01	112.5	0.148E-01	112.5	0.741E-02
187.5	0.178E-02	187.5	0.224E-02	187.5	0.	187.5	0.494E-02	187.5	0.
262.5	0.889E-03	262.5	0.125E-03	262.5	0.202E-02	262.5	0.	262.5	0.
337.5	0.178E-03	337.5	0.	337.5	0.	337.5	0.	337.5	0.
412.5	0.	412.5	0.125E-03	412.5	0.	412.5	0.	412.5	0.
487.5	0.	487.5	0.	487.5	0.	487.5	0.	487.5	0.
562.5	0.	562.5	0.	562.5	0.	562.5	0.	562.5	0.
637.5	0.	637.5	0.	637.5	0.	637.5	0.	637.5	0.
712.5	0.	712.5	0.	712.5	0.	712.5	0.	712.5	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON PB INC. K.E. (MEV) IS 750.0 A IS 207. Z IS 82. 4000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM -0.40 TO -0.60
(THETA FROM 113 DEG. 35 MIN. TO 126 DEG. 54 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0	DELTA E(MEV)	75.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
37.5	0.614E-01	37.5	0.604E-01	37.5	0.600E-01	37.5	0.519E-01	37.5	0.606E-01
112.5	0.449E-02	112.5	0.513E-02	112.5	0.667E-02	112.5	0.148E-01	112.5	0.606E-02
187.5	0.749E-03	187.5	0.932E-03	187.5	0.	187.5	0.	187.5	0.
262.5	0.	262.5	0.233E-03	262.5	0.	262.5	0.	262.5	0.
337.5	0.	337.5	0.	337.5	0.	337.5	0.	337.5	0.
412.5	0.	412.5	0.	412.5	0.	412.5	0.	412.5	0.
487.5	0.	487.5	0.	487.5	0.	487.5	0.	487.5	0.
562.5	0.	562.5	0.	562.5	0.	562.5	0.	562.5	0.
637.5	0.	637.5	0.	637.5	0.	637.5	0.	637.5	0.
712.5	0.	712.5	0.	712.5	0.	712.5	0.	712.5	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON PB INC. K.E. (MEV) IS 750.0 A IS 207. Z IS 82. 4000 INC. HISTORIES 5.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PROTONS

0 TO 0.7500000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PROTONS /DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
15.00	0.1120454E-01	225.00	0.1016046E-02	405.00	0.3643753E-03	585.00	0.2102165E-03
45.00	0.5304464E-02	255.00	0.7427651E-03	435.00	0.2943031E-03	615.00	0.2872959E-03
75.00	0.3244342E-02	285.00	0.5745918E-03	465.00	0.2802887E-03	645.00	0.2522598E-03
105.00	0.2389461E-02	315.00	0.5325485E-03	495.00	0.2382454E-03	675.00	0.3503609E-03
135.00	0.1765819E-02	345.00	0.5045197E-03	525.00	0.2242310E-03	705.00	0.3293392E-03
165.00	0.1198234E-02	375.00	0.4344475E-03	555.00	0.1681732E-03	735.00	0.3293392E-03
195.00	0.1093126E-02						

PROTON ON PB INC. K.E. (MEV) IS 750.0 A IS 207. Z IS 82. 4000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE NEUTRONS

0 TO 0.7500000E 03 MEV 0 DEL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED NEUTRONS/DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
15.00	0.1425139E-01	225.00	0.5556390E-03	405.00	0.1701957E-03	585.00	0.5506332E-04
45.00	0.6447415E-02	255.00	0.5506332E-03	435.00	0.1701957E-03	615.00	0.9510938E-04
75.00	0.3559093E-02	285.00	0.3754317E-03	465.00	0.1201382E-03	645.00	0.8009211E-04
105.00	0.2127447E-02	315.00	0.2803224E-03	495.00	0.1501727E-03	675.00	0.9510938E-04
135.00	0.1461681E-02	345.00	0.2903339E-03	525.00	0.1151324E-03	705.00	0.8009211E-04
165.00	0.9761226E-03	375.00	0.2653051E-03	555.00	0.1101266E-03	735.00	0.1201497E-03
195.00	0.8209441E-03						

PROTON ON PB INC. K.E. (MEV) IS 750.0 A IS 207. Z IS 82. 4000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI+

0 TO 0.7500000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI+ / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
15.00	0.7267442E-02	225.00	0.7751938E-03	405.00	0.9689923E-04	585.00	0.
45.00	0.1191860E-01	255.00	0.1453488E-02	435.00	0.	615.00	0.
75.00	0.3779070E-02	285.00	0.9689923E-03	465.00	0.	645.00	0.
105.00	0.2519380E-02	315.00	0.5813954E-03	495.00	0.	675.00	0.
135.00	0.1162791E-02	345.00	0.3875969E-03	525.00	0.	705.00	0.
165.00	0.1065891E-02	375.00	0.2906977E-03	555.00	0.	735.00	0.
195.00	0.1065891E-02						

PROTON ON PB INC. K.E. (MEV) IS 750.0 A IS 207. Z IS 82. 4000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PIO

0 TO 0.7500000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PIO / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
15.00	0.1076747E-01	225.00	0.5727377E-03	405.00	0.	585.00	0.
45.00	0.8476518E-02	255.00	0.5727377E-03	435.00	0.	615.00	0.
75.00	0.4696449E-02	285.00	0.5727377E-03	465.00	0.	645.00	0.
105.00	0.3321879E-02	315.00	0.3436426E-03	495.00	0.	675.00	0.
135.00	0.1260023E-02	345.00	0.5727377E-03	525.00	0.	705.00	0.
165.00	0.1030928E-02	375.00	0.2290951E-03	555.00	0.	735.00	0.
195.00	0.9163803E-03						

PROTON ON PB INC. K.E. (MEV) IS 750.0 A IS 207. Z IS 82. 4000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI-

0 TO 0.7500000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI- / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
15.00	0.1364522E-01	225.00	0.1949318E-03	405.00	0.	585.00	0.
45.00	0.1072125E-01	255.00	0.5847953E-03	435.00	0.	615.00	0.
75.00	0.4483431E-02	285.00	0.3898636E-03	465.00	0.	645.00	0.
105.00	0.1559454E-02	315.00	0.	495.00	0.	675.00	0.
135.00	0.3898636E-03	345.00	0.	525.00	0.	705.00	0.
165.00	0.5847953E-03	375.00	0.	555.00	0.	735.00	0.
195.00	0.7797271E-03						

PROTON ON PB INC. K.E. (MEV) IS 750.0 A IS 207. Z IS 82. 4000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PARTICLES

0 TO 1000 MEV

N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PARTICLES/DELTA E

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N IS (SUM OVER HISTOGRAM FROM 1 TO 1000 MEV) (DELTA E)

K.E.	PROTONS N(E)	NEUTRONS N(E)	PI+ N(E)	PIO N(E)	PI- N(E)
25.0	0.9043515E-02	0.1139811E-01	0.9883721E-02	0.9965636E-02	0.1309941E-01
75.0	0.3363464E-02	0.3628172E-02	0.4360465E-02	0.5292096E-02	0.4795322E-02
125.0	0.1938196E-02	0.1681934E-02	0.1744186E-02	0.1855670E-02	0.5847953E-03
175.0	0.1185621E-02	0.9280673E-03	0.1046512E-02	0.9621993E-03	0.5847953E-03
225.0	0.9712003E-03	0.6006908E-03	0.9883721E-03	0.6872852E-03	0.5847953E-03
275.0	0.6180366E-03	0.4385043E-03	0.1162791E-02	0.5498282E-03	0.3508772E-03
325.0	0.5213370E-03	0.2883316E-03	0.5232558E-03	0.4810997E-03	0.
375.0	0.4330460E-03	0.2432798E-03	0.2325581E-03	0.2061856E-03	0.
425.0	0.3237334E-03	0.1742003E-03	0.5813953E-04	0.	0.
475.0	0.2522598E-03	0.1381589E-03	0.	0.	0.
525.0	0.2228295E-03	0.1261451E-03	0.	0.	0.
575.0	0.1976035E-03	0.6607599E-04	0.	0.	0.
625.0	0.2648728E-03	0.8710016E-04	0.	0.	0.
675.0	0.3447551E-03	0.8109326E-04	0.	0.	0.
725.0	0.3195291E-03	0.1201382E-03	0.	0.	0.
775.0	0.	0.	0.	0.	0.
825.0	0.	0.	0.	0.	0.
875.0	0.	0.	0.	0.	0.
925.0	0.	0.	0.	0.	0.
975.0	0.	0.	0.	0.	0.
	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 1.0000000E 00	N IS 1.0000000E 00	N IS 1.0000000E 00

PROTON ON PB INC. K.E. (MEV) IS 750.0 A IS 207. Z IS 82. 4000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ANGULAR DISTRIBUTION OF EMITTED CASCADE PARTICLES

(FRACTION IN EACH INTERVAL)/(DELTA MU)

MU IS COSINE THETA AND SPECIFIES THE CENTER OF THE INTERVAL

MU	PROTON	NEUTRON	PI+	PIO	PI-
0.975	0.2295564E 01	0.1754017E 01	0.1162791E 01	0.6872852E 00	0.4678363E-00
0.925	0.1484129E 01	0.1264454E 01	0.8720930E 00	0.6185567E 00	0.3508772E-00
0.875	0.1362203E 01	0.1120288E 01	0.6976744E 00	0.4810997E-00	0.9356725E 00
0.825	0.1046878E 01	0.9941433E 00	0.5813954E 00	0.9621993E 00	0.5847953E 00
0.775	0.8576834E 00	0.9851329E 00	0.3488372E-00	0.5498282E 00	0.8187134E 00
0.725	0.9165440E 00	0.9130500E 00	0.1744186E-00	0.6185567E 00	0.1169591E-00
0.675	0.8030271E 00	0.8109326E 00	0.8720930E 00	0.4810997E-00	0.4678363E-00
0.625	0.7651881E 00	0.8679982E 00	0.4069767E-00	0.4810997E-00	0.3508772E-00
0.575	0.6979189E 00	0.7808980E 00	0.4069767E-00	0.4810997E-00	0.4678363E-00
0.525	0.7231448E 00	0.7748911E 00	0.5813954E 00	0.4810997E-00	0.3508772E-00
0.475	0.7820055E 00	0.6397357E 00	0.5813954E 00	0.5498282E 00	0.5847953E 00
0.425	0.6054236E 00	0.6577564E 00	0.6976744E 00	0.2749141E-00	0.4678363E-00
0.375	0.5633803E 00	0.6127046E 00	0.5232558E 00	0.4123711E-00	0.4678363E-00
0.325	0.5087240E 00	0.5496321E 00	0.7558140E 00	0.4123711E-00	0.4678363E-00
0.275	0.4372504E-00	0.5496321E 00	0.4651163E-00	0.4123711E-00	0.
0.225	0.5423586E 00	0.4895630E-00	0.4651163E-00	0.2749141E-00	0.7017544E 00
0.175	0.4078201E-00	0.4865595E-00	0.4069767E-00	0.4810997E-00	0.1169591E-00
0.125	0.3615724E-00	0.4535215E-00	0.5813954E 00	0.3436426E-00	0.7017544E 00
0.075	0.4750893E-00	0.3784352E-00	0.2906977E-00	0.6185567E 00	0.8187134E 00
0.025	0.4120244E-00	0.4234870E-00	0.5232558E 00	0.2061856E-00	0.4678363E-00
-0.025	0.3867984E-00	0.4174801E-00	0.7558140E 00	0.6185567E 00	0.4678363E-00
-0.075	0.3027118E-00	0.3874456E-00	0.3488372E-00	0.4123711E-00	0.3508772E-00
-0.125	0.2985075E-00	0.3874456E-00	0.4069767E-00	0.6185567E 00	0.7017544E 00
-0.175	0.2816901E-00	0.2312660E-00	0.4069767E-00	0.2061856E-00	0.5847953E 00
-0.225	0.2396468E-00	0.2643039E-00	0.6395349E 00	0.6185567E 00	0.7017544E 00
-0.275	0.2186252E-00	0.2883316E-00	0.2906977E-00	0.4810997E-00	0.8187134E 00
-0.325	0.2354425E-00	0.2582970E-00	0.2325581E-00	0.2749141E-00	0.3508772E-00
-0.375	0.1933992E-00	0.2432798E-00	0.3488372E-00	0.4123711E-00	0.2339181E-00
-0.425	0.1765819E-00	0.2582970E-00	0.3488372E-00	0.6185567E 00	0.2339181E-00
-0.475	0.1807862E-00	0.2162487E-00	0.5813954E 00	0.3436426E-00	0.2339181E-00
-0.525	0.1933992E-00	0.2042349E-00	0.4069767E-00	0.4810997E-00	0.3508772E-00
-0.575	0.1976035E-00	0.1802072E-00	0.4069767E-00	0.4123711E-00	0.4678363E-00
-0.625	0.1471516E-00	0.1711969E-00	0.6395349E 00	0.1374570E-00	0.8187134E 00
-0.675	0.1261299E-00	0.1591831E-00	0.2325581E-00	0.7560137E 00	0.3508772E-00
-0.725	0.1471516E-00	0.1501727E-00	0.5232558E 00	0.6185567E 00	0.5847953E 00
-0.775	0.1345386E-00	0.1411623E-00	0.5813954E 00	0.5498282E 00	0.7017544E 00
-0.825	0.1135169E-00	0.1231416E-00	0.2906977E-00	0.7560137E 00	0.4678363E-00
-0.875	0.1345386E-00	0.1501727E-00	0.4069767E-00	0.6872852E 00	0.7017544E 00
-0.925	0.1387429E-00	0.1531762E-00	0.4069767E-00	0.6872852E 00	0.9356725E 00
-0.975	0.1051083E-00	0.1081243E-00	0.3488372E-00	0.4810997E-00	0.2339181E-00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	0. TO 10.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.6448E 00	3.0016E 00	1.2864E 00	1.0720E 00	1.2864E 00	1.5008E 00	1.2864E 00	1.5008E 00
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.5008E 00	1.0720E 00	1.2864E 00	1.5008E 00	2.5728E 00	1.9296E 00	1.9296E 00	8.5760E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.7152E 00	1.5008E 00	6.4320E-01	2.1440E-01	4.2880E-01	0.	4.2880E-01	3.7872E 00
INTERVAL 25							
6.8608E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	10.00 TO 30.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.4423E 00	2.4954E 00	1.2066E 00	1.3437E 00	1.3437E 00	7.4038E-01	1.0694E 00	1.0420E 00
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.0694E 00	7.6781E-01	6.8554E-01	5.2101E-01	6.0328E-01	6.8554E-01	4.3875E-01	4.3875E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
3.8390E-01	5.4843E-01	4.6617E-01	7.4038E-01	9.3234E-01	9.8718E-01	1.3162E 00	9.3234E-01
INTERVAL 25							
4.1132E-01							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1254E 04 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.375154E 03 MEV FOR CASCADE PROTON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.7684E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.279989E 03 MEV FOR CASCADE PROTON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.66	2455.9	02714

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	30.00 TO 90.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.2308E 00	1.6474E 00	1.2562E 00	8.8386E-01	6.8076E-01	4.7766E-01	4.0620E-01	3.6483E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.1814E-01	1.8429E-01	1.6925E-01	1.7301E-01	1.0531E-01	6.7700E-02	6.3939E-02	7.5222E-02
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
4.5133E-02	1.8805E-02	1.5044E-02	7.5222E-03	1.8805E-02	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	90.00 TO 180.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.8273E 00	6.9704E-01	2.5732E-01	1.6937E-01	5.2115E-02	3.2572E-02	9.7716E-03	9.7716E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
6.5144E-03	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3033E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.103761E 03 MEV FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.9185E 02 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.372447E 02 MEV FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 0 TO 187

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
3.386E 02	3.337E 02	2.769E 02	2.410E 02	1.657E 02	1.003E 02	7.309E 01	6.246E 01	5.023E 01

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 187 TO 562

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
3.678E 02	1.874E 02	8.484E 01	1.916E 01	4.502E 00	2.994E-01	3.673E-01	0.	0.

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 562 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
3.030E 02	3.883E 01	7.346E-01	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 0 TO 187

K EQUALS 0	1	2	3	4	5	6	7
2.9716E 02	5.4643E 02	3.5303E 02	1.7928E 02	7.0606E 01	2.7629E 01	1.8419E 00	6.1397E-01
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 187 TO 562

K EQUALS 0	1	2	3	4	5	6	7
9.8542E 02	4.4635E 02	4.4820E 01	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 562 TO 750

K EQUALS 0	1	2	3	4	5	6	7
1.3182E 03	1.5840E 02	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PROTONS	0.18667E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.3565E 02	0.2251E 02	0.2681E 02	0.3982E 02	0.4220E 02	0.2066E 02	0.2277E 02	0.2082E 02	0.5722E 01

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	0. TO 10.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
7.5040E 00	6.6464E 00	5.3600E 00	1.7152E 00	8.5760E-01	1.0720E 00	1.7152E 00	2.1440E 00
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.0720E 00	1.7152E 00	1.7152E 00	1.0720E 00	1.7152E 00	1.9296E 00	1.0720E 00	1.0720E 00
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.7152E 00	8.5760E-01	6.4320E-01	0.	0.	4.2880E-01	0.	1.2864E 00
INTERVAL 25							
3.4304E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	10.00 TO 30.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
7.8974E 00	4.5520E 00	2.8244E 00	1.5356E 00	1.5356E 00	9.5976E-01	1.2066E 00	9.3234E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
9.5976E-01	6.5812E-01	5.7585E-01	7.4038E-01	5.4843E-01	3.5648E-01	4.1132E-01	1.6453E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
4.1132E-01	1.6453E-01	2.4679E-01	1.3711E-01	4.1132E-01	3.5648E-01	5.2101E-01	2.7422E-01
INTERVAL 25							
2.7422E-01							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1402E 04 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.246606E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.8597E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.164656E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	30.00 TO 90.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
6.0554E 00	2.9750E 00	1.6361E 00	1.0832E 00	7.8231E-01	4.8894E-01	3.9491E-01	2.4447E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.5952E-01	1.5797E-01	9.7788E-02	9.7788E-02	9.4027E-02	4.5133E-02	5.2655E-02	4.8894E-02
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
2.6328E-02	4.8894E-02	3.7611E-02	2.2567E-02	1.5044E-02	3.7611E-03	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	90.00 TO 180.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.9771E 00	9.7716E-01	4.8206E-01	2.3778E-01	7.8173E-02	8.1430E-02	2.2800E-02	6.5144E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
3.2572E-03	3.2572E-03	3.2572E-03	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.4400E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.776385E 02 MEV FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1462E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.374398E 02 MEV FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE NEUTRON FOR THE ENERGY INTERVAL (MEV) 0 TO 187

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
6.271E 02	5.346E 02	4.815E 02	3.515E 02	2.591E 02	1.629E 02	1.135E 02	9.004E 01	7.129E 01

TYPE OF CASCADE PARTICLE NEUTRON FOR THE ENERGY INTERVAL (MEV) 187 TO 562

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
3.224E 02	1.626E 02	6.317E 01	2.126E 01	4.220E 00	8.983E-01	0.	0.	0.

TYPE OF CASCADE PARTICLE NEUTRON FOR THE ENERGY INTERVAL (MEV) 562 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.264E 02	1.744E 01	3.673E-01	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.62	2455.9	02714

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 0 TO 187

K EQUALS 0	1	2	3	4	5	6	7
1.5165E 02	3.7268E 02	3.2970E 02	2.7629E 02	2.0752E 02	9.0867E 01	4.4206E 01	1.4725E 01
8	9	10	11	12	13	14	15
3.0698E 00	1.8419E 00	6.1397E-01	0.	0.	0.	0.	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 187 TO 562

K EQUALS 0	1	2	3	4	5	6	7
1.0536E 03	4.1934E 02	2.0261E 01	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 562 TO 750

K EQUALS 0	1	2	3	4	5	6	7
1.4256E 03	6.7536E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
NEUTRONS	0.74936E-01		

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	0. TO 25.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.7382E-01	3.4765E-02	3.4765E-02	6.9530E-02	0.	0.	6.9530E-02	6.9530E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.4335E-01	1.0429E-01	1.0429E-01	1.0429E-01	6.9530E-02	3.4765E-02	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	25.00 TO 75.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.0061E-01	1.5595E-01	6.0366E-02	5.0305E-02	4.5275E-02	4.5275E-02	4.0244E-02	2.5153E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
4.0244E-02	3.0183E-02	1.5092E-02	5.0305E-03	5.0305E-03	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3337E 02 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.219375E 03 MEV FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1856E 02 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.117439E 03 MEV FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	75.00 TO 130.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.3367E-01	2.4205E-01	5.7803E-02	5.0577E-02	1.0838E-02	3.6127E-03	3.6127E-03	3.6127E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	3.6127E-03	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	130.00 TO 180.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.1854E-01	2.1884E-01	9.1183E-02	0.	0.	9.1183E-03	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1528E 02 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.532979E 02 MEV FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1313E 02 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.456250E 02 MEV FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 0 TO 187

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
9.722E 00	7.315E 00	1.286E 01	1.826E 01	1.576E 01	1.317E 01	1.579E 01	1.238E 01	1.296E 01

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 187 TO 562

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
2.755E 01	1.351E 01	3.673E 00	8.983E-01	5.627E-01	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 562 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 0 TO 187

K EQUALS 0	1	2	3	4	5	6	7
3.4382E 01	1.7437E 02	1.2279E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 187 TO 562

K EQUALS 0	1	2	3	4	5	6	7
1.7559E 02	3.4382E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 562 TO 750

K EQUALS 0	1	2	3	4	5	6	7
2.0998E 02	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI +	0.38372E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.3565E 02	0.2251E 02	0.2681E 02	0.3982E 02	0.4220E 02	0.2066E 02	0.2277E 02	0.2082E 02	0.9722E 01

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	0. TO 25.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.0429E-01	0.	0.	0.	0.	0.	3.4765E-02	3.4765E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
6.9530E-02	1.7382E-01	3.4765E-02	6.9530E-02	6.9530E-02	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	25.00 TO 75.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.3079E-01	8.0488E-02	7.5458E-02	5.0305E-02	3.0183E-02	2.5153E-02	3.5214E-02	2.0122E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.5092E-02	0.	1.0061E-02	1.5092E-02	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1773E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.244412E 03 MEV FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1464E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.991237E 02 MEV FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	75.00 TO 130.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.3006E-01	1.4089E-01	5.4190E-02	4.6965E-02	1.4451E-02	1.4451E-02	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	130.00 TO 180.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.6443E-01	1.7325E-01	1.0030E-01	5.4710E-02	9.1183E-03	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1203E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.539189E 02 MEV FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1805E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.436364E 02 MEV FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 0 TO 187

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
4.861E 00	1.069E 01	1.102E 01	1.138E 01	1.294E 01	1.228E 01	1.286E 01	2.138E 01	1.296E 01

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 187 TO 562

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.620E 01	8.441E 00	2.938E 00	0.	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 562 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 0 TO 187

K EQUALS 0	1	2	3	4	5	6	7
2.0261E 01	1.5349E 02	2.4559E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 187 TO 562

K EQUALS 0	1	2	3	4	5	6	7
1.5595E 02	2.0261E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 562 TO 750

K EQUALS 0	1	2	3	4	5	6	7
1.7621E 02	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI 0	0.31959E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.3565E 02	0.2251E 02	0.2681E 02	0.3982E 02	0.4220E 02	0.2066E 02	0.2277E 02	0.2082E 02	0.9722E 01

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	0. TO 25.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.4765E-02	6.9530E-02	0.	0.	0.	0.	0.	3.4765E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
6.9530E-02	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	25.00 TO 75.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
7.0427E-02	8.0488E-02	4.5275E-02	1.5092E-02	1.0061E-02	1.0061E-02	2.0122E-02	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
5.0305E-03	1.0061E-02	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.6258E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.140000E 03 MEV FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.7999E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.778302E 02 MEV FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	75.00 TO 130.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.3006E-01	7.9479E-02	3.9739E-02	1.8063E-02	0.	3.6127E-03	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	130.00 TO 180.00	25	30.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.7325E-01	1.3678E-01	2.7355E-02	0.	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.8128E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.406000E 02 MEV FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1012E 02 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.320270E 02 MEV FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 0 TO 187

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
3.241E 00	8.441E 00	5.877E 00	7.186E 00	9.566E 00	6.887E 00	8.448E 00	1.238E 01	4.861E 00

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 187 TO 562

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
3.241E 00	3.939E 00	0.	0.	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 562 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 0 TO 187

K EQUALS 0	1	2	3	4	5	6	7
5.5257E 00	9.9463E 01	0.	0.	0.	0.	0.	0.

8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 187 TO 562

K EQUALS 0	1	2	3	4	5	6	7
9.9463E 01	5.5257E 00	0.	0.	0.	0.	0.	0.

8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 562 TO 750

K EQUALS 0	1	2	3	4	5	6	7
1.0499E 02	0.	0.	0.	0.	0.	0.	0.

8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	750	PB	207	82	04000	6.68	2455.9	02714

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI -	0.99415E-01		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.3565E 02	0.2251E 02	0.2681E 02	0.3982E 02	0.4220E 02	0.2066E 02	0.2277E 02	0.2082E 02	0.9722E 01

CASE NUMBER 207 82 750 2

A= 207
Z= 82
KINETIC ENERGY (MEV)= 750.00
PROTON
GEOMETRIC CROSS SECTION (MB)= 2455.67
CUTOFF ENERGY (MEV)= 6.68
4000 CASE HISTORIES
INELASTIC CROSS SECTION (MB) 1666.31

AVERAGE EVAPORATION YIELD PER INELASTIC EVENT

NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
13.7004424	1.5648490	0.3551953	0.1079587	0.0070007	0.1215917

CASE NUMBER 207 82 750 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
207	83	6	3.68
	82	9	5.53
	81	1	0.61
206	83	9	5.53
	82	91	55.87
	81	90	55.26
205	83	8	4.91
	82	37	22.72
	81	27	16.58
	80	6	3.68
204	83	9	5.53
	82	33	20.26
	81	13	7.98
	80	5	3.07
203	83	9	5.53
	82	25	15.35
	81	15	9.21
	80	5	3.07
	79	1	0.61
202	83	6	3.68
	82	26	15.96
	81	14	8.60
	80	6	3.68
	79	1	0.61
201	83	10	6.14
	82	23	14.12
	81	18	11.05
	80	5	3.07
200	83	7	4.30
	82	31	19.03
	81	6	3.68
	80	6	3.68
199	83	4	2.46
	82	26	15.96
	81	20	12.28
	80	9	5.53
198	83	4	2.46
	82	24	14.74
	81	18	11.05
	80	8	4.91
	79	1	0.61
	78	1	0.61
197	83	7	4.30
	82	23	14.12
	81	23	14.12
	80	6	3.68
	78	1	0.61
196	83	9	5.53
	82	7	4.30
	81	21	12.89
	80	9	5.53
	79	3	1.84
195	83	5	3.07
	82	21	12.89
	81	26	15.96

CASE NUMBER 207 82 750 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
195	80	10	6.14
	79	1	0.61
	78	1	0.61
194	83	4	2.46
	82	35	21.49
	81	17	10.44
	80	18	11.05
	78	1	0.61
193	83	4	2.46
	82	14	8.60
	81	22	13.51
	80	20	12.28
	79	3	1.84
	78	2	1.23
192	82	16	9.82
	81	23	14.12
	80	9	5.53
	79	4	2.46
	78	1	0.61
191	82	14	8.60
	81	29	17.81
	80	19	11.67
	79	6	3.68
	78	1	0.61
	77	1	0.61
190	82	13	7.98
	81	29	17.81
	80	34	20.87
	79	4	2.46
	78	2	1.23
189	82	10	6.14
	81	26	15.96
	80	19	11.67
	79	8	4.91
	78	1	0.61
188	82	5	3.07
	81	16	9.82
	80	30	18.42
	79	19	11.67
	78	2	1.23
187	81	28	17.19
	80	32	19.65
	79	14	8.60
	78	3	1.84
186	81	12	7.37
	80	33	20.26
	79	22	13.51
	78	5	3.07
185	81	16	9.82
	80	39	23.94
	79	29	17.81
	78	3	1.84
184	81	5	3.07
	80	26	15.96
	79	31	19.03

CASE NUMBER 207 82 750 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
184	78	9	5.53
	77	1	0.61
183	81	3	1.84
	80	20	12.28
	79	21	12.89
	78	12	7.37
	77	2	1.23
182	81	4	2.46
	80	16	9.82
	79	39	23.94
	78	11	6.75
	77	2	1.23
181	80	7	4.30
	79	27	16.58
	78	25	15.35
	77	6	3.68
	76	2	1.23
180	80	3	1.84
	79	16	9.82
	78	26	15.96
	77	13	7.98
	76	3	1.84
179	80	1	0.61
	79	9	5.53
	78	35	21.49
	77	20	12.28
	76	4	2.46
178	79	5	3.07
	78	22	13.51
	77	26	15.96
	76	11	6.75
177	79	1	0.61
	78	15	9.21
	77	30	18.42
	76	17	10.44
	75	1	0.61
	74	1	0.61
176	78	4	2.46
	77	29	17.81
	76	25	15.35
	75	9	5.53
	73	1	0.61
175	77	22	13.51
	76	26	15.96
	75	9	5.53
	74	2	1.23
174	77	7	4.30
	76	41	25.17
	75	15	9.21
	74	6	3.68
173	77	1	0.61
	76	22	13.51
	75	22	13.51
	74	8	4.91
172	76	8	4.91

CASE NUMBER 207 82 750 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
172	75	16	9.82
	74	14	8.60
	73	1	0.61
171	76	1	0.61
	75	20	12.28
	74	11	6.75
	73	5	3.07
	72	1	0.61
170	75	15	9.21
	74	18	11.05
	73	11	6.75
	72	2	1.23
169	74	17	10.44
	73	14	8.60
	72	2	1.23
168	75	1	0.61
	74	15	9.21
	73	20	12.28
	72	5	3.07
167	74	5	3.07
	73	19	11.67
	72	8	4.91
166	73	20	12.28
	72	14	8.60
165	73	5	3.07
	72	17	10.44
	71	4	2.46
164	73	1	0.61
	72	11	6.75
163	72	11	6.75
	71	2	1.23
	70	2	1.23
162	72	2	1.23
	71	6	3.68
	70	3	1.84
161	71	6	3.68
	70	3	1.84
160	71	7	4.30
	70	3	1.84
	69	1	0.61
159	70	7	4.30
	69	2	1.23
	68	1	0.61
158	70	2	1.23
	69	1	0.61
	68	1	0.61
157	69	2	1.23
	68	1	0.61
156	69	3	1.84
155	69	1	0.61
	68	3	1.84
	67	1	0.61
154	68	1	0.61
149	67	1	0.61

CASE NUMBER 207 82 750 2

MOMENTS OF THE ENERGY DISTRIBUTIONS FOR THE FOLLOWING EVAPORATION PARTICLES

	NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
1ST MOM.	4.07844E 00	1.31242E 01	1.43461E 01	1.49057E 01	2.59660E 01	2.65008E 01
2ND MOM.	3.05874E 01	1.89740E 02	2.28301E 02	2.41048E 02	6.90133E 02	7.27622E 02
3RD MOM.	3.44631E 02	3.08660E 03	4.07006E 03	4.26669E 03	1.88372E 04	2.05651E 04

NORMALIZED EVAPORATION NEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.063027	0.114741	0.144639	0.166186	0.172112	0.167533	0.181270	0.199316	0.197969	0.194737
1	0.193390	0.199855	0.197161	0.200124	0.179923	0.191235	0.170227	0.186118	0.178038	0.181806
2	0.171035	0.166186	0.161338	0.157029	0.154335	0.153796	0.155413	0.145447	0.148410	0.130902
3	0.126323	0.137097	0.118512	0.120936	0.129825	0.126593	0.097773	0.096426	0.107469	0.115280
4	0.102082	0.103429	0.094271	0.093732	0.096695	0.079188	0.089961	0.092116	0.092386	0.079188
5	0.075956	0.078649	0.079996	0.074609	0.071646	0.069222	0.063835	0.060333	0.065182	0.066528
6	0.060872	0.059525	0.055755	0.056293	0.047136	0.055485	0.054408	0.054138	0.049560	0.048752
7	0.050637	0.045250	0.041479	0.040671	0.041749	0.039594	0.036092	0.031513	0.032321	0.039594
8	0.032860	0.033668	0.030975	0.034207	0.033399	0.028012	0.026935	0.023164	0.030436	0.022625
9	0.026935	0.023972	0.024780	0.023433	0.021817	0.022086	0.016430	0.018046	0.018854	0.016699
10	0.016161	0.019932	0.017238	0.016161	0.016161	0.012929	0.014814	0.014006	0.016699	0.016699
11	0.017238	0.012929	0.014545	0.013737	0.015622	0.010774	0.009158	0.012659	0.013737	0.010774
12	0.013198	0.009158	0.013198	0.011043	0.009966	0.009696	0.010504	0.011582	0.008619	0.007811
13	0.008080	0.008888	0.005387	0.008619	0.005926	0.007811	0.008350	0.008080	0.009427	0.007272
14	0.007272	0.007542	0.006195	0.005387	0.005926	0.009158	0.005926	0.005387	0.007003	0.004579
15	0.004040	0.004040	0.007003	0.003501	0.003232	0.003232	0.004579	0.002963	0.004579	0.005387
16	0.003232	0.003501	0.002963	0.004310	0.003771	0.002963	0.003501	0.003771	0.003501	0.005118
17	0.002693	0.003232	0.002155	0.002155	0.003501	0.001885	0.003232	0.002963	0.004040	0.001616
18	0.002155	0.002155	0.001077	0.002963	0.003232	0.002963	0.002424	0.003232	0.001885	0.002424
19	0.000808	0.001616	0.000808	0.001347	0.002424	0.000269	0.001077	0.001616	0.001347	0.002424
20	0.001347	0.002155	0.000539	0.001616	0.001077	0.001077	0.001347	0.001347	0.001616	0.000808
21	0.000808	0.001077	0.	0.001077	0.001616	0.000808	0.001077	0.001885	0.000808	0.000808
22	0.001077	0.000808	0.000539	0.001347	0.000269	0.001885	0.	0.000808	0.001077	0.000269
23	0.000269	0.000269	0.000269	0.000539	0.000808	0.000269	0.000269	0.000808	0.000269	0.000808
24	0.000539	0.	0.000269	0.000539	0.000269	0.000269	0.	0.	0.	0.

NORMALIZED EVAPORATION PROTON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
7	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
8	0.009620	0.012025	0.036075	0.050505	0.079365	0.091390	0.108225	0.122655	0.132275	0.122655
9	0.137085	0.158730	0.163540	0.139490	0.144300	0.158730	0.153920	0.165945	0.132275	0.192400
10	0.168350	0.163540	0.134680	0.151515	0.129870	0.144300	0.163540	0.185185	0.134680	0.144300
11	0.122655	0.139490	0.139490	0.125060	0.117845	0.132275	0.134680	0.122655	0.127465	0.091390
12	0.127465	0.122655	0.117845	0.115440	0.105820	0.108225	0.108225	0.093795	0.103415	0.096200
13	0.108225	0.079365	0.115440	0.072150	0.069745	0.105820	0.098605	0.081770	0.084175	0.088985
14	0.093795	0.084175	0.052910	0.072150	0.057720	0.055315	0.057720	0.074555	0.069745	0.043290
15	0.052910	0.055315	0.052910	0.060125	0.055315	0.055315	0.072150	0.045695	0.040885	0.052910
16	0.057720	0.055315	0.038480	0.050505	0.048100	0.024050	0.031265	0.050505	0.038480	0.021645
17	0.036075	0.016835	0.036075	0.040885	0.026455	0.036075	0.043290	0.040885	0.024050	0.040885
18	0.024050	0.021645	0.026455	0.038480	0.024050	0.031265	0.026455	0.031265	0.019240	0.016835
19	0.043290	0.028860	0.007215	0.021645	0.012025	0.024050	0.004810	0.014430	0.031265	0.019240
20	0.014430	0.026455	0.024050	0.019240	0.014430	0.014430	0.014430	0.012025	0.012025	0.007215
21	0.007215	0.007215	0.009620	0.002405	0.021645	0.021645	0.024050	0.007215	0.012025	0.012025
22	0.009620	0.002405	0.012025	0.014430	0.009620	0.009620	0.009620	0.012025	0.009620	0.007215
23	0.009620	0.009620	0.007215	0.007215	0.007215	0.002405	0.007215	0.002405	0.002405	0.004810
24	0.009620	0.002405	0.007215	0.002405	0.004810	0.002405	0.	0.007215	0.007215	0.

NORMALIZED EVAPORATION DEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.	0.016598	0.078838	0.089212	0.101660
10	0.124481	0.130705	0.122407	0.116183	0.080913	0.091286	0.099585	0.093361	0.070539	0.076763
15	0.089212	0.070539	0.058091	0.043558	0.051867	0.039419	0.033195	0.026971	0.031120	0.014523
20	0.024896	0.014523	0.012448	0.020747	0.022822	0.029046	0.012448	0.008299	0.016598	0.008299
25	0.010373	0.010373	0.010373	0.014523	0.002075	0.004149	0.006224	0.	0.002075	0.002075
30	0.002075	0.	0.	0.	0.002075	0.	0.	0.002075	0.002075	0.004149
35	0.	0.	0.	0.002075	0.002075	0.	0.	0.	0.	0.
40	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
45	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION TRITON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.	0.	0.013652	0.061433	0.061433
10	0.116041	0.075085	0.122867	0.129693	0.095563	0.116041	0.122867	0.068259	0.116041	0.088737
15	0.102389	0.068259	0.061433	0.040956	0.081911	0.054608	0.027304	0.020478	0.020478	0.075085
20	0.047782	0.034130	0.020478	0.027304	0.006826	0.027304	0.013652	0.006826	0.006826	0.027304
25	0.013652	0.	0.006826	0.	0.	0.	0.	0.	0.	0.006826
30	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.006826
35	0.	0.	0.	0.006826	0.	0.	0.	0.	0.	0.
40	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
45	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION HE3 SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
10	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
15	0.	0.	0.	0.	0.	0.	0.	0.	0.105263	0.
20	0.	0.	0.	0.	0.	0.315789	0.315789	0.	0.105263	0.
25	0.105263	0.	0.210526	0.421053	0.105263	0.	0.	0.	0.	0.105263
30	0.	0.	0.105263	0.	0.	0.	0.	0.	0.	0.
35	0.	0.	0.	0.	0.	0.	0.105263	0.	0.	0.
40	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
45	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION ALPHA SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
10	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
15	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.006061
20	0.006061	0.018182	0.018182	0.090909	0.084848	0.133333	0.139394	0.163636	0.133333	0.109091
25	0.109091	0.133333	0.078788	0.090909	0.109091	0.030303	0.048485	0.054545	0.036364	0.024242
30	0.042424	0.048485	0.024242	0.030303	0.030303	0.024242	0.	0.030303	0.006061	0.024242
35	0.012121	0.006061	0.018182	0.018182	0.006061	0.012121	0.006061	0.006061	0.	0.
40	0.	0.012121	0.012121	0.	0.	0.	0.	0.	0.	0.
45	0.	0.006061	0.	0.	0.	0.	0.	0.	0.	0.006061

INPUT

FROM CARDS

USED FILE 1 INCIDENT PARTICLE PROTON INCIDENT KINETIC ENERGY 1000.000 MEV

TOTAL NUMBER OF INCIDENT PARTICLES 3000 TARGET SYMBOL PB

SIZE OF HISTOGRAMS FOR OUTGOING K.E. 25 FOR PROT, 25 FOR NEUT, 25 FOR PI+, 25 FOR PI0, 25 FOR PI-.

CROSS SECTIONS WERE CALCULATED FOR AS MANY AS 9 EMITTED PARTICLE COMBINATIONS.

101.000 MEV INTERVAL WAS USED IN CALCULATING HISTOGRAM FOR N(E*)DE FOR TOTAL REACTION

DELTAS FOR OUTGOING KINETIC ENERGY DISTRIBUTION IN MEV

	-.6 MU -.4 0 (K.E.) 10D	-.1 MU +.1 0 (K.E.) 10D	+.4 MU +.6 0 (K.E.) 10D	+.9 MU +.95 0 (K.E.) 20D	+.95 MU +1.0 0 (K.E.) 20D
PROTONS	100.0000	100.0000	100.0000	50.0000	50.0000
NEUTRONS	100.0000	100.0000	100.0000	50.0000	50.0000
PI+	100.0000	100.0000	100.0000	50.0000	50.0000
PI0	100.0000	100.0000	100.0000	50.0000	50.0000
PI-	100.0000	100.0000	100.0000	50.0000	50.0000

D = DELTA, RESPECTIVE ENERGY INTERVALS OF HISTOGRAMS

OUTGOING COMBINATIONS	10000	01000	00100	00010	00001	01001	10100	11000	11001
INTERVAL FOR N(E*)DE IN MEV	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000

FROM RECORD 1

3000 INCIDENT PROTON HIT PB TARGET WITH 207.000 MASS AND 82.000 ATOMIC NUMBER AT 1000.000MEV.

FROM RECORD N

THERE WERE 2049. INCIDENT PARTICLE COLLISIONS CREATING 2049 ESCAPING PARTICLE RECORDS. THE GEOMETRIC CROSS SECTION WAS 2455.8685303 MB. THE INELASTIC CROSS SECTION WAS 1677.3582001 MB. THE CUT OFF ENERGY WAS 6.6831360 MEV.

PROTON ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

MOMENTUM OF COMPOUND NUCLEUS 1697.100250MEV/C EXCITATION ENERGY OF COMPOUND NUCLEUS 1006.915207MEV

THE MASS OF THE RESIDUAL NUCLEUS WAS ZERO 0 TIMES, WAS MINUS 0 TIMES CUT OFF ENERGY 6.683136MEV

FOR 140 INCIDENT PARTICLE COLLISIONS THERE WERE MORE THAN 9 OUT GOING PARTICLES

EMITTED CASCADE PARTICLES

	PROTONS	NEUTRONS	PI+	PIO	PI-
AVERAGE NO.	0.2050268E 01	0.2967301E 01	0.1815520E-00	0.1649585E-00	0.1117618E-00
VARIANCE	0.1858381E 01	0.3977945E 01	0.1612800E-00	0.1445798E-00	0.1051276E-00
AV. K.E. (MEV)	0.1513785E 03	0.9905618E 02	0.9820456E 02	0.9770903E 02	0.8352996E 02
VARIANCE	0.4866577E 05	0.2390913E 05	0.1070813E 05	0.1142368E 05	0.1043662E 05

RESIDUAL NUCLEUS

OUTGOING COMBINATION	CO	C1	ARM	AREE	AAR
TOTAL CASCADE	0.2985347	0.2459375	715.3587189	261.3075600	202.9824295
10000	0.0457518	0.1624398	287.9354858	42.8889828	207.0000000
01000	0.0532345	0.1525953	278.5335732	53.0647774	207.0000000
00100	0.	0.	0.	0.	208.0000000
00010	0.	0.	0.	0.	208.0000000
00001	0.	0.	0.	0.	208.0000000
01001	0.2818204	0.0923238	503.2880096	102.9766951	207.0000000
10100	0.1481740	0.1027139	320.6847916	46.1737003	207.0000000
11000	0.0582176	0.1283233	266.6343269	60.1569319	206.0000000
11001	0.2973328	0.2117695	702.0031128	222.7031174	206.0000000

CO = (SUM OF PARALLEL RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

C1 = (SUM OF PERPENDICULAR RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

ARM = AVERAGE RESIDUAL MOMENTUM IN MEV/C

AREE = AVERAGE RESIDUAL EXCITATION ENERGY IN MEV

AAR = AVERAGE MASS OF RESIDUAL NUCLEUS FOR TOTAL CASCADE
AAR = MASS OF RESIDUAL NUCLEUS FOR DESIGNATED OUTGOING COMBINATIONS

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PROTON ON PB        INC. K.E. (MEV) IS  1000.0   A IS  207.   Z IS  82.    3000 INC. HISTORIES        6.7 MEV CUTOFF EN.

                    ANGULAR DISTRIBUTION OF THE CASCADE NUCLEUS  (FRACTION IN DELTA MU)/(DELTA MU)

       -0.9000000E 00        -0.7000000E 00        -0.5000000E 00        -0.3000000E-00        -0.1000000E-00
                0.1000000E-00         0.3000000E-00         0.5000000E 00         0.7000000E 00         0.9000000E 00

            TOTAL CASCADE                              RATIO OF FORWARD /BACKWARD     0.9093596E 01
        0.2928258E-01         0.7564666E-01         0.8296730E-01         0.1195705E-00         0.1878965E-00
                0.3221083E-00         0.5075647E 00         0.6783797E 00         0.1120059E 01         0.1876525E 01

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.1886792E 01         0.2735849E 01         0.3773585E-00         0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.1896552E 01         0.2241379E 01         0.6896552E 00         0.1724138E-00         0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.5000000E 01

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.2500000E 01         0.2500000E 01

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.2142857E 01
        0.9090909E-01         0.4090909E-00         0.3636364E-00         0.2727273E-00         0.4545455E-00
                0.5000000E-00         0.4545455E-00         0.1090909E 01         0.8636364E 00         0.5000000E-00

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.6000000E 01
        0.                    0.                    0.                    0.7142857E 00         0.
                0.7142857E 00         0.7142857E 00         0.                    0.7142857E 00         0.2142857E 01
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PROTON ON PB       INC. K.E. (MEV) IS  1000.0   A IS  207.   Z IS  82.    3000 INC. HISTORIES        6.7 MEV CUTOFF EN.

