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EXPERIMENTAL AND THEORETICAL NEUTRON SPECTRA

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INTRODUCTION

This Neutron Spectrum Book will enable reactor design groups to make comparative calculations to check their numerical procedures and basic physics data. Experimental and theoretical neutron spectra for a number of moderators and poisons at different temperatures, and in several geometries have been standardized and compiled in this document.

A loose leaf binding was chosen to facilitate insertion of additional or improved data. The spectra are grouped according to moderators. Each spectrum presented is described on two pages. First the experimental data are compared to the calculated spectrum on a log-log plot of $E\phi(E)$ vs E , where $\phi(E)$ is the neutron flux per unit energy and E is the neutron energy in eV. The semilog insert gives the ratio of the calculated-to-experimental data as a function of energy. For each case the theory is normalized to the experiment by a "best fit" at the higher energies. The parameters used to generate the calculated spectrum, as well as the geometrical arrangement used to measure the spectrum, are then given. Only quasi-infinite medium neutron spectra are examined to determine if they satisfy a neutron conservation balance. In this balance the slowing-down neutrons are equated to those that are absorbed. The bucklings quoted for the infinite medium cases are the total bucklings used in the calculation, and those quoted for the angular flux measurements are the transverse bucklings. The buckling in the direction which is handled by one-dimensional transport theory is not included. Experimental spectral values are tabulated on the reverse side of the second page. For finite medium spectral calculations the tables also include the spatial distribution of the indium resonance flux, $Q(X)$.

Tables containing energy-dependent absorption and scattering cross sections of various poison materials are included in the book. Cases submitted after 1965 refer to these tables and to a common reference list, which will be updated as new information becomes available.

90° ANGULAR NEUTRON SPECTRUM IN BORATED H₂O5.2 BARNS/HYDROGEN ATOM (0.0253 eV)CALCULATION PARAMETERSSCATTERING KERNEL: GAKER (300°K, H(H₂O), P₀ + P₁)

TRANSPORT THEORY CODE: GAPLSN (ID 050464)

TEMPERATURE: 0.0258 eV

SOURCE: DSZ CODE (GA3542, P.145)

ATOM DENSITIES

$$N_H = 6.605 \times 10^{22}$$

$$N_B = 4.240 \times 10^{20}$$

$$N_O = 3.366 \times 10^{22}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = -0.03881$$

90° ANGULAR NEUTRON SPECTRUM IN BORATED H₂O
3-4-64 T7, T8

E(ev)	ϕ (E)	$E\phi$ (E)	E(ev)	ϕ (E)	$E\phi$ (E)	E(ev)	ϕ (E)	$E\phi$ (E)	Q (x)	x (cm)
3.33830+01	2.485-03	1.694+00	3.86095-01	2.766-01	2.180+00	3.09741-02	5.000+00	3.161+00	0.442	0.05
2.51423+01	3.205-03	1.645+00	3.61990-01	3.068-01	2.267+00	2.93193-02	4.830+00	2.890+00	0.604	0.742
1.96151+01	3.952-03	1.582+00	3.40075-01	3.187-01	2.212+00	2.77935-02	4.785+00	2.715+00	0.718	1.377
1.57287+01	5.646-03	1.813+00	3.20091-01	3.427-01	2.239+00	2.62729-02	4.684+00	2.512+00	0.800	1.986
1.28926+01	6.905-03	1.817+00	3.01819-01	3.691-01	2.274+00	2.47691-02	4.643+00	2.348+00	0.868	2.616
1.07597+01	7.429-03	1.632+00	2.85067-01	3.913-01	2.277+00	2.33909-02	4.656+00	2.223+00	0.914	3.236
9.11538+00	9.610-03	1.788+00	2.69673-01	4.181-01	2.302+00	2.21245-02	4.525+00	2.043+00	0.950	3.858
7.82112+00	1.106-02	1.766+00	2.55595-01	4.408-01	2.300+00	2.09583-02	4.284+00	1.833+00	0.978	4.615
6.78414+00	1