      EXCITATION ENERGY DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS (FRACTION PER UNIT EN.)    (DE=DELTA E(MEV))

DEA IS  0.1010000E 03   DEB IS  0.2500000E 02   DEC IS  0.2500000E 02   DED IS  0.2500000E 02   DEE IS  0.2500000E 02
  DEF IS  0.2500000E 02   DEG IS  0.2500000E 02   DEH IS  0.2500000E 02   DEI IS  0.2500000E 02   DEJ IS  0.2500000E 02

            TOTAL CASCADE                          (SUM OVER HISTOGRAM)X(DEA)        0.1000000E 01      0 OFL
        0.2749470E-02          0.1749223E-02          0.1473793E-02          0.1410976E-02          0.1135545E-02
                0.7924658E-03          0.4107292E-03          0.1642917E-03          0.1449632E-04          0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEB)        0.1000000E 01      0 OFL
        0.1584906E-01          0.1132075E-01          0.8301887E-02          0.1509434E-02          0.1509434E-02
                0.7547170E-03          0.7547170E-03          0.                     0.                     0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEC)        0.1000000E 01      0 OFL
        0.1793103E-01          0.5517241E-02          0.6896552E-02          0.4137931E-02          0.2758621E-02
                0.                     0.                     0.                     0.1379310E-02          0.1379310E-02

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DED)        0.                     0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEE)        0.                     0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEF)        0.                     0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEG)        0.1000000E 01      0 OFL
        0.                     0.                     0.                     0.                     0.4000000E-01
                0.                     0.                     0.                     0.                     0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEH)        0.1000000E 01      0 OFL
        0.2000000E-01          0.6666667E-02          0.6666667E-02          0.                     0.
                0.6666667E-02          0.                     0.                     0.                     0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEI)        0.9454545E 00      6 OFL
        0.1854545E-01          0.5454545E-02          0.7272727E-02          0.1818182E-02          0.2181818E-02
                0.7272727E-03          0.7272727E-03          0.                     0.7272727E-03          0.3636364E-03

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEJ)        0.7142857E 00      2 OFL
        0.                     0.                     0.1142857E-01          0.5714286E-02          0.5714286E-02
                0.                     0.5714286E-02          0.                     0.                     0.
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DESCRIPTION OF THE FOLLOWING MOMENTUM DISTRIBUTIONS

THE FIRST GROUP OF NUMBERS BELOW THE TITLES SPECIFY THE MIDPOINTS OF THE MOMENTUM INTERVALS.
THE MOMENTUM IS THE NUMBER INDICATED (MEV/C).

THE SUBSEQUENT GROUPS OF NUMBERS ARE THE FRACTION OF THE TOTAL IN EACH INTERVAL DIVIDED BY DELTA P.

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PROTON ON PB       INC. K.E. (MEV) IS  1000.0   A IS  207.   Z IS  82.    3000 INC. HISTORIES        6.7 MEV CUTOFF EN.

                              THE MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

  0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
        0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

            TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.5952794E-03   0.8483451E-03   0.8569723E-03   0.7591970E-03   0.7160608E-03   0.6039067E-03   0.5233858E-03
        0.3479653E-03   0.3048291E-03   0.1955507E-03   0.7476940E-04   0.4313619E-04   0.1725448E-04   0.5751492E-05

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.1111774E-02   0.2779436E-02   0.1556484E-02   0.4447097E-03   0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.1625491E-02   0.2438236E-02   0.1422304E-02   0.              0.4063727E-03   0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.              0.              0.5892404E-02   0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.1964134E-02   0.9820673E-03   0.1964134E-02   0.9820673E-03   0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.2303394E-02   0.2035558E-02   0.8570769E-03   0.4285384E-03   0.1607019E-03   0.5356731E-04   0.5356731E-04
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.              0.2525316E-02   0.8417720E-03   0.              0.8417720E-03   0.              0.
        0.              0.8417720E-03   0.8417720E-03   0.              0.              0.              0.
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PROTON ON PB       INC. K.E. (MEV) IS  1000.0   A IS  207.   Z IS  82.    3000 INC. HISTORIES        6.7 MEV CUTOFF EN.

                    THE PERPENDICULAR MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

  0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
        0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

            TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.1098535E-02   0.1521270E-02   0.1325719E-02   0.9806294E-03   0.5291373E-03   0.2760716E-03   0.1294086E-03
        0.2013022E-04   0.8627238E-05   0.2875746E-05   0.                0.                0.                0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PI0   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.1111774E-02   0.3001790E-02   0.1556484E-02   0.2223549E-03   0.                0.                0.
        0.                0.                0.                0.                0.                0.                0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PI0   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.2031863E-02   0.2641422E-02   0.8127453E-03   0.2031863E-03   0.2031863E-03   0.                0.
        0.                0.                0.                0.                0.                0.                0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PI0   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                0 OFL
  0.                0.                0.                0.                0.                0.                0.
        0.                0.                0.                0.                0.                0.                0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PI0   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                0 OFL
  0.                0.                0.                0.                0.                0.                0.
        0.                0.                0.                0.                0.                0.                0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PI0   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                0 OFL
  0.                0.                0.                0.                0.                0.                0.
        0.                0.                0.                0.                0.                0.                0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PI0   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.5892404E-02   0.                0.                0.                0.                0.                0.
        0.                0.                0.                0.                0.                0.                0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PI0   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.2946202E-02   0.1964134E-02   0.9820673E-03   0.                0.                0.                0.
        0.                0.                0.                0.                0.                0.                0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PI0   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.3106904E-02   0.1553452E-02   0.7499423E-03   0.3214038E-03   0.1607019E-03   0.                0.
        0.                0.                0.                0.                0.                0.                0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PI0   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.8417720E-03   0.3367088E-02   0.                0.8417720E-03   0.8417720E-03   0.                0.
        0.                0.                0.                0.                0.                0.                0.
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PROTON ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

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-0.2291085E 04  -0.2121375E 04  -0.1951665E 04  -0.1781955E 04  -0.1612245E 04  -0.1442535E 04  -0.1272825E 04
      -0.1103115E 04  -0.9334051E 03  -0.7636951E 03  -0.5939851E 03  -0.4242751E 03  -0.2545650E 03  -0.8485501E 02
 0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
      0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

          TOTAL CASCADE                        (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
 0.              0.              0.              0.              0.              0.              0.
      0.              0.              0.              0.              0.5751492E-05   0.8627238E-05   0.5463917E-04   0.5147585E-03
 0.1153174E-02   0.9547477E-03   0.7131850E-03   0.6211611E-03   0.4917526E-03   0.4169832E-03   0.3565925E-03
      0.2386869E-03   0.1754205E-03   0.1092783E-03   0.5176343E-04   0.1725448E-04   0.5751492E-05   0.2875746E-05

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
 0.              0.              0.              0.              0.              0.              0.
      0.              0.              0.              0.              0.              0.              0.              0.
 0.5447694E-02   0.4447097E-03   0.              0.              0.              0.              0.
      0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
 0.              0.              0.              0.              0.              0.              0.
      0.              0.              0.              0.              0.              0.              0.              0.
 0.5079658E-02   0.6095590E-03   0.2031863E-03   0.              0.              0.              0.
      0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
 0.              0.              0.              0.              0.              0.              0.
      0.              0.              0.              0.              0.              0.              0.              0.
 0.              0.              0.              0.              0.              0.              0.
      0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
 0.              0.              0.              0.              0.              0.              0.
      0.              0.              0.              0.              0.              0.              0.              0.
 0.              0.              0.              0.              0.              0.              0.
      0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
 0.              0.              0.              0.              0.              0.              0.
      0.              0.              0.              0.              0.              0.              0.              0.
 0.              0.              0.              0.              0.              0.              0.
      0.              0.              0.              0.              0.              0.              0.
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PROTON ON PB       INC. K.E. (MEV) IS  1000.0   A IS  207.   Z IS  82.    3000 INC. HISTORIES        6.7 MEV CUTOFF EN.

                    THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

 -0.2291085E 04  -0.2121375E 04  -0.1951665E 04  -0.1781955E 04  -0.1612245E 04  -0.1442535E 04  -0.1272825E 04
       -0.1103115E 04  -0.9334051E 03  -0.7636951E 03  -0.5939851E 03  -0.4242751E 03  -0.2545650E 03  -0.8485501E 02
  0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
        0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

            TOTAL CASCADE                        (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.5751492E-05   0.8627238E-05   0.5463917E-04   0.5147585E-03
  0.1153174E-02   0.9547477E-03   0.7131850E-03   0.6211611E-03   0.4917526E-03   0.4169832E-03   0.3565925E-03
        0.2386869E-03   0.1754205E-03   0.1092783E-03   0.5176343E-04   0.1725448E-04   0.5751492E-05   0.2875746E-05

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.5892404E-02   0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
  0.1964134E-02   0.2946202E-02   0.9820673E-03   0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.1874856E-02
  0.2356961E-02   0.1178481E-02   0.4285384E-03   0.              0.5356731E-04   0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.8417720E-03
  0.8417720E-03   0.1683544E-02   0.8417720E-03   0.              0.              0.              0.
        0.8417720E-03   0.8417720E-03   0.              0.              0.              0.              0.
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PROTON ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES

1ST NO. IS NO. OF PROTONS EMITTED		2ND IS NO. OF NEUTRONS		3RD IS NO. OF PI+		4TH IS NO. OF PIO		5TH IS NO. OF PI-	
09000	0.81862283E 00	17010	0.16372456E 01	17100	0.16372456E 01	18000	0.73676054E 01		
25002	0.81862283E 00	25020	0.81862283E 00	25101	0.81862283E 00	25110	0.16372456E 01		
26001	0.16372456E 01	26010	0.81862283E 00	26100	0.32744913E 01	27000	0.65489826E 01		
34011	0.81862283E 00	35001	0.32744913E 01	35010	0.81862282E 01	35100	0.32744913E 01		
36000	0.16372456E 02	43101	0.16372456E 01	43200	0.81862283E 00	44001	0.16372456E 01		
44010	0.40931141E 01	44100	0.16372456E 01	45000	0.16372456E 02	53001	0.16372456E 01		
53010	0.24558684E 01	53100	0.16372456E 01	54000	0.98234738E 01	62001	0.81862283E 00		
63000	0.32744913E 01	72000	0.81862283E 00	06011	0.81862283E 00	07001	0.81862283E 00		
07100	0.16372456E 01	08000	0.16372456E 01	15011	0.81862283E 00	15101	0.24558684E 01		
15200	0.16372456E 01	16001	0.24558684E 01	16010	0.40931141E 01	16100	0.49117369E 01		
17000	0.11460719E 02	24101	0.81862283E 00	24110	0.16372456E 01	24200	0.81862283E 00		
25001	0.40931141E 01	25010	0.73676054E 01	25100	0.57303597E 01	26000	0.22102816E 02		
33011	0.81862283E 00	33101	0.81862283E 00	34001	0.65489826E 01	34010	0.57303597E 01		
34100	0.73676054E 01	35000	0.27014554E 02	42011	0.81862283E 00	43001	0.16372456E 01		
43010	0.16372456E 01	43100	0.24558684E 01	44000	0.19646948E 02	52001	0.16372456E 01		
52100	0.81862283E 00	53000	0.11460719E 02	62000	0.24558684E 01	05110	0.81862283E 00		
06010	0.81862283E 00	06100	0.81862283E 00	07000	0.49117369E 01	14020	0.81862283E 00		
14101	0.16372456E 01	15001	0.16372456E 01	15010	0.49117369E 01	15100	0.40931141E 01		
16000	0.21284193E 02	23101	0.24558684E 01	24001	0.90048511E 01	24010	0.65489826E 01		
24100	0.81862282E 01	25000	0.35200781E 02	32011	0.81862283E 00	32020	0.81862283E 00		
32101	0.24558684E 01	32200	0.81862283E 00	33001	0.24558684E 01	33010	0.13916588E 02		
33100	0.40931141E 01	34000	0.26195931E 02	42001	0.32744913E 01	42010	0.81862283E 00		
42100	0.16372456E 01	43000	0.19646948E 02	51001	0.81862283E 00	52000	0.10642096E 02		
04110	0.81862283E 00	04200	0.81862283E 00	05001	0.81862283E 00	05100	0.24558684E 01		
06000	0.16372456E 01	12210	0.81862283E 00	13011	0.16372456E 01	13101	0.24558684E 01		
13110	0.81862283E 00	14001	0.98234738E 01	14010	0.10642096E 02	14100	0.90048511E 01		

PROTON ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PIO 5TH IS NO. OF PI-

CONTINUED

15000	0.26195931E 02	22020	0.81862283E 00	22101	0.40931141E 01	22110	0.81862283E 00
22200	0.16372456E 01	23001	0.65489826E 01	23010	0.90048511E 01	23100	0.98234738E 01
24000	0.35200781E 02	30021	0.81862283E 00	31011	0.81862283E 00	31110	0.81862283E 00
32001	0.65489826E 01	32010	0.81862282E 01	32100	0.73676054E 01	33000	0.35200781E 02
40101	0.81862283E 00	41001	0.81862283E 00	41010	0.81862283E 00	41100	0.24558684E 01
42000	0.20465571E 02	51000	0.16372456E 01	60000	0.81862283E 00	03011	0.16372456E 01
03101	0.81862283E 00	04001	0.81862283E 00	04010	0.32744913E 01	04100	0.40931141E 01
05000	0.57303597E 01	12002	0.16372456E 01	12011	0.16372456E 01	12020	0.81862283E 00
12110	0.24558684E 01	12200	0.16372456E 01	13001	0.98234738E 01	13010	0.13097965E 02
13100	0.14735211E 02	14000	0.32744913E 02	21002	0.81862283E 00	21101	0.32744913E 01
21110	0.24558684E 01	21200	0.81862283E 00	22001	0.57303597E 01	22010	0.13097965E 02
22100	0.12279342E 02	23000	0.40931141E 02	31001	0.49117369E 01	31010	0.90048511E 01
31100	0.57303597E 01	32000	0.27014554E 02	40001	0.16372456E 01	40100	0.81862283E 00
41000	0.90048511E 01	50000	0.81862283E 00	02101	0.81862283E 00	03001	0.16372456E 01
03010	0.40931141E 01	03100	0.40931141E 01	04000	0.98234738E 01	11011	0.24558684E 01
11101	0.57303597E 01	11110	0.24558684E 01	12001	0.40931141E 01	12010	0.27833176E 02
12100	0.13097965E 02	13000	0.40931141E 02	20011	0.16372456E 01	20101	0.81862283E 00
21001	0.65489826E 01	21010	0.98234738E 01	21100	0.15553834E 02	22000	0.36839027E 02
30001	0.24558684E 01	30010	0.16372456E 01	30100	0.81862283E 00	31000	0.12279342E 02
40000	0.40931141E 01	02001	0.16372456E 01	02010	0.49117369E 01	02100	0.11460719E 02
03000	0.11460719E 02	10020	0.81862283E 00	11001	0.57303597E 01	11010	0.23740061E 02
11100	0.36019404E 02	12000	0.33563536E 02	20001	0.24558684E 01	20010	0.98234738E 01
20100	0.32744913E 01	21000	0.39293896E 02	30000	0.57303597E 01	01001	0.81862283E 00
01010	0.32744913E 01	01100	0.49117369E 01	02000	0.12279342E 02	10001	0.24558684E 01
10010	0.65489826E 01	10100	0.49117369E 01	11000	0.90048511E 02	20000	0.49935992E 02
01000	0.23740061E 02	10000	0.43387010E 02				

PROTON ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 1.00 TO 0.95
(THETA FROM 0 DEG. 0 MIN. TO 18 DEG. 12 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
25.0	0.595E-01	25.0	0.120E-00	25.0	0.667E-01	25.0	0.126E-00	25.0	0.471E-01
75.0	0.321E-01	75.0	0.524E-01	75.0	0.222E-01	75.0	0.211E-01	75.0	0.706E-01
125.0	0.211E-01	125.0	0.317E-01	125.0	0.667E-01	125.0	0.211E-01	125.0	0.
175.0	0.250E-01	175.0	0.170E-01	175.0	0.	175.0	0.211E-01	175.0	0.235E-01
225.0	0.172E-01	225.0	0.185E-01	225.0	0.444E-01	225.0	0.211E-01	225.0	0.706E-01
275.0	0.110E-01	275.0	0.155E-01	275.0	0.	275.0	0.421E-01	275.0	0.706E-01
325.0	0.133E-01	325.0	0.959E-02	325.0	0.444E-01	325.0	0.211E-01	325.0	0.235E-01
375.0	0.196E-01	375.0	0.155E-01	375.0	0.	375.0	0.211E-01	375.0	0.471E-01
425.0	0.110E-01	425.0	0.140E-01	425.0	0.889E-01	425.0	0.	425.0	0.235E-01
475.0	0.110E-01	475.0	0.111E-01	475.0	0.667E-01	475.0	0.421E-01	475.0	0.
525.0	0.102E-01	525.0	0.369E-02	525.0	0.	525.0	0.632E-01	525.0	0.
575.0	0.141E-01	575.0	0.148E-01	575.0	0.	575.0	0.	575.0	0.
625.0	0.110E-01	625.0	0.125E-01	625.0	0.	625.0	0.	625.0	0.
675.0	0.149E-01	675.0	0.111E-01	675.0	0.	675.0	0.	675.0	0.235E-01
725.0	0.180E-01	725.0	0.886E-02	725.0	0.	725.0	0.	725.0	0.
775.0	0.861E-02	775.0	0.664E-02	775.0	0.	775.0	0.	775.0	0.
825.0	0.548E-02	825.0	0.590E-02	825.0	0.	825.0	0.	825.0	0.
875.0	0.149E-01	875.0	0.590E-02	875.0	0.	875.0	0.	875.0	0.
925.0	0.384E-01	925.0	0.118E-01	925.0	0.	925.0	0.	925.0	0.
975.0	0.438E-01	975.0	0.140E-01	975.0	0.	975.0	0.	975.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON CN PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.95 TO 0.90
(THETA FROM 18 DEG. 12 MIN. TO 25 DEG. 51 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
25.0	0.108E-00	25.0	0.140E-00	25.0	0.667E-01	25.0	0.	25.0	0.120E-00
75.0	0.495E-01	75.0	0.606E-01	75.0	0.667E-01	75.0	0.727E-01	75.0	0.
125.0	0.302E-01	125.0	0.404E-01	125.0	0.444E-01	125.0	0.364E-01	125.0	0.
175.0	0.242E-01	175.0	0.263E-01	175.0	0.222E-01	175.0	0.	175.0	0.400E-01
225.0	0.218E-01	225.0	0.232E-01	225.0	0.444E-01	225.0	0.364E-01	225.0	0.120E-00
275.0	0.205E-01	275.0	0.232E-01	275.0	0.444E-01	275.0	0.	275.0	0.800E-01
325.0	0.157E-01	325.0	0.152E-01	325.0	0.	325.0	0.145E-00	325.0	0.400E-01
375.0	0.145E-01	375.0	0.121E-01	375.0	0.667E-01	375.0	0.364E-01	375.0	0.
425.0	0.145E-01	425.0	0.808E-02	425.0	0.	425.0	0.727E-01	425.0	0.
475.0	0.109E-01	475.0	0.707E-02	475.0	0.444E-01	475.0	0.	475.0	0.
525.0	0.846E-02	525.0	0.707E-02	525.0	0.	525.0	0.	525.0	0.
575.0	0.483E-02	575.0	0.808E-02	575.0	0.	575.0	0.	575.0	0.
625.0	0.725E-02	625.0	0.606E-02	625.0	0.	625.0	0.	625.0	0.
675.0	0.604E-02	675.0	0.404E-02	675.0	0.	675.0	0.	675.0	0.
725.0	0.133E-01	725.0	0.303E-02	725.0	0.	725.0	0.	725.0	0.
775.0	0.133E-01	775.0	0.505E-02	775.0	0.	775.0	0.	775.0	0.
825.0	0.230E-01	825.0	0.404E-02	825.0	0.	825.0	0.	825.0	0.
875.0	0.121E-01	875.0	0.505E-02	875.0	0.	875.0	0.	875.0	0.
925.0	0.242E-02	925.0	0.101E-02	925.0	0.	925.0	0.	925.0	0.
975.0	0.	975.0	0.	975.0	0.	975.0	0.	975.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON P8 INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.60 TO 0.40
(THETA FROM 53 DEG. 8 MIN. TO 66 DEG. 25 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.331E-01	50.0	0.383E-01	50.0	0.263E-01	50.0	0.320E-01	50.0	0.382E-01
150.0	0.112E-01	150.0	0.739E-02	150.0	0.145E-01	150.0	0.100E-01	150.0	0.118E-01
250.0	0.406E-02	250.0	0.303E-02	250.0	0.921E-02	250.0	0.400E-02	250.0	0.
350.0	0.130E-02	350.0	0.821E-03	350.0	0.	350.0	0.200E-02	350.0	0.
450.0	0.345E-03	450.0	0.442E-03	450.0	0.	450.0	0.200E-02	450.0	0.
550.0	0.	550.0	0.	550.0	0.	550.0	0.	550.0	0.
650.0	0.	650.0	0.	650.0	0.	650.0	0.	650.0	0.
750.0	0.	750.0	0.	750.0	0.	750.0	0.	750.0	0.
850.0	0.	850.0	0.	850.0	0.	850.0	0.	850.0	0.
950.0	0.	950.0	0.	950.0	0.	950.0	0.	950.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	0.100E 01	N IS	1.000E 00	N IS	0.100E 01

PROTON ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.10 TO -0.10
(THETA FROM 84 DEG. 16 MIN. TO 95 DEG. 44 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.439E-01	50.0	0.441E-01	50.0	0.437E-01	50.0	0.344E-01	50.0	0.455E-01
150.0	0.529E-02	150.0	0.512E-02	150.0	0.625E-02	150.0	0.156E-01	150.0	0.227E-02
250.0	0.641E-03	250.0	0.474E-03	250.0	0.	250.0	0.	250.0	0.227E-02
350.0	0.160E-03	350.0	0.285E-03	350.0	0.	350.0	0.	350.0	0.
450.0	0.	450.0	0.	450.0	0.	450.0	0.	450.0	0.
550.0	0.	550.0	0.	550.0	0.	550.0	0.	550.0	0.
650.0	0.	650.0	0.	650.0	0.	650.0	0.	650.0	0.
750.0	0.	750.0	0.	750.0	0.	750.0	0.	750.0	0.
850.0	0.	850.0	0.	850.0	0.	850.0	0.	850.0	0.
950.0	0.	950.0	0.	950.0	0.	950.0	0.	950.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM -0.40 TO -0.60
(THETA FROM 113 DEG. 35 MIN. TO 126 DEG. 54 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.478E-01	50.0	0.464E-01	50.0	0.444E-01	50.0	0.440E-01	50.0	0.478E-01
150.0	0.186E-02	150.0	0.341E-02	150.0	0.556E-02	150.0	0.600E-02	150.0	0.217E-02
250.0	0.311E-03	250.0	0.179E-03	250.0	0.	250.0	0.	250.0	0.
350.0	0.	350.0	0.	350.0	0.	350.0	0.	350.0	0.
450.0	0.	450.0	0.	450.0	0.	450.0	0.	450.0	0.
550.0	0.	550.0	0.	550.0	0.	550.0	0.	550.0	0.
650.0	0.	650.0	0.	650.0	0.	650.0	0.	650.0	0.
750.0	0.	750.0	0.	750.0	0.	750.0	0.	750.0	0.
850.0	0.	850.0	0.	850.0	0.	850.0	0.	850.0	0.
950.0	0.	950.0	0.	950.0	0.	950.0	0.	950.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PROTONS

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PROTONS /DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.1022376E-01	300.00	0.5712926E-03	540.00	0.1428231E-03	780.00	0.1130683E-03
60.00	0.4332302E-02	340.00	0.4225185E-03	580.00	0.1963818E-03	820.00	0.1309212E-03
100.00	0.2303023E-02	380.00	0.3451559E-03	620.00	0.1428231E-03	860.00	0.1309212E-03
140.00	0.1541300E-02	420.00	0.2975482E-03	660.00	0.1309212E-03	900.00	0.1963818E-03
180.00	0.1208046E-02	460.00	0.2082837E-03	700.00	0.2320876E-03	940.00	0.2796953E-03
220.00	0.7676744E-03	500.00	0.1606760E-03	740.00	0.1666270E-03	980.00	0.2439895E-03
260.00	0.5117829E-03						

PROTON ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE NEUTRONS

0 TO 1.0000000E 03 MEV 0 CFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED NEUTRONS/DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.1258635E-01	300.00	0.3536184E-03	540.00	0.7812500E-04	780.00	0.7401316E-04
60.00	0.4564145E-02	340.00	0.3042763E-03	580.00	0.1110197E-03	820.00	0.4111842E-04
100.00	0.2249178E-02	380.00	0.2055921E-03	620.00	0.1274671E-03	860.00	0.5345395E-04
140.00	0.1278783E-02	420.00	0.1768092E-03	660.00	0.7812500E-04	900.00	0.4523026E-04
180.00	0.9375000E-03	460.00	0.1562500E-03	700.00	0.9046053E-04	940.00	0.4523026E-04
220.00	0.6825658E-03	500.00	0.1315789E-03	740.00	0.7401316E-04	980.00	0.7401316E-04
260.00	0.4810855E-03						

PROTON ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI+

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI+ / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.9005376E-02	300.00	0.4032258E-03	540.00	0.	780.00	0.
60.00	0.6451613E-02	340.00	0.3360215E-03	580.00	0.	820.00	0.
100.00	0.2956989E-02	380.00	0.2688172E-03	620.00	0.	860.00	0.
140.00	0.1344086E-02	420.00	0.2688172E-03	660.00	0.	900.00	0.
180.00	0.1344086E-02	460.00	0.2016129E-03	700.00	0.	940.00	0.
220.00	0.1478495E-02	500.00	0.2688172E-03	740.00	0.	980.00	0.
260.00	0.6720430E-03						

PROTON ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PIO

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PIO / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.9097633E-02	300.00	0.3698225E-03	540.00	0.7396450E-04	780.00	0.
60.00	0.6878698E-02	340.00	0.2958580E-03	580.00	0.	820.00	0.
100.00	0.2514793E-02	380.00	0.4437870E-03	620.00	0.	860.00	0.
140.00	0.1775148E-02	420.00	0.3698225E-03	660.00	0.	900.00	0.
180.00	0.1257396E-02	460.00	0.7396450E-04	700.00	0.	940.00	0.
220.00	0.7396450E-03	500.00	0.2218935E-03	740.00	0.	980.00	0.
260.00	0.8875740E-03						

PROTON ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI-

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI- / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.1266376E-01	300.00	0.5458515E-03	540.00	0.	780.00	0.
60.00	0.5676856E-02	340.00	0.4366812E-03	580.00	0.	820.00	0.
100.00	0.1528384E-02	380.00	0.3275109E-03	620.00	0.	860.00	0.
140.00	0.4366812E-03	420.00	0.1091703E-03	660.00	0.1091703E-03	900.00	0.
180.00	0.1310044E-02	460.00	0.	700.00	0.	940.00	0.
220.00	0.1200873E-02	500.00	0.1091703E-03	740.00	0.	980.00	0.
260.00	0.5458515E-03						

PROTON ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PARTICLES

0 TO 1000 MEV

N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PARTICLES/DELTA E
K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N IS (SUM OVER HISTOGRAM FROM 1 TO 1000 MEV) (DELTA E)

K.E.	PROTONS N(E)	NEUTRONS N(E)	PI+ N(E)	PI0 N(E)	PI- N(E)
25.0	0.9207332E-02	0.1136184E-01	0.8870968E-02	0.9230769E-02	0.1117904E-01
75.0	0.3451559E-02	0.3388158E-02	0.4731183E-02	0.4792899E-02	0.4104803E-02
125.0	0.1794811E-02	0.1569079E-02	0.1989247E-02	0.1775148E-02	0.8733624E-03
175.0	0.1233040E-02	0.9703947E-03	0.1290323E-02	0.1420118E-02	0.1135371E-02
225.0	0.7141157E-03	0.6611842E-03	0.1344086E-02	0.8284024E-03	0.1048035E-02
275.0	0.5427279E-03	0.4309210E-03	0.6451613E-03	0.5325444E-03	0.5240175E-03
325.0	0.4522733E-03	0.2730263E-03	0.2688172E-03	0.4733728E-03	0.4366812E-03
375.0	0.3856225E-03	0.2598684E-03	0.2688172E-03	0.3550296E-03	0.4366812E-03
425.0	0.2713640E-03	0.1842105E-03	0.2150538E-03	0.2958580E-03	0.8733624E-04
475.0	0.1904308E-03	0.1447368E-03	0.3225806E-03	0.1183432E-03	0.
525.0	0.1666270E-03	0.7894737E-04	0.5376344E-04	0.1775148E-03	0.8733624E-04
575.0	0.1761485E-03	0.1151316E-03	0.	0.	0.
625.0	0.1428231E-03	0.1184210E-03	0.	0.	0.
675.0	0.1571054E-03	0.8552632E-04	0.	0.	0.8733624E-04
725.0	0.2094739E-03	0.7894737E-04	0.	0.	0.
775.0	0.1190193E-03	0.7236842E-04	0.	0.	0.
825.0	0.1333016E-03	0.4276316E-04	0.	0.	0.
875.0	0.1428231E-03	0.4276316E-04	0.	0.	0.
925.0	0.2427993E-03	0.5921053E-04	0.	0.	0.
975.0	0.2666032E-03	0.6250000E-04	0.	0.	0.
	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 0.9999999E 00

PROTON ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ANGULAR DISTRIBUTION OF EMITTED CASCADE PARTICLES

(FRACTION IN EACH INTERVAL)/(DELTA MU)

MU IS COSINE THETA AND SPECIFIES THE CENTER OF THE INTERVAL

MU	PROTON	NEUTRON	PI+	PIO	PI-
0.975	0.2432754E 01	0.1782895E 01	0.9677419E 00	0.1124260E 01	0.1484716E 01
0.925	0.1575815E 01	0.1302631E 01	0.9677419E 00	0.6508876E 00	0.8733624E 00
0.875	0.1156867E 01	0.1125000E 01	0.5913979E 00	0.4142012E-00	0.6986900E 00
0.825	0.1018805E 01	0.9506579E 00	0.5376344E 00	0.8284024E 00	0.9606987E 00
0.775	0.8426565E 00	0.8717105E 00	0.5913979E 00	0.4733728E-00	0.5240175E 00
0.725	0.8093311E 00	0.8881579E 00	0.5376344E 00	0.4733728E-00	0.4366812E-00
0.675	0.8426565E 00	0.7664474E 00	0.4301075E-00	0.7692308E 00	0.6113537E 00
0.625	0.7141157E 00	0.8256579E 00	0.3763441E-00	0.6508876E 00	0.5240175E 00
0.575	0.6950726E 00	0.6776316E 00	0.5376344E 00	0.4142012E-00	0.2620087E-00
0.525	0.7474411E 00	0.6447368E 00	0.4838710E-00	0.4142012E-00	0.4366812E-00
0.475	0.6903118E 00	0.7368421E 00	0.4838710E-00	0.2958580E-00	0.5240175E 00
0.425	0.6236610E 00	0.5460526E 00	0.5376344E 00	0.3550296E-00	0.2620087E-00
0.375	0.6189003E 00	0.6710526E 00	0.4838710E-00	0.6508876E 00	0.4366812E-00
0.325	0.4713164E-00	0.5559210E 00	0.5376344E 00	0.5917160E 00	0.4366812E-00
0.275	0.4665556E-00	0.5197368E 00	0.5376344E 00	0.2366864E-00	0.2620087E-00
0.225	0.4903594E-00	0.5296053E 00	0.5376344E 00	0.4733728E-00	0.4366812E-00
0.175	0.3903832E-00	0.4638158E-00	0.4838710E-00	0.5325444E 00	0.1135371E 01
0.125	0.4237086E-00	0.4111842E-00	0.4301075E-00	0.5325444E 00	0.3493450E-00
0.075	0.3618186E-00	0.4440789E-00	0.2150538E-00	0.5325444E 00	0.4366812E-00
0.025	0.4046656E-00	0.4934210E-00	0.2688172E-00	0.3550296E-00	0.6986900E 00
-0.025	0.4141871E-00	0.4078947E-00	0.7526882E 00	0.3550296E-00	0.3493450E-00
-0.075	0.3046894E-00	0.3881579E-00	0.4838710E-00	0.6508876E 00	0.4366812E-00
-0.125	0.3189717E-00	0.3092105E-00	0.3763441E-00	0.5325444E 00	0.4366812E-00
-0.175	0.2570816E-00	0.3059210E-00	0.3763441E-00	0.2958580E-00	0.6113537E 00
-0.225	0.2380386E-00	0.3190789E-00	0.3763441E-00	0.2366864E-00	0.2620087E-00
-0.275	0.2666032E-00	0.2467105E-00	0.6989247E 00	0.4733728E-00	0.8733624E-01
-0.325	0.3046894E-00	0.2368421E-00	0.5913979E 00	0.4733728E-00	0.5240175E 00
-0.375	0.2047132E-00	0.2664474E-00	0.5913979E 00	0.6508876E 00	0.6986900E 00
-0.425	0.1856701E-00	0.2598684E-00	0.4838710E-00	0.4733728E-00	0.6113537E 00
-0.475	0.2475601E-00	0.2006579E-00	0.4838710E-00	0.1775148E-00	0.3493450E-00
-0.525	0.1809093E-00	0.1973684E-00	0.4838710E-00	0.3550296E-00	0.5240175E 00
-0.575	0.1523447E-00	0.2598684E-00	0.4838710E-00	0.4733728E-00	0.5240175E 00
-0.625	0.1380624E-00	0.2565789E-00	0.5376344E 00	0.5325444E 00	0.6113537E 00
-0.675	0.1809093E-00	0.2138158E-00	0.4301075E-00	0.5325444E 00	0.4366812E-00
-0.725	0.1856701E-00	0.1907895E-00	0.4301075E-00	0.3550296E-00	0.1746725E-00
-0.775	0.1380624E-00	0.1447368E-00	0.3225806E-00	0.5325444E 00	0.5240175E 00
-0.825	0.1380624E-00	0.1447368E-00	0.2688172E-00	0.4142012E-00	0.4366812E-00
-0.875	0.9521542E-01	0.1743421E-00	0.3763441E-00	0.2366864E-00	0.8733624E-01
-0.925	0.1428231E-00	0.1381579E-00	0.5376344E 00	0.6508876E 00	0.8733624E-01
-0.975	0.1285408E-00	0.1315789E-00	0.3763441E-00	0.8284024E 00	0.4366812E-00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	0. TO 10.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.6448E 00	2.3584E 00	1.5008E 00	1.0720E 00	6.4320E-01	8.5760E-01	8.5760E-01	1.5008E 00
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.2864E 00	2.5728E 00	1.2864E 00	4.2880E-01	4.2880E-01	2.1440E-01	1.7152E 00	1.0720E 00
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
2.1440E 00	3.6448E 00	2.5728E 00	6.4320E-01	2.1440E-01	2.1440E-01	1.5008E 00	3.6448E 00
INTERVAL 25							
6.8608E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	10.00 TO 30.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.5520E 00	2.7696E 00	1.5905E 00	1.5356E 00	1.2066E 00	1.0146E 00	6.3070E-01	8.2265E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
7.1296E-01	5.7585E-01	6.3070E-01	5.2101E-01	4.9359E-01	3.2906E-01	4.3875E-01	3.5648E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
2.7422E-01	4.6617E-01	3.5648E-01	4.1132E-01	5.7585E-01	5.4843E-01	7.1296E-01	8.2265E-01
INTERVAL 25							
2.4679E-01							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1715E 04 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.556600E 03 MEV FOR CASCADE PROTON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.9038E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.311602E 03 MEV FOR CASCADE PROTON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	30.00 TO 90.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.5053E 00	1.6699E 00	9.1771E-01	6.8076E-01	5.4160E-01	3.1593E-01	2.2190E-01	2.1814E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.4668E-01	9.4027E-02	7.8983E-02	5.2655E-02	2.6328E-02	4.1372E-02	3.3850E-02	2.2567E-02
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
7.5222E-03	1.8805E-02	1.1283E-02	3.7611E-03	0.	3.7611E-03	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	90.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.9641E 00	5.6024E-01	2.5406E-01	5.5372E-02	3.9086E-02	1.3029E-02	0.	3.2572E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3445E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.103598E 03 MEV FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1156E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.404735E 02 MEV FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
5.358E 02	4.247E 02	3.624E 02	2.882E 02	1.962E 02	1.337E 02	9.060E 01	6.828E 01	7.561E 01

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
4.148E 02	1.763E 02	5.142E 01	1.158E 01	1.876E 00	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
3.457E 02	2.251E 01	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
2.5459E 02	5.1410E 02	3.3809E 02	2.3167E 02	1.3180E 02	4.9936E 01	1.7191E 01	4.9117E 00
8	9	10	11	12	13	14	15
1.6372E 00	8.1862E-01	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
1.1043E 03	4.1750E 02	2.2921E 01	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
1.3892E 03	1.5554E 02	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PROTONS	0.14996E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.1296E 02	0.1951E 02	0.2449E 02	0.2954E 02	0.3114E 02	0.1956E 02	0.1224E 02	0.9004E 01	0.1296E 02

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	0. TO 10.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
7.2896E 00	6.4320E 00	4.0736E 00	3.4304E 00	8.5760E-01	1.7152E 00	1.5008E 00	6.4320E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.2864E 00	6.4320E-01	8.5760E-01	1.0720E 00	8.5760E-01	6.4320E-01	1.7152E 00	2.5728E 00
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.0720E 00	1.5008E 00	6.4320E-01	1.2864E 00	8.5760E-01	4.2880E-01	4.2880E-01	6.4320E-01
INTERVAL 25							
3.4304E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	10.00 TO 30.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
8.3088E 00	3.8939E 00	1.8921E 00	1.6453E 00	1.4808E 00	9.0491E-01	1.0420E 00	9.5976E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
7.4038E-01	6.0328E-01	5.7585E-01	4.6617E-01	4.6617E-01	3.0164E-01	4.1132E-01	2.7422E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
3.0164E-01	3.0164E-01	3.2906E-01	2.4679E-01	1.3711E-01	3.0164E-01	2.4679E-01	2.1937E-01
INTERVAL 25							
5.4843E-02							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1835E 04 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.350841E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1044E 04 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.202479E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	30.00 TO 90.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
6.3149E 00	2.5162E 00	1.3954E 00	7.4094E-01	5.9801E-01	4.4757E-01	2.7080E-01	1.8053E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.5420E-01	9.4027E-02	6.7700E-02	6.0178E-02	4.1372E-02	1.8805E-02	1.5044E-02	3.3850E-02
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.1283E-02	1.5044E-02	1.1283E-02	1.1283E-02	3.7611E-03	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	90.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.4038E 00	8.7619E-01	2.8663E-01	1.2377E-01	3.5829E-02	1.9543E-02	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5201E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.841597E 02 MEV FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1898E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.373782E 02 MEV FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE NEUTRON — FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
8.339E 02	6.505E 02	5.578E 02	4.539E 02	3.163E 02	2.084E 02	1.743E 02	1.230E 02	9.290E 01

TYPE OF CASCADE PARTICLE NEUTRON — FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
3.975E 02	1.726E 02	4.848E 01	8.384E 00	1.501E 00	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE NEUTRON — FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.426E 02	1.351E 01	4.897E-01	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
1.4326E 02	3.0043E 02	2.8652E 02	2.4231E 02	2.2430E 02	1.5636E 02	9.7416E 01	4.9117E 01
8	9	10	11	12	13	14	15
2.2921E 01	5.7304E 00	2.4559E 00	0.	0.	0.	0.	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
1.1060E 03	4.0931E 02	1.5554E 01	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
1.4612E 03	6.9583E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
NEUTRONS	0.63816E-01		

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	0. TO 25.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.3906E-01	1.0429E-01	1.3906E-01	6.9530E-02	3.4765E-02	1.0429E-01	1.0429E-01	3.4765E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
3.4765E-02	1.0429E-01	1.3906E-01	6.9530E-02	1.0429E-01	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	25.00 TO 75.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.3582E-01	1.0061E-01	6.5397E-02	6.5397E-02	7.5458E-02	9.0549E-02	3.0183E-02	2.0122E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.0122E-02	5.0305E-03	0.	5.0305E-03	5.0305E-03	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.4728E 02 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.248235E 03 MEV FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2475E 02 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.138049E 03 MEV FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	75.00 TO 130.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.5650E-01	2.1315E-01	7.2253E-02	1.8063E-02	1.4451E-02	3.6127E-03	3.6127E-03	3.6127E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	130.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.9179E-01	1.2766E-01	6.3828E-02	0.	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2341E 02 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.565432E 02 MEV FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1933E 02 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.411321E 02 MEV FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
2.160E 01	2.176E 01	2.106E 01	2.435E 01	2.026E 01	2.515E 01	2.204E 01	1.951E 01	1.728E 01

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.944E 01	1.200E 01	2.449E 00	7.985E-01	0.	3.992E-01	0.	0.	0.

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
2.7015E 01	2.5623E 02	1.0642E 01	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
2.6687E 02	2.7015E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
2.9389E 02	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI +	0.33871E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.1296E 02	0.1951E 02	0.2449E 02	0.2954E 02	0.3114E 02	0.1956E 02	0.1224E 02	0.9004E 01	0.1296E 02

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	0. TO 25.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.0859E-01	6.9530E-02	6.9530E-02	0.	3.4765E-02	6.9530E-02	3.4765E-02	1.3906E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
6.9530E-02	6.9530E-02	6.9530E-02	3.4765E-02	1.0429E-01	3.4765E-02	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	25.00 TO 75.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.2576E-01	1.2073E-01	6.5397E-02	6.5397E-02	5.0305E-02	3.5214E-02	5.0305E-02	5.0305E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.0061E-02	2.0122E-02	1.5092E-02	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.4033E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.251724E 03 MEV FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2254E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.131786E 03 MEV FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02048

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	75.00 TO 130.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.1676E-01	1.4451E-01	6.1415E-02	3.9739E-02	2.1676E-02	3.6127E-03	3.6127E-03	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	130.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.9179E-01	2.4620E-01	1.8237E-02	0.	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1965E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.617647E 02 MEV FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2225E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.403279E 02 MEV FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
2.376E 01	1.651E 01	2.008E 01	1.916E 01	2.101E 01	1.757E 01	2.057E 01	1.801E 01	3.673E 01

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
2.592E 01	9.754E 00	2.938E 00	3.992E-01	3.751E-01	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.0	02049

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
2.7015E 01	2.3822E 02	5.7304E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
2.4395E 02	2.7015E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
2.7096E 02	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI 0	0.26627E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.1296E 02	0.1951E 02	0.2449E 02	0.2954E 02	0.3114E 02	0.1956E 02	0.1224E 02	0.9004E 01	0.1296E 02

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	0. TO 25.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.7382E-01	6.9530E-02	3.4765E-02	0.	6.9530E-02	2.0859E-01	1.0429E-01	6.9530E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.0429E-01	3.4765E-02	3.4765E-02	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
3.4765E-02	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	25.00 TO 75.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.5092E-01	6.5397E-02	2.5153E-02	1.5092E-02	4.0244E-02	2.0122E-02	1.0061E-02	1.5092E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
5.0305E-03	1.0061E-02	0.	0.	5.0305E-03	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3755E 02 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.217037E 03 MEV FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1449E 02 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.106111E 03 MEV FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	75.00 TO 130.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.3121E-01	1.1199E-01	2.5289E-02	3.6127E-03	3.6127E-03	3.6127E-03	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	130.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.5501E-01	5.4710E-02	9.1183E-03	0.	9.1183E-03	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1517E 02 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.417143E 02 MEV FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.9118E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.392000E 02 MEV FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
2.809E 01	1.501E 01	1.273E 01	1.357E 01	1.576E 01	1.238E 01	1.371E 01	7.503E 00	1.296E 01

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.728E 01	6.002E 00	1.469E 00	0.	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
1.4735E 01	1.6372E 02	4.0931E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
1.6700E 02	1.5554E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
1.8255E 02	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	1000	PB	207	82	03000	6.68	2455.9	02049

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI -	0.12227E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.1296E 02	0.1951E 02	0.2449E 02	0.2954E 02	0.3114E 02	0.1956E 02	0.1224E 02	0.9004E 01	0.1296E 02

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A= 207
Z= 82
KINETIC ENERGY (MEV)= 1000.00
PROTON
GEOMETRIC CROSS SECTION (MB)= 2455.87
CUTOFF ENERGY (MEV)= 6.68
3000 CASE HISTORIES
INELASTIC CROSS SECTION (MB) 1677.36

AVERAGE EVAPORATION YIELD PER INELASTIC EVENT

NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
15.3025868	2.2288921	0.5900439	0.1727672	0.0185456	0.1961933

CASE NUMBER 207 821000 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
207	83	4	3.27
	82	6	4.91
	81	1	0.82
206	83	7	5.73
	82	70	57.30
	81	59	48.30
205	83	5	4.09
	82	26	21.28
	81	18	14.74
	80	6	4.91
204	83	7	5.73
	82	16	13.10
	81	14	11.46
	80	6	4.91
203	83	1	0.82
	82	19	15.55
	81	13	10.64
	80	3	2.46
202	83	3	2.46
	82	22	18.01
	81	18	14.74
	80	4	3.27
201	83	5	4.09
	82	20	16.37
	81	14	11.46
	80	5	4.09
	79	1	0.82
200	83	5	4.09
	82	15	12.28
	81	15	12.28
	80	5	4.09
199	83	3	2.46
	82	19	15.55
	81	13	10.64
	80	3	2.46
198	83	5	4.09
	82	20	16.37
	81	6	4.91
	80	6	4.91
197	83	3	2.46
	82	16	13.10
	81	9	7.37
	80	5	4.09
	79	3	2.46
	78	1	0.82
196	83	1	0.82
	82	6	4.91
	81	11	9.00
	80	4	3.27
	79	3	2.46
	78	1	0.82
195	83	3	2.46
	82	18	14.74
	81	9	7.37
	80	8	6.55

CASE NUMBER 207 821000 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
195	79	3	2.46
194	83	2	1.64
	82	9	7.37
	81	5	4.09
	80	11	9.00
	79	1	0.82
193	83	3	2.46
	82	7	5.73
	81	17	13.92
	80	10	8.19
	79	1	0.82
	78	2	1.64
192	83	1	0.82
	82	14	11.46
	81	15	12.28
	80	3	2.46
	79	3	2.46
	77	1	0.82
191	82	6	4.91
	81	12	9.82
	80	12	9.82
	79	5	4.09
	78	1	0.82
190	82	10	8.19
	81	19	15.55
	80	8	6.55
	78	5	4.09
189	82	5	4.09
	81	17	13.92
	80	10	8.19
	79	6	4.91
188	82	5	4.09
	81	16	13.10
	80	9	7.37
	79	10	8.19
	78	2	1.64
187	81	12	9.82
	80	17	13.92
	79	18	14.74
	78	3	2.46
	77	1	0.82
186	81	11	9.00
	80	20	16.37
	79	13	10.64
	78	2	1.64
	77	1	0.82
185	82	1	0.82
	81	9	7.37
	80	15	12.28
	79	12	9.82
	78	5	4.09
184	81	2	1.64
	80	18	14.74
	79	10	8.19
	78	8	6.55

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
184	77	1	0.82
183	81	7	5.73
	80	11	9.00
	79	11	9.00
	78	12	9.82
182	81	1	0.82
	80	12	9.82
	79	13	10.64
	78	6	4.91
	77	3	2.46
	76	1	0.82
181	80	3	2.46
	79	15	12.28
	78	14	11.46
	77	2	1.64
180	80	2	1.64
	79	10	8.19
	78	8	6.55
	77	18	14.74
	76	1	0.82
179	79	4	3.27
	78	16	13.10
	77	16	13.10
	76	6	4.91
178	80	1	0.82
	79	4	3.27
	78	13	10.64
	77	14	11.46
	76	2	1.64
	75	3	2.46
177	78	14	11.46
	77	15	12.28
	76	6	4.91
	75	1	0.82
176	78	4	3.27
	77	18	14.74
	76	12	9.82
	75	5	4.09
175	77	14	11.46
	76	18	14.74
	75	9	7.37
	74	1	0.82
	73	1	0.82
174	77	4	3.27
	76	21	17.19
	75	16	13.10
	74	1	0.82
173	76	12	9.82
	75	13	10.64
	74	8	6.55
172	75	34	27.83
	74	8	6.55
171	76	3	2.46
	75	16	13.10
	74	14	11.46

CASE NUMBER 207 821000 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
171	73	3	2.46
170	75	9	7.37
	74	30	24.56
	73	11	9.00
169	75	4	3.27
	74	15	12.28
	73	11	9.00
	72	2	1.64
	71	1	0.82
168	75	1	0.82
	74	8	6.55
	73	23	18.83
	72	8	6.55
167	74	6	4.91
	73	15	12.28
	72	7	5.73
166	74	1	0.82
	73	14	11.46
	72	18	14.74
165	73	7	5.73
	72	19	15.55
	71	4	3.27
164	72	22	18.01
	71	9	7.37
163	73	2	1.64
	72	11	9.00
	71	21	17.19
162	72	5	4.09
	71	11	9.00
	70	8	6.55
	69	1	0.82
161	72	1	0.82
	71	15	12.28
	70	5	4.09
	69	1	0.82
	68	1	0.82
160	71	14	11.46
	70	14	11.46
	69	4	3.27
159	71	1	0.82
	70	13	10.64
	69	8	6.55
	68	1	0.82
158	70	11	9.00
	69	2	1.64
157	70	8	6.55
	69	4	3.27
	68	2	1.64
156	70	5	4.09
	69	7	5.73
	68	5	4.09
155	69	7	5.73
	68	9	7.37
154	69	1	0.82
	68	5	4.09

CASE NUMBER 207 821000 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
154	67	1	0.82
	66	2	1.64
153	69	1	0.82
	68	7	5.73
	67	3	2.46
	66	1	0.82
152	68	5	4.09
	67	4	3.27
	66	2	1.64
	65	1	0.82
151	68	3	2.46
	67	4	3.27
	66	1	0.82
	65	1	0.82
150	68	1	0.82
	67	5	4.09
	66	2	1.64
	65	1	0.82
149	67	2	1.64
	66	1	0.82
148	66	7	5.73
147	66	1	0.82
	65	4	3.27
146	65	2	1.64
145	64	2	1.64
	63	1	0.82
144	63	1	0.82
141	62	1	0.82

CASE NUMBER 207 821000 2

MOMENTS OF THE ENERGY DISTRIBUTIONS FOR THE FOLLOWING EVAPORATION PARTICLES

	NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
1ST MOM.	4.57232E 00	1.35295E 01	1.47622E 01	1.55682E 01	2.86913E 01	2.68604E 01
2ND MOM.	3.85193E 01	2.05048E 02	2.44873E 02	2.74069E 02	8.63548E 02	7.41880E 02
3RD MOM.	4.84606E 02	3.55334E 03	4.60818E 03	5.53912E 03	2.73915E 04	2.11421E 04

NORMALIZED EVAPORATION NEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.063010	0.092755	0.116744	0.141372	0.150648	0.166640	0.162162	0.176555	0.172397	0.181995
1	0.174636	0.169519	0.166320	0.180393	0.175916	0.176555	0.167919	0.163761	0.162482	0.163761
2	0.170478	0.151927	0.162802	0.150968	0.146490	0.145530	0.126659	0.142012	0.142332	0.133056
3	0.123141	0.127619	0.117703	0.107149	0.119942	0.118983	0.112586	0.101071	0.103310	0.110027
4	0.103310	0.097873	0.096913	0.098833	0.099792	0.084120	0.092436	0.089877	0.081561	0.090517
5	0.082201	0.076443	0.078682	0.078682	0.079002	0.071646	0.068767	0.062370	0.067807	0.063010
6	0.068447	0.063010	0.056293	0.058532	0.055333	0.057572	0.060131	0.058212	0.055973	0.041580
7	0.047977	0.041900	0.048297	0.046698	0.040301	0.040940	0.044779	0.039341	0.040301	0.039341
8	0.040940	0.037422	0.035823	0.033584	0.031985	0.034224	0.031345	0.033264	0.030066	0.029106
9	0.026227	0.030705	0.030066	0.026867	0.027187	0.027187	0.026867	0.026867	0.021110	0.028786
10	0.022069	0.026227	0.023669	0.027187	0.021750	0.019511	0.022389	0.021430	0.020470	0.019191
11	0.020150	0.021750	0.016632	0.017272	0.021750	0.015353	0.017272	0.017592	0.013753	0.012474
12	0.015992	0.014713	0.016312	0.016952	0.011514	0.012474	0.012154	0.016632	0.011834	0.012154
13	0.007356	0.007676	0.010555	0.006717	0.011834	0.008316	0.009595	0.009915	0.008316	0.009276
14	0.006397	0.007356	0.009915	0.008956	0.007676	0.009276	0.008636	0.006397	0.008956	0.005757
15	0.007676	0.006717	0.008956	0.007356	0.004478	0.005437	0.006717	0.005437	0.006077	0.005437
16	0.003198	0.004798	0.004798	0.006397	0.005757	0.007356	0.004158	0.005757	0.005757	0.002879
17	0.004158	0.003518	0.006077	0.004798	0.004158	0.003518	0.001919	0.003838	0.003198	0.005437
18	0.001279	0.002559	0.002879	0.002879	0.002559	0.004478	0.003518	0.001919	0.004478	0.001919
19	0.003518	0.002559	0.003518	0.001919	0.003518	0.002239	0.003198	0.001599	0.001279	0.001919
20	0.002239	0.001599	0.002559	0.001919	0.002239	0.000320	0.001279	0.001599	0.000960	0.001279
21	0.003198	0.002239	0.000960	0.001919	0.002239	0.000640	0.000640	0.001919	0.002559	0.001599
22	0.000960	0.001279	0.001599	0.000320	0.000960	0.000320	0.000960	0.002559	0.000960	0.000640
23	0.000640	0.001599	0.000960	0.000640	0.002559	0.000960	0.001919	0.000960	0.	0.
24	0.001279	0.001599	0.000320	0.000640	0.000960	0.001919	0.000960	0.001279	0.001599	0.

NORMALIZED EVAPORATION PROTON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
7	0.	0.	0.	0.	0.	0.	0.002263	0.006789	0.018104	0.004526
8	0.029418	0.024893	0.049785	0.045259	0.095044	0.099570	0.108622	0.090518	0.083729	0.124463
9	0.149355	0.131251	0.169722	0.151618	0.181036	0.151618	0.149355	0.158407	0.147092	0.126726
10	0.160670	0.158407	0.169722	0.113148	0.140303	0.149355	0.142566	0.133514	0.128988	0.167459
11	0.108622	0.117674	0.115411	0.133514	0.144829	0.106359	0.104096	0.138040	0.113148	0.104096
12	0.081466	0.135777	0.124463	0.108622	0.110885	0.101833	0.088255	0.106359	0.108622	0.083729
13	0.081466	0.104096	0.074678	0.079203	0.067889	0.088255	0.070152	0.090518	0.088255	0.079203
14	0.052048	0.108622	0.083363	0.072415	0.067889	0.042996	0.052048	0.081466	0.054311	0.072415
15	0.074678	0.072415	0.067889	0.054311	0.061100	0.040733	0.038470	0.054311	0.058837	0.040733
16	0.040733	0.038470	0.031681	0.040733	0.054311	0.040733	0.029418	0.049785	0.031681	0.052048
17	0.033944	0.040733	0.029418	0.038470	0.031681	0.033944	0.052048	0.029418	0.022630	0.047522
18	0.015841	0.033944	0.036207	0.027155	0.015841	0.036207	0.031681	0.015841	0.022630	0.022630
19	0.029418	0.027155	0.036207	0.024893	0.031681	0.022630	0.022630	0.020367	0.024893	0.022630
20	0.018104	0.024893	0.022630	0.029418	0.022630	0.015841	0.022630	0.031681	0.013578	0.027155
21	0.022630	0.022630	0.011315	0.013578	0.018104	0.015841	0.011315	0.009052	0.013578	0.004526
22	0.018104	0.015841	0.	0.011315	0.011315	0.009052	0.011315	0.004526	0.013578	0.011315
23	0.009052	0.009052	0.011315	0.013578	0.006789	0.009052	0.011315	0.006789	0.004526	0.009052
24	0.006789	0.011315	0.006789	0.011315	0.009052	0.009052	0.018104	0.004526	0.006789	0.004526

NORMALIZED EVAPORATION DEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.003309	0.014888	0.084367	0.076096	0.117452
10	0.112490	0.105873	0.095947	0.086022	0.107527	0.115798	0.104218	0.076096	0.086022	0.067825
15	0.061208	0.084367	0.051282	0.038048	0.039702	0.052936	0.039702	0.034739	0.024814	0.023160
20	0.028122	0.021505	0.026468	0.018197	0.014888	0.019851	0.018197	0.016543	0.016543	0.014888
25	0.008271	0.008271	0.009926	0.006617	0.004963	0.003309	0.004963	0.009926	0.006617	0.003309
30	0.003309	0.001654	0.004963	0.004963	0.004963	0.	0.	0.003309	0.003309	0.
35	0.	0.	0.	0.004963	0.	0.001654	0.	0.001654	0.	0.
40	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
45	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION TRITON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.005650	0.011299	0.016949	0.079096	0.079096
10	0.124294	0.090395	0.112994	0.090395	0.090395	0.084746	0.090395	0.084746	0.056497	0.062147
15	0.124294	0.067797	0.033898	0.050847	0.062147	0.079096	0.050847	0.022599	0.039548	0.050847
20	0.039548	0.050847	0.016949	0.022599	0.016949	0.016949	0.005650	0.016949	0.011299	0.005650
25	0.011299	0.016949	0.005650	0.011299	0.011299	0.	0.005650	0.005650	0.	0.
30	0.005650	0.016949	0.005650	0.005650	0.	0.	0.	0.	0.	0.
35	0.005650	0.005650	0.	0.	0.005650	0.	0.005650	0.	0.	0.
40	0.005650	0.	0.005650	0.	0.	0.	0.	0.	0.	0.
45	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION HE3 SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
10	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
15	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
20	0.	0.	0.105263	0.052632	0.210526	0.157895	0.052632	0.	0.	0.052632
25	0.052632	0.052632	0.105263	0.	0.105263	0.210526	0.	0.	0.105263	0.052632
30	0.	0.105263	0.052632	0.	0.052632	0.052632	0.105263	0.	0.052632	0.
35	0.052632	0.	0.	0.	0.	0.	0.	0.052632	0.	0.052632
40	0.	0.	0.	0.	0.	0.	0.052632	0.	0.	0.
45	0.	0.	0.	0.	0.	0.	0.	0.052632	0.	0.

NORMALIZED EVAPORATION ALPHA SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
10	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
15	0.	0.	0.	0.	0.	0.	0.	0.	0.004975	0.
20	0.009950	0.019900	0.054726	0.069652	0.069652	0.134328	0.144279	0.119403	0.134328	0.124378
25	0.089552	0.079602	0.089552	0.089552	0.059701	0.069652	0.024876	0.054726	0.069652	0.059701
30	0.029851	0.049751	0.034826	0.014925	0.059701	0.024876	0.039801	0.029851	0.029851	0.009950
35	0.014925	0.014925	0.009950	0.009950	0.014925	0.	0.	0.	0.004975	0.004975
40	0.	0.004975	0.009950	0.	0.004975	0.	0.	0.	0.	0.
45	0.	0.	0.	0.	0.	0.004975	0.	0.	0.004975	0.

INPUT

FROM CARDS

USED FILE 1 INCIDENT PARTICLE PROTON INCIDENT KINETIC ENERGY 2000.000 MEV

TOTAL NUMBER OF INCIDENT PARTICLES 2500 TARGET SYMBOL PB

SIZE OF HISTOGRAMS FOR OUTGOING K.E. 25 FOR PROT, 25 FOR NEUT, 25 FOR PI+, 25 FOR PIO, 25 FOR PI-.

CROSS SECTIONS WERE CALCULATED FOR AS MANY AS 9 EMITTED PARTICLE COMBINATIONS.

201.000 MEV INTERVAL WAS USED IN CALCULATING HISTOGRAM FOR N(E*)DE FOR TOTAL REACTION

DELTAS FOR OUTGOING KINETIC ENERGY DISTRIBUTION IN MEV

	-.6 MU -.4 0 (K.E.) 10D	-.1 MU +.1 0 (K.E.) 10D	+.4 MU +.6 0 (K.E.) 10D	+.9 MU +.95 0 (K.E.) 20D	+.95 MU +1.0 0 (K.E.) 20D
PROTONS	200.0000	200.0000	200.0000	100.0000	100.0000
NEUTRONS	200.0000	200.0000	200.0000	100.0000	100.0000
PI+	200.0000	200.0000	200.0000	100.0000	100.0000
PIO	200.0000	200.0000	200.0000	100.0000	100.0000
PI-	200.0000	200.0000	200.0000	100.0000	100.0000

D = DELTA, RESPECTIVE ENERGY INTERVALS OF HISTOGRAMS

OUTGOING COMBINATIONS	10000	01000	00100	00010	00001	01001	10100	11000	11001
INTERVAL FOR N(E*)DE IN MEV	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000

FROM RECORD 1

2500 INCIDENT PROTON HIT PB TARGET WITH 207.000 MASS AND 82.000 ATOMIC NUMBER AT 2000.000MEV.

FROM RECORD N

THERE WERE 1768. INCIDENT PARTICLE COLLISIONS CREATING 1768 ESCAPING PARTICLE RECORDS. THE GEOMETRIC CROSS SECTION WAS 2455.8685303 MB. THE INELASTIC CROSS SECTION WAS 1736.7902069 MB. THE CUT OFF ENERGY WAS 6.6831360 MEV.

PROTON ON PB INC. K.E. (MEV) IS 2000.0 A IS 207. Z IS 82. 2500 INC. HISTORIES 6.7 MEV CUTOFF EN.

MOMENTUM OF COMPOUND NUCLEUS 2785.731201MEV/C EXCITATION ENERGY OF COMPOUND NUCLEUS 2006.915176MEV

THE MASS OF THE RESIDUAL NUCLEUS WAS ZERO 0 TIMES, WAS MINUS 0 TIMES CUT OFF ENERGY 6.683136MEV

FOR 846 INCIDENT PARTICLE COLLISIONS THERE WERE MORE THAN 9 OUT GOING PARTICLES

EMITTED CASCADE PARTICLES

	PROTONS	NEUTRONS	PI+	PIO	PI-
AVERAGE NO.	0.3131222E 01	0.4919118E 01	0.3552036E-00	0.3427602E-00	0.2992081E-00
VARIANCE	0.4039342E 01	0.1122705E 02	0.2957761E-00	0.3474476E-00	0.2730310E-00
AV. K.E. (MEV)	0.1941302E 03	0.1220020E 03	0.1759971E 03	0.1476776E 03	0.1287263E 03
VARIANCE	0.1472579E 06	0.6399431E 05	0.4622121E 05	0.3356268E 05	0.2816024E 05

RESIDUAL NUCLEUS

OUTGOING COMBINATION	CO	C1	ARM	AREE	AAR
TOTAL CASCADE	0.2429035	0.2070423	969.2544556	453.7063942	199.9496593
10000	0.0189846	0.0926153	264.3924942	35.2980242	207.0000000
01000	0.0217268	0.0772107	237.4918709	46.5633593	207.0000000
00100	0.	0.	0.	0.	208.0000000
00010	0.	0.	0.	0.	208.0000000
00001	0.	0.	0.	0.	208.0000000
01001	0.	0.	0.	0.	207.0000000
10100	0.0590356	0.0223202	186.0681973	23.6318579	207.0000000
11000	0.0109167	0.0642917	207.0541306	31.3338022	206.0000000
11001	0.	0.	0.	0.	206.0000000

CO = (SUM OF PARALLEL RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

C1 = (SUM OF PERPENDICULAR RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

ARM = AVERAGE RESIDUAL MOMENTUM IN MEV/C

AREE = AVERAGE RESIDUAL EXCITATION ENERGY IN MEV

AAR = AVERAGE MASS OF RESIDUAL NUCLEUS FOR TOTAL CASCADE
AAR = MASS OF RESIDUAL NUCLEUS FOR DESIGNATED OUTGOING COMBINATIONS

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PROTON ON PB       INC. K.E. (MEV) IS  2000.0   A IS  207.   Z IS  82.    2500 INC. HISTORIES        6.7 MEV CUTOFF EN.

                   ANGULAR DISTRIBUTION OF THE CASCADE NUCLEUS  (FRACTION IN DELTA MU)/(DELTA MU)

       -0.9000000E 00        -0.7000000E 00        -0.5000000E 00        -0.3000000E-00        -0.1000000E-00
                 0.1000000E-00         0.3000000E-00         0.5000000E 00         0.7000000E 00         0.9000000E 00

            TOTAL CASCADE                            RATIO OF FORWARD /BACKWARD     0.8661202E 01
        0.6787330E-01         0.5656108E-01         0.9332579E-01         0.1216063E-00         0.1781574E-00
                 0.3535068E-00         0.4807692E-00         0.7522624E 00         0.1119909E 01         0.1776018E 01

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                 0.3285714E 01         0.1714286E 01         0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                 0.2777778E 01         0.1666667E 01         0.                    0.                    0.5555556E 00

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                 0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                 0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                 0.                    0.                    0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                 0.                    0.                    0.                    0.                    0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                 0.                    0.                    0.                    0.1111111E 01         0.3888889E 01

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.1342857E 01
        0.6097561E 00         0.1219512E-00         0.3048780E-00         0.6707317E 00         0.4268293E-00
                 0.2439024E-00         0.1097561E 01         0.8536585E 00         0.4268293E-00         0.2439024E-00

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                 0.                    0.                    0.                    0.                    0.
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PROTON ON PB       INC. K.E. (MEV) IS  2000.0   A IS  207.   Z IS  82.    2500 INC. HISTORIES        6.7 MEV CUTOFF EN.

      EXCITATION ENERGY DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS (FRACTION PER UNIT EN.)    (DE=DELTA E(MEV))

DEA IS  0.2010000E 03   DEB IS  0.2500000E 02   DEC IS  0.2500000E 02   DED IS  0.2500000E 02   DEE IS  0.2500000E 02
  DEF IS  0.2500000E 02   DEG IS  0.2500000E 02   DEH IS  0.2500000E 02   DEI IS  0.2500000E 02   DEJ IS  0.2500000E 02

            TOTAL CASCADE                        (SUM OVER HISTOGRAM)X(DEA)        0.1000000E 01      0 OFL
        0.1609599E-02        0.8301254E-03        0.8273114E-03        0.7344499E-03        0.5627969E-03
                0.3207942E-03        0.8160555E-04        0.8441953E-05        0.                   0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEB)        0.1000000E 01      0 OFL
        0.2171429E-01        0.4571429E-02        0.8000000E-02        0.5714286E-02        0.
                0.                   0.                   0.                   0.                   0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEC)        0.1000000E 01      0 OFL
        0.1777778E-01        0.8888889E-02        0.8888889E-02        0.                   0.
                0.                   0.4444444E-02        0.                   0.                   0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DED)        0.                 0 OFL
        0.                   0.                   0.                   0.                   0.
                0.                   0.                   0.                   0.                   0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEE)        0.                 0 OFL
        0.                   0.                   0.                   0.                   0.
                0.                   0.                   0.                   0.                   0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEF)        0.                 0 OFL
        0.                   0.                   0.                   0.                   0.
                0.                   0.                   0.                   0.                   0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEG)        0.                 0 OFL
        0.                   0.                   0.                   0.                   0.
                0.                   0.                   0.                   0.                   0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEH)        0.1000000E 01      0 OFL
        0.2222222E-01        0.1333333E-01        0.4444444E-02        0.                   0.
                0.                   0.                   0.                   0.                   0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEI)        0.1000000E 01      0 OFL
        0.2682927E-01        0.3414634E-02        0.4390244E-02        0.2439024E-02        0.4878049E-03
                0.4878049E-03        0.9756097E-03        0.                   0.                   0.9756097E-03

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEJ)        0.                 0 OFL
        0.                   0.                   0.                   0.                   0.
                0.                   0.                   0.                   0.                   0.
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DESCRIPTION OF THE FOLLOWING MOMENTUM DISTRIBUTIONS

THE FIRST GROUP OF NUMBERS BELOW THE TITLES SPECIFY THE MIDPOINTS OF THE MOMENTUM INTERVALS.
THE MOMENTUM IS THE NUMBER INDICATED (MEV/C).

THE SUBSEQUENT GROUPS OF NUMBERS ARE THE FRACTION OF THE TOTAL IN EACH INTERVAL DIVIDED BY DELTA P.

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PROTON CN PB       INC. K.E. (MEV) IS  2000.0   A IS  207.   Z IS  82.    2500 INC. HISTORIES        6.7 MEV CUTOFF EN.

                          THE MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

   0.1392866E 03   0.4178597E 03   0.6964328E 03   0.9750059E 03   0.1253579E 04   0.1532152E 04   0.1810725E 04
         0.2089298E 04   0.2367871E 04   0.2646444E 04   0.2925018E 04   0.3203591E 04   0.3482164E 04   0.3760737E 04

              TOTAL CASCADE                        (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.6355107E-03   0.5847511E-03   0.5075964E-03   0.4791710E-03   0.4304417E-03   0.3512567E-03   0.2416159E-03
         0.2030386E-03   0.8527620E-04   0.5075964E-04   0.1624308E-04   0.2030386E-05   0.              0.2030386E-05

1 PROTONS   0 NEUTRONS   0 PI+   C PIC   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.1948706E-02   0.1538452E-02   0.1025635E-03   0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.1994290E-02   0.1595432E-02   C.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.2792006E-02   0.7977159E-03   0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.2626626E-02   0.7442106E-03   0.1751084E-03   0.4377709E-04   0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.
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PROTON ON PB        INC. K.E. (MEV) IS  2000.0   A IS  207.   Z IS  82.    2500 INC. HISTORIES        6.7 MEV CUTOFF EN.

                    THE PERPENDICULAR MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

  0.1392866E 03   0.4178597E 03   0.6964328E 03   0.9750059E 03   0.1253579E 04   0.1532152E 04   0.1810725E 04
        0.2089298E 04   0.2367871E 04   0.2646444E 04   0.2925018E 04   0.3203591E 04   0.3482164E 04   0.3760737E 04

            TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.9745851E-03   0.9258558E-03   0.8324581E-03   0.4608975E-03   0.2456767E-03   0.1096408E-03   0.3451655E-04
        0.4060771E-05   0.2030386E-05   0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.2358960E-02   0.1128198E-02   0.1025635E-03   0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.1994290E-02   0.1595432E-02   0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.3589722E-02   0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
  0.2670403E-02   0.8317648E-03   0.8755419E-04   0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
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PROTON ON PB       INC. K.E. (MEV) IS  2000.0   A IS  207.   Z IS  82.    2500 INC. HISTORIES        6.7 MEV CUTOFF EN.

                    THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

 -0.3760737E 04  -0.3482164E 04  -0.3203591E 04  -0.2925018E 04  -0.2646444E 04  -0.2367871E 04  -0.2089298E 04
       -0.1810725E 04  -0.1532152E 04  -0.1253579E 04  -0.9750059E 03  -0.6964328E 03  -0.4178597E 03  -0.1392866E 03
  0.1392866E 03   0.4178597E 03   0.6964328E 03   0.9750059E 03   0.1253579E 04   0.1532152E 04   0.1810725E 04
        0.2089298E 04   0.2367871E 04   0.2646444E 04   0.2925018E 04   0.3203591E 04   0.3482164E 04   0.3760737E 04

            TOTAL CASCADE                        (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.2639501E-04   0.3451656E-03
  0.9664635E-03   0.5441433E-03   0.4141987E-03   0.3979556E-03   0.3248617E-03   0.2111601E-03   0.1685220E-03
        0.9542812E-04   0.6091157E-04   0.2842540E-04   0.4060771E-05   0.2030386E-05   0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.
  0.3589722E-02   0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.
  0.3589722E-02   0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.
  0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.
  0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.
  0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.
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PROTON ON PB INC. K.E. (MEV) IS 2000.0 A IS 207. Z IS 82. 2500 INC. HISTORIES 6.7 MEV CUTOFF EN.

THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

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-0.3760737E 04  -0.3482164E 04  -0.3203591E 04  -0.2925018E 04  -0.2646444E 04  -0.2367871E 04  -0.2089298E 04
      -0.1810725E 04  -0.1532152E 04  -0.1253579E 04  -0.9750059E 03  -0.6964328E 03  -0.4178597E 03  -0.1392866E 03
 0.1392866E 03   0.4178597E 03   0.6964328E 03   0.9750059E 03   0.1253579E 04   0.1532152E 04   0.1810725E 04
        0.2089298E 04   0.2367871E 04   0.2646444E 04   0.2925018E 04   0.3203591E 04   0.3482164E 04   0.3760737E 04

          TOTAL CASCADE                    (SUM OVER HISTOGRAM)(DELTA P)    0.1000000E 01     0 OFL     0 UFL
 0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.2639501E-04  0.3451656E-03
 0.9664635E-03  0.5441433E-03  0.4141987E-03  0.3979556E-03  0.3248617E-03  0.2111601E-03  0.1685220E-03
        0.9542812E-04  0.6091157E-04  0.2842540E-04  0.4060771E-05  0.2030386E-05  0.            0.

0 PROTONS  1 NEUTRONS  0 PI+  0 PIO  1 PI-  (SUM OVER HISTOGRAM)(DELTA P)    0.                0 OFL     0 UFL
 0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.
 0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.

1 PROTONS  0 NEUTRONS  1 PI+  0 PIO  0 PI-  (SUM OVER HISTOGRAM)(DELTA P)    0.1000000E 01     0 OFL     0 UFL
 0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.
 0.3589722E-02  0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.

1 PROTONS  1 NEUTRONS  0 PI+  0 PIO  0 PI-  (SUM OVER HISTOGRAM)(DELTA P)    0.1000000E 01     0 OFL     0 UFL
 0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.1532198E-02
 0.1969969E-02  0.8755419E-04  0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.

1 PROTONS  1 NEUTRONS  0 PI+  0 PIO  1 PI-  (SUM OVER HISTOGRAM)(DELTA P)    0.                0 OFL     0 UFL
 0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.
 0.            0.            0.            0.            0.            0.            0.
        0.            0.            0.            0.            0.            0.            0.
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PROTON ON PB INC. K.E. (MEV) IS 2000.0 A IS 207. Z IS 82. 2500 INC. HISTORIES 6.7 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES

1ST NO. IS NO. OF PROTONS EMITTED		2ND IS NO. OF NEUTRONS		3RD IS NO. OF PI+		4TH IS NO. OF PIO		5TH IS NO. OF PI-	
07101	0.98234740E 00	07110	0.98234740E 00	16002	0.98234740E 00	17010	0.19646948E 01		
25002	0.19646948E 01	25020	0.98234740E 00	25101	0.39293896E 01	25110	0.19646948E 01		
25200	0.98234740E 00	26001	0.88411265E 01	26010	0.49117369E 01	26100	0.39293896E 01		
27000	0.49117369E 01	33021	0.19646948E 01	33102	0.98234740E 00	33111	0.98234740E 00		
34020	0.19646948E 01	34101	0.39293896E 01	34110	0.29470421E 01	34200	0.98234740E 00		
35001	0.68764317E 01	35010	0.39293896E 01	35100	0.68764317E 01	36000	0.49117369E 01		
42030	0.98234740E 00	43002	0.29470421E 01	43020	0.98234740E 00	43101	0.19646948E 01		
44001	0.58940843E 01	44010	0.88411265E 01	44100	0.68764317E 01	45000	0.68764317E 01		
52101	0.98234740E 00	53001	0.19646948E 01	53010	0.98234740E 00	54000	0.29470421E 01		
62001	0.98234740E 00	62100	0.98234740E 00	63000	0.98234740E 00	05210	0.98234740E 00		
06011	0.19646948E 01	06020	0.98234740E 00	07100	0.98234740E 00	14111	0.98234740E 00		
15011	0.19646948E 01	15020	0.98234740E 00	15101	0.19646948E 01	16010	0.98234740E 00		
16100	0.98234740E 00	23102	0.98234740E 00	24020	0.19646948E 01	24101	0.39293896E 01		
24110	0.29470421E 01	25001	0.49117369E 01	25010	0.58940843E 01	25100	0.29470421E 01		
26000	0.39293896E 01	32030	0.98234740E 00	32102	0.98234740E 00	32111	0.98234740E 00		
33002	0.98234740E 00	33011	0.19646948E 01	33101	0.19646948E 01	33110	0.98234740E 00		
33200	0.98234740E 00	34001	0.29470421E 01	34010	0.29470421E 01	34100	0.98234740E 00		
35000	0.88411265E 01	41102	0.98234740E 00	42011	0.98234740E 00	42101	0.98234740E 00		
42110	0.19646948E 01	43001	0.29470421E 01	43010	0.29470421E 01	43100	0.19646948E 01		
44000	0.78587791E 01	52001	0.98234740E 00	52010	0.98234740E 00	52100	0.98234740E 00		
53000	0.98234740E 00	05110	0.98234740E 00	06010	0.98234740E 00	13111	0.98234740E 00		
14020	0.98234740E 00	14101	0.29470421E 01	14110	0.29470421E 01	14200	0.19646948E 01		
15001	0.19646948E 01	15010	0.98234740E 00	15100	0.29470421E 01	16000	0.39293896E 01		
22030	0.98234740E 00	22102	0.98234740E 00	22201	0.98234740E 00	23002	0.98234740E 00		
23011	0.19646948E 01	23020	0.98234740E 00	23101	0.39293896E 01	23110	0.98234740E 00		
23200	0.19646948E 01	24001	0.39293896E 01	24010	0.58940843E 01	24100	0.68764317E 01		

PROTON ON PB INC. K.E. (MEV) IS 2000.0 A IS 207. Z IS 82. 2500 INC. HISTORIES 5.7 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PIO 5TH IS NO. OF PI-

CONTINUED

25000	0.49117369E 01	31030	0.98234740E 00	32011	0.39293896E 01	32020	0.19646948E 01
32101	0.98234740E 00	32110	0.19646948E 01	33001	0.58940843E 01	33010	0.29470421E 01
33100	0.58940843E 01	34000	0.49117369E 01	41110	0.19646948E 01	42001	0.29470421E 01
42010	0.19646948E 01	42100	0.98234740E 00	43000	0.68764317E 01	50020	0.98234740E 00
51001	0.98234740E 00	51100	0.98234740E 00	04020	0.98234740E 00	05100	0.98234740E 00
12111	0.98234740E 00	12120	0.98234740E 00	13020	0.98234740E 00	13101	0.39293896E 01
13110	0.19646948E 01	13200	0.98234740E 00	14001	0.98234740E 00	14010	0.68764317E 01
14100	0.58940843E 01	15000	0.58940843E 01	21102	0.19646948E 01	22011	0.98234740E 00
22020	0.39293896E 01	22101	0.49117369E 01	22110	0.49117369E 01	22200	0.19646948E 01
23001	0.49117369E 01	23010	0.29470421E 01	23100	0.39293896E 01	24000	0.78587791E 01
30102	0.98234740E 00	31011	0.98234740E 00	31020	0.39293896E 01	31101	0.98234740E 00
31110	0.19646948E 01	32001	0.58940843E 01	32010	0.39293896E 01	32100	0.19646948E 01
33000	0.78587791E 01	40110	0.98234740E 00	41001	0.98234740E 00	42000	0.68764317E 01
03101	0.19646948E 01	03110	0.19646948E 01	04010	0.19646948E 01	04100	0.98234740E 00
05000	0.98234740E 00	12020	0.29470421E 01	12101	0.68764317E 01	12110	0.29470421E 01
12200	0.98234740E 00	13001	0.98234740E 00	13010	0.68764317E 01	13100	0.49117369E 01
14000	0.58940843E 01	21011	0.19646948E 01	21020	0.29470421E 01	21101	0.19646948E 01
21110	0.19646948E 01	22001	0.39293896E 01	22010	0.39293896E 01	22100	0.49117369E 01
23000	0.13752863E 02	30101	0.19646948E 01	31001	0.98234740E 00	31010	0.39293896E 01
31100	0.39293896E 01	32000	0.29470421E 01	40100	0.98234740E 00	41000	0.98234740E 00
50000	0.98234740E 00	02101	0.98234740E 00	02110	0.98234740E 00	02200	0.98234740E 00
03010	0.19646948E 01	03100	0.29470421E 01	11020	0.29470421E 01	11101	0.98234738E 01
11110	0.58940843E 01	12001	0.19646948E 01	12010	0.98234738E 01	12100	0.12770516E 02
13000	0.12770516E 02	20002	0.98234740E 00	20011	0.98234740E 00	20020	0.98234740E 00
20101	0.39293896E 01	20110	0.98234740E 00	21001	0.39293896E 01	21010	0.68764317E 01
22000	0.19646948E 02	30001	0.19646948E 01	30010	0.29470421E 01	31000	0.78587791E 01

PROTON ON PB INC. K.E. (MEV) IS 2000.0 A IS 207. Z IS 82. 2500 INC. HISTORIES 6.7 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PIO 5TH IS NO. OF PI-

CONTINUED

40000	0.98234740E 00	02010	0.29470421E 01	02100	0.78587791E 01	03000	0.29470421E 01
10110	0.98234740E 00	11010	0.68764317E 01	11100	0.23576337E 02	12000	0.23576337E 02
20001	0.19646948E 01	20010	0.29470421E 01	20100	0.98234740E 00	21000	0.17682253E 02
30000	0.98234740E 00	01010	0.19646948E 01	01100	0.29470421E 01	02000	0.29470421E 01
10001	0.39293896E 01	10010	0.39293896E 01	10100	0.88411265E 01	11000	0.80552486E 02
20000	0.35364506E 02	01000	0.88411265E 01	10000	0.34382159E 02		

PROTON ON PB INC. K.E. (MEV) IS 2000.0 A IS 207. Z IS 82. 2500 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 1.00 TO 0.95
(THETA FROM 0 DEG. 0 MIN. TO 18 DEG. 12 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.492E-01	50.0	0.752E-01	50.0	0.120E-01	50.0	0.375E-01	50.0	0.324E-01
150.0	0.227E-01	150.0	0.241E-01	150.0	0.	150.0	0.417E-02	150.0	0.
250.0	0.115E-01	250.0	0.147E-01	250.0	0.280E-01	250.0	0.250E-01	250.0	0.432E-01
350.0	0.561E-02	350.0	0.102E-01	350.0	0.280E-01	350.0	0.292E-01	350.0	0.486E-01
450.0	0.872E-02	450.0	0.581E-02	450.0	0.240E-01	450.0	0.375E-01	450.0	0.162E-01
550.0	0.498E-02	550.0	0.636E-02	550.0	0.320E-01	550.0	0.167E-01	550.0	0.162E-01
650.0	0.498E-02	650.0	0.387E-02	650.0	0.800E-02	650.0	0.250E-01	650.0	0.162E-01
750.0	0.561E-02	750.0	0.526E-02	750.0	0.120E-01	750.0	0.417E-02	750.0	0.108E-01
850.0	0.374E-02	850.0	0.553E-02	850.0	0.280E-01	850.0	0.833E-02	850.0	0.
950.0	0.498E-02	950.0	0.526E-02	950.0	0.120E-01	950.0	0.417E-02	950.0	0.541E-02
1050.0	0.436E-02	1050.0	0.553E-02	1050.0	0.800E-02	1050.0	0.417E-02	1050.0	0.541E-02
1150.0	0.436E-02	1150.0	0.526E-02	1150.0	0.400E-02	1150.0	0.417E-02	1150.0	0.541E-02
1250.0	0.561E-02	1250.0	0.387E-02	1250.0	0.400E-02	1250.0	0.	1250.0	0.
1350.0	0.218E-02	1350.0	0.304E-02	1350.0	0.	1350.0	0.	1350.0	0.
1450.0	0.592E-02	1450.0	0.277E-02	1450.0	0.	1450.0	0.	1450.0	0.
1550.0	0.374E-02	1550.0	0.415E-02	1550.0	0.	1550.0	0.	1550.0	0.
1650.0	0.779E-02	1650.0	0.526E-02	1650.0	0.	1650.0	0.	1650.0	0.
1750.0	0.654E-02	1750.0	0.332E-02	1750.0	0.	1750.0	0.	1750.0	0.
1850.0	0.115E-01	1850.0	0.415E-02	1850.0	0.	1850.0	0.	1850.0	0.
1950.0	0.259E-01	1950.0	0.636E-02	1950.0	0.	1950.0	0.	1950.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON PB INC. K.E. (MEV) IS 2000.0 A IS 207. Z IS 82. 2500 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.95 TO 0.90
(THETA FROM 18 DEG. 12 MIN. TO 25 DEG. 51 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.881E-01	50.0	0.986E-01	50.0	0.341E-01	50.0	0.390E-01	50.0	0.621E-01
150.0	0.324E-01	150.0	0.315E-01	150.0	0.976E-02	150.0	0.976E-02	150.0	0.
250.0	0.202E-01	250.0	0.192E-01	250.0	0.976E-02	250.0	0.293E-01	250.0	0.690E-02
350.0	0.101E-01	350.0	0.106E-01	350.0	0.293E-01	350.0	0.244E-01	350.0	0.483E-01
450.0	0.690E-02	450.0	0.368E-02	450.0	0.293E-01	450.0	0.683E-01	450.0	0.345E-01
550.0	0.690E-02	550.0	0.859E-02	550.0	0.293E-01	550.0	0.195E-01	550.0	0.276E-01
650.0	0.584E-02	650.0	0.532E-02	650.0	0.390E-01	650.0	0.	650.0	0.690E-02
750.0	0.637E-02	750.0	0.409E-02	750.0	0.195E-01	750.0	0.976E-02	750.0	0.138E-01
850.0	0.371E-02	850.0	0.409E-02	850.0	0.	850.0	0.	850.0	0.
950.0	0.318E-02	950.0	0.327E-02	950.0	0.	950.0	0.	950.0	0.
1050.0	0.371E-02	1050.0	0.286E-02	1050.0	0.	1050.0	0.	1050.0	0.
1150.0	0.318E-02	1150.0	0.123E-02	1150.0	0.	1150.0	0.	1150.0	0.
1250.0	0.159E-02	1250.0	0.818E-03	1250.0	0.	1250.0	0.	1250.0	0.
1350.0	0.265E-02	1350.0	0.204E-02	1350.0	0.	1350.0	0.	1350.0	0.
1450.0	0.106E-02	1450.0	0.164E-02	1450.0	0.	1450.0	0.	1450.0	0.
1550.0	0.212E-02	1550.0	0.164E-02	1550.0	0.	1550.0	0.	1550.0	0.
1650.0	0.106E-02	1650.0	0.	1650.0	0.	1650.0	0.	1650.0	0.
1750.0	0.106E-02	1750.0	0.818E-03	1750.0	0.	1750.0	0.	1750.0	0.
1850.0	0.	1850.0	0.	1850.0	0.	1850.0	0.	1850.0	0.
1950.0	0.	1950.0	0.	1950.0	0.	1950.0	0.	1950.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON PB INC. K.E. (MEV) IS 2000.0 A IS 207. Z IS 82. 2500 INC. HISTORIES 5.7 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.60 TO 0.40
(THETA FROM 53 DEG. 8 MIN. TO 66 DEG. 25 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PI0		PI-	
DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
100.0	0.216E-01	100.0	0.226E-01	100.0	0.181E-01	100.0	0.179E-01	100.0	0.201E-01
300.0	0.304E-02	300.0	0.191E-02	300.0	0.500E-02	300.0	0.560E-02	300.0	0.392E-02
500.0	0.236E-03	500.0	0.401E-03	500.0	0.154E-02	500.0	0.112E-02	500.0	0.490E-03
700.0	0.135E-03	700.0	0.445E-04	700.0	0.385E-03	700.0	0.373E-03	700.0	0.490E-03
900.0	0.	900.0	0.223E-04	900.0	0.	900.0	0.	900.0	0.
1100.0	0.	1100.0	0.	1100.0	0.	1100.0	0.	1100.0	0.
1300.0	0.	1300.0	0.	1300.0	0.	1300.0	0.	1300.0	0.
1500.0	0.	1500.0	0.	1500.0	0.	1500.0	0.	1500.0	0.
1700.0	0.	1700.0	0.	1700.0	0.	1700.0	0.	1700.0	0.
1900.0	0.	1900.0	0.	1900.0	0.	1900.0	0.	1900.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON PB INC. K.E. (MEV) IS 2000.0 A IS 207. Z IS 82. 2500 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.10 TO -0.10
(THETA FROM 84 DEG. 16 MIN. TO 95 DEG. 44 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PI0		PI-	
DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
100.0	0.244E-01	100.0	0.245E-01	100.0	0.236E-01	100.0	0.236E-01	100.0	0.233E-01
300.0	0.554E-03	300.0	0.480E-03	300.0	0.144E-02	300.0	0.926E-03	300.0	0.111E-02
500.0	0.	500.0	0.343E-04	500.0	0.	500.0	0.463E-03	500.0	0.556E-03
700.0	0.	700.0	0.	700.0	0.	700.0	0.	700.0	0.
900.0	0.	900.0	0.	900.0	0.	900.0	0.	900.0	0.
1100.0	0.	1100.0	0.	1100.0	0.	1100.0	0.	1100.0	0.
1300.0	0.	1300.0	0.	1300.0	0.	1300.0	0.	1300.0	0.
1500.0	0.	1500.0	0.	1500.0	0.	1500.0	0.	1500.0	0.
1700.0	0.	1700.0	0.	1700.0	0.	1700.0	0.	1700.0	0.
1900.0	0.	1900.0	0.	1900.0	0.	1900.0	0.	1900.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

PROTON ON PB INC. K.E. (MEV) IS 2000.0 A IS 207. Z IS 82. 2500 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM -0.40 TO -0.60
(THETA FROM 113 DEG. 35 MIN. TO 126 DEG. 54 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0	DELTA E(MEV)	200.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
100.0	0.246E-01	100.0	0.248E-01	100.0	0.238E-01	100.0	0.241E-01	100.0	0.250E-01
300.0	0.405E-03	300.0	0.169E-03	300.0	0.122E-02	300.0	0.877E-03	300.0	0.
500.0	0.	500.0	0.	500.0	0.	500.0	0.	500.0	0.
700.0	0.	700.0	0.	700.0	0.	700.0	0.	700.0	0.
900.0	0.	900.0	0.	900.0	0.	900.0	0.	900.0	0.
1100.0	0.	1100.0	0.	1100.0	0.	1100.0	0.	1100.0	0.
1300.0	0.	1300.0	0.	1300.0	0.	1300.0	0.	1300.0	0.
1500.0	0.	1500.0	0.	1500.0	0.	1500.0	0.	1500.0	0.
1700.0	0.	1700.0	0.	1700.0	0.	1700.0	0.	1700.0	0.
1900.0	0.	1900.0	0.	1900.0	0.	1900.0	0.	1900.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	0.100E 01	N IS	1.000E 00	N IS	0.100E 01

PROTON ON PB INC. K.E. (MEV) IS 2000.0 A IS 207. Z IS 82. 2500 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PROTONS

0 TO 0.2000000E 04 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PROTONS /DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
40.00	0.7467034E-02	600.00	0.9934971E-04	1080.00	0.4741691E-04	1560.00	0.2709538E-04
120.00	0.2047959E-02	680.00	0.8805997E-04	1160.00	0.4741691E-04	1640.00	0.4741691E-04
200.00	0.7970557E-03	760.00	0.8805997E-04	1240.00	0.4064306E-04	1720.00	0.4741691E-04
280.00	0.4809429E-03	840.00	0.8128613E-04	1320.00	0.3161127E-04	1800.00	0.6096460E-04
360.00	0.2754697E-03	920.00	0.4967486E-04	1400.00	0.3612717E-04	1880.00	0.6548049E-04
440.00	0.1716040E-03	1000.00	0.5644870E-04	1480.00	0.4741691E-04	1960.00	0.1670882E-03
520.00	0.1309610E-03						

PROTON ON PB INC. K.E. (MEV) IS 2000.0 A IS 207. Z IS 82. 2500 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE NEUTRONS

0 TO 0.2000000E 04 MEV 0 DEL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED NEUTRONS/DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
40.00	0.9586294E-02	600.00	0.7473842E-04	1080.00	0.4886743E-04	1560.00	0.1581005E-04
120.00	0.1842589E-02	680.00	0.5317926E-04	1160.00	0.2730827E-04	1640.00	0.2155916E-04
200.00	0.6740830E-03	760.00	0.6324020E-04	1240.00	0.2299644E-04	1720.00	0.1868460E-04
280.00	0.3650684E-03	840.00	0.4743015E-04	1320.00	0.1868460E-04	1800.00	0.1437277E-04
360.00	0.2127170E-03	920.00	0.4743015E-04	1400.00	0.1293550E-04	1880.00	0.2155916E-04
440.00	0.1250431E-03	1000.00	0.3449465E-04	1480.00	0.2874554E-04	1960.00	0.2587099E-04
520.00	0.9629758E-04						

PROTON ON PB INC. K.E. (MEV) IS 2000.0 A IS 207. Z IS 82. 2500 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI+

0 TO 0.2000000E 04 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI+ / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
40.00	0.6608280E-02	600.00	0.2189490E-03	1080.00	0.	1560.00	0.
120.00	0.1592357E-02	680.00	0.2388535E-03	1160.00	0.1990446E-04	1640.00	0.
200.00	0.8160828E-03	760.00	0.1393312E-03	1240.00	0.1990446E-04	1720.00	0.
280.00	0.1094745E-02	840.00	0.1791401E-03	1320.00	0.	1800.00	0.
360.00	0.6767516E-03	920.00	0.3980892E-04	1400.00	0.	1880.00	0.
440.00	0.4578026E-03	1000.00	0.5971338E-04	1480.00	0.	1960.00	0.
520.00	0.3383758E-03						

PROTON ON PB INC. K.E. (MEV) IS 2000.0 A IS 207. Z IS 82. 2500 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PIO

0 TO 0.2000000E 04 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PIO / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
40.00	0.7260726E-02	600.00	0.1443894E-03	1080.00	0.2062706E-04	1560.00	0.
120.00	0.1485149E-02	680.00	0.1650165E-03	1160.00	0.2062706E-04	1640.00	0.
200.00	0.1031353E-02	760.00	0.8250825E-04	1240.00	0.	1720.00	0.
280.00	0.7219472E-03	840.00	0.4125413E-04	1320.00	0.	1800.00	0.
360.00	0.4331683E-03	920.00	0.2062706E-04	1400.00	0.	1880.00	0.
440.00	0.7838284E-03	1000.00	0.2062706E-04	1480.00	0.	1960.00	0.
520.00	0.2681518E-03						

PROTON ON PB INC. K.E. (MEV) IS 2000.0 A IS 207. Z IS 82. 2500 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI-

0 TO 0.2000000E 04 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI- / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
40.00	0.7774102E-02	600.00	0.1181474E-03	1080.00	0.2362949E-04	1560.00	0.
120.00	0.1465028E-02	680.00	0.9451796E-04	1160.00	0.	1640.00	0.
200.00	0.9215501E-03	760.00	0.1181474E-03	1240.00	0.	1720.00	0.
280.00	0.6852552E-03	840.00	0.	1320.00	0.	1800.00	0.
360.00	0.7088847E-03	920.00	0.	1400.00	0.	1880.00	0.
440.00	0.3308129E-03	1000.00	0.4725898E-04	1480.00	0.	1960.00	0.
520.00	0.2126654E-03						

PROTON ON PB INC. K.E. (MEV) IS 2000.0 A IS 207. Z IS 82. 2500 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PARTICLES

0 TO 1000 MEV

N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PARTICLES/DELTA E
K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N IS (SUM OVER HISTOGRAM FROM 1 TO 1000 MEV) (DELTA E)

K.E.	PROTONS N(E)	NEUTRONS N(E)	PI+ N(E)	PI0 N(E)	PI- N(E)
25.0	0.9483381E-02	0.1131195E-01	0.7929936E-02	0.8382838E-02	0.9754253E-02
75.0	0.3554913E-02	0.3451765E-02	0.3407643E-02	0.4059406E-02	0.3629490E-02
125.0	0.1907514E-02	0.1690238E-02	0.1624204E-02	0.1452145E-02	0.1209830E-02
175.0	0.1044075E-02	0.8485685E-03	0.6050955E-03	0.7920792E-03	0.9829868E-03
225.0	0.6539017E-03	0.5749109E-03	0.1178344E-02	0.1155115E-02	0.9073724E-03
275.0	0.4913295E-03	0.3748419E-03	0.9554140E-03	0.7260726E-03	0.5671077E-03
325.0	0.3106936E-03	0.2322640E-03	0.9554140E-03	0.4620462E-03	0.7183365E-03
375.0	0.2637283E-03	0.2046683E-03	0.6050955E-03	0.4620462E-03	0.7183365E-03
425.0	0.1589595E-03	0.1287800E-03	0.6050955E-03	0.9570957E-03	0.3780718E-03
475.0	0.1842486E-03	0.9888467E-04	0.2229299E-03	0.4950495E-03	0.2268431E-03
525.0	0.1156069E-03	0.1172818E-03	0.3821656E-03	0.1320132E-03	0.1890359E-03
575.0	0.1047688E-03	0.7358859E-04	0.2866242E-03	0.2640264E-03	0.1890359E-03
625.0	0.8670520E-04	0.6209038E-04	0.2229299E-03	0.1320132E-03	0.1134215E-03
675.0	0.1119942E-03	0.6209038E-04	0.1910828E-03	0.1980198E-03	0.1134215E-03
725.0	0.7225433E-04	0.7128895E-04	0.1910828E-03	0.3300330E-04	0.7561437E-04
775.0	0.9031792E-04	0.4599287E-04	0.1273885E-03	0.9900990E-04	0.1134215E-03
825.0	0.8309249E-04	0.4599287E-04	0.9554140E-04	0.6600660E-04	0.
875.0	0.6864162E-04	0.5059216E-04	0.1910828E-03	0.	0.
925.0	0.4335260E-04	0.4139358E-04	0.3184713E-04	0.3300330E-04	0.
975.0	0.6502890E-04	0.4599287E-04	0.6369427E-04	0.3300330E-04	0.3780718E-04
	N IS 0.9447254E 00	N IS 0.9766585E 00	N IS 0.9936305E 00	N IS 0.9966996E 00	N IS 0.9962192E 00

PROTON ON PB INC. K.E. (MEV) IS 2000.0 A IS 207. Z IS 82. 2500 INC. HISTORIES 6.7 MEV CUTOFF EN.

ANGULAR DISTRIBUTION OF EMITTED CASCADE PARTICLES

(FRACTION IN EACH INTERVAL)/(DELTA MU)

MU IS COSINE THETA AND SPECIFIES THE CENTER OF THE INTERVAL

MU	PROTON	NEUTRON	PI+	PIO	PI-
0.975	0.2319364E 01	0.1662642E 01	0.1592357E 01	0.1584158E 01	0.1398866E 01
0.925	0.1361994E 01	0.1124526E 01	0.1305732E 01	0.1353135E 01	0.1096408E 01
0.875	0.1098266E 01	0.1016442E 01	0.8598726E 00	0.9240924E 00	0.5293006E 00
0.825	0.9537572E 00	0.9474531E 00	0.8280255E 00	0.5610561E 00	0.7561437E 00
0.775	0.8995665E 00	0.8094745E 00	0.9554140E 00	0.7590759E 00	0.5293006E 00
0.725	0.8526012E 00	0.8347706E 00	0.5414013E 00	0.4950495E-00	0.8695652E 00
0.675	0.6972543E 00	0.8163735E 00	0.7324841E 00	0.6930693E 00	0.7183365E 00
0.625	0.6358382E 00	0.8186731E 00	0.3184713E-00	0.2640264E-00	0.4158790E-00
0.575	0.5997110E 00	0.7450845E 00	0.7961783E 00	0.6600660E 00	0.6805293E 00
0.525	0.8020231E 00	0.6301023E 00	0.3184713E-00	0.5610561E 00	0.3780718E-00
0.475	0.6864162E 00	0.6094055E 00	0.3821656E-00	0.5940594E 00	0.4158790E-00
0.425	0.5888728E 00	0.5979073E 00	0.5732484E 00	0.3960396E-00	0.4536862E-00
0.375	0.5816474E 00	0.6324020E 00	0.3821656E-00	0.4620462E-00	0.5293006E 00
0.325	0.5382948E 00	0.5450155E 00	0.2547771E-00	0.2310231E-00	0.4536862E-00
0.275	0.5816474E 00	0.5818098E 00	0.1910828E-00	0.4290429E-00	0.3402646E-00
0.225	0.4443642E-00	0.4875244E-00	0.4140127E-00	0.3630363E-00	0.5293006E 00
0.175	0.4154624E-00	0.5243187E 00	0.5732484E 00	0.4620462E-00	0.2646503E-00
0.125	0.4046243E-00	0.4829251E-00	0.1592357E-00	0.2970297E-00	0.4914934E-00
0.075	0.4443642E-00	0.4576291E-00	0.3821656E-00	0.6270627E 00	0.5293006E 00
0.025	0.3721098E-00	0.4346326E-00	0.4140127E-00	0.3630363E-00	0.1890359E-00
-0.025	0.3468208E-00	0.4530298E-00	0.4140127E-00	0.3630363E-00	0.3780718E-00
-0.075	0.3034682E-00	0.3311487E-00	0.4458599E-00	0.4290429E-00	0.5049149E 00
-0.125	0.2962428E-00	0.4001380E-00	0.4140127E-00	0.4290429E-00	0.4158790E-00
-0.175	0.4010116E-00	0.3196504E-00	0.3503185E-00	0.3300330E-00	0.4914934E-00
-0.225	0.3395954E-00	0.3012533E-00	0.5095541E 00	0.4950495E-00	0.4914934E-00
-0.275	0.3251445E-00	0.2759572E-00	0.5732484E 00	0.2970297E-00	0.3780718E-00
-0.325	0.2239884E-00	0.2805565E-00	0.3821656E-00	0.4950495E-00	0.3024575E-00
-0.375	0.2565029E-00	0.2851558E-00	0.3184713E-00	0.2970297E-00	0.3780718E-00
-0.425	0.2673410E-00	0.2046683E-00	0.3503185E-00	0.3300330E-00	0.4536862E-00
-0.475	0.1661850E-00	0.2805565E-00	0.3821656E-00	0.6270627E 00	0.3780718E-00
-0.525	0.2312139E-00	0.2782569E-00	0.1592357E-00	0.3960396E-00	0.4914934E-00
-0.575	0.2276012E-00	0.2552604E-00	0.4140127E-00	0.5280528E 00	0.3780718E-00
-0.625	0.1697977E-00	0.1977693E-00	0.5732484E 00	0.2970297E-00	0.4536862E-00
-0.675	0.1806358E-00	0.1885708E-00	0.2866242E-00	0.2970297E-00	0.4158790E-00
-0.725	0.1734104E-00	0.2276647E-00	0.3503185E-00	0.5610561E 00	0.3024575E-00
-0.775	0.2131503E-00	0.2046683E-00	0.3184713E-00	0.3960396E-00	0.4158790E-00
-0.825	0.1986994E-00	0.2092676E-00	0.3821656E-00	0.3300330E-00	0.3402646E-00
-0.875	0.1517341E-00	0.1862711E-00	0.4777070E-00	0.1980198E-00	0.5671078E 00
-0.925	0.1156069E-00	0.1816718E-00	0.4777070E-00	0.3300330E-00	0.4914934E-00
-0.975	0.1336705E-00	0.1793722E-00	0.4458599E-00	0.4950495E-00	0.3024575E-00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	0. TO 10.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
5.9174E 00	1.5437E 00	1.6723E 00	1.2864E 00	1.0291E 00	1.1578E 00	6.4320E-01	5.1456E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.5728E-01	1.0291E 00	9.0048E-01	7.7184E-01	1.2864E 00	6.4320E-01	1.0291E 00	7.7184E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
5.1456E-01	1.1578E 00	9.0048E-01	6.4320E-01	1.2864E 00	7.7184E-01	3.8592E-01	1.5437E 00
INTERVAL 25							
9.2620E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	10.00 TO 30.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
5.3472E 00	2.4679E 00	1.0859E 00	1.0694E 00	5.9231E-01	4.9359E-01	4.2778E-01	3.7842E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
4.1132E-01	3.2906E-01	3.1261E-01	1.8098E-01	2.1389E-01	1.6453E-01	1.6453E-01	1.8098E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.3162E-01	9.8718E-02	2.1389E-01	9.8718E-02	1.8098E-01	2.4679E-01	3.9487E-01	2.7970E-01
INTERVAL 25							
3.2906E-02							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2954E 04 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.105686E 04 MEV FOR CASCADE PROTON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1240E 04 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.417919E 03 MEV FOR CASCADE PROTON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	30.00 TO 90.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.1410E 00	1.2773E 00	5.7319E-01	2.9788E-01	1.7376E-01	8.3496E-02	6.0930E-02	3.8363E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.7080E-02	2.4823E-02	2.2567E-02	1.1283E-02	4.5133E-03	1.3540E-02	6.7700E-03	2.2567E-03
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
4.5133E-03	2.2567E-03	2.2567E-03	2.2567E-03	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	90.00 TO 180.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.1517E 00	3.4982E-01	3.9086E-02	1.1726E-02	1.9543E-03	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5416E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.115707E 03 MEV FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2043E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.547513E 02 MEV FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 0 TO 500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
9.851E 02	7.932E 02	6.059E 02	4.834E 02	3.174E 02	2.367E 02	1.669E 02	1.522E 02	1.141E 02

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 500 TO 1500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
4.278E 02	1.324E 02	1.939E 01	4.791E-01	4.502E-01	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 1500 TO 2000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
4.692E 02	9.904E 00	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 0 TO 500

K EQUALS 0	1	2	3	4	5	6	7
1.9156E 02	3.2417E 02	2.8783E 02	2.6523E 02	2.3478E 02	1.5816E 02	1.0413E 02	5.4029E 01
8	9	10	11	12	13	14	15
3.3400E 01	1.3753E 01	7.8588E 00	9.8235E-01	0.	0.	0.	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 500 TO 1500

K EQUALS 0	1	2	3	4	5	6	7
1.3380E 03	3.3498E 02	2.9470E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 1500 TO 2000

K EQUALS 0	1	2	3	4	5	6	7
1.4873E 03	1.8861E 02	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PROTONS	0.89053E-01		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.1555E 02	0.8103E 01	0.7640E 01	0.1725E 02	0.1666E 02	0.4791E 01	0.3526E 01	0.3601E 01	0.1037E 02

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	0. TO 10.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.0548E 01	3.3446E 00	1.6723E 00	1.8010E 00	1.0291E 00	5.1456E-01	9.0048E-01	7.7184E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
3.8592E-01	9.0048E-01	1.2864E 00	9.0048E-01	9.0048E-01	1.5437E 00	9.0048E-01	1.0291E 00
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
5.1456E-01	7.7184E-01	1.0291E 00	5.1456E-01	1.4150E 00	1.2864E 00	3.8592E-01	1.4150E 00
INTERVAL 25							
2.1869E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	10.00 TO 30.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
8.9504E 00	2.8793E 00	1.7440E 00	1.1846E 00	8.7201E-01	5.5940E-01	5.4295E-01	5.1004E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.4679E-01	4.1132E-01	2.4679E-01	3.1261E-01	2.1389E-01	3.2906E-01	1.6453E-01	1.1517E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.3162E-01	4.9359E-02	1.9744E-01	1.1517E-01	6.5812E-02	4.9359E-02	1.1517E-01	6.5812E-02
INTERVAL 25							
1.6453E-02							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3036E 04 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.716610E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1607E 04 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.282817E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	30.00 TO 90.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
7.5959E 00	1.8595E 00	7.1536E-01	3.6558E-01	1.9407E-01	1.1058E-01	6.0930E-02	3.3850E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
4.2876E-02	2.7080E-02	1.8053E-02	1.5797E-02	9.0266E-03	4.5133E-03	4.5133E-03	2.2567E-03
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
2.2567E-03	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	90.00 TO 180.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.8735E 00	5.0226E-01	6.4492E-02	1.1726E-02	1.9543E-03	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.8850E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.946716E 02 MEV FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3563E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.521106E 02 MEV FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE — NEUTRON — FOR THE ENERGY INTERVAL (MEV) 0 TO 500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.457E 03	1.178E 03	1.030E 03	7.641E 02	5.911E 02	3.727E 02	3.068E 02	2.710E 02	2.437E 02

TYPE OF CASCADE PARTICLE — NEUTRON — FOR THE ENERGY INTERVAL (MEV) 500 TO 1500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
4.874E 02	1.324E 02	2.468E 01	1.916E 00	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE — NEUTRON — FOR THE ENERGY INTERVAL (MEV) 1500 TO 2000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
2.204E 02	4.502E 00	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 0 TO 500

K EQUALS 0	1	2	3	4	5	6	7
9.0376E 01	2.2201E 02	1.6110E 02	1.5128E 02	1.5030E 02	1.7093E 02	1.5521E 02	1.3458E 02
8	9	10	11	12	13	14	15
1.0118E 02	1.1592E 02	6.4835E 01	4.3223E 01	3.3400E 01	1.5718E 01	7.8588E 00	3.9294E 00

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 500 TO 1500

K EQUALS 0	1	2	3	4	5	6	7
1.2584E 03	3.5266E 02	1.0806E 01	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 1500 TO 2000

K EQUALS 0	1	2	3	4	5	6	7
1.5334E 03	8.8411E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
NEUTRONS	0.40129E-01		

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	0. TO 25.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.6687E-01	4.1718E-02	2.0859E-02	2.2945E-01	1.8773E-01	1.8773E-01	2.5031E-01	1.4601E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.6687E-01	1.0429E-01	1.4601E-01	4.1718E-02	6.2577E-02	0.	2.0859E-02	2.0859E-02
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	25.00 TO 75.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.5354E-01	1.0564E-01	7.2439E-02	9.6586E-02	6.6403E-02	4.2256E-02	1.5092E-02	1.2073E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.2073E-02	6.0366E-03	6.0366E-03	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1435E 03 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.509767E 03 MEV FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5505E 02 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.203158E 03 MEV FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	75.00 TO 130.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.5115E-01	7.5866E-02	3.2514E-02	2.3844E-02	6.5028E-03	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	130.00 TO 180.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.2674E-01	4.3768E-02	5.4710E-03	5.4710E-03	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3919E 02 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.789381E 02 MEV FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3852E 02 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.518182E 02 MEV FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 0 TO 500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
6.740E 01	8.013E 01	5.054E 01	3.833E 01	3.601E 01	4.072E 01	3.467E 01	4.142E 01	4.407E 01

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 500 TO 1500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
7.777E 01	2.071E 01	2.938E 00	9.581E-01	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 1500 TO 2000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 0 TO 500

K EQUALS 0	1	2	3	4	5	6	7
5.2064E 01	4.5876E 02	4.8135E 01	9.8235E-01	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 500 TO 1500

K EQUALS 0	1	2	3	4	5	6	7
5.0198E 02	5.6976E 01	9.8235E-01	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 1500 TO 2000

K EQUALS 0	1	2	3	4	5	6	7
5.5994E 02	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI +	0.25159E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.1555E 02	0.8103E 01	0.7640E 01	0.1725E 02	0.1666E 02	0.4791E 01	0.3526E 01	0.3601E 01	0.1037E 02

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	0. TO 25.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.1288E-01	8.3436E-02	1.6687E-01	1.2515E-01	2.0859E-01	2.9203E-01	1.8773E-01	1.0429E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.0429E-01	6.2577E-02	4.1718E-02	2.0859E-02	0.	2.0859E-02	2.0859E-02	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	25.00 TO 75.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.8674E-01	7.5458E-02	7.5458E-02	6.9421E-02	3.3201E-02	6.9421E-02	1.2073E-02	6.0366E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
9.0549E-03	3.0183E-03	0.	0.	3.0183E-03	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1402E 03 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.384762E 03 MEV FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5143E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.184977E 03 MEV FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	75.00 TO 130.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.7066E-01	7.5866E-02	3.4682E-02	1.3006E-02	0.	2.1676E-03	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	130.00 TO 180.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.8844E-01	4.3768E-02	5.4710E-03	0.	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3971E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.714410E 02 MEV FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3501E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.5C0000E 02 MEV FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 0 TO 500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
9.592E 01	7.833E 01	4.819E 01	3.928E 01	3.827E 01	4.072E 01	3.820E 01	3.061E 01	4.407E 01

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 500 TO 1500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
4.926E 01	7.203E 00	2.938E 00	0.	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 1500 TO 2000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 0 TO 500

K EQUALS 0	1	2	3	4	5	6	7
2.0629E 01	3.9982E 02	6.8764E 01	8.8411E 00	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 500 TO 1500

K EQUALS 0	1	2	3	4	5	6	7
4.6760E 02	2.9470E 01	9.8235E-01	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 1500 TO 2000

K EQUALS 0	1	2	3	4	5	6	7
4.9805E 02	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.66	2455.9	01768

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI 0	0.17492E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.1555E 02	0.8103E 01	0.7640E 01	0.1725E 02	0.1666E 02	0.4791E 01	0.3526E 01	0.3601E 01	0.1037E 02

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	0. TO 25.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.9203E-01	0.	6.2577E-02	1.6687E-01	2.9203E-01	1.4601E-01	1.2515E-01	6.2577E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
4.1718E-02	8.3436E-02	0.	0.	4.1718E-02	2.0859E-02	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	25.00 TO 75.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.4750E-01	9.9604E-02	8.4513E-02	4.8293E-02	4.2256E-02	2.1128E-02	6.0366E-03	6.0366E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
6.0366E-03	3.0183E-03	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1068E 03 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.373750E 03 MEV FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.4515E 02 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.159358E 03 MEV FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	75.00 TO 130.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.5765E-01	4.3352E-02	1.7341E-02	1.0838E-02	4.3352E-03	0.	2.1676E-03	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	130.00 TO 180.00	25	80.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.7203E-01	4.9239E-02	0.	0.	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3485E 02 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.658706E 02 MEV FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3370E 02 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.493506E 02 MEV FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 0 TO 500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
7.777E 01	5.222E 01	4.936E 01	3.593E 01	3.556E 01	3.306E 01	3.408E 01	3.601E 01	3.111E 01

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 500 TO 1500

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
3.370E 01	6.303E 00	1.763E 00	0.	4.502E-01	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 1500 TO 2000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 0 TO 500

K EQUALS 0	1	2	3	4	5	6	7
2.1612E 01	3.9294E 02	5.0100E 01	9.8235E-01	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 500 TO 1500

K EQUALS 0	1	2	3	4	5	6	7
4.4206E 02	2.3576E C1	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 1500 TO 2000

K EQUALS 0	1	2	3	4	5	6	7
4.6563E 02	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
PROTON	2000	PB	207	82	02500	6.68	2455.9	01768

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI -	0.12098E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.1555E 02	0.8103E 01	0.7640E 01	0.1725E 02	0.1666E 02	0.4791E 01	0.3526E 01	0.3601E 01	0.1037E 02

CASE NUMBER 207 822000 2

A= 207
Z= 82
KINETIC ENERGY (MEV)= 2000.00
PROTON
GEOMETRIC CROSS SECTION (MB)= 2455.87
CUTOFF ENERGY (MEV)= 6.68
2500 CASE HISTORIES
INELASTIC CROSS SECTION (MB) 1736.79

AVERAGE EVAPORATION YIELD PER INELASTIC EVENT

NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
20.0424211	4.7245476	1.5780543	0.4915158	0.1001131	0.5164027

CASE NUMBER 207 822000 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
207	83	1	0.98
	82	9	8.84
	81	1	0.98
206	83	5	4.91
	82	69	67.78
	81	53	52.06
205	83	3	2.95
	82	20	19.65
	81	14	13.75
	80	1	0.98
204	83	3	2.95
	82	14	13.75
	81	8	7.86
	80	3	2.95
203	83	2	1.96
	82	10	9.82
	81	12	11.79
	79	1	0.98
202	83	2	1.96
	82	14	13.75
	81	4	3.93
	80	1	0.98
	79	1	0.98
201	83	2	1.96
	82	10	9.82
	81	8	7.86
	80	3	2.95
200	83	2	1.96
	82	16	15.72
	81	12	11.79
	80	1	0.98
	79	1	0.98
199	83	1	0.98
	82	11	10.81
	81	11	10.81
	80	3	2.95
	79	1	0.98
198	82	16	15.72
	81	9	8.84
	80	4	3.93
	79	2	1.96
197	82	4	3.93
	81	8	7.86
	80	2	1.96
196	82	2	1.96
	81	3	2.95
	80	2	1.96
	79	1	0.98
195	82	6	5.89
	81	4	3.93
	80	3	2.95
	79	1	0.98
194	82	6	5.89
	81	3	2.95
	80	4	3.93

CASE NUMBER 207 822000 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
194	79	1	0.98
193	83	1	0.98
	82	4	3.93
	81	9	8.84
	80	3	2.95
	79	1	0.98
192	82	6	5.89
	81	4	3.93
	80	2	1.96
	79	2	1.96
191	82	7	6.88
	81	7	6.88
	80	4	3.93
	79	2	1.96
190	82	3	2.95
	81	10	9.82
	80	6	5.89
	79	1	0.98
	78	1	0.98
	77	1	0.98
189	82	1	0.98
	81	9	8.84
	80	6	5.89
	79	6	5.89
	78	2	1.96
188	82	1	0.98
	81	6	5.89
	80	6	5.89
	79	6	5.89
187	82	2	1.96
	81	3	2.95
	80	7	6.88
	79	4	3.93
	77	1	0.98
186	81	4	3.93
	80	8	7.86
	79	5	4.91
	78	4	3.93
	77	1	0.98
185	81	6	5.89
	80	8	7.86
	79	3	2.95
	78	1	0.98
	77	1	0.98
184	81	2	1.96
	80	5	4.91
	79	7	6.88
	78	6	5.89
	77	1	0.98
183	81	1	0.98
	80	9	8.84
	79	5	4.91
	78	6	5.89
	77	2	1.96
182	81	1	0.98

CASE NUMBER 207 822000 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
182	80	3	2.95
	79	9	8.84
	78	3	2.95
	77	1	0.98
	76	1	0.98
181	80	1	0.98
	79	12	11.79
	78	7	6.88
	77	4	3.93
	76	1	0.98
180	79	7	6.88
	78	5	4.91
	77	2	1.96
	76	1	0.98
179	79	1	0.98
	78	10	9.82
	77	8	7.86
	76	4	3.93
178	78	5	4.91
	77	6	5.89
	76	2	1.96
177	78	3	2.95
	77	6	5.89
	76	9	8.84
	75	1	0.98
176	78	1	0.98
	77	7	6.88
	76	4	3.93
	75	1	0.98
175	77	2	1.96
	76	8	7.86
	75	6	5.89
174	76	14	13.75
	75	4	3.93
173	76	5	4.91
	75	13	12.77
	74	1	0.98
172	75	7	6.88
	74	5	4.91
171	76	1	0.98
	75	8	7.86
	74	9	8.84
	73	2	1.96
170	75	6	5.89
	74	16	15.72
	73	7	6.88
169	74	13	12.77
	73	8	7.86
168	74	10	9.82
	73	9	8.84
	72	2	1.96
167	75	1	0.98
	74	6	5.89
	73	15	14.74
	72	5	4.91

CASE NUMBER 207 622000 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
167	70	1	0.98
166	73	10	9.82
	72	8	7.86
	71	1	0.98
165	73	8	7.86
	72	12	11.79
164	73	2	1.96
	72	10	9.82
	71	3	2.95
163	73	1	0.98
	72	7	6.88
	71	9	8.84
162	72	1	0.98
	71	13	12.77
	70	1	0.98
	69	1	0.98
161	72	1	0.98
	71	13	12.77
	70	4	3.93
	69	1	0.98
160	72	1	0.98
	71	6	5.89
	70	9	8.84
159	71	4	3.93
	70	12	11.79
	69	6	5.89
	68	1	0.98
158	71	1	0.98
	70	6	5.89
	69	7	6.88
157	70	9	8.84
	69	4	3.93
	68	4	3.93
	67	2	1.96
156	70	6	5.89
	69	13	12.77
	68	7	6.88
	67	2	1.96
155	70	2	1.96
	69	10	9.82
	68	5	4.91
	67	3	2.95
	66	1	0.98
154	69	2	1.96
	68	8	7.86
	67	4	3.93
	66	1	0.98
153	69	4	3.93
	68	10	9.82
	67	1	0.98
	66	1	0.98
	65	1	0.98
152	68	15	14.74
	67	7	6.88
	66	6	5.89

CASE NUMBER 207 822000 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
152	65	2	1.96
151	68	3	2.95
	67	10	9.82
	66	4	3.93
150	67	14	13.75
	66	4	3.93
	65	1	0.98
149	67	10	9.82
	66	10	9.82
	65	3	2.95
148	67	1	0.98
	66	12	11.79
	65	3	2.95
147	66	3	2.95
	65	11	10.81
	64	3	2.95
146	66	1	0.98
	65	11	10.81
	64	3	2.95
145	65	2	1.96
	64	12	11.79
	63	3	2.95
144	64	6	5.89
	63	11	10.81
	62	1	0.98
143	64	3	2.95
	63	20	19.65
142	63	9	8.84
	62	11	10.81
	61	1	0.98
141	63	4	3.93
	62	14	13.75
	61	1	0.98
140	63	1	0.98
	62	9	8.84
	61	1	0.98
139	62	6	5.89
	61	15	14.74
	60	6	5.89
138	62	2	1.96
	61	13	12.77
	60	5	4.91
	59	2	1.96
137	62	2	1.96
	61	9	8.84
	60	7	6.88
	59	2	1.96
136	61	1	0.98
	60	7	6.88
	59	5	4.91
	58	1	0.98
135	60	6	5.89
	59	6	5.89
	58	3	2.95
134	59	3	2.95

CASE NUMBER 207 822000 2

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
134	58	11	10.81

CASE NUMBER 207 822000 2

MOMENTS OF THE ENERGY DISTRIBUTIONS FOR THE FOLLOWING EVAPORATION PARTICLES

	NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
1ST MOM.	6.11200E 00	1.48992E 01	1.62688E 01	1.66754E 01	2.98293E 01	2.67827E 01
2ND MOM.	6.93253E 01	2.64803E 02	3.09983E 02	3.23799E 02	9.72379E 02	7.61575E 02
3RD MOM.	1.18459E 03	5.75985E 03	7.01517E 03	7.46278E 03	3.53218E 04	2.32542E 04

NORMALIZED EVAPORATION NEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.041475	0.061497	0.092389	0.097537	0.100112	0.117274	0.120420	0.116701	0.117846	0.122136
1	0.142730	0.123715	0.133291	0.131575	0.139717	0.141586	0.133863	0.132147	0.142444	0.131861
2	0.120992	0.125855	0.130717	0.117560	0.124716	0.124996	0.118132	0.107548	0.122422	0.128143
3	0.114127	0.116415	0.110123	0.109265	0.107548	0.107834	0.113269	0.106118	0.098109	0.092675
4	0.098109	0.102400	0.091245	0.088956	0.088956	0.093247	0.088098	0.088670	0.080089	0.079803
5	0.088384	0.077515	0.075513	0.084094	0.078087	0.077801	0.075799	0.074083	0.075513	0.071794
6	0.070936	0.067504	0.068862	0.058076	0.069220	0.069792	0.059781	0.059495	0.062927	0.058351
7	0.052916	0.062927	0.054632	0.051486	0.053202	0.052916	0.048626	0.048054	0.052058	0.044621
8	0.048054	0.045765	0.047195	0.044621	0.042047	0.044049	0.044621	0.047481	0.041475	0.039759
9	0.040331	0.040903	0.029175	0.040331	0.039187	0.033180	0.028889	0.036612	0.036898	0.037184
10	0.026315	0.032322	0.034610	0.028317	0.034610	0.027173	0.030033	0.028031	0.026029	0.026601
11	0.025171	0.029175	0.023455	0.020594	0.024599	0.028889	0.024313	0.023455	0.030319	0.023455
12	0.023455	0.025171	0.016876	0.020680	0.022883	0.025743	0.018592	0.023455	0.021166	0.017162
13	0.020594	0.020308	0.014874	0.016304	0.019450	0.015160	0.018592	0.017448	0.014302	0.016304
14	0.015160	0.014302	0.012585	0.018020	0.016590	0.014302	0.017162	0.009725	0.018020	0.012013
15	0.014016	0.006295	0.013444	0.012299	0.011727	0.013158	0.012585	0.010869	0.011441	0.010583
16	0.010869	0.011727	0.011727	0.010869	0.010583	0.010297	0.010869	0.010297	0.007437	0.008867
17	0.007723	0.011155	0.005149	0.008581	0.010297	0.007151	0.009439	0.006293	0.008009	0.006865
18	0.009439	0.006579	0.008295	0.010583	0.007437	0.008295	0.006293	0.011155	0.007437	0.006007
19	0.006007	0.006865	0.006579	0.006293	0.006865	0.007723	0.006293	0.005721	0.006579	0.004577
20	0.006007	0.004290	0.004577	0.003718	0.003432	0.004290	0.006007	0.004004	0.005149	0.004290
21	0.004004	0.002860	0.006293	0.004004	0.003146	0.003146	0.003146	0.003146	0.003146	0.004577
22	0.003432	0.004004	0.003146	0.001144	0.003718	0.002574	0.004004	0.003146	0.003146	0.003718
23	0.004577	0.002288	0.003146	0.002574	0.004863	0.002288	0.002288	0.002574	0.002574	0.002860
24	0.002288	0.002288	0.004004	0.003718	0.002288	0.002002	0.004004	0.002860	0.002288	0.002574

NORMALIZED EVAPORATION PROTON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.002593	0.001297	0.	0.001297	0.007779	0.003890	0.007779
7	0.014262	0.012965	0.016855	0.029820	0.020744	0.028523	0.035006	0.045378	0.054454	0.055750
8	0.066122	0.072605	0.080384	0.079087	0.080384	0.107611	0.092052	0.105017	0.103721	0.115390
9	0.129651	0.121872	0.128355	0.110204	0.117983	0.103721	0.099831	0.119279	0.106314	0.106314
10	0.105017	0.106314	0.085570	0.110204	0.098535	0.112797	0.124465	0.093349	0.089459	0.132244
11	0.116686	0.097238	0.097238	0.094645	0.092052	0.077791	0.119279	0.120576	0.090756	0.077791
12	0.090756	0.095942	0.129651	0.093349	0.090756	0.086866	0.092052	0.089459	0.092052	0.082977
13	0.108907	0.092052	0.086866	0.085570	0.067419	0.066122	0.073901	0.062233	0.064826	0.070012
14	0.058343	0.059640	0.070012	0.066122	0.071308	0.080384	0.070012	0.053157	0.080384	0.064826
15	0.064826	0.077791	0.049267	0.054454	0.050564	0.057047	0.059640	0.051860	0.036302	0.058343
16	0.042785	0.055750	0.062233	0.040192	0.053157	0.047971	0.044081	0.046674	0.042785	0.045378
17	0.042785	0.042785	0.057047	0.044081	0.037599	0.029820	0.038895	0.044081	0.050564	0.042785
18	0.033709	0.035006	0.044081	0.038895	0.037599	0.036302	0.038895	0.049267	0.028523	0.036302
19	0.047971	0.038895	0.028523	0.031116	0.028523	0.031116	0.037599	0.040192	0.027227	0.020744
20	0.020744	0.023337	0.029820	0.036302	0.027227	0.032413	0.036302	0.023337	0.031116	0.040192
21	0.035006	0.022041	0.018151	0.020744	0.018151	0.019448	0.020744	0.025930	0.023337	0.018151
22	0.016855	0.019448	0.029820	0.016855	0.022041	0.016855	0.012965	0.023337	0.019448	0.009076
23	0.018151	0.009076	0.012965	0.014262	0.011669	0.014262	0.016855	0.015558	0.014262	0.014262
24	0.014262	0.012965	0.011669	0.014262	0.006483	0.016855	0.023337	0.015558	0.020744	0.009076

NORMALIZED EVAPORATION DEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.000718	0.004310	0.003592	0.023707	0.034483	0.053879	0.063218	0.088362
10	0.071839	0.083333	0.081897	0.079023	0.077586	0.083333	0.079741	0.081178	0.061782	0.080460
15	0.068966	0.058908	0.063937	0.055316	0.056034	0.044540	0.044540	0.040948	0.039511	0.027299
20	0.031609	0.034483	0.025862	0.034483	0.025862	0.028736	0.022989	0.016523	0.020115	0.015805
25	0.012931	0.017960	0.009339	0.011494	0.005747	0.013649	0.009339	0.009339	0.007184	0.008621
30	0.008621	0.007184	0.007902	0.002155	0.003592	0.006466	0.002874	0.002155	0.006466	0.004310
35	0.000718	0.001437	0.002874	0.002155	0.003592	0.001437	0.000718	0.002874	0.001437	0.000718
40	0.002155	0.000718	0.000718	0.001437	0.000718	0.002155	0.000718	0.001437	0.001437	0.002155
45	0.	0.	0.000718	0.	0.	0.	0.	0.	0.001437	0.

NORMALIZED EVAPORATION TRITON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.	0.013857	0.043880	0.041570	0.064665
10	0.099307	0.076212	0.103926	0.087760	0.092379	0.087760	0.076212	0.076212	0.071594	0.076212
15	0.090069	0.055427	0.055427	0.048499	0.055427	0.057737	0.032333	0.036951	0.036951	0.046189
20	0.041570	0.036951	0.050808	0.018476	0.023095	0.030023	0.020785	0.011547	0.013857	0.023095
25	0.023095	0.004619	0.009238	0.006928	0.011547	0.011547	0.013857	0.013857	0.009238	0.002309
30	0.009238	0.004619	0.006928	0.011547	0.006928	0.004619	0.006928	0.004619	0.	0.002309
35	0.002309	0.006928	0.	0.002309	0.002309	0.002309	0.002309	0.006928	0.	0.
40	0.	0.004619	0.	0.	0.	0.	0.002309	0.	0.	0.002309
45	0.002309	0.	0.	0.	0.	0.	0.	0.	0.002309	0.

NORMALIZED EVAPORATION HE3 SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
10	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
15	0.	0.	0.	0.011696	0.	0.011696	0.023392	0.023392	0.023392	0.035088
20	0.046784	0.046784	0.011696	0.070175	0.046784	0.093567	0.105263	0.046784	0.046784	0.081871
25	0.035088	0.058480	0.093567	0.058480	0.081871	0.058480	0.023392	0.046784	0.	0.058480
30	0.035088	0.011696	0.046784	0.023392	0.058480	0.046784	0.035088	0.035088	0.081871	0.023392
35	0.035088	0.023392	0.023392	0.035088	0.023392	0.011696	0.035088	0.	0.011696	0.011696
40	0.023392	0.	0.	0.023392	0.	0.011696	0.023392	0.011696	0.035088	0.
45	0.	0.	0.	0.011696	0.	0.	0.011696	0.	0.	0.

NORMALIZED EVAPORATION ALPHA SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
10	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
15	0.	0.004415	0.002208	0.013245	0.008830	0.013245	0.011038	0.033113	0.039735	0.044150
20	0.059603	0.050773	0.066225	0.081678	0.070640	0.094923	0.112583	0.128035	0.092715	0.072848
25	0.079470	0.057395	0.059603	0.061810	0.064018	0.066225	0.033113	0.046358	0.037528	0.041943
30	0.019868	0.046358	0.037528	0.039735	0.022075	0.030905	0.015453	0.017660	0.008830	0.008830
35	0.013245	0.013245	0.015453	0.017660	0.011038	0.008830	0.006623	0.011038	0.004415	0.008830
40	0.013245	0.011038	0.002208	0.008830	0.002208	0.006623	0.004415	0.011038	0.006623	0.002208
45	0.	0.004415	0.006623	0.008830	0.	0.002208	0.	0.	0.002208	0.002208

INPUT

FROM CARDS

USED FILE 1 INCIDENT PARTICLE NEUT INCIDENT KINETIC ENERGY 1000.000 MEV

TOTAL NUMBER OF INCIDENT PARTICLES 6000 TARGET SYMBOL O

SIZE OF HISTOGRAMS FOR OUTGOING K.E. 25 FOR PROT, 25 FOR NEUT, 25 FOR PI+, 25 FOR PIO, 25 FOR PI-.

CROSS SECTIONS WERE CALCULATED FOR AS MANY AS 9 EMITTED PARTICLE COMBINATIONS.

101.000 MEV INTERVAL WAS USED IN CALCULATING HISTOGRAM FOR N(E*)DE FOR TOTAL REACTION

DELTAS FOR OUTGOING KINETIC ENERGY DISTRIBUTION IN MEV

	-.6 MU -.4 O (K.E.) 10D	-.1 MU +.1 O (K.E.) 10D	+.4 MU +.6 O (K.E.) 10D	+.9 MU +.95 O (K.E.) 20D	+.95 MU +1.0 O (K.E.) 20D
PROTONS	100.0000	100.0000	100.0000	50.0000	50.0000
NEUTRONS	100.0000	100.0000	100.0000	50.0000	50.0000
PI+	100.0000	100.0000	100.0000	50.0000	50.0000
PIO	100.0000	100.0000	100.0000	50.0000	50.0000
PI-	100.0000	100.0000	100.0000	50.0000	50.0000

O = DELTA, RESPECTIVE ENERGY INTERVALS OF HISTOGRAMS

OUTGOING COMBINATIONS	10000	01000	00100	00010	00001	01001	10100	11000	11001
INTERVAL FOR N(E*)DE IN MEV	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000

FROM RECORD 1

6000 INCIDENT NEUT HIT O TARGET WITH 16.000 MASS AND 8.000 ATOMIC NUMBER AT 1000.000MEV.

FROM RECORD N

THERE WERE 2351. INCIDENT PARTICLE COLLISIONS CREATING 2351 ESCAPING PARTICLE RECORDS. THE GEOMETRIC CROSS SECTION WAS 852.4694672 MB. THE INELASTIC CROSS SECTION WAS 334.0259514 MB. THE CUT OFF ENERGY WAS 1.1066737 MEV.

NEUT ON O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

MOMENTUM OF COMPOUND NUCLEUS 1697.100250MEV/C EXCITATION ENERGY OF COMPOUND NUCLEUS 1006.915207MEV

THE MASS OF THE RESIDUAL NUCLEUS WAS ZERO 1 TIMES, WAS MINUS 1 TIMES CUT OFF ENERGY 1.106674MEV

FOR 79 INCIDENT PARTICLE COLLISIONS THERE WERE MORE THAN 9 OUT GOING PARTICLES

EMITTED CASCADE PARTICLES

	PROTONS	NEUTRONS	PI+	PIO	PI-
AVERAGE NO.	0.1490430E 01	0.2045938E 01	0.7996597E-01	0.1654615E-00	0.2803062E-00
VARIANCE	0.1741189E 01	0.1812437E 01	0.7697422E-01	0.1491431E-00	0.2178980E-00
AV. K.E. (MEV)	0.1896237E 03	0.2492227E 03	0.1061893E 03	0.1326386E 03	0.1448904E 03
VARIANCE	0.6076266E 05	0.9197415E 05	0.1152347E 05	0.1545654E 05	0.1823045E 05

RESIDUAL NUCLEUS

OUTGOING COMBINATION	CO	C1	ARM	AREE	AAR
TOTAL CASCADE	0.0666554	0.1083500	252.0523338	42.4107890	13.4487451
10000	0.0237132	0.1219024	211.3810997	21.2010360	16.0000000
01000	0.0255836	0.1267727	220.0667133	23.1793361	16.0000000
00100	0.	0.	0.	0.	17.0000000
00010	0.	0.	0.	0.	17.0000000
00001	0.	0.	0.	0.	17.0000000
01001	0.1309418	0.0583280	253.6265831	19.7931061	16.0000000
10100	0.1629079	0.1636470	391.8770981	21.7450061	16.0000000
11000	0.0194919	0.0662005	133.4632626	11.2437978	15.0000000
11001	0.0322657	0.0537225	125.8770781	11.2312905	15.0000000

CO = (SUM OF PARALLEL RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

C1 = (SUM OF PERPENDICULAR RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

ARM = AVERAGE RESIDUAL MOMENTUM IN MEV/C

AREE = AVERAGE RESIDUAL EXCITATION ENERGY IN MEV

AAR = AVERAGE MASS OF RESIDUAL NUCLEUS FOR TOTAL CASCADE
AAR = MASS OF RESIDUAL NUCLEUS FOR DESIGNATED OUTGOING COMBINATIONS

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NEUT   ON O        INC. K.E. (MEV) IS  1000.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

                   ANGULAR DISTRIBUTION OF THE CASCADE NUCLEUS  (FRACTION IN DELTA MU)/(DELTA MU)

      -0.9000000E 00        -0.7000000E 00        -0.5000000E 00        -0.3000000E-00        -0.1000000E-00
                0.1000000E-00         0.3000000E-00         0.5000000E 00         0.7000000E 00         0.9000000E 00

            TOTAL CASCADE                          RATIO OF FORWARD /BACKWARD     0.3270909E 01
       0.1424926E-00         0.1743939E-00         0.1616333E-00         0.3296470E-00         0.3615483E-00
                0.5954913E 00         0.6571672E 00         0.7145895E 00         0.7741387E 00         0.1084645E 01

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
       0.                    0.                    0.                    0.                    0.
                0.3333333E 01         0.1666667E 01         0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
       0.                    0.                    0.                    0.                    0.
                0.2986111E 01         0.2013889E 01         0.                    0.                    0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
       0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
       0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
       0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
       0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.7142857E 00         0.4285714E 01

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
       0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.5000000E 01         0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.1927273E 01
       0.2018633E-00         0.2329193E-00         0.2173913E-00         0.5434783E 00         0.5124224E 00
                0.6366460E 00         0.6987578E 00         0.7608596E 00         0.6987578E 00         0.4968944E-00

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.2850000E 01
       0.2597403E-00         0.1948052E-00         0.9740260E-01         0.1948052E-00         0.5519480E 00
                0.2922078E-00         0.7142857E 00         0.8766234E 00         0.7467532E 00         0.1071429E 01
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NEUT   ON O        INC. K.E. (MEV) IS  1000.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

      EXCITATION ENERGY DISTRIBUTICN OF THE CASCADE RESIDUAL NUCLEUS (FRACTION PER UNIT EN.)    (DE=DELTA E(MEV))

DEA IS  0.1010000E 03   DEB IS  0.2500000E 02   DEC IS  0.2500000E C2   DED IS  0.2500000E 02   DEE IS  0.2500000E 02
  DEF IS  0.2500000E 02   DEG IS  0.2500000E 02   DEH IS  0.2500000E 02   DEI IS  0.2500000E 02   DEJ IS  0.2500000E 02

            TOTAL CASCADE                          (SUM OVER HISTOGRAM)X(DEA)        0.9991493E 00      0 OFL
        0.8717588E-02          0.9896779E-03          0.1516102E-03          0.3369116E-04          0.
                0.                     0.                     0.                     0.                     0.

1 PROTONS   0 NEUTRONS   0 PI+   C PIC   0 PI-    (SUM OVER HISTOGRAM)X(DEB)        0.1000000E 01      0 OFL
        0.2857143E-01          0.9523809E-02          0.1904762E-02          0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIC   0 PI-    (SUM OVER HISTOGRAM)X(DEC)        0.1000000E 01      0 OFL
        0.2555556E-01          0.1111111E-01          0.2777778E-02          0.5555556E-03          0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   0 NEUTRONS   1 PI+   C PIO   0 PI-    (SUM OVER HISTOGRAM)X(DED)        0.                 0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEE)        0.                 0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEF)        0.                 0 OFL
        0.                     0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEG)        0.1000000E 01      0 OFL
        0.2285714E-01          0.1714286E-01          0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

1 PROTONS   0 NEUTRONS   1 PI+   C PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEH)        0.1000000E 01      0 OFL
        0.4000000E-01          0.                     0.                     0.                     0.
                0.                     0.                     0.                     0.                     0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEI)        0.1000000E 01      0 OFL
        0.3503106E-01          0.3229814E-02          0.1118012E-02          0.2484472E-03          0.2484472E-03
                0.                     0.1242236E-03          0.                     0.                     0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEJ)        0.1000000E 01      0 OFL
        0.3584416E-01          0.2857143E-02          0.5194805E-03          0.2597403E-03          0.
                0.                     0.2597403E-03          0.2597403E-03          0.                     0.
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DESCRIPTION OF THE FOLLOWING MOMENTUM DISTRIBUTIONS

THE FIRST GROUP OF NUMBERS BELOW THE TITLES SPECIFY THE MIDPOINTS OF THE MOMENTUM INTERVALS.
THE MOMENTUM IS THE NUMBER INDICATED (MEV/C).

THE SUBSEQUENT GROUPS OF NUMBERS ARE THE FRACTION OF THE TOTAL IN EACH INTERVAL DIVIDED BY DELTA P.

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NEUT   ON O        INC. K.E. (MEV) IS  1000.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

                              THE MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

   0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
         0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

            TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.9991493E 00      0 OFL
   0.2386035E-02   0.2007578E-02   0.9298519E-03   0.3734445E-03   0.1253170E-03   0.5263313E-04   0.1002536E-04
         0.2506339E-05   0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.2244725E-02   0.3086497E-02   0.2805907E-03   0.2805907E-03   0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.1964134E-02   0.3273558E-02   0.6547115E-03   0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.8417720E-03   0.3787974E-02   0.1262658E-02   0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.              0.              0.5892404E-02   0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.4593147E-02   0.1061365E-02   0.1829939E-03   0.5489817E-04   0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.4476696E-02   0.1147871E-02   0.2678365E-03   0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.
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NEUT   ON O        INC. K.E. (MEV) IS  1000.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

                    THE PERPENDICULAR MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

   0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
         0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

            TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.3266032E-02   0.1846236E-02   0.6321353E-03   0.1178982E-03   0.2257626E-04   0.5016946E-05   0.2508473E-05
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.2244725E-02   0.3086497E-02   0.2805907E-03   0.2805907E-03   0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.2045973E-02   0.3273558E-02   0.5728726E-03   0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.4629746E-02   0.8417720E-03   0.4208860E-03   0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.              0.5892404E-02   0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.4922536E-02   0.8051732E-03   0.1463951E-03   0.1829939E-04   0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.5012369E-02   0.8417720E-03   0.3826236E-04   0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.
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NEUT   ON O        INC. K.E. (MEV) IS  1000.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

                    THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

 -0.2291085E 04  -0.2121375E 04  -0.1951665E 04  -0.1781955E 04  -0.1612245E 04  -0.1442535E 04  -0.1272825E 04
       -0.1103115E 04  -0.9334051E 03  -0.7636951E 03  -0.5939851E 03  -0.4242751E 03  -0.2545650E 03  -0.8485501E 02
  0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
       0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

          TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.9991493E 00      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.1253170E-04   0.7017750E-04   0.1295777E-02
  0.2869758E-02   0.9849913E-03   0.4361030E-03   0.1578994E-03   0.4260777E-04   0.1503804E-04   0.2506339E-05
       0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
  0.5892404E-02   0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
  0.5892404E-02   0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
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NEUT   CN O        INC. K.E. (MEV) IS  1000.0   A IS   16.   Z IS   8.    6000 INC. HISTORIES        1.1 MEV CUTOFF EN.

                    THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

 -0.2291085E 04  -0.2121375E 04  -0.1951665E 04  -0.1781955E 04  -0.1612245E 04  -0.1442535E 04  -0.1272825E 04
       -0.1103115E 04  -0.9334051E 03  -0.7636951E 03  -0.5939851E 03  -0.4242751E 03  -0.2545650E 03  -0.8485501E 02
  0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
        0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

            TOTAL CASCADE                        (SUM OVER HISTOGRAM)(DELTA P)     0.9991493E 00      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.1253170E-04   0.7017750E-04   0.1295777E-02
  0.2869758E-02   0.9849913E-03   0.4361030E-03   0.1578994E-03   0.4260777E-04   0.1503804E-04   0.2506339E-05
        0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.              0.
  0.8417720E-03   0.4629746E-02   0.4208860E-03   0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.              0.
  0.              0.5892404E-02   0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.              0.2012933E-02
  0.3659878E-02   0.2012933E-03   0.              0.1829939E-04   0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.              0.1530494E-02
  0.3902761E-02   0.3826236E-03   0.7652472E-04   0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
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NEUT CN O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PIO 5TH IS NO. OF PI-

25011	0.14207824E-00	25020	0.14207824E-00	25101	0.14207824E-00	26001	0.28415649E-00
26010	0.28415649E-00	26100	0.28415649E-00	27000	0.42623473E-00	33021	0.14207824E-00
34011	0.14207824E-00	35001	0.14207824E-00	35010	0.28415649E-00	35100	0.42623473E-00
36000	0.71039122E 00	43101	0.14207824E-00	43110	0.14207824E-00	44001	0.56831297E 00
44010	0.56831297E 00	44100	0.85246946E 00	45000	0.85246946E 00	52011	0.14207824E-00
53001	0.42623473E-00	53010	0.14207824E-00	54000	0.42623473E-00	62001	0.14207824E-00
62010	0.14207824E-00	63000	0.42623473E-00	08000	0.14207824E-00	14111	0.14207824E-00
15011	0.14207824E-00	16001	0.14207824E-00	17000	0.14207824E-00	24011	0.28415649E-00
24101	0.14207824E-00	25001	0.42623473E-00	25010	0.14207824E-00	25100	0.14207824E-00
26000	0.85246946E 00	33011	0.42623473E-00	33101	0.14207824E-00	34001	0.99454770E 00
34100	0.42623473E-00	35000	0.12787041E 01	42200	0.14207824E-00	43001	0.71039122E 00
43010	0.28415649E-00	43100	0.85246946E 00	44000	0.99454770E 00	52001	0.42623473E-00
52010	0.42623473E-00	52100	0.28415649E-00	53000	0.71039122E 00	07000	0.14207824E-00
14002	0.14207824E-00	14110	0.14207824E-00	15001	0.42623473E-00	15010	0.42623473E-00
15100	0.28415649E-00	16000	0.71039122E 00	22111	0.14207824E-00	23002	0.56831297E 00
23011	0.28415649E-00	23020	0.14207824E-00	23200	0.14207824E-00	24001	0.11366259E 01
24010	0.17049389E 01	24100	0.42623473E-00	25000	0.15628606E 01	32002	0.14207824E-00
32011	0.42623473E-00	32101	0.42623473E-00	33001	0.22732519E 01	33010	0.11366259E 01
33100	0.11366259E 01	34000	0.17049389E 01	41002	0.14207824E-00	41011	0.42623473E-00
42001	0.11366259E 01	42010	0.56831297E 00	42100	0.14207824E-00	43000	0.19890954E 01
51010	0.14207824E-00	61000	0.14207824E-00	04011	0.14207824E-00	04101	0.14207824E-00
13002	0.14207824E-00	13011	0.14207824E-00	13101	0.42623473E-00	14001	0.71039122E 00
14010	0.71039122E 00	14100	0.14207824E-00	15000	0.11366259E 01	22002	0.56831297E 00
22011	0.11366259E 01	22020	0.14207824E-00	22101	0.42623473E-00	22110	0.42623473E-00
23001	0.25574083E 01	23010	0.12787041E 01	23100	0.85246946E 00	24000	0.34098778E 01
31002	0.14207824E-00	31011	0.42623473E-00	31101	0.28415649E-00	32001	0.18470171E 01

NEUT ON O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PIO 5TH IS NO. OF PI-

CONTINUED

32010	0.99454770E 00	32100	0.85246946E 00	33000	0.31257213E 01	40002	0.14207824E-00
41001	0.42623473E-00	41010	0.71039122E 00	41100	0.14207824E-00	42000	0.17049389E 01
50001	0.28415649E-00	51000	0.28415649E-00	03002	0.14207824E-00	03101	0.28415649E-00
03110	0.28415649E-00	04001	0.42623473E-00	04100	0.14207824E-00	05000	0.28415649E-00
12011	0.71039122E 00	12020	0.42623473E-00	12101	0.12787041E 01	12110	0.14207824E-00
13001	0.19890954E 01	13010	0.22732519E 01	13100	0.99454770E 00	14000	0.21311736E 01
21002	0.28415649E-00	21011	0.14207824E-00	21020	0.14207824E-00	21101	0.28415649E-00
22001	0.45465037E 01	22010	0.25574083E 01	22100	0.14207824E 01	23000	0.41202690E 01
30011	0.14207824E-00	30110	0.14207824E-00	31001	0.31257213E 01	31010	0.71039122E 00
31100	0.14207824E-00	32000	0.35519560E 01	40001	0.14207824E-00	40010	0.14207824E-00
41000	0.71039122E 00	02020	0.28415649E-00	02101	0.28415649E-00	03001	0.99454770E 00
03010	0.99454770E 00	03100	0.56831297E 00	04000	0.11366259E 01	11002	0.14207824E-00
11011	0.85246946E 00	11020	0.14207824E-00	11101	0.56831297E 00	12001	0.88088509E 01
12010	0.55410514E 01	12100	0.18470171E 01	13000	0.62514426E 01	20011	0.14207824E-00
20101	0.28415649E-00	21001	0.73880686E 01	21010	0.35519560E 01	21100	0.28415649E-00
22000	0.62514426E 01	30001	0.85246946E 00	30010	0.42623473E-00	31000	0.22732519E 01
40000	0.28415649E-00	02001	0.71039122E 00	02010	0.52568949E 01	02100	0.28415648E 01
03000	0.56831297E 01	11001	0.21880049E 02	11010	0.80984598E 01	11100	0.42623473E-00
12000	0.13213276E 02	20001	0.32677995E 01	20010	0.42623473E-00	20100	0.14207824E-00
21000	0.76722251E 01	30000	0.71039122E 00	01001	0.19890954E 01	01010	0.85246946E 00
02000	0.37366577E 02	10001	0.11366259E 01	10010	0.71039122E 00	10100	0.14207824E-00
11000	0.45749194E 02	20000	0.15628606E 01	01000	0.10229633E 02	10000	0.29836430E 01

NEUT CN O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 1.00 TO 0.95
(THETA FROM 0 DEG. 0 MIN. TO 18 DEG. 12 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
25.0	0.614E-01	25.0	0.360E-01	25.0	0.800E-01	25.0	0.118E-01	25.0	0.186E-01
75.0	0.260E-01	75.0	0.132E-01	75.0	0.267E-01	75.0	0.471E-01	75.0	0.279E-01
125.0	0.171E-01	125.0	0.178E-01	125.0	0.	125.0	0.118E-01	125.0	0.186E-01
175.0	0.124E-01	175.0	0.120E-01	175.0	0.533E-01	175.0	0.118E-01	175.0	0.372E-01
225.0	0.130E-01	225.0	0.116E-01	225.0	0.267E-01	225.0	0.588E-01	225.0	0.186E-01
275.0	0.159E-01	275.0	0.108E-01	275.0	0.267E-01	275.0	0.706E-01	275.0	0.279E-01
325.0	0.136E-01	325.0	0.108E-01	325.0	0.800E-01	325.0	0.118E-01	325.0	0.186E-01
375.0	0.177E-01	375.0	0.128E-01	375.0	0.267E-01	375.0	0.588E-01	375.0	0.465E-01
425.0	0.171E-01	425.0	0.101E-01	425.0	0.267E-01	425.0	0.353E-01	425.0	0.651E-01
475.0	0.153E-01	475.0	0.190E-01	475.0	0.533E-01	475.0	0.588E-01	475.0	0.279E-01
525.0	0.183E-01	525.0	0.124E-01	525.0	0.	525.0	0.118E-01	525.0	0.372E-01
575.0	0.236E-01	575.0	0.852E-02	575.0	0.	575.0	0.	575.0	0.186E-01
625.0	0.212E-01	625.0	0.194E-01	625.0	0.	625.0	0.118E-01	625.0	0.372E-01
675.0	0.248E-01	675.0	0.968E-02	675.0	0.	675.0	0.	675.0	0.
725.0	0.165E-01	725.0	0.120E-01	725.0	0.	725.0	0.	725.0	0.
775.0	0.767E-02	775.0	0.929E-02	775.0	0.	775.0	0.	775.0	0.
825.0	0.124E-01	825.0	0.132E-01	825.0	0.	825.0	0.	825.0	0.
875.0	0.118E-01	875.0	0.298E-01	875.0	0.	875.0	0.	875.0	0.
925.0	0.271E-01	925.0	0.573E-01	925.0	0.	925.0	0.	925.0	0.
975.0	0.271E-01	975.0	0.743E-01	975.0	0.	975.0	0.	975.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

NEUT CN O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.95 TO 0.90
(THETA FROM 18 DEG. 12 MIN. TO 25 DEG. 51 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
25.0	0.890E-01	25.0	0.672E-01	25.0	0.500E-01	25.0	0.444E-01	25.0	0.255E-01
75.0	0.317E-01	75.0	0.353E-01	75.0	0.500E-01	75.0	0.593E-01	75.0	0.170E-01
125.0	0.256E-01	125.0	0.250E-01	125.0	0.	125.0	0.296E-01	125.0	0.170E-01
175.0	0.244E-01	175.0	0.216E-01	175.0	0.	175.0	0.296E-01	175.0	0.255E-01
225.0	0.232E-01	225.0	0.190E-01	225.0	0.500E-01	225.0	0.296E-01	225.0	0.511E-01
275.0	0.232E-01	275.0	0.155E-01	275.0	0.100E-00	275.0	0.444E-01	275.0	0.766E-01
325.0	0.220E-01	325.0	0.129E-01	325.0	0.500E-01	325.0	0.148E-01	325.0	0.596E-01
375.0	0.134E-01	375.0	0.138E-01	375.0	0.100E-00	375.0	0.296E-01	375.0	0.255E-01
425.0	0.207E-01	425.0	0.155E-01	425.0	0.	425.0	0.593E-01	425.0	0.340E-01
475.0	0.159E-01	475.0	0.147E-01	475.0	0.	475.0	0.593E-01	475.0	0.426E-01
525.0	0.134E-01	525.0	0.129E-01	525.0	0.	525.0	0.	525.0	0.
575.0	0.195E-01	575.0	0.690E-02	575.0	0.	575.0	0.	575.0	0.170E-01
625.0	0.610E-02	625.0	0.776E-02	625.0	0.	625.0	0.	625.0	0.851E-02
675.0	0.976E-02	675.0	0.103E-01	675.0	0.	675.0	0.	675.0	0.
725.0	0.122E-01	725.0	0.172E-01	725.0	0.	725.0	0.	725.0	0.
775.0	0.171E-01	775.0	0.388E-01	775.0	0.	775.0	0.	775.0	0.
825.0	0.122E-01	825.0	0.345E-01	825.0	0.	825.0	0.	825.0	0.
875.0	0.159E-01	875.0	0.207E-01	875.0	0.	875.0	0.	875.0	0.
925.0	0.366E-02	925.0	0.103E-01	925.0	0.	925.0	0.	925.0	0.
975.0	0.122E-02	975.0	0.	975.0	0.	975.0	0.	975.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

NEUT CN O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.60 TO 0.40
(THETA FROM 53 DEG. 8 MIN. TO 66 DEG. 25 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.344E-01	50.0	0.290E-01	50.0	0.250E-01	50.0	0.297E-01	50.0	0.270E-01
150.0	0.112E-01	150.0	0.130E-01	150.0	0.125E-01	150.0	0.109E-01	150.0	0.158E-01
250.0	0.298E-02	250.0	0.606E-02	250.0	0.100E-01	250.0	0.469E-02	250.0	0.592E-02
350.0	0.112E-02	350.0	0.135E-02	350.0	0.250E-02	350.0	0.312E-02	350.0	0.658E-03
450.0	0.248E-03	450.0	0.421E-03	450.0	0.	450.0	0.156E-02	450.0	0.658E-03
550.0	0.124E-03	550.0	0.842E-04	550.0	0.	550.0	0.	550.0	0.
650.0	0.	650.0	0.842E-04	650.0	0.	650.0	0.	650.0	0.
750.0	0.	750.0	0.	750.0	0.	750.0	0.	750.0	0.
850.0	0.	850.0	0.	850.0	0.	850.0	0.	850.0	0.
950.0	0.	950.0	0.	950.0	0.	950.0	0.	950.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

NEUT CN O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.10 TO -0.10
(THETA FROM 84 DEG. 16 MIN. TO 95 DEG. 44 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.462E-01	50.0	0.432E-01	50.0	0.500E-01	50.0	0.352E-01	50.0	0.321E-01
150.0	0.306E-02	150.0	0.642E-02	150.0	0.	150.0	0.148E-01	150.0	0.155E-01
250.0	0.765E-03	250.0	0.389E-03	250.0	0.	250.0	0.	250.0	0.238E-02
350.0	0.	350.0	0.	350.0	0.	350.0	0.	350.0	0.
450.0	0.	450.0	0.	450.0	0.	450.0	0.	450.0	0.
550.0	0.	550.0	0.	550.0	0.	550.0	0.	550.0	0.
650.0	0.	650.0	0.	650.0	0.	650.0	0.	650.0	0.
750.0	0.	750.0	0.	750.0	0.	750.0	0.	750.0	0.
850.0	0.	850.0	0.	850.0	0.	850.0	0.	850.0	0.
950.0	0.	950.0	0.	950.0	0.	950.0	0.	950.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

NEUT CN O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM -0.40 TO -0.60
(THETA FROM 113 DEG. 35 MIN. TO 126 DEG. 54 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PI0		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.466E-01	50.0	0.467E-01	50.0	0.437E-01	50.0	0.458E-01	50.0	0.434E-01
150.0	0.337E-02	150.0	0.250E-02	150.0	0.625E-02	150.0	0.208E-02	150.0	0.658E-02
250.0	0.	250.0	0.833E-03	250.0	0.	250.0	0.208E-02	250.0	0.
350.0	0.	350.0	0.	350.0	0.	350.0	0.	350.0	0.
450.0	0.	450.0	0.	450.0	0.	450.0	0.	450.0	0.
550.0	0.	550.0	0.	550.0	0.	550.0	0.	550.0	0.
650.0	0.	650.0	0.	650.0	0.	650.0	0.	650.0	0.
750.0	0.	750.0	0.	750.0	0.	750.0	0.	750.0	0.
850.0	0.	850.0	0.	850.0	0.	850.0	0.	850.0	0.
950.0	0.	950.0	0.	950.0	0.	950.0	0.	950.0	0.
N IS	0.100E 01	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	0.100E 01

NEUT CN O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PROTONS

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PROTONS /DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.9043763E-02	300.00	0.5115090E-03	540.00	0.2699631E-03	780.00	0.1847116E-03
60.00	0.3722649E-02	340.00	0.4830918E-03	580.00	0.4120489E-03	820.00	0.1349815E-03
100.00	0.2273373E-02	380.00	0.4759875E-03	620.00	0.2486502E-03	860.00	0.2131287E-03
140.00	0.1449275E-02	420.00	0.3907360E-03	660.00	0.3694231E-03	900.00	0.2841716E-03
180.00	0.1072748E-02	460.00	0.4333618E-03	700.00	0.2131287E-03	940.00	0.2699631E-03
220.00	0.8312021E-03	500.00	0.4191532E-03	740.00	0.2557545E-03	980.00	0.2486502E-03
260.00	0.7885763E-03						

NEUT CN O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE NEUTRONS

0 TO 1.0000000E 03 MEV 0 DEL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED NEUTRONS/DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.7696688E-02	300.00	0.5797102E-03	540.00	0.2743271E-03	780.00	0.3519469E-03
60.00	0.3302277E-02	340.00	0.4710145E-03	580.00	0.2225673E-03	820.00	0.3157350E-03
100.00	0.2324017E-02	380.00	0.3726708E-03	620.00	0.3467909E-03	860.00	0.4140787E-03
140.00	0.1661491E-02	420.00	0.3312629E-03	660.00	0.2950311E-03	900.00	0.4503106E-03
180.00	0.1061077E-02	460.00	0.4244307E-03	700.00	0.2432712E-03	940.00	0.7867495E-03
220.00	0.9782609E-03	500.00	0.3933747E-03	740.00	0.2950311E-03	980.00	0.7971015E-03
260.00	0.6107661E-03						

NEUT ON O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI+

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI+ / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.7579787E-02	300.00	0.3989362E-03	540.00	0.	780.00	0.
60.00	0.8111702E-02	340.00	0.9308511E-03	580.00	0.	820.00	0.
100.00	0.2127660E-02	380.00	0.3989362E-03	620.00	0.	860.00	0.
140.00	0.1329787E-02	420.00	0.1329787E-03	660.00	0.	900.00	0.
180.00	0.1728723E-02	460.00	0.2659575E-03	700.00	0.	940.00	0.
220.00	0.5319149E-03	500.00	0.1329787E-03	740.00	0.	980.00	0.
260.00	0.1329787E-02						

NEUT ON O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PIO

0 TO 1.0000000E 03 MEV 0 DEL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PIO / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.5976864E-02	300.00	0.1028278E-02	540.00	0.6426735E-04	780.00	0.
60.00	0.6105399E-02	340.00	0.5784062E-03	580.00	0.	820.00	0.
100.00	0.3084833E-02	380.00	0.6426735E-03	620.00	0.6426735E-04	860.00	0.
140.00	0.2313625E-02	420.00	0.2570694E-03	660.00	0.	900.00	0.
180.00	0.1735219E-02	460.00	0.4498715E-03	700.00	0.	940.00	0.
220.00	0.1028278E-02	500.00	0.4498715E-03	740.00	0.	980.00	0.
260.00	0.1221080E-02						

NEUT CN O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI-

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI- / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.5159332E-02	300.00	0.9104704E-03	540.00	0.1138088E-03	780.00	0.
60.00	0.6107739E-02	340.00	0.9863430E-03	580.00	0.1517451E-03	820.00	0.
100.00	0.3490137E-02	380.00	0.6828528E-03	620.00	0.1896813E-03	860.00	0.
140.00	0.2200304E-02	420.00	0.5311077E-03	660.00	0.	900.00	0.
180.00	0.1441578E-02	460.00	0.3793627E-03	700.00	0.	940.00	0.
220.00	0.1251897E-02	500.00	0.3034901E-03	740.00	0.	980.00	0.
260.00	0.1100152E-02						

NEUT CN O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PARTICLES

0 TO 1000 MEV

N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PARTICLES/DELTA E
K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N IS (SUM OVER HISTOGRAM FROM 1 TO 1000 MEV) (DELTA E)

K.E.	PROTONS N(E)	NEUTRONS N(E)	PI+ N(E)	PI0 N(E)	PI- N(E)
25.0	0.8167093E-02	0.7006211E-02	0.8191489E-02	0.6015424E-02	0.5462822E-02
75.0	0.3046320E-02	0.2778468E-02	0.5425532E-02	0.5141388E-03	0.5128983E-02
125.0	0.1705030E-02	0.1929607E-02	0.1382979E-02	0.2519280E-02	0.2458270E-02
175.0	0.1131003E-02	0.1118012E-02	0.1702128E-02	0.1696658E-02	0.1669196E-02
225.0	0.8070474E-03	0.9399586E-03	0.7446808E-03	0.1079691E-02	0.1274659E-02
275.0	0.6990622E-03	0.5838509E-03	0.8510638E-03	0.1233933E-02	0.9408194E-03
325.0	0.5115089E-03	0.4886128E-03	0.7446808E-03	0.7197943E-03	0.1042215E-02
375.0	0.4546746E-03	0.4016563E-03	0.5319149E-03	0.5655527E-03	0.6676783E-03
425.0	0.4092072E-03	0.3436853E-03	0.1063830E-03	0.4113110E-03	0.5462822E-03
475.0	0.3921569E-03	0.4265010E-03	0.3191489E-03	0.5141388E-03	0.3641882E-03
525.0	0.3580563E-03	0.3312629E-03	0.	0.5141388E-04	0.1517451E-03
575.0	0.3807900E-03	0.2153209E-03	0.	0.	0.1213960E-03
625.0	0.2614379E-03	0.3436853E-03	0.	0.5141388E-04	0.1517451E-03
675.0	0.3296391E-03	0.2567288E-03	0.	0.	0.
725.0	0.2557545E-03	0.2815735E-03	0.	0.	0.
775.0	0.1705030E-03	0.3436853E-03	0.	0.	0.
825.0	0.1818698E-03	0.3312629E-03	0.	0.	0.
875.0	0.1932367E-03	0.4223602E-03	0.	0.	0.
925.0	0.2784882E-03	0.6625259E-03	0.	0.	0.
975.0	0.2671213E-03	0.7950310E-03	0.	0.	0.
	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 0.9999999E 00

NEUT CN O INC. K.E. (MEV) IS 1000.0 A IS 16. Z IS 8. 6000 INC. HISTORIES 1.1 MEV CUTOFF EN.

ANGULAR DISTRIBUTION OF EMITTED CASCADE PARTICLES

(FRACTION IN EACH INTERVAL)/(DELTA MU)

MU IS COSINE THETA AND SPECIFIES THE CENTER OF THE INTERVAL

MU	PROTON	NEUTRON	PI+	PIO	PI-
0.975	0.3853367E 01	0.4277433E 01	0.1595745E 01	0.1748072E 01	0.1305008E 01
0.925	0.1864166E 01	0.1921325E 01	0.8510638E 00	0.1388175E 01	0.1426404E 01
0.875	0.1375391E 01	0.1262940E 01	0.1382979E 01	0.1285347E 01	0.1122913E 01
0.825	0.1034385E 01	0.1018633E 01	0.9574468E 00	0.8226221E 00	0.1213960E 01
0.775	0.8638818E 00	0.7991718E 00	0.1063830E 01	0.7712082E 00	0.7890744E 00
0.725	0.8411481E 00	0.8654244E 00	0.7446809E 00	0.5655527E 00	0.8194234E 00
0.675	0.7615800E 00	0.6666667E 00	0.6382979E 00	0.7197943E 00	0.6069803E 00
0.625	0.6535948E 00	0.7204969E 00	0.8510638E 00	0.5141388E 00	0.9711684E 00
0.575	0.7217960E 00	0.6583851E 00	0.7446809E 00	0.4627249E-00	0.7283763E 00
0.525	0.4887752E-00	0.6045549E 00	0.6382979E 00	0.4627249E-00	0.4552352E-00
0.475	0.5228758E 00	0.5921325E 00	0.4255319E-00	0.2056555E-00	0.6676783E 00
0.425	0.5569764E 00	0.6045549E 00	0.3191489E-00	0.5141388E 00	0.4552352E-00
0.375	0.5228758E 00	0.4140787E-00	0.6382979E 00	0.5655527E 00	0.6069803E 00
0.325	0.5740267E 00	0.5300207E 00	0.3191489E-00	0.1542416E-00	0.4855842E-00
0.275	0.4887752E-00	0.3892340E-00	0.6382979E 00	0.4627249E-00	0.3945372E-00
0.225	0.3807900E-00	0.3850932E-00	0.2127660E-00	0.6169666E 00	0.4855842E-00
0.175	0.3580563E-00	0.3768116E-00	0.4255319E-00	0.3084833E-00	0.1517451E-00
0.125	0.3523728E-00	0.4057971E-00	0.8510638E 00	0.6169666E 00	0.5462822E 00
0.075	0.3580563E-00	0.3436853E-00	0.2127660E-00	0.4627249E-00	0.3338391E-00
0.025	0.2671213E-00	0.2111801E-00	0.1063830E-00	0.1542416E-00	0.2124431E-00
-0.025	0.2728048E-00	0.2608696E-00	0.1063830E-00	0.5141388E 00	0.4248862E-00
-0.075	0.2159704E-00	0.2484472E-00	0.3191489E-00	0.2570694E-00	0.3034901E-00
-0.125	0.2955385E-00	0.2981366E-00	0.	0.4627249E-00	0.4855842E-00
-0.175	0.2443876E-00	0.1780538E-00	0.3191489E-00	0.3598972E-00	0.2731411E-00
-0.225	0.2330207E-00	0.1904762E-00	0.2127660E-00	0.3598972E-00	0.4552352E-00
-0.275	0.1761864E-00	0.2153209E-00	0.3191489E-00	0.4627249E-00	0.3338391E-00
-0.325	0.2330207E-00	0.1532091E-00	0.3191489E-00	0.3598972E-00	0.1517451E-00
-0.375	0.1477692E-00	0.1449275E-00	0.1063830E-00	0.4113111E-00	0.3034901E-00
-0.425	0.1534527E-00	0.1449275E-00	0.5319149E 00	0.1542416E-00	0.3338391E-00
-0.475	0.1477692E-00	0.1366460E-00	0.4255319E-00	0.4627249E-00	0.2427921E-00
-0.525	0.1023018E-00	0.1118012E-00	0.2127660E-00	0.2570694E-00	0.2731411E-00
-0.575	0.1023018E-00	0.1035197E-00	0.5319149E 00	0.3598972E-00	0.3034901E-00
-0.625	0.1932367E-00	0.1118012E-00	0.3191489E-00	0.1542416E-00	0.3338391E-00
-0.675	0.7388463E-01	0.8281573E-01	0.1063830E-00	0.7197943E 00	0.3034901E-00
-0.725	0.9661836E-01	0.9523809E-01	0.2127660E-00	0.2056555E-00	0.3034901E-00
-0.775	0.9093492E-01	0.1242236E-00	0.6382979E 00	0.3084833E-00	0.1213960E-00
-0.825	0.7956806E-01	0.1283644E-00	0.9574468E 00	0.6683805E 00	0.4552352E-00
-0.875	0.1193521E-00	0.7867495E-01	0.1063830E-00	0.2570694E-00	0.3945372E-00
-0.925	0.1023018E-00	0.7867495E-01	0.5319149E 00	0.2570694E-00	0.2124431E-00
-0.975	0.7956806E-01	0.6625259E-01	0.1063830E-00	0.2056555E-00	0.2124431E-00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	0. TO 10.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.3768E 00	6.6979E-01	4.4653E-01	3.3490E-01	2.2326E-01	1.1163E-01	4.0932E-01	1.8605E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
4.0932E-01	3.3490E-01	3.7211E-01	3.7211E-01	3.3490E-01	4.0932E-01	8.9305E-01	7.8142E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.2280F 00	6.3258E-01	7.0700E-01	2.9768E-01	1.1163E-01	1.1163E-01	7.4421E-02	5.5816E-01
INTERVAL 25							
1.1163E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	10.00 TO 30.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
7.9003E-01	2.9031E-01	2.1892E-01	1.8561E-01	2.1892E-01	1.5230E-01	2.1417E-01	1.4278E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.1422E-01	1.5230E-01	1.1422E-01	1.6657E-01	1.7609E-01	8.5666E-02	1.4754E-01	5.2352E-02
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
7.6148E-02	4.7592E-02	7.6148E-02	8.5666E-02	7.6148E-02	1.2374E-01	1.8085E-01	1.0946E-01
INTERVAL 25							
2.3796E-02							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5001E 03 MB/STERADIAN FOR CASCADE PROTON WIEH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.500119E 03 MEV FOR CASCADE PROTON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1609E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.345822E 03 MEV FOR CASCADE PROTON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	30.00 TO 90.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.4649E-01	2.2129E-01	1.4296E-01	9.5304E-02	6.0055E-02	5.2221E-02	3.4597E-02	2.4152E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.1541E-02	1.6972E-02	1.3708E-02	1.0444E-02	8.4860E-03	5.8749E-03	1.9583E-03	1.9583E-03
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.9583E-03	1.9583E-03	6.5277E-04	0.	0.	6.5277E-04	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	90.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.1821E-01	5.9923E-02	2.4308E-02	5.6531E-03	3.9572E-03	1.1306E-03	1.1306E-03	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.4653E 02 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.108485E 03 MEV FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1257E 02 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.395683E 02 MEV FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
9.861E 01	6.185E 01	4.811E 01	3.811E 01	2.390E 01	1.455E 01	9.179E 00	7.813E 00	5.624E 00

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.316E 02	3.412E 01	7.055E 00	1.039E 00	1.302E-01	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
6.074E 01	3.776E 00	8.500E-02	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
6.2941E 01	1.0841E 02	4.5465E 01	2.4864E 01	1.2219E 01	5.9673E 00	1.8470E 00	4.2623E-01
8	9	10	11	12	13	14	15
4.2623E-01	1.4208E-01	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
1.6481E 02	9.4482E 01	3.4099E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
2.3542E 02	2.7279E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PROTONS	0.26570E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.3375E 01	0.5209E 00	0.1870E 01	0.2494E 01	0.3125E 01	0.2494E 01	0.1275E 01	0.1042E 01	0.1500E 01

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	0. TO 10.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.1163E 00	4.0932E-01	5.5816E-01	4.8374E-01	4.4653E-01	5.5816E-01	2.2326E-01	4.4653E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.6047E-01	2.9768E-01	1.1163E-01	7.4421E-01	3.7211E-01	4.4653E-01	4.0932E-01	8.1863E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
5.9537E-01	6.3258E-01	7.0700E-01	5.5816E-01	3.7211E-01	2.2326E-01	2.2326E-01	2.0838E 00
INTERVAL 25							
4.4653E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	10.00 TO 30.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
7.9479E-01	3.1887E-01	3.0935E-01	2.7128E-01	2.0465E-01	1.8561E-01	1.2850E-01	1.8561E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.9513E-01	1.7609E-01	1.5705E-01	1.8085E-01	1.8561E-01	1.2850E-01	8.0907E-02	1.3802E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.3326E-01	1.3802E-01	1.5230E-01	2.4272E-01	2.3320E-01	3.4742E-01	3.8550E-01	4.5689E-01
INTERVAL 25							
1.6181E-01							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.7C25E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.635169E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2357E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.468336E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	30.00 TO 90.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
5.4049E-01	2.8004E-01	1.8800E-01	1.5014E-01	8.9429E-02	8.4860E-02	5.5485E-02	3.9819E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.8069E-02	1.7625E-02	1.8277E-02	1.5666E-02	1.7625E-02	9.1387E-03	9.7915E-03	1.0444E-02
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
8.4860E-03	6.5277E-04	3.9166E-03	1.3055E-03	1.3055E-03	6.5277E-04	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	90.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.6117E-01	7.4056E-02	4.5790E-02	1.1872E-02	7.3490E-03	2.8266E-03	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.6285E 02 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.125509E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1612E 02 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.442917E 02 MEV FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE NEUTRON FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.039E 02	7.631E 01	6.349E 01	5.086E 01	3.164E 01	1.795E 01	1.096E 01	1.133E 01	7.874E 00

TYPE OF CASCADE PARTICLE NEUTRON FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.324E 02	4.623E 01	1.317E 01	1.663E 00	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE NEUTRON FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.927E 02	1.328E 01	8.500E-02	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
8.0985E 01	1.2560E 02	5.2143E 01	2.9410E 01	1.6765E 01	7.8143E 00	4.4044E 00	1.5629E 00
8	9	10	11	12	13	14	15
8.5247E-01	1.4208E-01	2.8416E-01	0.	0.	0.	0.	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
2.0829E 02	9.7608E 01	1.3782E 01	2.8416E-01	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
2.3230E 02	8.7662E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
NEUTRONS	0.36211E-00		

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	0. TO 25.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.2067E-02	2.4135E-02	0.	6.0337E-03	6.0337E-03	0.	2.4135E-02	6.0337E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.4135E-02	1.2067E-02	6.0337E-03	6.0337E-03	6.0337E-03	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	25.00 TO 75.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.2700E-02	2.0954E-02	3.4923E-03	6.1116E-03	8.7308E-03	3.4923E-03	5.2385E-03	1.7462E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.6193E-03	8.7308E-04	0.	8.7308E-04	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5310E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.247273E 03 MEV FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3073E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.114091E 03 MEV FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	75.00 TO 130.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.1913E-02	1.5675E-02	4.3890E-03	6.2701E-04	6.2701E-04	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	130.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.5826E-02	1.2660E-02	7.9128E-03	1.5826E-03	1.5826E-03	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1329E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.547170E 02 MEV FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1583E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.600000E 02 MEV FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	952.5	02351

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
2.625E 00	3.516E 00	2.805E 00	1.732E 00	1.172E 00	1.316E 00	1.105E 00	2.474E 00	1.125E 00

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
3.000E 00	1.432E 00	2.550E-01	1.386E-01	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
3.4099E 00	2.2164E 01	5.6831E-01	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
2.2733E 01	3.4099E 00	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
2.6142E 01	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI +	0.29255E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.3375E 01	0.5209E 00	0.1870E 01	0.2494E 01	0.3125E 01	0.2494E 01	0.1275E 01	0.1042E 01	0.1500E 01

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	0. TO 25.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.8101E-02	3.6202E-02	1.8101E-02	2.4135E-02	1.2067E-02	2.4135E-02	4.8270E-02	3.6202E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	4.2236E-02	1.8101E-02	3.6202E-02	3.6202E-02	6.0337E-03	0.	6.0337E-03
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	25.00 TO 75.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.0954E-02	1.8335E-02	1.4842E-02	1.6589E-02	1.7462E-02	7.8578E-03	8.7308E-03	8.7308E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
7.8578E-03	2.6193E-03	8.7308E-04	8.7308E-04	8.7308E-04	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1448E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.287333E 03 MEV FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5064E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.157655E 03 MEV FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	75.00 TO 130.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.6334E-02	3.1350E-02	1.3794E-02	6.2701E-03	3.1350E-03	1.8810E-03	6.2701E-04	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	130.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.7981E-02	2.8486E-02	9.4953E-03	4.7477E-03	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	C	16	8	06000	1.11	852.5	02351

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3336E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.696241E 02 MEV FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3228E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.505882E 02 MEV FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM								
0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
5.959E 00	5.339E 00	4.080E 00	3.464E 00	3.321E 00	3.326E 00	2.975E 00	3.386E 00	1.875E 00

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM								
0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.012E 01	3.386E 00	1.020E 00	2.772E-01	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM								
0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
9.8034E 00	4.1771E 01	1.8470E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
4.3618E 01	9.8034E 00	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
5.3421E 01	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI O	0.46530E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.3375E 01	0.5209E 00	0.1870E 01	0.2494E 01	0.3125E 01	0.2494E 01	0.1275E 01	0.1042E 01	0.1500E 01

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	0. TO 25.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.4135E-02	3.0169E-02	1.8101E-02	3.0169E-02	1.8101E-02	4.2236E-02	4.2236E-02	4.8270E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
3.6202E-02	4.8270E-02	4.2236E-02	4.8270E-02	3.6202E-02	1.2067E-02	1.8101E-02	3.0169E-02
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	25.00 TO 75.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.6670E-02	5.0639E-02	4.0162E-02	3.1431E-02	2.5319E-02	2.1827E-02	1.4842E-02	1.3969E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.4842E-02	8.7308E-03	6.1116E-03	1.7462E-03	1.7462E-03	8.7308E-04	8.7308E-04	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	C	16	8	06000	1.11	852.5	02351

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2100E 02 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.325287E 03 MEV FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1079E 02 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.160065E 03 MEV FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	75.00 TO 130.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.8247E-02	4.2636E-02	2.1318E-02	1.0659E-02	3.1350E-03	6.2701E-04	3.1350E-03	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.8810E-03	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	130.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.5894E-02	4.7477E-02	1.4243E-02	0.	1.5826E-03	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	C	16	8	06000	1.11	852.5	02351

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.4866E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.748454E 02 MEV FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.4368E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.501449E 02 MEV FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
6.374E 00	8.334E 00	8.839E 00	7.067E 00	5.079E 00	4.573E 00	4.335E 00	4.948E 00	2.625E 00

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.425E 01	8.464E 00	1.955E 00	1.386E-01	2.604E-01	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
1.8328E 01	7.0329E 01	2.2733E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
7.2176E 01	1.8754E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
9.0930E 01	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	O	16	8	06000	1.11	852.5	02351

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI -	0.48710E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.3375E 01	0.5209E 00	0.1870E 01	0.2494E 01	0.3125E 01	0.2494E 01	0.1275E 01	0.1042E 01	0.1500E 01

CASE NUMBER 16 81000 1

A= 16
Z= 8
KINETIC ENERGY (MEV)= 1000.00
NEUT
GEOMETRIC CROSS SECTION (MB)= 852.47
CUTOFF ENERGY (MEV)= 1.11
6000 CASE HISTORIES
INELASTIC CROSS SECTION (MB) 334.03

AVERAGE EVAPORATION YIELD PER INELASTIC EVENT

NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
0.7941302	0.8664398	0.1148447	0.0253957	0.0361548	0.3891961

CASE NUMBER 16 81000 1

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
16	8	44	6.25
	7	4	0.57
15	9	1	0.14
	8	309	43.90
	7	309	43.90
	6	1	0.14
14	8	37	5.26
	7	176	25.01
	6	44	6.25
	5	1	0.14
13	8	10	1.42
	7	51	7.25
	6	66	9.38
	5	4	0.57
12	7	41	5.83
	6	116	16.48
	5	6	0.85
	4	1	0.14
11	7	24	3.41
	6	49	6.96
	5	23	3.27
	4	1	0.14
10	7	1	0.14
	6	6	0.85
	5	37	5.26
	4	3	0.43
	3	1	0.14
9	6	43	6.11
	5	2	0.28
	4	6	0.85
	3	1	0.14
8	3	5	0.71
7	5	20	2.84
	3	10	1.42
	2	2	0.28
6	4	1	0.14
	3	65	9.24
	2	1	0.14
5	3	8	1.14
	2	21	2.98
4	3	91	12.93
	2	54	7.67
3	2	6	0.85
	1	2	0.28
2	1	48	6.82
1	1	126	17.90

CASE NUMBER 16 81000 1

MOMENTS OF THE ENERGY DISTRIBUTIONS FOR THE FOLLOWING EVAPORATION PARTICLES

	NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
1ST MOM.	9.76808E 00	8.74451E 00	1.19750E 01	1.21649E 01	1.04348E 01	1.19062E 01
2ND MOM.	2.10102E 02	1.57714E 02	2.53722E 02	2.15265E 02	1.99895E 02	3.33673E 02
3RD MOM.	7.59547E 03	4.66036E 03	7.62070E 03	4.81818E 03	5.83347E 03	1.82463E 04

NORMALIZED EVAPORATION NEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.075935	0.134346	0.110981	0.093458	0.116822	0.081776	0.105140	0.134346	0.070093	0.128505
1	0.134346	0.163551	0.058411	0.087617	0.122664	0.087617	0.070093	0.110981	0.122664	0.128505
2	0.087617	0.122664	0.099299	0.099299	0.093458	0.058411	0.099299	0.081776	0.081776	0.064252
3	0.046729	0.058411	0.075935	0.052570	0.081776	0.081776	0.070093	0.058411	0.116822	0.087617
4	0.087617	0.046729	0.046729	0.093458	0.087617	0.052570	0.081776	0.110981	0.093458	0.081776
5	0.081776	0.081776	0.087617	0.035047	0.087617	0.058411	0.081776	0.046729	0.029206	0.052570
6	0.099299	0.070093	0.064252	0.029206	0.046729	0.070093	0.046729	0.040888	0.052570	0.070093
7	0.040888	0.064252	0.099299	0.040888	0.064252	0.052570	0.046729	0.046729	0.046729	0.064252
8	0.093458	0.046729	0.029206	0.081776	0.035047	0.035047	0.023364	0.046729	0.052570	0.040888
9	0.017523	0.017523	0.052570	0.046729	0.046729	0.093458	0.040888	0.035047	0.023364	0.029206
10	0.035047	0.046729	0.035047	0.017523	0.035047	0.029206	0.017523	0.040888	0.029206	0.029206
11	0.017523	0.035047	0.070093	0.035047	0.017523	0.011682	0.040888	0.023364	0.029206	0.017523
12	0.035047	0.040888	0.035047	0.017523	0.029206	0.029206	0.023364	0.029206	0.023364	0.029206
13	0.011682	0.011682	0.035047	0.035047	0.040888	0.017523	0.017523	0.029206	0.035047	0.029206
14	0.052570	0.011682	0.035047	0.017523	0.046729	0.023364	0.017523	0.029206	0.023364	0.011682
15	0.023364	0.017523	0.029206	0.017523	0.011682	0.017523	0.017523	0.040888	0.023364	0.023364
16	0.035047	0.017523	0.017523	0.023364	0.011682	0.005841	0.023364	0.017523	0.017523	0.005841
17	0.040888	0.023364	0.	0.035047	0.	0.011682	0.023364	0.017523	0.017523	0.017523
18	0.017523	0.035047	0.017523	0.023364	0.005841	0.035047	0.023364	0.011682	0.017523	0.005841
19	0.005841	0.017523	0.011682	0.017523	0.011682	0.023364	0.	0.029206	0.005841	0.011682
20	0.011682	0.005841	0.029206	0.011682	0.011682	0.005841	0.017523	0.011682	0.011682	0.011682
21	0.005841	0.005841	0.005841	0.011682	0.005841	0.005841	0.005841	0.005841	0.005841	0.005841
22	0.023364	0.	0.005841	0.011682	0.005841	0.005841	0.	0.011682	0.	0.005841
23	0.005841	0.017523	0.005841	0.017523	0.005841	0.005841	0.	0.005841	0.005841	0.005841
24	0.	0.011682	0.005841	0.017523	0.017523	0.	0.017523	0.	0.011682	0.005841

NORMALIZED EVAPORATION PROTON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.005230	0.020921	0.005230	0.057531	0.031381	0.052301	0.041841	0.036611	0.078452
1	0.125523	0.183054	0.151674	0.104603	0.094142	0.151674	0.125523	0.141213	0.151674	0.162134
2	0.094142	0.141213	0.088912	0.120293	0.078452	0.177824	0.141213	0.094142	0.130753	0.120293
3	0.115063	0.057531	0.099372	0.104603	0.099372	0.099372	0.078452	0.062762	0.099372	0.052301
4	0.094142	0.120293	0.088912	0.062762	0.146444	0.078452	0.083682	0.036611	0.088912	0.052301
5	0.094142	0.067992	0.041841	0.062762	0.094142	0.067992	0.067992	0.115063	0.067992	0.047071
6	0.094142	0.083682	0.073222	0.067992	0.067992	0.062762	0.104603	0.088912	0.067992	0.078452
7	0.036611	0.067992	0.047071	0.052301	0.067992	0.031381	0.109833	0.052301	0.062762	0.047071
8	0.041841	0.052301	0.078452	0.041841	0.041841	0.031381	0.047071	0.047071	0.041841	0.047071
9	0.057531	0.062762	0.031381	0.015690	0.052301	0.020921	0.036611	0.052301	0.052301	0.047071
10	0.020921	0.020921	0.036611	0.015690	0.047071	0.073222	0.020921	0.010460	0.047071	0.052301
11	0.026151	0.047071	0.020921	0.	0.052301	0.020921	0.026151	0.020921	0.026151	0.020921
12	0.047071	0.010460	0.026151	0.026151	0.020921	0.026151	0.031381	0.031381	0.047071	0.026151
13	0.010460	0.010460	0.036611	0.036611	0.010460	0.015690	0.010460	0.010460	0.020921	0.020921
14	0.041841	0.041841	0.010460	0.015690	0.015690	0.010460	0.015690	0.010460	0.	0.010460
15	0.015690	0.031381	0.026151	0.010460	0.020921	0.010460	0.020921	0.020921	0.036611	0.015690
16	0.010460	0.020921	0.015690	0.005230	0.020921	0.020921	0.015690	0.015690	0.020921	0.031381
17	0.015690	0.010460	0.	0.010460	0.015690	0.010460	0.015690	0.015690	0.010460	0.010460
18	0.015690	0.015690	0.010460	0.010460	0.020921	0.010460	0.015690	0.	0.005230	0.010460
19	0.020921	0.	0.005230	0.	0.015690	0.005230	0.020921	0.010460	0.010460	0.015690
20	0.020921	0.010460	0.015690	0.005230	0.	0.010460	0.010460	0.010460	0.005230	0.010460
21	0.020921	0.005230	0.015690	0.015690	0.020921	0.005230	0.010460	0.015690	0.005230	0.005230
22	0.010460	0.010460	0.	0.	0.005230	0.010460	0.005230	0.	0.005230	0.020921
23	0.010460	0.005230	0.005230	0.	0.	0.005230	0.	0.005230	0.005230	0.010460
24	0.005230	0.	0.015690	0.010460	0.015690	0.	0.	0.005230	0.015690	0.

NORMALIZED EVAPORATION DEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.007463	0.014925	0.067164	0.022388	0.067164	0.044776	0.089552	0.104478	0.067164	0.082090
5	0.067164	0.104478	0.059701	0.059701	0.029851	0.074627	0.059701	0.067164	0.059701	0.037313
10	0.022388	0.014925	0.044776	0.007463	0.029851	0.014925	0.052239	0.044776	0.029851	0.014925
15	0.014925	0.029851	0.022388	0.037313	0.022388	0.	0.007463	0.037313	0.007463	0.014925
20	0.014925	0.007463	0.014925	0.014925	0.007463	0.022388	0.007463	0.014925	0.007463	0.014925
25	0.014925	0.014925	0.007463	0.007463	0.007463	0.	0.	0.	0.	0.
30	0.007463	0.022388	0.007463	0.	0.022388	0.007463	0.	0.	0.	0.007463
35	0.007463	0.	0.007463	0.007463	0.014925	0.007463	0.	0.007463	0.	0.
40	0.007463	0.	0.	0.	0.007463	0.007463	0.	0.	0.007463	0.
45	0.	0.	0.	0.	0.007463	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION TRITON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.033898	0.067797	0.	0.033898	0.	0.033898	0.101695	0.033898	0.033898
5	0.203390	0.033898	0.067797	0.135593	0.	0.	0.067797	0.033898	0.101695	0.
10	0.033898	0.033898	0.	0.033898	0.	0.033898	0.	0.067797	0.033898	0.067797
15	0.033898	0.101695	0.101695	0.	0.	0.033898	0.067797	0.	0.033898	0.
20	0.067797	0.	0.067797	0.	0.	0.	0.033898	0.033898	0.	0.
25	0.	0.	0.	0.	0.	0.033898	0.	0.067797	0.	0.
30	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
35	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
40	0.	0.	0.033898	0.	0.	0.	0.	0.	0.	0.
45	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION HE3 SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.047059	0.070588	0.117647	0.094118	0.141176	0.117647	0.117647
5	0.094118	0.023529	0.047059	0.070588	0.047059	0.070588	0.070588	0.117647	0.023529	0.023529
10	0.047059	0.047059	0.	0.047059	0.023529	0.047059	0.047059	0.	0.	0.047059
15	0.023529	0.	0.023529	0.023529	0.023529	0.	0.	0.	0.	0.023529
20	0.047059	0.	0.023529	0.	0.	0.047059	0.	0.	0.023529	0.
25	0.	0.	0.023529	0.	0.	0.	0.023529	0.	0.	0.
30	0.	0.	0.023529	0.	0.	0.	0.	0.	0.	0.
35	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
40	0.	0.	0.	0.	0.	0.	0.	0.023529	0.	0.
45	0.	0.	0.	0.023529	0.	0.	0.023529	0.	0.	0.

NORMALIZED EVAPORATION ALPHA SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.017937	0.067265	0.132287	0.170404	0.130045	0.085202	0.121076
5	0.032960	0.067265	0.060538	0.062780	0.069507	0.073991	0.067265	0.035874	0.056054	0.029148
10	0.022422	0.029148	0.042601	0.033632	0.026906	0.020179	0.026906	0.022422	0.020179	0.022422
15	0.013453	0.004484	0.022422	0.004484	0.013453	0.008969	0.011211	0.011211	0.015695	0.006726
20	0.008969	0.017937	0.006726	0.013453	0.011211	0.004484	0.008969	0.017937	0.008969	0.
25	0.022422	0.008969	0.002242	0.	0.011211	0.008969	0.	0.	0.013453	0.004484
30	0.004484	0.004484	0.017937	0.008969	0.002242	0.	0.008969	0.	0.	0.004484
35	0.008969	0.008969	0.	0.013453	0.	0.	0.	0.	0.004484	0.
40	0.004484	0.	0.	0.008969	0.	0.	0.002242	0.	0.	0.004484
45	0.	0.004484	0.	0.	0.	0.	0.008969	0.	0.	0.

INPUT

FROM CARDS

USED FILE 1 INCIDENT PARTICLE NEUT INCIDENT KINETIC ENERGY 1000.000 MEV

TOTAL NUMBER OF INCIDENT PARTICLES 6000 TARGET SYMBOL AL

SIZE OF HISTOGRAMS FOR OUTGOING K.E. 25 FOR PROT, 25 FOR NEUT, 25 FOR PI+, 25 FOR PIO, 25 FOR PI-.

CROSS SECTIONS WERE CALCULATED FOR AS MANY AS 9 EMITTED PARTICLE COMBINATIONS.

101.000 MEV INTERVAL WAS USED IN CALCULATING HISTOGRAM FOR N(E*)DE FOR TOTAL REACTION

DELTAS FOR OUTGOING KINETIC ENERGY DISTRIBUTION IN MEV

	-.6 MU -.4 0 (K.E.) 10D	-.1 MU +.1 0 (K.E.) 10D	+.4 MU +.6 0 (K.E.) 10D	+.9 MU +.95 0 (K.E.) 20D	+.95 MU +1.0 0 (K.E.) 20D
PROTONS	100.0000	100.0000	100.0000	50.0000	50.0000
NEUTRONS	100.0000	100.0000	100.0000	50.0000	50.0000
PI+	100.0000	100.0000	100.0000	50.0000	50.0000
PIO	100.0000	100.0000	100.0000	50.0000	50.0000
PI-	100.0000	100.0000	100.0000	50.0000	50.0000

D = DELTA, RESPECTIVE ENERGY INTERVALS OF HISTOGRAMS

OUTGOING COMBINATIONS	10000	01000	00100	00010	00001	01001	10100	11000	11001
INTERVAL FOR N(E*)DE IN MEV	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000

FROM RECORD 1

6000 INCIDENT NEUT HIT AL TARGET WITH 27.000 MASS AND 13.000 ATOMIC NUMBER AT 1000.000MEV.

FROM RECORD N

THERE WERE 2751. INCIDENT PARTICLE COLLISIONS CREATING 2751 ESCAPING PARTICLE RECORDS. THE GEOMETRIC CROSS SECTION WAS 1028.2138824 MB. THE INELASTIC CROSS SECTION WAS 471.4360695 MB. THE CUT OFF ENERGY WAS 1.6374597 MEV.

NEUT ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

MOMENTUM OF COMPOUND NUCLEUS 1697.100250MEV/C EXCITATION ENERGY OF COMPOUND NUCLEUS 1006.915207MEV

THE MASS OF THE RESIDUAL NUCLEUS WAS ZERO 0 TIMES, WAS MINUS 0 TIMES CUT OFF ENERGY 1.637460MEV

FOR 184 INCIDENT PARTICLE COLLISIONS THERE WERE MORE THAN 9 OUT GOING PARTICLES

EMITTED CASCADE PARTICLES

	PROTONS	NEUTRONS	PI+	PIO	PI-
AVERAGE NO.	0.1695020E 01	0.2426390E 01	0.8033442E-01	0.1599418E-00	0.2726281E-00
VARIANCE	0.2313748E 01	0.2632077E 01	0.7533482E-01	0.1510816E-00	0.2201123E-00
AV. K.E. (MEV)	0.1611862E 03	0.2061810E 03	0.1091688E 03	0.1271106E 03	0.1437216E 03
VARIANCE	0.5201436E 05	0.7700179E 05	0.1347667E 05	0.1633616E 05	0.1855854E 05

RESIDUAL NUCLEUS

OUTGOING COMBINATION	CO	C1	ARM	AREE	AAR
TOTAL CASCADE	0.0927692	0.1360497	321.6870651	65.6423712	23.8785894
10000	0.0195277	0.1145359	197.4991722	17.3819811	27.0000000
01000	0.0265626	0.1209657	213.6197891	25.2432010	27.0000000
00100	0.	0.	0.	0.	28.0000000
00010	0.	0.	0.	0.	28.0000000
00001	0.	0.	0.	0.	28.0000000
01001	0.1279824	0.0213109	222.2293968	18.3259838	27.0000000
10100	0.	0.	0.	0.	27.0000000
11000	0.0192146	0.0743244	146.7359333	12.7284867	26.0000000
11001	0.0311890	0.0661801	145.0760937	13.1603067	26.0000000

CO = (SUM OF PARALLEL RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

C1 = (SUM OF PERPENDICULAR RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

ARM = AVERAGE RESIDUAL MOMENTUM IN MEV/C

AREE = AVERAGE RESIDUAL EXCITATION ENERGY IN MEV

AAR = AVERAGE MASS OF RESIDUAL NUCLEUS FOR TOTAL CASCADE
AAR = MASS OF RESIDUAL NUCLEUS FOR DESIGNATED OUTGOING COMBINATIONS

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NEUT   CN AL       INC. K.E. (MEV) IS  1000.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

                   ANGULAR DISTRIBUTION OF THE CASCADE NUCLEUS  (FRACTION IN DELTA MU)/(DELTA MU)

       -0.9000000E 00        -0.7000000E 00        -0.5000000E 00        -0.3000000E-00        -0.1000000E-00
                0.1000000E-00         0.3000000E-00         0.5000000E 00         0.7000000E 00         0.9000000E 00

            TOTAL CASCADE                              RATIO OF FORWARD /BACKWARD     0.3694539E 01
        0.1290440E-00         0.1399491E-00         0.1962923E-00         0.2326427E-00         0.3671392E-00
                0.5743366E 00         0.6306797E 00         0.7778989E 00         0.8760451E 00         0.1075972E 01

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.4000000E 01         1.0000000E 00         0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.3227848E 01         0.1645570E 01         0.                    0.                    0.1265823E-00

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.5000000E 01

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.2021505E 01
        0.1245552E-00         0.2135231E-00         0.4270463E-00         0.3380783E-00         0.5516014E 00
                0.6939502E 00         0.7473309E 00         0.8718861E 00         0.6583630E 00         0.3736655E-00

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.2604651E 01
        0.2258064E-00         0.1935484E-00         0.2258064E-00         0.3548387E-00         0.3870968E-00
                0.4516129E-00         0.6451613E 00         0.7419355E 00         0.8032258E 00         0.8709677E 00
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NEUT   CN AL       INC. K.E. (MEV) IS  1000.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

      EXCITATION ENERGY DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS (FRACTION PER UNIT EN.)    (DE=DELTA E(MEV))

DEA IS  0.1010000E 03   DEB IS  0.2500000E 02   DEC IS  0.2500000E 02   DED IS  0.2500000E 02   DEE IS  0.2500000E 02
  DEF IS  0.2500000E 02   DEG IS  0.2500000E 02   DEH IS  0.2500000E 02   DEI IS  0.2500000E 02   DEJ IS  0.2500000E 02

            TOTAL CASCADE                        (SUM OVER HISTOGRAM)X(DEA)        0.1000000E 01      0 OFL
        0.7651583E-02         0.1576384E-02         0.5110653E-03         0.1295658E-03         0.3239146E-04
                 0.                    0.                    0.                    0.                    0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEB)        0.1000000E 01      0 OFL
        0.3200000E-01         0.8000000E-02         0.                    0.                    0.
                 0.                    0.                    0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEC)        0.1000000E 01      0 OFL
        0.2683544E-01         0.9620253E-02         0.2025316E-02         0.5063291E-03         0.
                 0.                    0.5063291E-03         0.5063291E-03         0.                    0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DED)        0.                    0 OFL
        0.                    0.                    0.                    0.                    0.
                 0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEE)        0.                    0 OFL
        0.                    0.                    0.                    0.                    0.
                 0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEF)        0.                    0 OFL
        0.                    0.                    0.                    0.                    0.
                 0.                    0.                    0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEG)        0.1000000E 01      0 OFL
        0.3000000E-01         0.1000000E-01         0.                    0.                    0.
                 0.                    0.                    0.                    0.                    0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEH)        0.                    0 OFL
        0.                    0.                    0.                    0.                    0.
                 0.                    0.                    0.                    0.                    0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEI)        0.1000000E 01      0 OFL
        0.3487545E-01         0.2277580E-02         0.2135231E-02         0.4270463E-03         0.
                 0.1423488E-03         0.                    0.1423488E-03         0.                    0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEJ)        0.1000000E 01      0 OFL
        0.3458064E-01         0.2838710E-02         0.1290323E-02         0.5161290E-03         0.2580645E-03
                 0.2580645E-03         0.2580645E-03         0.                    0.                    0.
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DESCRIPTION OF THE FOLLOWING MOMENTUM DISTRIBUTIONS

THE FIRST GROUP OF NUMBERS BELOW THE TITLES SPECIFY THE MIDPOINTS OF THE MOMENTUM INTERVALS.

THE MOMENTUM IS THE NUMBER INDICATED (MEV/C).

THE SUBSEQUENT GROUPS OF NUMBERS ARE THE FRACTION OF THE TOTAL IN EACH INTERVAL DIVIDED BY DELTA P.

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NEUT   CN AL       INC. K.E. (MEV) IS  1000.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

                              THE MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

   0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
         0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

              TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01       0 OFL
   0.1852755E-02   0.1827052E-02   0.1150207E-02   0.5311945E-03   0.3084355E-03   0.1456501E-03   0.4283827E-04
         0.2141913E-04   0.1070957E-04   0.2141913E-05   0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01       0 OFL
   0.2749788E-02   0.2749788E-02   0.3928269E-03   0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01       0 OFL
   0.2386796E-02   0.2759733E-02   0.7458739E-03   0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                  0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                  0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                  0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01       0 OFL
   0.1178481E-02   0.4124683E-02   0.5892404E-03   0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                  0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01       0 OFL
   0.4151943E-02   0.1383981E-02   0.2726023E-03   0.8387763E-04   0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01       0 OFL
   0.4371783E-02   0.1026419E-02   0.3801551E-03   0.7603102E-04   0.3801551E-04   0.              0.
         0.              0.              0.              0.              0.              0.              0.
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NEUT   ON AL       INC. K.E. (MEV) IS  1000.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

                        THE PERPENDICULAR MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

   0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
         0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

             TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.2634553E-02   0.1906303E-02   0.9231647E-03   0.2955840E-03   0.1028118E-03   0.2356105E-04   0.4283827E-05
         0.2141913E-05   0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.2749788E-02   0.3142615E-02   0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.2535971E-02   0.2685146E-02   0.6712865E-03   0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.5597783E-02   0.2946202E-03   0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.4424545E-02   0.1132348E-02   0.2935717E-03   0.4193882E-04   0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.4751939E-02   0.8743567E-03   0.2280930E-03   0.3801551E-04   0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.
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NEUT   ON AL       INC. K.E. (MEV) IS  1000.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

                    THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

 -0.2291085E 04  -0.2121375E 04  -0.1951665E 04  -0.1781955E 04  -0.1612245E 04  -0.1442535E 04  -0.1272825E 04
       -0.1103115E 04  -0.9334051E 03  -0.7636951E 03  -0.5939851E 03  -0.4242751E 03  -0.2545650E 03  -0.8485501E 02
  0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
       0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

            TOTAL CASCADE                        (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.6425740E-05   0.1049538E-03   0.1143782E-02
  0.2553161E-02   0.1070957E-02   0.5226269E-03   0.2570296E-03   0.1392244E-03   0.5140592E-04   0.3641253E-04
       0.6425740E-05   0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.              0.
  0.5892404E-02   0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.              0.
  0.5743229E-02   0.1491748E-03   0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-   (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
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NEUT   ON AL       INC. K.E. (MEV) IS  1000.0   A IS   27.   Z IS  13.    6000 INC. HISTORIES        1.6 MEV CUTOFF EN.

                        THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

 -0.2291085E 04  -0.2121375E 04  -0.1951665E 04  -0.1781955E 04  -0.1612245E 04  -0.1442535E 04  -0.1272825E 04
      -0.1103115E 04  -0.9334051E 03  -0.7636951E 03  -0.5939851E 03  -0.4242751E 03  -0.2545650E 03  -0.8485501E 02
  0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
        0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

            TOTAL CASCADE                        (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.6425740E-05   0.1049538E-03   0.1143782E-02
  0.2553161E-02   0.1070957E-02   0.5226269E-03   0.2570296E-03   0.1392244E-03   0.5140592E-04   0.3641253E-04
        0.6425740E-05   0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
  0.1178481E-02   0.4419303E-02   0.2946202E-03   0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.2096941E-04   0.1929186E-02
  0.3690616E-02   0.2306635E-03   0.              0.2096941E-04   0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.              0.1634667E-02
  0.3611473E-02   0.5702326E-03   0.7603102E-04   0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
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NEUT ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PIO 5TH IS NO. OF PI-

18000	0.17136898E-00	25011	0.34273796E-00	25101	0.17136898E-00	26001	0.51410694E 00
26010	0.51410694E 00	27000	0.51410694E 00	33102	0.17136898E-00	34002	0.34273796E-00
34011	0.34273796E-00	34101	0.34273796E-00	35001	0.68547592E 00	35010	0.85684490E 00
35100	0.34273796E-00	36000	0.10282138E 01	43002	0.17136898E-00	44001	0.51410694E 00
44010	0.10282138E 01	44100	0.68547592E 00	45000	0.11995828E 01	53001	0.11995828E 01
53010	0.34273796E-00	53100	0.85684490E 00	54000	0.15423208E 01	62001	0.68547592E 00
62100	0.17136898E-00	63000	0.51410694E 00	72000	0.17136898E-00	15002	0.17136898E-00
15020	0.17136898E-00	16001	0.85684490E 00	24002	0.17136898E-00	24011	0.17136898E-00
24020	0.17136898E-00	24101	0.17136898E-00	25001	0.11995828E 01	25010	0.85684490E 00
25100	0.51410694E 00	26000	0.17136898E 01	33011	0.17136898E-00	33101	0.34273796E-00
33110	0.51410694E 00	34001	0.29132726E 01	34010	0.15423208E 01	34100	0.85684490E 00
35000	0.37701175E 01	42002	0.17136898E-00	43001	0.25705346E 01	43010	0.34273796E-00
43100	0.68547592E 00	44000	0.25705346E 01	51101	0.17136898E-00	52001	0.68547592E 00
52010	0.34273796E-00	52100	0.34273796E-00	53000	0.15423208E 01	61001	0.17136898E-00
05020	0.17136898E-00	05101	0.17136898E-00	06100	0.34273796E-00	14002	0.17136898E-00
14011	0.51410694E 00	14110	0.17136898E-00	15001	0.11995828E 01	15010	0.34273796E-00
15100	0.34273796E-00	16000	0.13709518E 01	23002	0.17136898E-00	23011	0.68547592E 00
23020	0.34273796E-00	23101	0.17136898E-00	24001	0.20564277E 01	24010	0.20564277E 01
24100	0.17136898E 01	25000	0.22277967E 01	32002	0.68547592E 00	32011	0.34273796E-00
32020	0.17136898E-00	32101	0.51410694E 00	32110	0.17136898E-00	33001	0.25705346E 01
33010	0.15423208E 01	33100	0.11995828E 01	34000	0.44555934E 01	41002	0.17136898E-00
41011	0.17136898E-00	42001	0.17136898E 01	42010	0.85684490E 00	42100	0.51410694E 00
43000	0.32560106E 01	52000	0.85684490E 00	61000	0.17136898E-00	04002	0.17136898E-00
04020	0.34273796E-00	04101	0.17136898E-00	04110	0.17136898E-00	05010	0.51410694E 00
05100	0.34273796E-00	06000	0.68547592E 00	12201	0.17136898E-00	13002	0.17136898E-00
13011	0.17136898E-00	13020	0.51410694E 00	13101	0.34273796E-00	13110	0.51410694E 00

NEUT CN AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PI0 5TH IS NO. OF PI-

CONTINUED

13200	0.17136898E-00	14001	0.15423208E 01	14010	0.15423208E 01	14100	0.20564277E 01
15000	0.25705346E 01	22002	0.34273796E-00	22011	0.11995828E 01	22020	0.17136898E-00
22101	0.13709518E 01	23001	0.34273796E 01	23010	0.23991657E 01	23100	0.10282138E 01
24000	0.34273796E 01	31002	0.17136898E-00	31020	0.17136898E-00	32001	0.37701175E 01
32010	0.13709518E 01	32100	0.10282138E 01	33000	0.51410694E 01	40020	0.17136898E-00
41001	0.68547592E 00	41010	0.17136898E-00	41100	0.17136898E-00	42000	0.15423208E 01
50001	0.17136898E-00	51000	0.17136898E-00	03020	0.34273796E-00	03101	0.17136898E-00
03110	0.51410694E 00	04001	0.17136898E-00	04100	0.51410694E 00	05000	0.10282138E 01
12011	0.68547592E 00	12020	0.51410694E 00	12101	0.51410694E 00	12110	0.34273796E-00
13001	0.46269624E 01	13010	0.30846416E 01	13100	0.11995828E 01	14000	0.53124383E 01
21002	0.34273796E-00	21011	0.17136898E-00	21101	0.17136898E-00	22001	0.59979142E 01
22010	0.41128554E 01	22100	0.13709518E 01	23000	0.70261281E 01	30002	0.34273796E-00
30020	0.17136898E-00	30101	0.17136898E-00	31001	0.34273796E 01	31010	0.13709518E 01
31100	0.51410694E 00	32000	0.54838073E 01	40001	0.51410694E 00	41000	0.13709518E 01
50000	0.17136898E-00	02020	0.17136898E-00	02101	0.17136898E-00	02110	0.17136898E-00
03001	0.15423208E 01	03010	0.18850587E 01	03100	0.85684490E 00	04000	0.27419037E 01
11002	0.17136898E-00	11011	0.51410694E 00	11101	0.68547592E 00	11110	0.17136898E-00
12001	0.90825558E 01	12010	0.63406523E 01	12100	0.20564277E 01	13000	0.97680318E 01
21001	0.66833901E 01	21010	0.34273796E 01	21100	0.51410694E 00	22000	0.90825558E 01
30001	0.85684490E 00	30010	0.51410694E 00	31000	0.30846416E 01	40000	0.17136898E-00
02001	0.15423208E 01	02010	0.51410694E 01	02100	0.25705346E 01	03000	0.90825558E 01
11001	0.26562192E 02	11010	0.87398179E 01	11100	0.34273796E-00	12000	0.20735646E 02
20001	0.32560106E 01	20010	0.34273796E-00	21000	0.13195411E 02	30000	0.85684490E 00
01001	0.34273796E 01	01010	0.51410694E 00	01100	0.34273796E-00	02000	0.46098255E 02
10001	0.17136898E 01	10010	0.11995828E 01	11000	0.48154683E 02	20000	0.23991657E 01
01000	0.13538149E 02	10000	0.25705346E 01				

NEUT ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 1.00 TO 0.95
(THETA FROM 0 DEG. 0 MIN. TO 18 DEG. 12 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
25.0	0.675E-01	25.0	0.417E-01	25.0	0.421E-01	25.0	0.100E-01	25.0	0.127E-01
75.0	0.216E-01	75.0	0.211E-01	75.0	0.421E-01	75.0	0.600E-01	75.0	0.127E-01
125.0	0.261E-01	125.0	0.182E-01	125.0	0.	125.0	0.100E-01	125.0	0.127E-01
175.0	0.142E-01	175.0	0.139E-01	175.0	0.421E-01	175.0	0.600E-01	175.0	0.190E-01
225.0	0.102E-01	225.0	0.157E-01	225.0	0.421E-01	225.0	0.100E-01	225.0	0.381E-01
275.0	0.142E-01	275.0	0.139E-01	275.0	0.211E-01	275.0	0.500E-01	275.0	0.317E-01
325.0	0.965E-02	325.0	0.118E-01	325.0	0.421E-01	325.0	0.400E-01	325.0	0.508E-01
375.0	0.142E-01	375.0	0.153E-01	375.0	0.842E-01	375.0	0.100E-01	375.0	0.571E-01
425.0	0.165E-01	425.0	0.150E-01	425.0	0.	425.0	0.500E-01	425.0	0.571E-01
475.0	0.193E-01	475.0	0.121E-01	475.0	0.632E-01	475.0	0.500E-01	475.0	0.317E-01
525.0	0.216E-01	525.0	0.103E-01	525.0	0.	525.0	0.200E-01	525.0	0.508E-01
575.0	0.170E-01	575.0	0.111E-01	575.0	0.211E-01	575.0	0.100E-01	575.0	0.127E-01
625.0	0.210E-01	625.0	0.107E-01	625.0	0.	625.0	0.100E-01	625.0	0.635E-02
675.0	0.250E-01	675.0	0.128E-01	675.0	0.	675.0	0.100E-01	675.0	0.635E-02
725.0	0.182E-01	725.0	0.821E-02	725.0	0.	725.0	0.	725.0	0.
775.0	0.681E-02	775.0	0.111E-01	775.0	0.	775.0	0.	775.0	0.
825.0	0.738E-02	825.0	0.143E-01	825.0	0.	825.0	0.	825.0	0.
875.0	0.187E-01	875.0	0.328E-01	875.0	0.	875.0	0.	875.0	0.
925.0	0.210E-01	925.0	0.450E-01	925.0	0.	925.0	0.	925.0	0.
975.0	0.301E-01	975.0	0.649E-01	975.0	0.	975.0	0.	975.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

NEUT CN AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.95 TO 0.90
(THETA FROM 18 DEG. 12 MIN. TO 25 DEG. 51 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
25.0	0.101E-00	25.0	0.674E-01	25.0	0.187E-00	25.0	0.108E-00	25.0	0.500E-01
75.0	0.342E-01	75.0	0.357E-01	75.0	0.	75.0	0.308E-01	75.0	0.500E-01
125.0	0.332E-01	125.0	0.218E-01	125.0	0.267E-01	125.0	0.462E-01	125.0	0.200E-01
175.0	0.280E-01	175.0	0.304E-01	175.0	0.	175.0	0.	175.0	0.300E-01
225.0	0.207E-01	225.0	0.179E-01	225.0	0.	225.0	0.154E-01	225.0	0.100E-01
275.0	0.176E-01	275.0	0.185E-01	275.0	0.800E-01	275.0	0.154E-01	275.0	0.200E-01
325.0	0.187E-01	325.0	0.198E-01	325.0	0.	325.0	0.308E-01	325.0	0.600E-01
375.0	0.249E-01	375.0	0.132E-01	375.0	0.267E-01	375.0	0.615E-01	375.0	0.600E-01
425.0	0.228E-01	425.0	0.119E-01	425.0	0.533E-01	425.0	0.769E-01	425.0	0.600E-01
475.0	0.176E-01	475.0	0.112E-01	475.0	0.267E-01	475.0	0.154E-01	475.0	0.400E-01
525.0	0.114E-01	525.0	0.926E-02	525.0	0.	525.0	0.	525.0	0.
575.0	0.518E-02	575.0	0.106E-01	575.0	0.	575.0	0.	575.0	0.
625.0	0.933E-02	625.0	0.926E-02	625.0	0.	625.0	0.	625.0	0.
675.0	0.622E-02	675.0	0.106E-01	675.0	0.	675.0	0.	675.0	0.
725.0	0.104E-01	725.0	0.119E-01	725.0	0.	725.0	0.	725.0	0.
775.0	0.145E-01	775.0	0.278E-01	775.0	0.	775.0	0.	775.0	0.
825.0	0.145E-01	825.0	0.410E-01	825.0	0.	825.0	0.	825.0	0.
875.0	0.725E-02	875.0	0.231E-01	875.0	0.	875.0	0.	875.0	0.
925.0	0.311E-02	925.0	0.860E-02	925.0	0.	925.0	0.	925.0	0.
975.0	0.	975.0	0.	975.0	0.	975.0	0.	975.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

NEUT CN AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.60 TO 0.40
(THETA FROM 53 DEG. 8 MIN. TO 66 DEG. 25 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.325E-01	50.0	0.320E-01	50.0	0.304E-01	50.0	0.305E-01	50.0	0.296E-01
150.0	0.120E-01	150.0	0.119E-01	150.0	0.152E-01	150.0	0.110E-01	150.0	0.151E-01
250.0	0.363E-02	250.0	0.464E-02	250.0	0.435E-02	250.0	0.732E-02	250.0	0.430E-02
350.0	0.155E-02	350.0	0.111E-02	350.0	0.	350.0	0.122E-02	350.0	0.108E-02
450.0	0.345E-03	450.0	0.309E-03	450.0	0.	450.0	0.	450.0	0.
550.0	0.	550.0	0.	550.0	0.	550.0	0.	550.0	0.
650.0	0.	650.0	0.	650.0	0.	650.0	0.	650.0	0.
750.0	0.	750.0	0.	750.0	0.	750.0	0.	750.0	0.
850.0	0.	850.0	0.	850.0	0.	850.0	0.	850.0	0.
950.0	0.	950.0	0.	950.0	0.	950.0	0.	950.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

NEUT CN AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.10 TO -0.10
(THETA FROM 84 DEG. 16 MIN. TO 95 DEG. 44 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.458E-01	50.0	0.442E-01	50.0	0.421E-01	50.0	0.385E-01	50.0	0.348E-01
150.0	0.358E-02	150.0	0.477E-02	150.0	0.789E-02	150.0	0.769E-02	150.0	0.116E-01
250.0	0.597E-03	250.0	0.998E-03	250.0	0.	250.0	0.385E-02	250.0	0.268E-02
350.0	0.	350.0	0.	350.0	0.	350.0	0.	350.0	0.893E-03
450.0	0.	450.0	0.	450.0	0.	450.0	0.	450.0	0.
550.0	0.	550.0	0.	550.0	0.	550.0	0.	550.0	0.
650.0	0.	650.0	0.	650.0	0.	650.0	0.	650.0	0.
750.0	0.	750.0	0.	750.0	0.	750.0	0.	750.0	0.
850.0	0.	850.0	0.	850.0	0.	850.0	0.	850.0	0.
950.0	0.	950.0	0.	950.0	0.	950.0	0.	950.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

NEUT ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM -0.40 TO -0.60
(THETA FROM 113 DEG. 35 MIN. TO 126 DEG. 54 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.460E-01	50.0	0.468E-01	50.0	0.458E-01	50.0	0.448E-01	50.0	0.410E-01
150.0	0.399E-02	150.0	0.320E-02	150.0	0.417E-02	150.0	0.517E-02	150.0	0.897E-02
250.0	0.	250.0	0.	250.0	0.	250.0	0.	250.0	0.
350.0	0.	350.0	0.	350.0	0.	350.0	0.	350.0	0.
450.0	0.	450.0	0.	450.0	0.	450.0	0.	450.0	0.
550.0	0.	550.0	0.	550.0	0.	550.0	0.	550.0	0.
650.0	0.	650.0	0.	650.0	0.	650.0	0.	650.0	0.
750.0	0.	750.0	0.	750.0	0.	750.0	0.	750.0	0.
850.0	0.	850.0	0.	850.0	0.	850.0	0.	850.0	0.
950.0	0.	950.0	0.	950.0	0.	950.0	0.	950.0	0.
N IS	0.100E 01	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

NEUT ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PROTONS

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PROTONS /DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.1074416E-01	300.00	0.4557152E-03	540.00	0.2787905E-03	780.00	0.1554793E-03
60.00	0.3372293E-02	340.00	0.4449925E-03	580.00	0.1822861E-03	820.00	0.1340339E-03
100.00	0.2117735E-02	380.00	0.3699335E-03	620.00	0.2627064E-03	860.00	0.1662020E-03
140.00	0.1501179E-02	420.00	0.3645722E-03	660.00	0.2734291E-03	900.00	0.2037315E-03
180.00	0.1040103E-02	460.00	0.3860176E-03	700.00	0.2251769E-03	940.00	0.1554793E-03
220.00	0.8363715E-03	500.00	0.2573451E-03	740.00	0.1608407E-03	980.00	0.2519837E-03
260.00	0.6594467E-03						

NEUT ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE NEUTRONS

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED NEUTRONS/DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.9295880E-02	300.00	0.5056180E-03	540.00	0.2397004E-03	780.00	0.2546816E-03
60.00	0.3408240E-02	340.00	0.4531835E-03	580.00	0.2322097E-03	820.00	0.3183521E-03
100.00	0.2288390E-02	380.00	0.4344569E-03	620.00	0.2322097E-03	860.00	0.3820225E-03
140.00	0.1516854E-02	420.00	0.3333333E-03	660.00	0.2209738E-03	900.00	0.3483146E-03
180.00	0.1071161E-02	460.00	0.2771536E-03	700.00	0.2247191E-03	940.00	0.4981273E-03
220.00	0.7565543E-03	500.00	0.2509363E-03	740.00	0.2059925E-03	980.00	0.5543071E-03
260.00	0.6966292E-03						

NEUT ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI+

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI+ / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.8257919E-02	300.00	0.6787330E-03	540.00	0.1131222E-03	780.00	0.
60.00	0.7126697E-02	340.00	0.1018100E-02	580.00	0.	820.00	0.
100.00	0.2149321E-02	380.00	0.4524887E-03	620.00	0.	860.00	0.
140.00	0.1923077E-02	420.00	0.2262443E-03	660.00	0.	900.00	0.
180.00	0.1244344E-02	460.00	0.1131222E-03	700.00	0.	940.00	0.
220.00	0.6787330E-03	500.00	0.3393665E-03	740.00	0.	980.00	0.
260.00	0.6787330E-03						

NEUT ON AL INC. K.E. (MEV) IS 100.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PIO

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PIO / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.6534091E-02	300.00	0.6818182E-03	540.00	0.1136364E-03	780.00	0.
60.00	0.7102273E-02	340.00	0.5681818E-03	580.00	0.5681818E-04	820.00	0.
100.00	0.2500000E-02	380.00	0.6250000E-03	620.00	0.5681818E-04	860.00	0.
140.00	0.1704545E-02	420.00	0.6818182E-03	660.00	0.	900.00	0.
180.00	0.1761364E-02	460.00	0.5113636E-03	700.00	0.5681818E-04	940.00	0.
220.00	0.1193182E-02	500.00	0.5681818E-04	740.00	0.	980.00	0.
260.00	0.7954546E-03						

NEUT CN AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI-

0 TO 1.0000000E 03 MEV 0 DEL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI- / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.5466667E-02	300.00	0.1166667E-02	540.00	0.2000000E-03	780.00	0.
60.00	0.6433333E-02	340.00	0.9333333E-03	580.00	0.3333333E-04	820.00	0.
100.00	0.3100000E-02	380.00	0.8333334E-03	620.00	0.6666667E-04	860.00	0.
140.00	0.1733333E-02	420.00	0.5333333E-03	660.00	0.3333333E-04	900.00	0.
180.00	0.1633333E-02	460.00	0.4000000E-03	700.00	0.	940.00	0.
220.00	0.1033333E-02	500.00	0.4000000E-03	740.00	0.	980.00	0.
260.00	0.1000000E-02						

NEUT ON AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.5 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PARTICLES

0 TO 1000 MEV

N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PARTICLES/DELTA E

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N IS (SUM OVER HISTOGRAM FROM 1 TO 1000 MEV) (DELTA E)

K.E.	PROTONS N(E)	NEUTRONS N(E)	PI+ N(E)	PI0 N(E)	PI- N(E)
25.0	0.9405962E-02	0.8254682E-02	0.8235294E-02	0.6818182E-02	0.5760000E-02
75.0	0.2826506E-02	0.2918352E-02	0.5248869E-02	0.5227273E-02	0.5226667E-02
125.0	0.1702766E-02	0.1803745E-02	0.1719457E-02	0.2045455E-02	0.2160000E-02
175.0	0.1085138E-02	0.1087640E-02	0.1357466E-02	0.1590909E-02	0.1546667E-02
225.0	0.8149260E-03	0.7490637E-03	0.6334842E-03	0.1090909E-02	0.1120000E-02
275.0	0.5704482E-03	0.6082397E-03	0.8144796E-03	0.8181818E-03	0.9333333E-03
325.0	0.4074630E-03	0.4883895E-03	0.8144796E-03	0.6363636E-03	0.1093333E-02
375.0	0.4203302E-03	0.4314607E-03	0.5429864E-03	0.5454545E-03	0.8266667E-03
425.0	0.3517049E-03	0.3415730E-03	0.1809955E-03	0.6818182E-03	0.5600000E-03
475.0	0.3431267E-03	0.2576779E-03	0.3619909E-03	0.2727273E-03	0.3200000E-03
525.0	0.2916577E-03	0.2337079E-03	0.	0.1363636E-03	0.3200000E-03
575.0	0.1887197E-03	0.2307116E-03	0.9049774E-04	0.4545454E-04	0.5333333E-04
625.0	0.2616341E-03	0.2337079E-03	0.	0.4545454E-04	0.5333333E-04
675.0	0.2487669E-03	0.2426966E-03	0.	0.4545454E-04	0.2666667E-04
725.0	0.2144542E-03	0.1917603E-03	0.	0.	0.
775.0	0.1372507E-03	0.2456929E-03	0.	0.	0.
825.0	0.1415398E-03	0.3355805E-03	0.	0.	0.
875.0	0.1844306E-03	0.3835206E-03	0.	0.	0.
925.0	0.1758524E-03	0.4134831E-03	0.	0.	0.
975.0	0.2273215E-03	0.5483146E-03	0.	0.	0.
	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 0.9999999E 00

NEUT CN AL INC. K.E. (MEV) IS 1000.0 A IS 27. Z IS 13. 6000 INC. HISTORIES 1.6 MEV CUTOFF EN.

ANGULAR DISTRIBUTION OF EMITTED CASCADE PARTICLES

(FRACTION IN EACH INTERVAL)/(DELTA MU)

MU IS COSINE THETA AND SPECIFIES THE CENTER OF THE INTERVAL

MU	PROTON	NEUTRON	PI+	PIO	PI-
0.975	0.3023804E 01	0.3358801E 01	0.1719457E 01	0.1818182E 01	0.1680000E 01
0.925	0.1655587E 01	0.1812734E 01	0.1357466E 01	0.1181818E 01	0.1066667E 01
0.875	0.1286725E 01	0.1135580E 01	0.7239819E 00	0.1090909E 01	0.8533333E 00
0.825	0.9907785E 00	0.1060674E 01	0.8144796E 00	0.1227273E 01	0.1306667E 01
0.775	0.9736221E 00	0.9977528E 00	0.5429864E 00	0.5909091E 00	0.1040000E 01
0.725	0.8020588E 00	0.8179775E 00	0.4524887E-00	0.6363636E 00	0.7200000E 00
0.675	0.7291443E 00	0.7820225E 00	0.5429864E 00	0.1045455E 01	0.6133333E 00
0.625	0.8277933E 00	0.6801498E 00	0.9049774E 00	0.6363636E 00	0.5600000E 00
0.575	0.6347845E 00	0.6172285E 00	0.6334842E 00	0.3181818E-00	0.7200000E 00
0.525	0.6433626E 00	0.6711610E 00	0.2714932E-00	0.5454545E 00	0.5866667E 00
0.475	0.5876045E 00	0.5423221E 00	0.4524887E-00	0.4090909E-00	0.5866667E 00
0.425	0.6176281E 00	0.5932584E 00	0.7239819E 00	0.5909091E 00	0.5866667E 00
0.375	0.4583320E-00	0.5213483E 00	0.6334842E 00	0.3636364E-00	0.5333333E 00
0.325	0.5189792E 00	0.5033708E 00	0.6334842E 00	0.6363636E 00	0.5866667E 00
0.275	0.4503538E-00	0.4644195E-00	0.5429864E 00	0.4090909E-00	0.5600000E 00
0.225	0.4160412E-00	0.4524345E-00	0.1809955E-00	0.5909091E 00	0.5600000E 00
0.175	0.3817285E-00	0.4164794E-00	0.4524887E-00	0.9090909E 00	0.5066667E 00
0.125	0.4203303E-00	0.3805243E-00	0.4524887E-00	0.3636364E-00	0.4800000E-00
0.075	0.3988848E-00	0.4044944E-00	0.1809955E-00	0.2272727E-00	0.3733333E-00
0.025	0.3903067E-00	0.3415730E-00	0.5429864E 00	0.3181818E-00	0.3200000E-00
-0.025	0.3345486E-00	0.3385768E-00	0.5429864E 00	0.4090909E-00	0.3733333E-00
-0.075	0.3131031E-00	0.2666667E-00	0.4524887E-00	0.2272727E-00	0.4266667E-00
-0.125	0.2659232E-00	0.2936330E-00	0.4524887E-00	0.4545455E-00	0.3200000E-00
-0.175	0.2530560E-00	0.2157303E-00	0.3619910E-00	0.4545455E-00	0.2400000E-00
-0.225	0.2573451E-00	0.2367041E-00	0.2714932E-00	0.2272727E-00	0.4000000E-00
-0.275	0.2316106E-00	0.2007491E-00	0.9049774E-01	0.2272727E-00	0.1866667E-00
-0.325	0.2401887E-00	0.1887640E-00	0.3619910E-00	0.4545455E-00	0.2666667E-00
-0.375	0.2144542E-00	0.1498127E-00	0.7239819E 00	0.4545455E-01	0.2666667E-00
-0.425	0.2144542E-00	0.1797753E-00	0.2714932E-00	0.4090909E-00	0.2666667E-00
-0.475	0.1930088E-00	0.1558052E-00	0.2714932E-00	0.9090909E-01	0.2933333E-00
-0.525	0.1329616E-00	0.1288389E-00	0.2714932E-00	0.4545455E-00	0.2400000E-00
-0.575	0.1586961E-00	0.1438202E-00	0.2714932E-00	0.3636364E-00	0.2400000E-00
-0.625	0.1501179E-00	0.1378277E-00	0.4524887E-00	0.9090909E-01	0.2400000E-00
-0.675	0.1544070E-00	0.1438202E-00	0.8144796E 00	0.2727273E-00	0.3733333E-00
-0.725	0.9864894E-01	0.1528090E-00	0.2714932E-00	0.4090909E-00	0.2933333E-00
-0.775	0.1415398E-00	0.7191011E-01	0.2714932E-00	0.3181818E-00	0.5333333E-01
-0.825	0.1115162E-00	0.1168539E-00	0.2714932E-00	0.1818182E-00	0.3466667E-00
-0.875	0.1029380E-00	0.1018727E-00	0.3619910E-00	0.2272727E-00	0.3733333E-00
-0.925	0.1072271E-00	0.1018727E-00	0.3619910E-00	0.4545455E-00	0.3200000E-00
-0.975	0.1158053E-00	0.1198502E-00	0.9049774E-01	0.3181818E-00	0.2400000E-00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	0. TO 10.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.6157E 00	7.1811E-01	6.7323E-01	4.0394E-01	3.5906E-01	1.3465E-01	3.1417E-01	4.4882E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
3.5906E-01	2.2441E-01	4.0394E-01	6.2835E-01	4.4882E-01	7.1811E-01	4.4882E-01	9.8740E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.0772E 00	9.8740E-01	5.3858E-01	2.6929E-01	2.6929E-01	0.	8.9764E-02	2.2441E-01
INTERVAL 25							
1.4811E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	10.00 TO 30.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.1710E 00	4.1905E-01	3.7313E-01	2.9276E-01	2.8128E-01	2.1813E-01	2.3536E-01	1.9517E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.2962E-01	2.2962E-01	2.0665E-01	2.4110E-01	1.6073E-01	1.4925E-01	1.1481E-01	9.7587E-02
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.2629E-01	1.0333E-01	9.1846E-02	1.0907E-01	9.7587E-02	1.7221E-01	2.0665E-01	1.3777E-01
INTERVAL 25							
8.0365E-02							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5368E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.485418E 03 MEV FOR CASCADE PROTON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2296E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.335760E 03 MEV FOR CASCADE PROTON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	30.00 TO 90.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
8.6844E-01	3.2281E-01	2.0550E-01	1.4881E-01	1.0235E-01	9.0544E-02	5.8263E-02	3.9367E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.7557E-02	1.8896E-02	1.8109E-02	1.2597E-02	7.8734E-03	7.8734E-03	3.1494E-03	7.8734E-03
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
3.9367E-03	1.5747E-03	1.5747E-03	3.1494E-03	1.5747E-03	7.8734E-04	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	90.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.5071E-01	8.8641E-02	3.6820E-02	2.1138E-02	4.7730E-03	0.	6.8186E-04	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.7810E 02 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.101177E 03 MEV FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2411E 02 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.365158E 02 MEV FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PROTON FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.302E 02	1.018E 02	8.386E 01	6.101E 01	4.437E 01	2.892E 01	1.815E 01	1.282E 01	1.447E 01

TYPE OF CASCADE PARTICLE PROTON FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.569E 02	4.492E 01	1.107E 01	2.006E 00	3.141E-01	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PROTON FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
7.236E 01	6.597E 00	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
7.3689E 01	1.4275E 02	7.0775E 01	4.4213E 01	2.2278E 01	1.2681E 01	5.4838E 00	2.5705E 00
8	9	10	11	12	13	14	15
6.8548E-01	1.7137E-01	3.4274E-01	1.7137E-01	0.	0.	0.	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
2.4763E 02	1.2459E 02	3.5987E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
3.4120E 02	3.4617E C1	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PROTONS	0.18872E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.3166E 01	0.2199E 01	0.2665E 01	0.4429E 01	0.2984E 01	0.3510E 01	0.2665E 01	0.2984E 01	0.3166E 01

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	0. TO 10.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.2118E 00	7.1811E-01	7.1811E-01	5.3858E-01	4.9370E-01	4.9370E-01	3.5906E-01	5.3858E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
7.6299E-01	5.3858E-01	7.6299E-01	7.1811E-01	4.9370E-01	5.3858E-01	4.4882E-01	8.0787E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
8.0787E-01	8.5276E-01	6.2835E-01	6.2835E-01	3.1417E-01	3.5906E-01	2.6929E-01	1.5708E 00
INTERVAL 25							
5.2512E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	10.00 TO 30.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.3375E 00	6.1422E-01	5.0515E-01	4.1905E-01	4.1331E-01	3.3294E-01	3.4442E-01	2.9850E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.2962E-01	2.8702E-01	2.1813E-01	1.4351E-01	2.0091E-01	1.7795E-01	1.7795E-01	1.0907E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.6073E-01	1.8369E-01	1.8943E-01	2.9850E-01	4.3053E-01	5.3960E-01	4.9541E-01	5.6256E-01
INTERVAL 25							
1.7795E-01							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.8330E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.604914E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3541E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.428067E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	30.00 TO 90.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.1054E 00	4.7004E-01	3.2753E-01	2.2833E-01	1.4802E-01	1.0235E-01	9.0544E-02	5.5901E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
5.0390E-02	4.2516E-02	2.6770E-02	2.5982E-02	1.6534E-02	1.6534E-02	1.6534E-02	1.9684E-02
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.0235E-02	7.0861E-03	6.2987E-03	1.5747E-03	2.3620E-03	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	90.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
5.5776E-01	1.2955E-01	6.2049E-02	2.0456E-02	1.0228E-02	2.0456E-03	2.0456E-03	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1108E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.115323E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3137E 02 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.393043E 02 MEV FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE — NEUTRON — FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.642E 02	1.299E 02	1.119E 02	8.967E 01	6.063E 01	3.426E 01	2.481E 01	1.885E 01	2.035E 01

TYPE OF CASCADE PARTICLE — NEUTRON — FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.696E 02	7.414E 01	2.163E 01	2.340E 00	1.571E-01	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE — NEUTRON — FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
2.334E 02	1.979E 01	1.025E-01	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
9.3225E 01	1.5492E 02	8.3971E 01	4.8840E 01	3.5473E 01	1.9022E 01	9.5967E 00	5.8265E 00
8	9	10	11	12	13	14	15
3.2560E 00	1.0282E 00	3.4274E-01	3.4274E-01	0.	0.	0.	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
2.8944E 02	1.4652E 02	1.9707E 01	1.7137E-01	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
3.4565E 02	1.1019E 02	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
NEUTRONS	0.26787E-00		

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	0. TO 25.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
5.0943E-02	7.2776E-03	7.2776E-03	7.2776E-03	1.4555E-02	7.2776E-03	1.4555E-02	1.4555E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.4555E-02	2.9111E-02	1.4555E-02	7.2776E-03	2.1833E-02	7.2776E-03	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	25.00 TO 75.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.0539E-02	1.6849E-02	9.4777E-03	9.4777E-03	7.3716E-03	5.2654E-03	4.2123E-03	4.2123E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
7.3716E-03	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.8733E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.256000E 03 MEV FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3791E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.118667E 03 MEV FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	75.00 TO 130.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.7394E-02	2.7982E-02	4.5376E-03	4.5376E-03	1.5125E-03	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	130.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.6723E-02	1.7179E-02	5.7265E-03	1.9088E-03	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2239E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.605405E 02 MEV FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2062E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.466667E 02 MEV FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
4.070E 00	3.141E 00	2.973E 00	2.841E 00	2.749E 00	2.089E 00	2.460E 00	1.885E 00	9.045E-01

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
5.879E 00	1.885E 00	5.126E-01	8.357E-02	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
5.3124E 00	3.1875E 01	3.4274E-01	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
3.2217E 01	5.3124E 00	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
3.7530E 01	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1078.2	02751

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI +	0.22172E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.3166E 01	0.2199E 01	0.2665E 01	0.4429E 01	0.2984E 01	0.3510E 01	0.2665E 01	0.2984E 01	0.3166E 01

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	0. TO 25.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
5.0943E-02	5.8221E-02	1.4555E-02	7.2776E-03	4.3666E-02	7.2776E-03	1.4555E-02	4.3666E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.9111E-02	2.9111E-02	5.8221E-02	5.8221E-02	0.	1.4555E-02	7.2776E-03	7.2776E-03
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	7.2776E-03	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	25.00 TO 75.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.3699E-02	5.0548E-02	2.0009E-02	1.8955E-02	1.8955E-02	1.8955E-02	1.0531E-02	6.3185E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
6.3185E-03	7.3716E-03	4.2123E-03	1.0531E-03	1.0531E-03	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1805E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.281935E 03 MEV FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.7919E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.142979E 03 MEV FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	75.00 TO 130.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.0082E-02	3.8570E-02	1.3613E-02	6.8064E-03	5.2939E-03	1.5125E-03	1.5125E-03	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	130.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.3903E-02	3.4359E-02	9.5441E-03	3.8176E-03	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.4296E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.661972E 02 MEV FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3665E 01 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.483333E 02 MEV FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
8.141E 00	8.010E 00	6.459E 00	6.268E 00	4.476E 00	3.092E 00	3.691E 00	3.141E 00	5.427E 00

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.176E 01	4.712E 00	1.230E 00	1.671E-01	7.853E-02	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
1.1824E 01	5.6038E 01	3.5987E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
5.9294E 01	1.2167E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
7.1461E 01	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI 0	0.40227E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.3166E 01	0.2199E 01	0.2665E 01	0.4429E 01	0.2984E 01	0.3510E 01	0.2665E 01	0.2984E 01	0.3166E 01

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	0. TO 25.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.9111E-02	5.8221E-02	1.4555E-02	2.1833E-02	3.6388E-02	2.9111E-02	5.8221E-02	4.3666E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
8.7332E-02	8.0054E-02	5.8221E-02	6.5499E-02	7.2776E-02	2.9111E-02	7.2776E-02	7.2776E-03
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
7.2776E-03	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	25.00 TO 75.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
5.3707E-02	7.7928E-02	4.5282E-02	3.4752E-02	3.4752E-02	2.2115E-02	2.1062E-02	2.9486E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.6849E-02	1.4743E-02	8.4246E-03	3.1592E-03	2.1062E-03	2.1062E-03	0.	1.0531E-03
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2824E 02 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.325979E 03 MEV FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1470E 02 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.162579E 03 MEV FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	75.00 TO 130.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
5.7476E-02	5.6720E-02	3.1007E-02	1.1344E-02	7.5627E-03	4.5376E-03	1.5125E-03	7.5627E-04
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	130.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
6.2991E-02	6.8717E-02	1.3362E-02	1.9088E-03	1.9088E-03	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.6837E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.715044E 02 MEV FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5956E 01 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.492308E 02 MEV FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
7.688E 00	1.099E 01	1.117E 01	1.086E 01	7.853E 00	5.432E 00	5.433E 00	5.969E 00	4.975E 00

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
2.578E 01	1.131E 01	1.845E 00	5.850E-01	2.356E-01	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
2.6391E 01	9.2368E 01	4.6270E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
9.6481E 01	2.6905E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
1.2339E 02	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	AL	27	13	06000	1.64	1028.2	02751

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI -	0.45333E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.3166E 01	0.2199E 01	0.2665E 01	0.4429E 01	0.2984E 01	0.3510E 01	0.2665E 01	0.2984E 01	0.3166E 01

CASE NUMBER 27 131000 1

A= 27
Z= 13
KINETIC ENERGY (MEV)= 1000.00
NEUT
GEOMETRIC CROSS SECTION (MB)= 1028.21
CUTOFF ENERGY (MEV)= 1.64
6000 CASE HISTORIES
INELASTIC CROSS SECTION (MB) 471.44

AVERAGE EVAPORATION YIELD PER INELASTIC EVENT

NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
1.3369684	1.2940749	0.2246456	0.0552526	0.0603417	0.4405671

CASE NUMBER 27 131000 1

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
27	14	4	0.69
	13	32	5.48
	12	6	1.03
26	14	1	0.17
	13	324	55.52
	12	272	46.61
25	13	25	4.28
	12	220	37.70
	11	15	2.57
	10	2	0.34
24	13	2	0.34
	12	152	26.05
	11	30	5.14
	9	1	0.17
23	12	8	1.37
	11	154	26.39
	9	4	0.69
22	11	103	17.65
	10	17	2.91
	9	43	7.37
21	11	5	0.86
	10	72	12.34
	8	1	0.17
20	10	100	17.14
	9	2	0.34
19	10	3	0.51
	9	18	3.08
	7	1	0.17
18	9	32	5.48
	8	2	0.34
	7	95	16.28
17	9	3	0.51
	8	11	1.89
	7	1	0.17
	6	54	9.25
16	8	128	21.94
	7	2	0.34
	6	1	0.17
	5	22	3.77
15	8	2	0.34
	7	44	7.54
	6	2	0.34
14	7	140	23.99
	6	5	0.86
	5	23	3.94
13	8	1	0.17
	7	12	2.06
	6	42	7.20
	5	3	0.51
12	6	78	13.37
	5	15	2.57
	4	1	0.17
11	7	1	0.17
	6	6	1.03
	5	18	3.08

CASE NUMBER 27 131000 1

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
10	5	32	5.48
	3	2	0.34
9	6	1	0.17
	5	3	0.51
	4	6	1.03
	3	1	0.17
8	3	8	1.37
7	5	1	0.17
	4	1	0.17
	3	7	1.20
6	3	32	5.48
	2	1	0.17
5	3	2	0.34
	2	11	1.89
4	3	23	3.94
	2	15	2.57
	1	1	0.17
3	2	6	1.03
	1	1	0.17
2	1	13	2.23
1	1	62	10.62

MOMENTS OF THE ENERGY DISTRIBUTIONS FOR THE FOLLOWING EVAPORATION PARTICLES

	NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
1ST MOM.	8.00435E 00	9.54610E 00	1.21706E 01	1.13565E 01	1.35483E 01	8.83440E 00
2ND MOM.	1.32483E 02	1.69611E 02	2.31703E 02	2.46388E 02	2.85636E 02	1.35543E 02
3RD MOM.	3.34015E 03	4.76109E 03	5.99994E 03	9.23401E 03	8.56018E 03	4.07174E 03

NORMALIZED EVAPORATION NEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.059880	0.136869	0.151126	0.119760	0.108355	0.128315	0.122612	0.116909	0.153978	0.151126
1	0.099800	0.105503	0.111206	0.125463	0.114058	0.148275	0.099800	0.134018	0.128315	0.096949
2	0.119760	0.108355	0.125463	0.125463	0.091246	0.082692	0.099800	0.088395	0.102652	0.094098
3	0.114058	0.076989	0.091246	0.079840	0.088395	0.074137	0.079840	0.091246	0.094098	0.079840
4	0.071286	0.071286	0.105503	0.068435	0.076989	0.071286	0.057029	0.074137	0.071286	0.031366
5	0.065583	0.059880	0.065583	0.065583	0.068435	0.051326	0.068435	0.082692	0.062732	0.054177
6	0.065583	0.079840	0.062732	0.042772	0.039920	0.071286	0.051326	0.051326	0.076989	0.045623
7	0.039920	0.045623	0.057029	0.028514	0.045623	0.074137	0.042772	0.048474	0.031366	0.042772
8	0.042772	0.031366	0.068435	0.045623	0.051326	0.028514	0.039920	0.039920	0.037069	0.031366
9	0.019960	0.059880	0.042772	0.028514	0.048474	0.031366	0.042772	0.025663	0.034217	0.039920
10	0.037069	0.034217	0.045623	0.028514	0.022812	0.028514	0.014257	0.034217	0.025663	0.031366
11	0.034217	0.022812	0.031366	0.025663	0.037069	0.042772	0.039920	0.034217	0.039920	0.025663
12	0.037069	0.017109	0.034217	0.022812	0.011406	0.031366	0.025663	0.022812	0.022812	0.019960
13	0.011406	0.025663	0.022812	0.019960	0.017109	0.014257	0.022812	0.022812	0.025663	0.022812
14	0.022812	0.025663	0.031366	0.028514	0.034217	0.008554	0.022812	0.031366	0.025663	0.017109
15	0.025663	0.019960	0.017109	0.019960	0.019960	0.025663	0.022812	0.017109	0.005703	0.028514
16	0.017109	0.022812	0.028514	0.014257	0.017109	0.022812	0.011406	0.025663	0.019960	0.022812
17	0.014257	0.011406	0.011406	0.017109	0.017109	0.014257	0.022812	0.011406	0.008554	0.017109
18	0.011406	0.019960	0.005703	0.014257	0.025663	0.005703	0.022812	0.	0.014257	0.017109
19	0.014257	0.002851	0.005703	0.008554	0.005703	0.005703	0.002851	0.008554	0.008554	0.005703
20	0.014257	0.011406	0.002851	0.011406	0.019960	0.008554	0.011406	0.011406	0.005703	0.002851
21	0.005703	0.002851	0.011406	0.005703	0.011406	0.002851	0.008554	0.014257	0.011406	0.005703
22	0.011406	0.002851	0.002851	0.005703	0.011406	0.011406	0.019960	0.005703	0.008554	0.011406
23	0.005703	0.017109	0.	0.002851	0.008554	0.008554	0.008554	0.008554	0.	0.011406
24	0.011406	0.008554	0.011406	0.005703	0.008554	0.002851	0.005703	0.002851	0.005703	0.008554

NORMALIZED EVAPORATION PROTON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.002996	0.002996	0.008987	0.011983	0.020971	0.008987
1	0.041941	0.041941	0.050929	0.059916	0.113841	0.113841	0.080887	0.089874	0.065908	0.128820
2	0.113841	0.104853	0.143799	0.131815	0.122828	0.110845	0.101857	0.161774	0.086878	0.107849
3	0.137807	0.125824	0.146794	0.092870	0.149790	0.122828	0.101857	0.068904	0.104853	0.074895
4	0.074895	0.104853	0.098862	0.089874	0.095866	0.074895	0.095866	0.107849	0.107849	0.074895
5	0.080887	0.056920	0.077891	0.080887	0.080887	0.092870	0.068904	0.077891	0.068904	0.074895
6	0.056920	0.068904	0.071899	0.059916	0.062912	0.047933	0.038945	0.086878	0.044937	0.065908
7	0.062912	0.077891	0.077891	0.062912	0.044937	0.071899	0.077891	0.062912	0.044937	0.062912
8	0.047933	0.053925	0.041941	0.053925	0.068904	0.047933	0.053925	0.065908	0.041941	0.035950
9	0.047933	0.074895	0.062912	0.053925	0.044937	0.065908	0.044937	0.029958	0.032954	0.041941
10	0.050929	0.035950	0.041941	0.029958	0.038945	0.038945	0.041941	0.047933	0.029958	0.041941
11	0.023966	0.032954	0.038945	0.035950	0.047933	0.053925	0.035950	0.026962	0.035950	0.020971
12	0.026962	0.023966	0.035950	0.044937	0.053925	0.032954	0.020971	0.041941	0.011983	0.029958
13	0.008987	0.017975	0.014979	0.026962	0.032954	0.020971	0.026962	0.026962	0.032954	0.029958
14	0.032954	0.026962	0.050929	0.008987	0.029958	0.029958	0.017975	0.023966	0.029958	0.014979
15	0.017975	0.017975	0.035950	0.026962	0.020971	0.002996	0.011983	0.011983	0.020971	0.023966
16	0.017975	0.014979	0.020971	0.020971	0.020971	0.014979	0.023966	0.011983	0.008987	0.011983
17	0.023966	0.014979	0.014979	0.035950	0.026962	0.017975	0.029958	0.011983	0.005992	0.014979
18	0.014979	0.014979	0.011983	0.029958	0.020971	0.017975	0.020971	0.011983	0.014979	0.020971
19	0.011983	0.002996	0.011983	0.020971	0.005992	0.014979	0.005992	0.011983	0.020971	0.014979
20	0.011983	0.011983	0.017975	0.011983	0.008987	0.008987	0.005992	0.002996	0.005992	0.002996
21	0.008987	0.014979	0.005992	0.008987	0.011983	0.005992	0.020971	0.008987	0.002996	0.005992
22	0.011983	0.005992	0.011983	0.002996	0.008987	0.011983	0.002996	0.020971	0.008987	0.008987
23	0.	0.017975	0.	0.014979	0.	0.014979	0.008987	0.002996	0.008987	0.017975
24	0.008987	0.008987	0.	0.002996	0.023966	0.005992	0.011983	0.005992	0.005992	0.005992

NORMALIZED EVAPORATION DEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.003247	0.	0.025974	0.038961	0.029221	0.048701	0.071429	0.071429	0.097403	0.074675
5	0.064935	0.061688	0.048701	0.038961	0.077922	0.064935	0.071429	0.051948	0.051948	0.068182
10	0.045455	0.038961	0.038961	0.042208	0.038961	0.029221	0.022727	0.025974	0.045455	0.032468
15	0.035714	0.032468	0.019481	0.035714	0.029221	0.019481	0.022727	0.009740	0.019481	0.019481
20	0.022727	0.016234	0.016234	0.006494	0.012987	0.003247	0.029221	0.006494	0.012987	0.016234
25	0.009740	0.012987	0.009740	0.006494	0.006494	0.003247	0.009740	0.006494	0.003247	0.003247
30	0.012987	0.016234	0.019481	0.003247	0.003247	0.003247	0.003247	0.009740	0.003247	0.003247
35	0.003247	0.	0.003247	0.003247	0.	0.003247	0.003247	0.	0.	0.003247
40	0.	0.	0.003247	0.	0.006494	0.	0.	0.	0.	0.
45	0.	0.003247	0.	0.003247	0.003247	0.	0.	0.	0.003247	0.

NORMALIZED EVAPORATION TRITON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.013333	0.040000	0.013333	0.066667	0.186667	0.146667	0.013333	0.080000	0.120000
5	0.093333	0.013333	0.013333	0.093333	0.026667	0.040000	0.026667	0.080000	0.040000	0.026667
10	0.	0.080000	0.053333	0.053333	0.040000	0.013333	0.066667	0.080000	0.040000	0.013333
15	0.	0.013333	0.026667	0.	0.040000	0.026667	0.026667	0.013333	0.040000	0.
20	0.026667	0.013333	0.	0.013333	0.	0.013333	0.	0.	0.013333	0.
25	0.	0.013333	0.	0.013333	0.013333	0.	0.	0.013333	0.	0.
30	0.026667	0.	0.	0.013333	0.	0.	0.013333	0.	0.	0.013333
35	0.	0.	0.013333	0.	0.	0.	0.013333	0.	0.	0.
40	0.	0.	0.	0.	0.013333	0.	0.	0.	0.	0.
45	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION HE3 SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.012195	0.024390	0.073171	0.036585	0.060976
5	0.109756	0.085366	0.085366	0.109756	0.097561	0.060976	0.048780	0.024390	0.085366	0.085366
10	0.012195	0.024390	0.073171	0.048780	0.024390	0.048780	0.048780	0.097561	0.024390	0.048780
15	0.085366	0.	0.012195	0.	0.	0.024390	0.012195	0.	0.024390	0.073171
20	0.012195	0.012195	0.012195	0.012195	0.	0.	0.024390	0.	0.	0.036585
25	0.012195	0.012195	0.012195	0.012195	0.	0.	0.	0.	0.012195	0.012195
30	0.	0.	0.012195	0.012195	0.	0.	0.	0.	0.	0.
35	0.	0.	0.	0.012195	0.	0.024390	0.	0.	0.012195	0.024390
40	0.	0.	0.	0.	0.	0.	0.024390	0.	0.	0.
45	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.012195

NORMALIZED EVAPORATION ALPHA SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.008285	0.041425	0.076222	0.122618	0.150787	0.111019	0.122618
5	0.115990	0.122618	0.107705	0.072908	0.099420	0.089478	0.046396	0.049710	0.074565	0.039768
10	0.049710	0.057995	0.023198	0.028169	0.036454	0.016570	0.033140	0.033140	0.024855	0.013256
15	0.028169	0.011599	0.009942	0.014913	0.006628	0.008285	0.014913	0.003314	0.008285	0.004971
20	0.011599	0.003314	0.006628	0.001657	0.008285	0.009942	0.009942	0.001657	0.003314	0.001657
25	0.003314	0.001657	0.004971	0.	0.	0.004971	0.004971	0.	0.003314	0.003314
30	0.001657	0.004971	0.	0.004971	0.004971	0.001657	0.	0.	0.	0.
35	0.	0.	0.	0.003314	0.	0.	0.001657	0.	0.003314	0.003314
40	0.	0.003314	0.	0.	0.	0.	0.001657	0.	0.	0.001657
45	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

INPUT

FROM CARDS

USED FILE 1 INCIDENT PARTICLE NEUT INCIDENT KINETIC ENERGY 1000.000 MEV

TOTAL NUMBER OF INCIDENT PARTICLES 3000 TARGET SYMBOL PB

SIZE OF HISTOGRAMS FOR OUTGOING K.E. 25 FOR PROT, 25 FOR NEUT, 25 FOR PI+, 25 FOR PIO, 25 FOR PI-.

CROSS SECTIONS WERE CALCULATED FOR AS MANY AS 9 EMITTED PARTICLE COMBINATIONS.

101.000 MEV INTERVAL WAS USED IN CALCULATING HISTOGRAM FOR N(E*)DE FOR TOTAL REACTION

DELTAS FOR OUTGOING KINETIC ENERGY DISTRIBUTION IN MEV

	-.6 MU -.4 0 (K.E.) 10D	-.1 MU +.1 0 (K.E.) 10D	+.4 MU +.6 0 (K.E.) 10D	+.9 MU +.95 0 (K.E.) 20D	+.95 MU +1.0 0 (K.E.) 20D
PROTONS	100.0000	100.0000	100.0000	50.0000	50.0000
NEUTRONS	100.0000	100.0000	100.0000	50.0000	50.0000
PI+	100.0000	100.0000	100.0000	50.0000	50.0000
PIO	100.0000	100.0000	100.0000	50.0000	50.0000
PI-	100.0000	100.0000	100.0000	50.0000	50.0000

0 = DELTA, RESPECTIVE ENERGY INTERVALS OF HISTOGRAMS

OUTGOING COMBINATIONS	10000	01000	00100	00010	00001	01001	10100	11000	11001
INTERVAL FOR N(E*)DE IN MEV	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000	25.000

FROM RECORD 1

3000 INCIDENT NEUT HIT PB TARGET WITH 207.000 MASS AND 82.000 ATOMIC NUMBER AT 1000.000MEV.

FROM RECORD N

THERE WERE 2092. INCIDENT PARTICLE COLLISIONS CREATING 2092 ESCAPING PARTICLE RECORDS. THE GEOMETRIC CROSS SECTION WAS 2455.8685303 MB. THE INELASTIC CROSS SECTION WAS 1712.5589905 MB. THE CUT OFF ENERGY WAS 6.6831360 MEV.

NEUT CN PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

MOMENTUM OF COMPOUND NUCLEUS 1697.100250MEV/C EXCITATION ENERGY OF COMPOUND NUCLEUS 1006.915207MEV

THE MASS OF THE RESIDUAL NUCLEUS WAS ZERO 0 TIMES, WAS MINUS 0 TIMES CUT OFF ENERGY 6.683136MEV

FOR 157 INCIDENT PARTICLE COLLISIONS THERE WERE MORE THAN 9 OUT GOING PARTICLES

EMITTED CASCADE PARTICLES

	PROTONS	NEUTRONS	PI+	PI0	PI-
AVERAGE NO.	0.1673040E 01	0.3357553E 01	0.5401530E-01	0.1443595E-00	0.2456979E-00
VARIANCE	0.1832868E 01	0.4055713E 01	0.5109764E-01	0.1330800E-00	0.2034949E-00
AV. K.E. (MEV)	0.1228565E 03	0.1176753E 03	0.8633907E 02	0.1103589E 03	0.1038090E 03
VARIANCE	0.3320765E 05	0.3583411E 05	0.9859453E 04	0.1330526E 05	0.1267976E 05

RESIDUAL NUCLEUS

OUTGOING COMBINATION	CO	C1	ARM	AREE	AAR
TOTAL CASCADE	0.2985509	0.2399193	710.2424850	263.9389076	202.9694061
10000	0.0604125	0.1897944	343.7489510	55.0596581	207.0000000
01000	0.0632919	0.1597429	301.4572868	65.7981482	207.0000000
00100	0.	0.	0.	0.	208.0000000
00010	0.	0.	0.	0.	208.0000000
00001	0.	0.	0.	0.	208.0000000
01001	0.1399384	0.0439128	258.9033432	34.0662923	207.0000000
10100	0.	0.	0.	0.	207.0000000
11000	0.0320167	0.1021927	201.2335052	42.0112233	206.0000000
11001	0.0667294	0.1011055	232.2414131	42.0036020	206.0000000

CO = (SUM OF PARALLEL RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

C1 = (SUM OF PERPENDICULAR RESIDUAL MOMENTUM/NUMBER OF INCIDENT PARTICLE COLLISIONS)/MOMENTUM OF COMPOUND NUCLEUS

ARM = AVERAGE RESIDUAL MOMENTUM IN MEV/C

AREE = AVERAGE RESIDUAL EXCITATION ENERGY IN MEV

AAR = AVERAGE MASS OF RESIDUAL NUCLEUS FOR TOTAL CASCADE
AAR = MASS OF RESIDUAL NUCLEUS FOR DESIGNATED OUTGOING COMBINATIONS

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NEUT   ON PB       INC. K.E. (MEV) IS  1000.0   A IS  207.   Z IS  82.    3000 INC. HISTORIES        5.7 MEV CUTOFF EN.

                    ANGULAR DISTRIBUTION OF THE CASCADE NUCLEUS  (FRACTION IN DELTA MU)/(DELTA MU)

        -0.9000000E 00        -0.7000000E 00        -0.5000000E 00        -0.3000000E-00        -0.1000000E-00
                 0.1000000E-00         0.3000000E-00         0.5000000E 00         0.7000000E 00         0.9000000E 00

             TOTAL CASCADE                              RATIO OF FORWARD /BACKWARD     0.9057692E 01
          0.5736138E-01         0.5019120E-01         0.8843212E-01         0.1505736E-00         0.1505736E-00
                 0.3537285E-00         0.4636711E-00         0.7217973E 00         0.9847036E 00         0.1978967E 01

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
          0.                    0.                    0.                    0.                    0.
                 0.1111111E 01         0.3333333E 01         0.2777778E-00         0.                    0.2777778E-00

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
          0.                    0.                    0.                    0.                    0.
                 0.1694915E 01         0.2372881E 01         0.5084746E 00         0.1694915E-00         0.2542373E-00

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
          0.                    0.                    0.                    0.                    0.
                 0.                    0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
          0.                    0.                    0.                    0.                    0.
                 0.                    0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
          0.                    0.                    0.                    0.                    0.
                 0.                    0.                    0.                    0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.
          0.                    0.                    0.                    0.                    0.
                 0.                    0.                    0.                    0.                    0.6250000E 00         0.4375000E 01

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.
          0.                    0.                    0.                    0.                    0.
                 0.                    0.                    0.                    0.                    0.                    0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-       RATIO OF FORWARD /BACKWARD     0.2333333E 01
          0.2222222E-00         0.2777778E-00         0.2777778E-00         0.3333333E-00         0.3888889E-00
                 0.6111111E 00         0.6666667E 00         0.1277778E 01         0.4444444E-00         0.5000000E-00

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-       RATIO OF FORWARD /BACKWARD     0.4214286E 01
          0.6849315E-01         0.1369863E-00         0.2739726E-00         0.2739726E-00         0.2054795E-00
                 0.4794521E-00         0.9589041E 00         0.9589041E 00         0.8219178E 00         0.8219178E 00
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NEUT   ON PB       INC. K.E. (MEV) IS  1000.0   A IS  207.   Z IS  82.    3000 INC. HISTORIES        6.7 MEV CUTOFF EN.

      EXCITATION ENERGY DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS (FRACTION PER UNIT EN.)    (DE=DELTA E(MEV))

DEA IS  0.1010000E 03   DEB IS  0.2500000E 02   DEC IS  0.2500000E 02   DED IS  0.2500000E 02   DEE IS  0.2500000E 02
  DEF IS  0.2500000E 02   DEG IS  0.2500000E 02   DEH IS  0.2500000E 02   DEI IS  0.2500000E 02   DEJ IS  0.2500000E 02

             TOTAL CASCADE                          (SUM OVER HISTOGRAM)X(DEA)        0.1000000E 01      0 OFL
        0.2891733E-02         0.1647010E-02         0.1415103E-02         0.1325180E-02         0.1069610E-02
                0.8661000E-03         0.4590803E-03         0.1703803E-03         0.5679344E-04         0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEB)        0.1000000E 01      0 OFL
        0.1111111E-01         0.8888889E-02         0.1333333E-01         0.2222222E-02         0.
                0.2222222E-02         0.                    0.2222222E-02         0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEC)        0.9661017E 00      2 OFL
        0.1423729E-01         0.9491525E-02         0.7457627E-02         0.2711864E-02         0.
                0.2033898E-02         0.6779661E-03         0.6779661E-03         0.1355932E-02         0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DED)        0.                    0 OFL
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEE)        0.                    0 OFL
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEF)        0.                    0 OFL
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEG)        0.1000000E 01      0 OFL
        0.2000000E-01         0.1000000E-01         0.5000000E-02         0.5000000E-02         0.
                0.                    0.                    0.                    0.                    0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEH)        0.                    0 OFL
        0.                    0.                    0.                    0.                    0.
                0.                    0.                    0.                    0.                    0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)X(DEI)        0.9666667E 00      3 OFL
        0.2666667E-01         0.2666667E-02         0.4444444E-02         0.4444444E-03         0.8888889E-03
                0.1333333E-02         0.8888889E-03         0.8888889E-03         0.                    0.4444444E-03

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)X(DEJ)        0.9726027E 00      2 OFL
        0.2520548E-01         0.2739726E-02         0.6027397E-02         0.2191781E-02         0.
                0.1095890E-02         0.1095890E-02         0.                    0.                    0.5479452E-03
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DESCRIPTION OF THE FOLLOWING MOMENTUM DISTRIBUTIONS

THE FIRST GROUP OF NUMBERS BELOW THE TITLES SPECIFY THE MIDPOINTS OF THE MOMENTUM INTERVALS.

THE MOMENTUM IS THE NUMBER INDICATED (MEV/C).

THE SUBSEQUENT GROUPS OF NUMBERS ARE THE FRACTION OF THE TOTAL IN EACH INTERVAL DIVIDED BY DELTA P.

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NEUT   CN PB       INC. K.E. (MEV) IS  1000.0   A IS  207.   Z IS  82.    3000 INC. HISTORIES        6.7 MEV CUTOFF EN.

                                THE MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

   0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
         0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

             TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)      0.1000000E 01      0 OFL
   0.7182423E-03   0.7604919E-03   0.8365411E-03   0.8168246E-03   0.6759928E-03   0.5971270E-03   0.4985447E-03
         0.3577128E-03   0.2703971E-03   0.1915313E-03   0.9858228E-04   0.5069946E-04   0.1689982E-04   0.2816637E-05

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)      0.1000000E 01      0 OFL
   0.9820673E-03   0.1636779E-02   0.2946202E-02   0.              0.3273558E-03   0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)      0.1000000E 01      0 OFL
   0.7989700E-03   0.3295751E-02   0.1298326E-02   0.1997425E-03   0.1997425E-03   0.              0.9987125E-04
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)      0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)      0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)      0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)      0.1000000E 01      0 OFL
   0.              0.5155853E-02   0.7365505E-03   0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)      0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)      0.1000000E 01      0 OFL
   0.3469971E-02   0.1178481E-02   0.8511250E-03   0.3273558E-03   0.6547115E-04   0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)      0.1000000E 01      0 OFL
   0.3147996E-02   0.1452921E-02   0.7264607E-03   0.3228714E-03   0.1614357E-03   0.              0.
         0.              0.              0.8071786E-04   0.              0.              0.              0.
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NEUT   ON PB       INC. K.E. (MEV) IS  1000.0   A IS  207.   Z IS  82.    3000 INC. HISTORIES        6.7 MEV CUTOFF EN.

                        THE PERPENDICULAR MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

   0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
         0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

             TOTAL CASCADE                          (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.1174537E-02   0.1436485E-02   0.1456201E-02   0.8787906E-03   0.5774105E-03   0.2450474E-03   0.8449910E-04
         0.3379964E-04   0.5633273E-05   0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.1309423E-02   0.1309423E-02   0.2946202E-02   0.3273558E-03   0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.1198455E-02   0.3096009E-02   0.1398197E-02   0.              0.1997425E-03   0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.5155853E-02   0.7365505E-03   0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL
   0.              0.              0.              0.              0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.3797327E-02   0.1113010E-02   0.6547115E-03   0.3273558E-03   0.              0.              0.
         0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL
   0.3874457E-02   0.1130050E-02   0.6457429E-03   0.1614357E-03   0.              0.8071786E-04   0.
         0.              0.              0.              0.              0.              0.              0.
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NEUT   ON PB       INC. K.E. (MEV) IS  1000.0   A IS  207.   Z IS  82.    3000 INC. HISTORIES        6.7 MEV CUTOFF EN.

                         THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

 -0.2291085E 04  -0.2121375E 04  -0.1951665E 04  -0.1781955E 04  -0.1612245E 04  -0.1442535E 04  -0.1272825E 04
       -0.1103115E 04  -0.9334051E 03  -0.7636951E 03  -0.5939851E 03  -0.4242751E 03  -0.2545650E 03  -0.8485501E 02
  0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
       0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

            TOTAL CASCADE                        (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.5633273E-05   0.8449910E-05   0.6196600E-04   0.5098112E-03
  0.1261853E-02   0.8196412E-03   0.7210590E-03   0.6112101E-03   0.4788282E-03   0.4534785E-03   0.3070134E-03
       0.2788470E-03   0.1830814E-03   0.1070322E-03   0.5069946E-04   0.2816637E-04   0.5633273E-05   0.

1 PROTONS   0 NEUTRONS   0 PI+   0 PI0   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.              0.
  0.4910336E-02   0.9820673E-03   0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.              0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PI0   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.              0.
  0.4893691E-02   0.7989700E-03   0.              0.1997425E-03   0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   1 PI+   0 PI0   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   1 PI0   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.

0 PROTONS   0 NEUTRONS   0 PI+   0 PI0   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
       0.              0.              0.              0.              0.              0.              0.
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NEUT   ON PB       INC. K.E. (MEV) IS  1000.0   A IS  207.   Z IS  82.    3000 INC. HISTORIES        6.7 MEV CUTOFF EN.

                        THE PARALLEL MOMENTUM DISTRIBUTION OF THE CASCADE RESIDUAL NUCLEUS

 -0.2291085E 04  -0.2121375E 04  -0.1951665E 04  -0.1781955E 04  -0.1612245E 04  -0.1442535E 04  -0.1272825E 04
       -0.1103115E 04  -0.9334051E 03  -0.7636951E 03  -0.5939851E 03  -0.4242751E 03  -0.2545650E 03  -0.8485501E 02
  0.8485501E 02   0.2545650E 03   0.4242751E 03   0.5939851E 03   0.7636951E 03   0.9334051E 03   0.1103115E 04
        0.1272825E 04   0.1442535E 04   0.1612245E 04   0.1781955E 04   0.1951665E 04   0.2121375E 04   0.2291085E 04

            TOTAL CASCADE                        (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.5633273E-05   0.8449910E-05   0.6196600E-04   0.5098112E-03
  0.1261853E-02   0.8196412E-03   0.7210590E-03   0.6112101E-03   0.4788282E-03   0.4534785E-03   0.3070134E-03
        0.2788470E-03   0.1830814E-03   0.1070322E-03   0.5069946E-04   0.2816637E-04   0.5633273E-05   0.

0 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
  0.7365505E-03   0.4419303E-02   0.7365505E-03   0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   0 NEUTRONS   1 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.                 0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   0 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.1767721E-02
  0.3535442E-02   0.4582981E-03   0.6547115E-04   0.6547115E-04   0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.

1 PROTONS   1 NEUTRONS   0 PI+   0 PIO   1 PI-    (SUM OVER HISTOGRAM)(DELTA P)     0.1000000E 01      0 OFL      0 UFL
  0.              0.              0.              0.              0.              0.              0.
        0.              0.              0.              0.              0.              0.              0.1130050E-02
  0.3632304E-02   0.4843071E-03   0.4035893E-03   0.1614357E-03   0.              0.              0.
        0.8071786E-04   0.              0.              0.              0.              0.              0.
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NEUT ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PIO 5TH IS NO. OF PI-

08001	0.81862284E 00	08010	0.16372456E 01	09000	0.16372456E 01	16011	0.81862284E 00
17001	0.40931141E 01	17100	0.81862284E 00	18000	0.90048511E 01	26001	0.81862284E 00
26010	0.24558685E 01	26100	0.81862284E 00	27000	0.20465571E 02	34101	0.81862284E 00
35001	0.65489827E 01	35010	0.49117370E 01	35100	0.24558685E 01	36000	0.16372456E 02
43101	0.81862284E 00	44001	0.40931141E 01	44010	0.32744914E 01	45000	0.11460719E 02
53001	0.24558685E 01	53010	0.81862284E 00	54000	0.49117370E 01	72000	0.81862284E 00
07010	0.16372456E 01	08000	0.32744914E 01	15002	0.81862284E 00	15011	0.81862284E 00
15101	0.81862284E 00	16001	0.49117370E 01	16010	0.49117370E 01	16100	0.49117370E 01
17000	0.17191079E 02	24002	0.81862284E 00	25001	0.65489827E 01	25010	0.65489827E 01
25100	0.40931141E 01	26000	0.27014554E 02	33002	0.81862284E 00	33011	0.81862284E 00
33101	0.16372456E 01	34001	0.65489827E 01	34010	0.40931141E 01	34100	0.24558685E 01
35000	0.23740062E 02	42011	0.81862284E 00	43001	0.16372456E 01	43010	0.40931141E 01
44000	0.19646948E 02	52001	0.32744914E 01	52010	0.81862284E 00	53000	0.90048511E 01
62000	0.81862284E 00	05011	0.81862284E 00	05101	0.81862284E 00	06001	0.32744914E 01
06010	0.16372456E 01	06100	0.81862284E 00	07000	0.65489827E 01	14002	0.16372456E 01
14011	0.81862284E 00	14101	0.24558685E 01	15001	0.90048511E 01	15010	0.73676055E 01
15100	0.32744914E 01	16000	0.18828325E 02	23002	0.81862284E 00	23011	0.32744914E 01
23101	0.24558685E 01	24001	0.16372456E 02	24010	0.40931141E 01	24100	0.40931141E 01
25000	0.40931141E 02	32011	0.81862284E 00	33001	0.98234740E 01	33010	0.65489827E 01
33100	0.24558685E 01	34000	0.27833176E 02	41020	0.81862284E 00	41101	0.81862284E 00
42001	0.32744914E 01	42010	0.81862284E 00	42100	0.81862284E 00	43000	0.73676055E 01
51001	0.81862284E 00	51010	0.81862284E 00	52000	0.49117370E 01	61000	0.81862284E 00
04011	0.81862284E 00	04101	0.16372456E 01	05001	0.90048511E 01	05010	0.24558685E 01
05100	0.16372456E 01	06000	0.98234740E 01	13002	0.81862284E 00	13011	0.16372456E 01
13101	0.81862284E 00	14001	0.15553834E 02	14010	0.10642096E 02	14100	0.65489827E 01
15000	0.37656650E 02	21111	0.81862284E 00	22002	0.24558685E 01	22011	0.81862284E 00

NEUT ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

CROSS SECTIONS (MB) FOR VARIOUS COMBINATIONS OF EMITTED CASCADE PARTICLES
1ST NO. IS NO. OF PROTONS EMITTED 2ND IS NO. OF NEUTRONS 3RD IS NO. OF PI+ 4TH IS NO. OF PIO 5TH IS NO. OF PI-

CONTINUED

22020	0.81862284E 00	22101	0.16372456E 01	22110	0.16372456E 01	23001	0.12279342E 02
23010	0.57303598E 01	23100	0.24558685E 01	24000	0.41749764E 02	32001	0.65489827E 01
32010	0.73676055E 01	32100	0.24558685E 01	33000	0.21284194E 02	41010	0.16372456E 01
42000	0.12279342E 02	50010	0.16372456E 01	02120	0.81862284E 00	03002	0.81862284E 00
03101	0.16372456E 01	03110	0.81862284E 00	04001	0.81862283E 01	04010	0.49117370E 01
04100	0.32744914E 01	05000	0.18009702E 02	12011	0.24558685E 01	12020	0.24558685E 01
12110	0.81862284E 00	13001	0.14735211E 02	13010	0.15553834E 02	13100	0.32744914E 01
14000	0.37656650E 02	21002	0.24558685E 01	21011	0.24558685E 01	21101	0.81862284E 00
22001	0.21284194E 02	22010	0.11460719E 02	22100	0.16372456E 01	23000	0.40931141E 02
31001	0.90048511E 01	31010	0.40931141E 01	32000	0.17191079E 02	41000	0.24558685E 01
50000	0.81862284E 00	02011	0.16372456E 01	02020	0.24558685E 01	03001	0.98234740E 01
03010	0.57303598E 01	03100	0.16372456E 01	04000	0.19646948E 02	10102	0.81862284E 00
11002	0.81862284E 00	11011	0.81862284E 00	11101	0.81862284E 00	12001	0.32744914E 02
12010	0.18828325E 02	12100	0.16372456E 01	13000	0.41749764E 02	21001	0.15553834E 02
21010	0.90048511E 01	21100	0.24558685E 01	22000	0.27833176E 02	30001	0.24558685E 01
30010	0.81862284E 00	31000	0.81862283E 01	40000	0.81862284E 00	01011	0.81862284E 00
02001	0.81862283E 01	02010	0.98234740E 01	02100	0.49117370E 01	03000	0.31926291E 02
10002	0.81862284E 00	10011	0.81862284E 00	10101	0.81862284E 00	11001	0.59759467E 02
11010	0.19646948E 02	11100	0.16372456E 01	12000	0.51573239E 02	20001	0.73676055E 01
20100	0.16372456E 01	21000	0.19646948E 02	30000	0.16372456E 01	01001	0.65489827E 01
01010	0.32744914E 01	02000	0.81862283E 02	10001	0.40931141E 01	10010	0.24558685E 01
11000	0.73676055E 02	20000	0.32744914E 01	01000	0.48298747E 02	10000	0.14735211E 02

NEUT ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 1.00 TO 0.95
(THETA FROM 0 DEG. 0 MIN. TO 18 DEG. 12 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
25.0	0.798E-01	25.0	0.963E-01	25.0	0.	25.0	0.571E-01	25.0	0.
75.0	0.358E-01	75.0	0.334E-01	75.0	0.100E-00	75.0	0.571E-01	75.0	0.
125.0	0.338E-01	125.0	0.279E-01	125.0	0.	125.0	0.286E-01	125.0	0.364E-01
175.0	0.276E-01	175.0	0.192E-01	175.0	0.500E-01	175.0	0.	175.0	0.364E-01
225.0	0.164E-01	225.0	0.170E-01	225.0	0.	225.0	0.571E-01	225.0	0.364E-01
275.0	0.164E-01	275.0	0.164E-01	275.0	0.500E-01	275.0	0.857E-01	275.0	0.
325.0	0.512E-02	325.0	0.930E-02	325.0	0.	325.0	0.571E-01	325.0	0.727E-01
375.0	0.921E-02	375.0	0.115E-01	375.0	0.100E-00	375.0	0.	375.0	0.364E-01
425.0	0.102E-01	425.0	0.137E-01	425.0	0.500E-01	425.0	0.286E-01	425.0	0.127E-00
475.0	0.143E-01	475.0	0.159E-01	475.0	0.500E-01	475.0	0.286E-01	475.0	0.545E-01
525.0	0.205E-01	525.0	0.930E-02	525.0	0.	525.0	0.	525.0	0.
575.0	0.215E-01	575.0	0.109E-01	575.0	0.	575.0	0.	575.0	0.
625.0	0.205E-01	625.0	0.821E-02	625.0	0.	625.0	0.	625.0	0.
675.0	0.246E-01	675.0	0.821E-02	675.0	0.	675.0	0.	675.0	0.
725.0	0.123E-01	725.0	0.602E-02	725.0	0.	725.0	0.	725.0	0.
775.0	0.512E-02	775.0	0.766E-02	775.0	0.	775.0	0.	775.0	0.
825.0	0.614E-02	825.0	0.104E-01	825.0	0.	825.0	0.	825.0	0.
875.0	0.512E-02	875.0	0.159E-01	875.0	0.	875.0	0.	875.0	0.
925.0	0.194E-01	925.0	0.295E-01	925.0	0.	925.0	0.	925.0	0.
975.0	0.164E-01	975.0	0.334E-01	975.0	0.	975.0	0.	975.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

NEUT CN PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.95 TO 0.90
(THETA FROM 18 DEG. 12 MIN. TO 25 DEG. 51 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0	DELTA E(MEV)	50.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
25.0	0.118E-00	25.0	0.130E-00	25.0	0.286E-00	25.0	0.267E-01	25.0	0.552E-01
75.0	0.516E-01	75.0	0.620E-01	75.0	0.571E-01	75.0	0.	75.0	0.552E-01
125.0	0.403E-01	125.0	0.341E-01	125.0	0.	125.0	0.800E-01	125.0	0.276E-01
175.0	0.290E-01	175.0	0.253E-01	175.0	0.	175.0	0.	175.0	0.276E-01
225.0	0.177E-01	225.0	0.279E-01	225.0	0.	225.0	0.267E-01	225.0	0.414E-01
275.0	0.258E-01	275.0	0.114E-01	275.0	0.	275.0	0.533E-01	275.0	0.690E-01
325.0	0.129E-01	325.0	0.148E-01	325.0	0.	325.0	0.107E-00	325.0	0.690E-01
375.0	0.177E-01	375.0	0.114E-01	375.0	0.571E-01	375.0	0.533E-01	375.0	0.
425.0	0.129E-01	425.0	0.611E-02	425.0	0.	425.0	0.267E-01	425.0	0.138E-01
475.0	0.968E-02	475.0	0.873E-02	475.0	0.	475.0	0.267E-01	475.0	0.276E-01
525.0	0.645E-02	525.0	0.611E-02	525.0	0.	525.0	0.	525.0	0.138E-01
575.0	0.806E-02	575.0	0.786E-02	575.0	0.	575.0	0.	575.0	0.
625.0	0.806E-02	625.0	0.437E-02	625.0	0.	625.0	0.	625.0	0.
675.0	0.484E-02	675.0	0.611E-02	675.0	0.	675.0	0.	675.0	0.
725.0	0.484E-02	725.0	0.699E-02	725.0	0.	725.0	0.	725.0	0.
775.0	0.177E-01	775.0	0.961E-02	775.0	0.	775.0	0.	775.0	0.
825.0	0.484E-02	825.0	0.148E-01	825.0	0.	825.0	0.	825.0	0.
875.0	0.484E-02	875.0	0.873E-02	875.0	0.	875.0	0.	875.0	0.
925.0	0.484E-02	925.0	0.349E-02	925.0	0.	925.0	0.	925.0	0.
975.0	0.	975.0	0.	975.0	0.	975.0	0.	975.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

NEUT CN PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.60 TO 0.40
(THETA FROM 53 DEG. 8 MIN. TO 66 DEG. 25 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PI0		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.373E-01	50.0	0.359E-01	50.0	0.389E-01	50.0	0.320E-01	50.0	0.324E-01
150.0	0.921E-02	150.0	0.882E-02	150.0	0.556E-02	150.0	0.160E-01	150.0	0.102E-01
250.0	0.270E-02	250.0	0.406E-02	250.0	0.556E-02	250.0	0.	250.0	0.556E-02
350.0	0.562E-03	350.0	0.862E-03	350.0	0.	350.0	0.200E-02	350.0	0.926E-03
450.0	0.225E-03	450.0	0.304E-03	450.0	0.	450.0	0.	450.0	0.926E-03
550.0	0.	550.0	0.507E-04	550.0	0.	550.0	0.	550.0	0.
650.0	0.	650.0	0.	650.0	0.	650.0	0.	650.0	0.
750.0	0.	750.0	0.	750.0	0.	750.0	0.	750.0	0.
850.0	0.	850.0	0.	850.0	0.	850.0	0.	850.0	0.
950.0	0.	950.0	0.	950.0	0.	950.0	0.	950.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00	N IS	1.000E 00

NEUT ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM 0.10 TO -0.10
(THETA FROM 84 DEG. 16 MIN. TO 95 DEG. 44 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.436E-01	50.0	0.454E-01	50.0	0.500E-01	50.0	0.406E-01	50.0	0.409E-01
150.0	0.531E-02	150.0	0.406E-02	150.0	0.	150.0	0.937E-02	150.0	0.909E-02
250.0	0.110E-02	250.0	0.529E-03	250.0	0.	250.0	0.	250.0	0.
350.0	0.	350.0	0.	350.0	0.	350.0	0.	350.0	0.
450.0	0.	450.0	0.	450.0	0.	450.0	0.	450.0	0.
550.0	0.	550.0	0.	550.0	0.	550.0	0.	550.0	0.
650.0	0.	650.0	0.	650.0	0.	650.0	0.	650.0	0.
750.0	0.	750.0	0.	750.0	0.	750.0	0.	750.0	0.
850.0	0.	850.0	0.	850.0	0.	850.0	0.	850.0	0.
950.0	0.	950.0	0.	950.0	0.	950.0	0.	950.0	0.
N IS	1.000E 00	N IS	1.000E 00	N IS	0.100E 01	N IS	1.000E 00	N IS	1.000E 00

NEUT ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRA OF CASCADE PARTICLES WITH MU FROM -0.40 TO -0.60
(THETA FROM 113 DEG. 35 MIN. TO 126 DEG. 54 MIN.)

N(E) IS (FRACTION OF PARTICLES IN DELTA MU)/(DELTA MU)(DELTA E)

E(MEV) IS CENTER OF INTERVAL N IS (SUM OVER N(E))(DELTA MU)(DELTA E)

PROTONS		NEUTRONS		PI+		PIO		PI-	
DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0	DELTA E(MEV)	100.0
E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)	E(MEV)	N(E)
50.0	0.478E-01	50.0	0.471E-01	50.0	0.400E-01	50.0	0.450E-01	50.0	0.463E-01
150.0	0.185E-02	150.0	0.286E-02	150.0	0.100E-01	150.0	0.500E-02	150.0	0.375E-02
250.0	0.309E-03	250.0	0.	250.0	0.	250.0	0.	250.0	0.
350.0	0.	350.0	0.	350.0	0.	350.0	0.	350.0	0.
450.0	0.	450.0	0.	450.0	0.	450.0	0.	450.0	0.
550.0	0.	550.0	0.	550.0	0.	550.0	0.	550.0	0.
650.0	0.	650.0	0.	650.0	0.	650.0	0.	650.0	0.
750.0	0.	750.0	0.	750.0	0.	750.0	0.	750.0	0.
850.0	0.	850.0	0.	850.0	0.	850.0	0.	850.0	0.
950.0	0.	950.0	0.	950.0	0.	950.0	0.	950.0	0.
N IS	1.000E 00	N IS	0.100E 01	N IS	1.000E 00	N IS	0.100E 01	N IS	1.000E 00

NEUT CN PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PROTONS

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PROTONS /DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.1147857E-01	300.00	0.4142857E-03	540.00	0.1714286E-03	780.00	0.8571429E-04
60.00	0.4207143E-02	340.00	0.2714286E-03	580.00	0.2142857E-03	820.00	0.4285714E-04
100.00	0.2278571E-02	380.00	0.2785714E-03	620.00	0.2285714E-03	860.00	0.7142857E-04
140.00	0.1435714E-02	420.00	0.2357143E-03	660.00	0.1357143E-03	900.00	0.8571429E-04
180.00	0.1192857E-02	460.00	0.1928571E-03	700.00	0.1714286E-03	940.00	0.1214286E-03
220.00	0.7714286E-03	500.00	0.1785714E-03	740.00	0.8571429E-04	980.00	0.7857143E-04
260.00	0.5714286E-03						

NEUT ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE NEUTRONS

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED NEUTRONS/DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.1187358E-01	300.00	0.3772779E-03	540.00	0.1245729E-03	780.00	0.8542141E-04
60.00	0.4409880E-02	340.00	0.2740604E-03	580.00	0.1388098E-03	820.00	0.1138952E-03
100.00	0.2470103E-02	380.00	0.2099943E-03	620.00	0.8542141E-04	860.00	0.1138952E-03
140.00	0.1459282E-02	420.00	0.2028759E-03	660.00	0.1103360E-03	900.00	0.1281321E-03
180.00	0.9182802E-03	460.00	0.1815205E-03	700.00	0.8898064E-04	940.00	0.1815205E-03
220.00	0.6584567E-03	500.00	0.1210137E-03	740.00	0.6050683E-04	980.00	0.1672836E-03
260.00	0.4449032E-03						

NEUT CN PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI+

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI+ / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.1017699E-01	300.00	0.4424779E-03	540.00	0.	780.00	0.
60.00	0.7964602E-02	340.00	0.2212389E-03	580.00	0.	820.00	0.
100.00	0.1548673E-02	380.00	0.4424779E-03	620.00	0.	860.00	0.
140.00	0.1327434E-02	420.00	0.4424779E-03	660.00	0.	900.00	0.
180.00	0.1327434E-02	460.00	0.	700.00	0.	940.00	0.
220.00	0.	500.00	0.2212389E-03	740.00	0.	980.00	0.
260.00	0.8849558E-03						

NEUT ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PIO

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PIO / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.8360927E-02	300.00	0.1407285E-02	540.00	0.8278146E-04	780.00	0.
60.00	0.6208609E-02	340.00	0.4966887E-03	580.00	0.	820.00	0.
100.00	0.3228477E-02	380.00	0.5794702E-03	620.00	0.	860.00	0.
140.00	0.1738411E-02	420.00	0.4139073E-03	660.00	0.	900.00	0.
180.00	0.8278146E-03	460.00	0.2483444E-03	700.00	0.	940.00	0.
220.00	0.4966887E-03	500.00	0.8278146E-04	740.00	0.	980.00	0.
260.00	0.8278146E-03						

NEUT ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PI-

0 TO 1.0000000E 03 MEV 0 OFL

K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PI- / DELTA E

K.E.	N(E)	K.E.	N(E)	K.E.	N(E)	K.E.	N(E)
20.00	0.9046693E-02	300.00	0.8268483E-03	540.00	0.4863813E-04	780.00	0.
60.00	0.6663424E-02	340.00	0.6322957E-03	580.00	0.	820.00	0.
100.00	0.2821012E-02	380.00	0.2431907E-03	620.00	0.4863813E-04	860.00	0.
140.00	0.1118677E-02	420.00	0.3404669E-03	660.00	0.	900.00	0.
180.00	0.8754864E-03	460.00	0.3404669E-03	700.00	0.	940.00	0.
220.00	0.8268483E-03	500.00	0.9727627E-04	740.00	0.	980.00	0.
260.00	0.1070039E-02						

NEUT ON PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ENERGY SPECTRUM OF EMITTED CASCADE PARTICLES

0 TO 1000 MEV

N(E) IS THE FRACTION OF TOTAL NUMBER OF EMITTED PARTICLES/DELTA E
K.E. IS THE CENTER OF THE ENERGY INTERVAL IN MEV N IS (SUM OVER HISTOGRAM FROM 1 TO 1000 MEV) (DELTA E)

K.E.	PROTONS N(E)	NEUTRONS N(E)	PI+ N(E)	PIO N(E)	PI- N(E)
25.0	0.1024000E-01	0.1070900E-01	0.1044248E-01	0.8344371E-02	0.8949416E-02
75.0	0.3405714E-02	0.3439635E-02	0.4955752E-02	0.4635762E-02	0.5019455E-02
125.0	0.1645714E-02	0.1793850E-02	0.1415929E-02	0.2450331E-02	0.1595331E-02
175.0	0.1182857E-02	0.9624146E-03	0.1061947E-02	0.8609271E-03	0.8560311E-03
225.0	0.7257143E-03	0.6548975E-03	0.1769911E-03	0.5960265E-03	0.7782101E-03
275.0	0.5428571E-03	0.4100228E-03	0.7079646E-03	0.7947020E-03	0.9727626E-03
325.0	0.2800000E-03	0.2676537E-03	0.1769911E-03	0.1125828E-02	0.8949416E-03
375.0	0.2971428E-03	0.2391799E-03	0.5309734E-03	0.5298013E-03	0.2334630E-03
425.0	0.2114286E-03	0.1850797E-03	0.3539823E-03	0.4635762E-03	0.3501945E-03
475.0	0.1771429E-03	0.1907745E-03	0.1769911E-03	0.1324503E-03	0.2334630E-03
525.0	0.2114286E-03	0.1110478E-03	0.	0.6622516E-04	0.7782101E-04
575.0	0.1942857E-03	0.1281321E-03	0.	0.	0.
625.0	0.2057143E-03	0.9396355E-04	0.	0.	0.3891051E-04
675.0	0.1657143E-03	0.1025057E-03	0.	0.	0.
725.0	0.9714286E-04	0.7118451E-04	0.	0.	0.
775.0	0.9714286E-04	0.7687927E-04	0.	0.	0.
825.0	0.5142857E-04	0.1053531E-03	0.	0.	0.
875.0	0.5142857E-04	0.1195900E-03	0.	0.	0.
925.0	0.1257143E-03	0.1651481E-03	0.	0.	0.
975.0	0.9142857E-04	0.1736902E-03	0.	0.	0.
	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 0.9999999E 00	N IS 1.0000000E 00

NEUT CN PB INC. K.E. (MEV) IS 1000.0 A IS 207. Z IS 82. 3000 INC. HISTORIES 6.7 MEV CUTOFF EN.

ANGULAR DISTRIBUTION OF EMITTED CASCADE PARTICLES

(FRACTION IN EACH INTERVAL)/(DELTA MU)

MU IS COSINE THETA AND SPECIFIES THE CENTER OF THE INTERVAL

MU	PROTON	NEUTRON	PI+	PIO	PI-
0.975	0.2234286E 01	0.2081435E 01	0.1415929E 01	0.9271523E 00	0.8560311E 00
0.925	0.1417143E 01	0.1304100E 01	0.1238938E 01	0.9933775E 00	0.1128405E 01
0.875	0.1228571E 01	0.9937358E 00	0.7079646E 00	0.6622517E 00	0.7392996E 00
0.825	0.1040000E 01	0.9738041E 00	0.8849557E 00	0.1192053E 01	0.9338521E 00
0.775	0.9771429E 00	0.9367882E 00	0.5309734E 00	0.6622517E 00	0.6225681E 00
0.725	0.9600000E 00	0.8143508E 00	0.7079646E 00	0.9271523E 00	0.5447471E 00
0.675	0.8342857E 00	0.8171982E 00	0.8849557E 00	0.6622517E-01	0.2723735E-00
0.625	0.7657143E 00	0.7830296E 00	0.8849557E 00	0.5298013E 00	0.5447471E 00
0.575	0.6857143E 00	0.7374715E 00	0.1769911E-00	0.3973510E-00	0.5447471E 00
0.525	0.6800000E 00	0.6862187E 00	0.7079646E 00	0.5298013E 00	0.4280156E-00
0.475	0.6457143E 00	0.6947608E 00	0.3539823E-00	0.5298013E 00	0.6225681E 00
0.425	0.5314286E 00	0.6890661E 00	0.3539823E-00	0.1986755E-00	0.5058366E 00
0.375	0.5257143E 00	0.5466970E 00	0.7079646E 00	0.4635762E-00	0.6614786E 00
0.325	0.4057143E-00	0.5125285E 00	0.3539823E-00	0.3973510E-00	0.5058366E 00
0.275	0.4571429E-00	0.5381549E 00	0.	0.3973510E-00	0.4280156E-00
0.225	0.4971429E-00	0.5039863E 00	0.7079646E 00	0.4635762E-00	0.5058366E 00
0.175	0.4571429E-00	0.4470387E-00	0.	0.3311258E-00	0.3501946E-00
0.125	0.4171429E-00	0.4584282E-00	0.5309734E 00	0.5298013E 00	0.4280156E-00
0.075	0.4000000E-00	0.4214123E-00	0.3539823E-00	0.5298013E 00	0.4669261E-00
0.025	0.3828571E-00	0.4328018E-00	0.	0.6622517E 00	0.3112840E-00
-0.025	0.3714286E-00	0.4185649E-00	0.7079646E 00	0.3973510E-00	0.3891051E-00
-0.075	0.4057143E-00	0.3416856E-00	0.	0.5298013E 00	0.5447471E 00
-0.125	0.2800000E-00	0.2562642E-00	0.	0.5960265E 00	0.3501946E-00
-0.175	0.3142857E-00	0.3530752E-00	0.3539823E-00	0.5960265E 00	0.1946525E-00
-0.225	0.2342857E-00	0.2790433E-00	0.5309734E 00	0.3973510E-00	0.6225681E 00
-0.275	0.2800000E-00	0.2961276E-00	0.5309734E 00	0.5960265E 00	0.7003891E 00
-0.325	0.2685714E-00	0.2875854E-00	0.5309734E 00	0.1324503E-00	0.5836576E 00
-0.375	0.1942857E-00	0.3046697E-00	0.5309734E 00	0.4635762E-00	0.2723735E-00
-0.425	0.2114286E-00	0.2107062E-00	0.3539823E-00	0.3973510E-00	0.3501946E-00
-0.475	0.2514286E-00	0.2107062E-00	0.3539823E-00	0.2649007E-00	0.5058366E 00
-0.525	0.2171429E-00	0.2334852E-00	0.7079646E 00	0.1324503E-00	0.2334630E-00
-0.575	0.2457143E-00	0.1907745E-00	0.3539823E-00	0.5298013E 00	0.4669261E-00
-0.625	0.1428571E-00	0.1679954E-00	0.7079646E 00	0.7284768E 00	0.6225681E 00
-0.675	0.1942857E-00	0.1708428E-00	0.3539823E-00	0.4635762E-00	0.3891051E-00
-0.725	0.1142857E-00	0.1623007E-00	0.5309734E 00	0.3973510E-00	0.4669261E-00
-0.775	0.1714286E-00	0.1623007E-00	0.5309734E 00	0.2649007E-00	0.3891051E-00
-0.825	0.1600000E-00	0.1822323E-00	0.7079646E 00	0.5960265E 00	0.3891051E-00
-0.875	0.1314286E-00	0.1509112E-00	0.	0.2649007E-00	0.3112840E-00
-0.925	0.1371429E-00	0.1252847E-00	0.3539823E-00	0.5298013E 00	0.3891051E-00
-0.975	0.1314286E-00	0.1224374E-00	0.3539823E-00	0.3311258E-00	0.4280156E-00

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	0. TO 10.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
5.5744E 00	3.4304E 00	1.9296E 00	1.0720E 00	1.0720E 00	1.0720E 00	1.2864E 00	1.0720E 00
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
4.2880E-01	6.4320E-01	4.2880E-01	8.5760E-01	1.5008E 00	1.7152E 00	1.9296E 00	2.7872E 00
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.9296E 00	2.7872E 00	6.4320E-01	4.2880E-01	4.2880E-01	2.1440E-01	0.	4.2880E-01
INTERVAL 25							
1.7152E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	10.00 TO 30.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
4.2778E 00	1.7824E 00	1.3711E 00	1.2340E 00	1.1243E 00	6.5812E-01	6.8554E-01	4.3875E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
4.9359E-01	4.6617E-01	5.2101E-01	4.3875E-01	3.0164E-01	2.7422E-01	4.6617E-01	3.8390E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
2.1937E-01	2.4679E-01	2.1937E-01	2.4679E-01	1.0969E-01	2.4679E-01	3.2906E-01	4.1132E-01
INTERVAL 25							
8.2265E-02							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1415E 04 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.392606E 03 MEV FOR CASCADE PROTON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.6812E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.262512E 03 MEV FOR CASCADE PROTON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	30.00 TO 90.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.3699E 00	1.3051E 00	7.6350E-01	5.2279E-01	4.0244E-01	2.8208E-01	1.8053E-01	1.3164E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
6.7700E-02	7.1461E-02	4.5133E-02	2.6328E-02	2.6328E-02	2.2567E-02	1.5044E-02	1.8805E-02
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
7.5222E-03	7.5222E-03	3.7611E-03	3.7611E-03	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PROTON	90.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.7231E 00	5.2441E-01	1.8566E-01	3.9086E-02	4.5601E-02	1.3029E-02	3.2572E-03	6.5144E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2910E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.906101E 02 MEV FOR CASCADE PROTON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1016E 03 MB/STERADIAN FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.408718E 02 MEV FOR CASCADE PROTON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
5.034E 02	3.902E 02	3.262E 02	2.284E 02	1.684E 02	1.126E 02	8.178E 01	6.978E 01	6.049E 01

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
3.586E 02	1.238E 02	3.477E 01	3.992E 00	1.501E 00	3.992E-01	0.	0.	0.

TYPE OF CASCADE PARTICLE PROTON — FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.231E 02	1.200E 01	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
2.0875E 02	4.8626E 02	3.4137E 02	1.8828E 02	1.0478E 02	4.4206E 01	8.1862E 00	4.9117E 00
8	9	10	11	12	13	14	15
8.1862E-01	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
1.0503E 03	3.3318E 02	4.0931E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PROTON ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
1.3278E 03	5.9759E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PROTONS	0.95143E-01		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.1728E 02	0.2176E 02	0.2351E 02	0.1996E 02	0.1613E 02	0.1956E 02	0.1665E 02	0.1276E 02	0.1512E 02

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	0. TO 10.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.0506E 01	4.7168E 00	2.1440E 00	2.5728E 00	1.2864E 00	1.2864E 00	8.5760E-01	1.0720E 00
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.9296E 00	1.0720E 00	2.1440E 00	1.9296E 00	1.7152E 00	8.5760E-01	1.0720E 00	8.5760E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
1.2864E 00	1.2864E 00	8.5760E-01	1.2864E 00	4.2880E-01	8.5760E-01	4.2880E-01	4.7168E 00
INTERVAL 25							
7.9328E 00							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	10.00 TO 30.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
9.0491E 00	3.5922E 00	3.0712E 00	1.7824E 00	1.4808E 00	1.5082E 00	1.0969E 00	7.9523E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
8.2265E-01	8.5007E-01	7.1296E-01	5.4843E-01	4.1132E-01	5.2101E-01	6.5812E-01	3.8390E-01
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
5.2101E-01	3.8390E-01	3.5648E-01	4.6617E-01	8.2265E-01	7.6781E-01	9.0491E-01	7.9523E-01
INTERVAL 25							
2.7422E-01							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2204E 04 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

AVERAGE ENERGY EQUALS 0.445058E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 0. TO 10.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1303E 04 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

AVERAGE ENERGY EQUALS 0.268350E 03 MEV FOR CASCADE NEUTRON WITH THETA FROM 10.00 TO 30.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	30.00 TO 90.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
6.8941E 00	2.9148E 00	1.7376E 00	1.0230E 00	6.8828E-01	4.5885E-01	3.0089E-01	2.6704E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.4292E-01	8.6505E-02	7.8983E-02	8.2744E-02	4.1372E-02	4.5133E-02	3.7611E-02	2.2567E-02
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
2.2567E-02	1.8805E-02	0.	3.7611E-03	0.	0.	3.7611E-03	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
NEUTRON	90.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.6611E 00	1.0130E 00	3.5829E-01	1.9869E-01	4.8858E-02	6.5144E-03	3.2572E-03	3.2572E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5949E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

AVERAGE ENERGY EQUALS 0.861305E 02 MEV FOR CASCADE NEUTRON WITH THETA FROM 30.00 TO 90.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2117E 03 MB/STERADIAN FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.396185E 02 MEV FOR CASCADE NEUTRON WITH THETA FROM 90.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE FOR THE ENERGY INTERVAL (MEV)

NEUTRON 0 TO 250

LABORATORY ANGLE FROM								
0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
9.052E 02	7.480E 02	6.474E 02	5.098E 02	3.526E 02	2.499E 02	1.650E 02	1.471E 02	1.145E 02

TYPE OF CASCADE PARTICLE FOR THE ENERGY INTERVAL (MEV)

NEUTRON 250 TO 750

LABORATORY ANGLE FROM								
0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
4.839E 02	1.868E 02	5.926E 01	1.397E 01	1.125E 00	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE FOR THE ENERGY INTERVAL (MEV)

NEUTRON 750 TO 1000

LABORATORY ANGLE FROM								
0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
4.213E 02	2.251E 01	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
1.7437E 02	3.3482E 02	2.7424E 02	2.3003E 02	2.3494E 02	1.7764E 02	1.1379E 02	8.0225E 01
8	9	10	11	12	13	14	15
3.1108E 01	9.8235E 00	6.5490E 00	0.	0.	0.	0.	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
1.1764E 03	4.6498E 02	2.6196E 01	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE NEUTRON ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
1.4833E 03	1.8419E 02	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
NEUTRONS	0.11062E-00		

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	0. TO 25.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.0429E-01	6.9530E-02	3.4765E-02	0.	3.4765E-02	0.	3.4765E-02	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
3.4765E-02	6.9530E-02	3.4765E-02	0.	3.4765E-02	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	25.00 TO 75.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
7.0427E-02	6.0366E-02	1.5092E-02	2.0122E-02	2.0122E-02	0.	1.5092E-02	1.0061E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	5.0305E-03	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1808E 02 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.210769E 03 MEV FOR CASCADE PI+ WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.8652E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.101860E 03 MEV FOR CASCADE PI+ WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	75.00 TO 130.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
7.2253E-02	5.7803E-02	7.2253E-03	7.2253E-03	3.6127E-03	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI+	130.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
8.2065E-02	5.4710E-02	9.1183E-03	0.	0.	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5925E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.492683E 02 MEV FOR CASCADE PI+ WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.5836E 01 MB/STERADIAN FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.400000E 02 MEV FOR CASCADE PI+ WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
6.481E 00	1.125E 01	8.325E 00	5.589E 00	4.127E 00	6.388E 00	8.325E 00	5.252E 00	4.321E 00

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.080E 01	3.001E 00	9.794E-01	0.	0.	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI + FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
9.0049E 00	8.3500E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
8.3500E 01	9.0049E 00	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI + ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
9.2504E 01	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI +	0.17699E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.1728E 02	0.2176E 02	0.2351E 02	0.1996E 02	0.1613E 02	0.1956E 02	0.1665E 02	0.1276E 02	0.1512E 02

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	0. TO 25.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
0.	1.0429E-01	1.0429E-01	3.4765E-02	0.	3.4765E-02	1.3906E-01	2.0859E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
6.9530E-02	6.9530E-02	6.9530E-02	3.4765E-02	3.4765E-02	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	25.00 TO 75.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.3582E-01	9.0549E-02	5.0305E-02	6.5397E-02	3.0183E-02	1.5092E-02	2.5153E-02	5.0305E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
2.0122E-02	2.5153E-02	1.5092E-02	1.0061E-02	0.	5.0305E-03	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3616E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.266154E 03 MEV FOR CASCADE PIO WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2153E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.153832E 03 MEV FOR CASCADE PIO WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	75.00 TO 130.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.9508E-01	1.3006E-01	7.2253E-02	2.1676E-02	1.0838E-02	7.2253E-03	3.6127E-03	3.6127E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PIO	130.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.8237E-01	1.6413E-01	5.4710E-02	9.1183E-03	9.1183E-03	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1777E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.619512E 02 MEV FOR CASCADE PIO WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.1678E 02 MB/STERADIAN FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.521739E 02 MEV FOR CASCADE PIO WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.728E 01	1.426E 01	1.567E 01	1.517E 01	2.101E 01	1.517E 01	1.763E 01	1.726E 01	1.080E 01

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.512E 01	2.251E 01	3.918E 00	3.992E-01	3.751E-01	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI 0 FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
3.8475E 01	1.9238E 02	8.1862E 00	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
2.0056E 02	3.8475E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI 0 ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
2.3904E 02	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI 0	0.29139E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM								
0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.1728E 02	0.2176E 02	0.2351E 02	0.1996E 02	0.1613E 02	0.1956E 02	0.1665E 02	0.1276E 02	0.1512E 02

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	0. TO 25.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
1.3906E-01	1.0429E-01	6.9530E-02	1.3906E-01	1.0429E-01	1.0429E-01	1.3906E-01	1.3906E-01
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
1.3906E-01	6.9530E-02	2.4335E-01	1.7382E-01	6.9530E-02	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	25.00 TO 75.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
2.5656E-01	2.1631E-01	7.5458E-02	6.0366E-02	5.5336E-02	7.0427E-02	8.5519E-02	6.0366E-02
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
4.5275E-02	1.5092E-02	0.	1.0061E-02	0.	5.0305E-03	0.	5.0305E-03
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.6536E 02 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

AVERAGE ENERGY EQUALS 0.272766E 03 MEV FOR CASCADE PI- WITH THETA FROM 0. TO 25.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.3843E 02 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

AVERAGE ENERGY EQUALS 0.136859E 03 MEV FOR CASCADE PI- WITH THETA FROM 25.00 TO 75.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	75.00 TO 130.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.3598E-01	2.3121E-01	1.3006E-01	2.5289E-02	1.0838E-02	0.	3.6127E-03	3.6127E-03
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

(DSIGMA/(DOMEGA X DE) (MB)/(STERADIAN-MEV)

TYPE OF CASCADE PARTICLE	LAB. ANGULAR INTERVAL (DEG)	NO. OF ENERGY INTERVALS	DELTA E (MEV)
PI-	130.00 TO 180.00	25	40.0000

INTERVAL 1	INTERVAL 2	INTERVAL 3	INTERVAL 4	INTERVAL 5	INTERVAL 6	INTERVAL 7	INTERVAL 8
3.4650E-01	2.4620E-01	4.5592E-02	0.	9.1183E-03	0.	0.	0.
INTERVAL 9	INTERVAL 10	INTERVAL 11	INTERVAL 12	INTERVAL 13	INTERVAL 14	INTERVAL 15	INTERVAL 16
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 17	INTERVAL 18	INTERVAL 19	INTERVAL 20	INTERVAL 21	INTERVAL 22	INTERVAL 23	INTERVAL 24
0.	0.	0.	0.	0.	0.	0.	0.
INTERVAL 25							
0.							

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2962E 02 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

AVERAGE ENERGY EQUALS 0.555122E 02 MEV FOR CASCADE PI- WITH THETA FROM 75.00 TO 130.00 DEG

SUM OF DSIG/(DOMEGA X DE) X DE EQUALS 0.2590E 02 MB/STERADIAN FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

AVERAGE ENERGY EQUALS 0.430986E 02 MEV FOR CASCADE PI- WITH THETA FROM 130.00 TO 180.00 DEG

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	TARGET A	TARGET Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

DSIGMA / DOMEGA

(MB / STERADIAN)

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 0 TO 250

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
1.728E 01	3.451E 01	2.498E 01	3.353E 01	2.589E 01	3.154E 01	2.938E 01	2.401E 01	2.809E 01

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 250 TO 750

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
4.105E 01	2.476E 01	6.366E 00	1.996E 00	7.503E-01	0.	0.	0.	0.

TYPE OF CASCADE PARTICLE PI - FOR THE ENERGY INTERVAL (MEV) 750 TO 1000

LABORATORY ANGLE FROM 0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.	0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

CROSS SECTIONS (MB) FOR THE EMISSION OF K PARTICLES OF SPECIFIED TYPE INTO ENERGY INTERVALS INDICATED

(CONTRIBUTIONS TO K EQUAL ZERO ARE MADE ONLY WHEN PARTICLES OF SPECIFIED TYPE ARE EMITTED BUT ARE NOT IN THE ENERGY INTERVALS INDICATED)

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 0 TO 250

K EQUALS 0	1	2	3	4	5	6	7
5.7304E 01	3.3400E 02	1.3917E 01	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 250 TO 750

K EQUALS 0	1	2	3	4	5	6	7
3.4628E 02	5.8941E 01	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

EMITTED PARTICLE PI - ENERGY INTERVAL (MEV) 750 TO 1000

K EQUALS 0	1	2	3	4	5	6	7
4.0522E 02	0.	0.	0.	0.	0.	0.	0.
8	9	10	11	12	13	14	15
0.	0.	0.	0.	0.	0.	0.	0.

INCIDENT PARTICLE	INC. LAB. K.E.(MEV)	TARGET SYMB.	A	Z	NO. OF INC. PARTICLES	CUTOFF EN.(MEV)	GEOMETRIC X-SEC.(MB)	NO. OF INC. PART. COLLISIONS
NEUT	1000	PB	207	82	03000	6.68	2455.9	02092

	NO. OF TIMES SPECIFIED PARTICLE IS EMITTED ON THE FIRST INC. PARTICLE COLLISION DIVIDED BY THE NO. OF TIMES THE INC. PARTICLE TYPE IS EMITTED	PION ABSORPTION CROSS SECT. (MB)	PION CHARGE EXCHANGE CROSS SECT. (MB)
PI -	0.29572E-00		

ANGULAR DISTRIBUTION OF TWO CASCADE PROTONS AS A FUNCTION OF THE ANGLE, X, BETWEEN THEM.

DSIGMA / DOMEGA (MB / STERADIAN)

(REACTIONS CONTRIBUTE WHEN THERE ARE NO PIONS, ONLY TWO PROTONS, AND ANY NUMBER OF NEUTRONS EMITTED)

X FROM

0 - 20 DEG	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140	140 - 160	160 - 180
0.1728E 02	0.2176E 02	0.2351E 02	0.1996E 02	0.1613E 02	0.1956E 02	0.1665E 02	0.1276E 02	0.1512E 02

CASE NUMBER 207 821000 1

A= 207
Z= 82
KINETIC ENERGY (MEV)= 1000.00
NEUT
GEOMETRIC CROSS SECTION (MB)= 2455.87
CUTOFF ENERGY (MEV)= 6.68
3000 CASE HISTORIES
INELASTIC CROSS SECTION (MB) 1712.56

AVERAGE EVAPORATION YIELD PER INELASTIC EVENT

NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
15.6037287	2.0965583	0.6003824	0.1888145	0.0205545	0.2017208

CASE NUMBER 207 821000 1

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
207	83	1	0.82
	82	5	4.09
	81	1	0.82
206	83	1	0.82
	82	104	85.14
	81	58	47.48
205	83	4	3.27
	82	29	23.74
	81	27	22.10
	80	2	1.64
204	83	2	1.64
	82	27	22.10
	81	21	17.19
	80	4	3.27
203	83	1	0.82
	82	19	15.55
	81	5	4.09
	80	3	2.46
	79	2	1.64
202	83	2	1.64
	82	17	13.92
	81	16	13.10
	80	5	4.09
201	83	5	4.09
	82	18	14.74
	81	20	16.37
	80	2	1.64
	79	1	0.82
200	83	1	0.82
	82	18	14.74
	81	17	13.92
	80	4	3.27
	79	1	0.82
199	83	4	3.27
	82	24	19.65
	81	16	13.10
	80	5	4.09
198	83	2	1.64
	82	14	11.46
	81	9	7.37
	80	6	4.91
197	82	6	4.91
	81	14	11.46
	80	8	6.55
	79	3	2.46
196	83	1	0.82
	82	6	4.91
	81	11	9.00
	80	4	3.27
	79	1	0.82
	78	1	0.82
195	83	1	0.82
	82	8	6.55
	81	14	11.46
	80	11	9.00

CASE NUMBER 207 821000 1

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
195	78	1	0.82
194	82	12	9.82
	81	7	5.73
	80	12	9.82
	79	2	1.64
193	82	6	4.91
	81	22	18.01
	80	14	11.46
	79	4	3.27
	78	2	1.64
192	82	9	7.37
	81	14	11.46
	80	6	4.91
	79	2	1.64
	78	1	0.82
191	82	2	1.64
	81	15	12.28
	80	18	14.74
	79	6	4.91
190	82	9	7.37
	81	14	11.46
	80	10	8.19
	79	1	0.82
	78	2	1.64
189	81	21	17.19
	80	19	15.55
	79	11	9.00
	78	1	0.82
	77	1	0.82
188	82	2	1.64
	81	13	10.64
	80	15	12.28
	79	4	3.27
	78	4	3.27
	77	1	0.82
	76	1	0.82
187	81	11	9.00
	80	16	13.10
	79	7	5.73
	78	2	1.64
	76	1	0.82
186	81	6	4.91
	80	14	11.46
	79	13	10.64
	78	3	2.46
	77	3	2.46
185	82	1	0.82
	81	8	6.55
	80	6	4.91
	79	11	9.00
	78	3	2.46
	77	1	0.82
184	81	3	2.46
	80	15	12.28
	79	14	11.46

CASE NUMBER 207 821000 1

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
184	78	7	5.73
	77	3	2.46
183	81	1	0.82
	80	9	7.37
	79	13	10.64
	78	8	6.55
	77	1	0.82
182	80	6	4.91
	79	22	18.01
	78	12	9.82
	77	5	4.09
	76	2	1.64
181	80	2	1.64
	79	9	7.37
	78	22	18.01
	77	8	6.55
180	80	1	0.82
	79	10	8.19
	78	22	18.01
	77	13	10.64
	76	2	1.64
179	79	2	1.64
	78	8	6.55
	77	12	9.82
	76	1	0.82
	75	1	0.82
178	79	1	0.82
	78	27	22.10
	77	11	9.00
	76	4	3.27
177	78	10	8.19
	77	21	17.19
	76	14	11.46
176	77	15	12.28
	76	9	7.37
	75	8	6.55
	73	2	1.64
175	77	10	8.19
	76	24	19.65
	75	7	5.73
174	78	1	0.82
	77	3	2.46
	76	14	11.46
	75	12	9.82
	74	4	3.27
	73	1	0.82
173	77	1	0.82
	76	15	12.28
	75	20	16.37
	74	8	6.55
172	77	1	0.82
	76	4	3.27
	75	20	16.37
	74	11	9.00
	73	3	2.46

CASE NUMBER 207 821000 1

DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
171	75	15	12.28
	74	19	15.55
	73	1	0.82
170	75	3	2.46
	74	14	11.46
	73	8	6.55
169	74	14	11.46
	73	9	7.37
	72	3	2.46
168	74	12	9.82
	73	19	15.55
	72	5	4.09
167	74	2	1.64
	73	19	15.55
	72	10	8.19
166	74	1	0.82
	73	7	5.73
	72	17	13.92
	69	1	0.82
165	73	9	7.37
	72	19	15.55
	71	3	2.46
164	73	3	2.46
	72	27	22.10
	71	12	9.82
	70	2	1.64
	69	1	0.82
163	72	13	10.64
	71	23	18.83
	70	1	0.82
	69	1	0.82
162	72	7	5.73
	71	21	17.19
	70	5	4.09
161	72	1	0.82
	71	12	9.82
	70	9	7.37
160	71	13	10.64
	70	13	10.64
	69	2	1.64
159	71	2	1.64
	70	13	10.64
	69	5	4.09
	68	3	2.46
	67	1	0.82
158	70	9	7.37
	69	8	6.55
	68	2	1.64
157	70	8	6.55
	69	8	6.55
	68	4	3.27
156	70	3	2.46
	69	7	5.73
	68	5	4.09
155	69	9	7.37

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DISTRIBUTION OF RESIDUAL NUCLEI FOLLOWING EVAPORATION

A	Z	NUMBER OF NUCLEI	CROSS SECTION (MB)
155	68	14	11.46
	67	1	0.82
154	69	4	3.27
	68	9	7.37
	67	5	4.09
153	69	1	0.82
	68	10	8.19
	67	1	0.82
152	68	6	4.91
	67	3	2.46
	66	1	0.82
	65	1	0.82
151	68	1	0.82
	67	4	3.27
	66	3	2.46
150	67	2	1.64
	66	1	0.82
	65	1	0.82
149	67	2	1.64
	66	6	4.91
148	67	1	0.82
	66	9	7.37
147	66	3	2.46
	65	6	4.91
145	64	4	3.27
144	64	3	2.46
	63	1	0.82
143	63	2	1.64
142	64	1	0.82
	63	1	0.82
	62	1	0.82
140	62	1	0.82
139	62	1	0.82
	61	1	0.82
137	58	1	0.82

CASE NUMBER 207 821000 1

MOMENTS OF THE ENERGY DISTRIBUTIONS FOR THE FOLLOWING EVAPORATION PARTICLES

	NEUTRONS	PROTONS	DEUTERONS	TRITONS	HE3	ALPHAS
1ST MOM.	4.65814E 00	1.35758E 01	1.46638E 01	1.58083E 01	2.76227E 01	2.67609E 01
2ND MOM.	4.00700E 01	2.06822E 02	2.40667E 02	2.78332E 02	8.03965E 02	7.44037E 02
3RD MOM.	5.17977E 02	3.60837E 03	4.47270E 03	5.51372E 03	2.48095E 04	2.16696E 04

NORMALIZED EVAPORATION NEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.059619	0.095882	0.124155	0.131223	0.148125	0.166564	0.161033	0.168715	0.172711	0.172711
1	0.173018	0.170867	0.168408	0.168715	0.164413	0.156423	0.160418	0.163798	0.164413	0.162262
2	0.148433	0.148433	0.154272	0.144745	0.150277	0.155194	0.143823	0.138599	0.124155	0.133374
3	0.123848	0.131838	0.122926	0.127843	0.125384	0.120467	0.110018	0.118623	0.106331	0.103872
4	0.110018	0.103565	0.101106	0.083589	0.093423	0.083897	0.086663	0.094653	0.087277	0.086970
5	0.076214	0.086663	0.080824	0.072833	0.073141	0.070990	0.069760	0.063921	0.071297	0.055009
6	0.062077	0.061463	0.061770	0.055624	0.062077	0.054087	0.055009	0.053780	0.055009	0.048248
7	0.051014	0.057160	0.044253	0.046404	0.045790	0.045790	0.044868	0.042409	0.039951	0.043331
8	0.040258	0.033190	0.036263	0.031039	0.040565	0.030424	0.036878	0.038414	0.033497	0.028838
9	0.028888	0.026736	0.027658	0.027351	0.031346	0.027351	0.025507	0.027351	0.026736	0.025200
10	0.021512	0.024892	0.026122	0.024278	0.021205	0.018746	0.019975	0.013829	0.015366	0.024278
11	0.019361	0.021512	0.016902	0.016288	0.014136	0.019361	0.021819	0.017517	0.015673	0.017517
12	0.013522	0.014444	0.015366	0.014751	0.010756	0.013522	0.015058	0.014751	0.012600	0.009219
13	0.010141	0.012293	0.012293	0.011678	0.011063	0.011063	0.009834	0.009527	0.007683	0.011371
14	0.006761	0.008297	0.010449	0.011371	0.007683	0.009834	0.007990	0.008297	0.007376	0.007376
15	0.007068	0.005839	0.009219	0.006761	0.007990	0.006454	0.005839	0.006454	0.007990	0.003688
16	0.005532	0.005532	0.006146	0.003995	0.004302	0.002766	0.004610	0.005532	0.004302	0.005839
17	0.003380	0.004917	0.003995	0.004610	0.003073	0.005532	0.003688	0.003995	0.002459	0.003073
18	0.004302	0.002766	0.003688	0.000922	0.004610	0.003073	0.002766	0.002766	0.003995	0.002151
19	0.001844	0.003073	0.005532	0.004610	0.002151	0.003073	0.003380	0.002766	0.002459	0.003073
20	0.003073	0.002151	0.001844	0.001844	0.001537	0.001537	0.001844	0.003073	0.002766	0.001229
21	0.001844	0.002459	0.002151	0.001844	0.000922	0.001537	0.001844	0.001844	0.000922	0.002151
22	0.000615	0.001844	0.001229	0.001229	0.001229	0.001537	0.002459	0.001844	0.002766	0.000922
23	0.001537	0.001537	0.001229	0.002151	0.001537	0.001844	0.000307	0.000922	0.000615	0.000615
24	0.001537	0.000922	0.000922	0.001229	0.000615	0.000615	0.000922	0.000307	0.000615	0.000307

NORMALIZED EVAPORATION PROTON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
2	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
3	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
4	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
6	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
7	0.	0.	0.	0.	0.	0.	0.002352	0.004704	0.011759	0.007055
8	0.023518	0.039981	0.061148	0.070555	0.084666	0.108184	0.108184	0.091722	0.131703	0.122295
9	0.138758	0.124647	0.129351	0.110536	0.162277	0.188147	0.176388	0.155221	0.126999	0.166980
10	0.141110	0.150517	0.143462	0.155221	0.138758	0.129351	0.124647	0.129351	0.136406	0.117592
11	0.115240	0.115240	0.115240	0.138758	0.124647	0.134055	0.122295	0.087018	0.122295	0.112888
12	0.105833	0.117592	0.122295	0.101129	0.131703	0.096425	0.108184	0.101129	0.094073	0.079962
13	0.089370	0.077611	0.119944	0.087018	0.070555	0.075259	0.075259	0.051740	0.077611	0.072907
14	0.068203	0.058796	0.072907	0.056444	0.084666	0.068203	0.063500	0.065851	0.051740	0.051740
15	0.068203	0.054092	0.049389	0.054092	0.051740	0.056444	0.032926	0.051740	0.049389	0.044685
16	0.054092	0.042333	0.047037	0.042333	0.047037	0.037629	0.044685	0.044685	0.042333	0.039981
17	0.042333	0.037629	0.049389	0.039981	0.028222	0.025870	0.030574	0.025870	0.042333	0.030574
18	0.025870	0.028222	0.037629	0.042333	0.037629	0.030574	0.044685	0.023518	0.037629	0.039981
19	0.039981	0.030574	0.037629	0.032926	0.014111	0.037629	0.030574	0.037629	0.025870	0.009407
20	0.021167	0.018815	0.002352	0.021167	0.011759	0.016463	0.014111	0.018815	0.016463	0.018815
21	0.021167	0.011759	0.016463	0.030574	0.018815	0.009407	0.018815	0.018815	0.014111	0.002352
22	0.002352	0.004704	0.018815	0.023518	0.011759	0.016463	0.014111	0.009407	0.023518	0.011759
23	0.014111	0.014111	0.004704	0.007055	0.018815	0.014111	0.007055	0.011759	0.011759	0.004704
24	0.009407	0.016463	0.009407	0.009407	0.009407	0.007055	0.002352	0.004704	0.009407	0.004704

NORMALIZED EVAPORATION DEUT SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.006369	0.030255	0.071656	0.081210	0.116242
10	0.090764	0.125796	0.092357	0.092357	0.076433	0.140127	0.078025	0.093949	0.095541	0.058917
15	0.084395	0.058917	0.049363	0.066879	0.044586	0.038217	0.033439	0.036624	0.039809	0.028662
20	0.033439	0.028662	0.019108	0.014331	0.015924	0.011146	0.015924	0.012739	0.012739	0.014331
25	0.004777	0.011146	0.004777	0.006369	0.009554	0.003185	0.004777	0.007962	0.	0.004777
30	0.006369	0.001592	0.001592	0.001592	0.003185	0.	0.004777	0.003185	0.001592	0.001592
35	0.	0.001592	0.	0.001592	0.001592	0.	0.	0.001592	0.	0.
40	0.	0.	0.	0.	0.001592	0.	0.	0.	0.	0.
45	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION TRITON SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.	0.005063	0.050633	0.045570	0.075949
10	0.075949	0.081013	0.081013	0.111392	0.111392	0.050633	0.070886	0.091139	0.116456	0.086076
15	0.081013	0.086076	0.070886	0.070886	0.060759	0.040506	0.050633	0.045570	0.035443	0.055696
20	0.015190	0.040506	0.010127	0.015190	0.045570	0.015190	0.020253	0.025316	0.020253	0.005063
25	0.035443	0.030380	0.015190	0.	0.	0.	0.005063	0.005063	0.	0.005063
30	0.005063	0.005063	0.	0.	0.	0.	0.	0.005063	0.	0.010127
35	0.	0.	0.	0.005063	0.005063	0.	0.	0.	0.	0.
40	0.	0.	0.	0.	0.	0.	0.	0.	0.005063	0.
45	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

NORMALIZED EVAPORATION HE3 SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
10	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
15	0.	0.	0.	0.	0.	0.	0.	0.046512	0.	0.
20	0.046512	0.046512	0.186047	0.093023	0.186047	0.	0.	0.046512	0.046512	0.046512
25	0.046512	0.046512	0.139535	0.093023	0.046512	0.093023	0.093023	0.046512	0.093023	0.
30	0.046512	0.	0.093023	0.	0.093023	0.093023	0.046512	0.	0.	0.
35	0.	0.	0.	0.046512	0.	0.	0.	0.	0.	0.
40	0.	0.	0.	0.	0.	0.	0.046512	0.	0.	0.046512
45	0.	0.	0.	0.	0.	0.046512	0.	0.	0.	0.

NORMALIZED EVAPORATION ALPHA SPECTRUM
(E SPECIFIES THE LOWER ENERGY LIMIT OF THE INTERVAL IN MEV)

E										
0	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
10	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
15	0.	0.	0.	0.	0.	0.	0.	0.004762	0.	0.004762
20	0.004762	0.033333	0.100000	0.095238	0.114286	0.119048	0.166667	0.104762	0.095238	0.100000
25	0.047619	0.090476	0.100000	0.076190	0.080952	0.061905	0.066667	0.095238	0.052381	0.042857
30	0.009524	0.014286	0.028571	0.028571	0.019048	0.014286	0.023810	0.014286	0.028571	0.019048
35	0.009524	0.019048	0.014286	0.014286	0.	0.004762	0.014286	0.	0.	0.004762
40	0.014286	0.009524	0.004762	0.	0.004762	0.	0.	0.004762	0.	0.009524
45	0.009524	0.	0.	0.004762	0.	0.	0.	0.	0.	0.

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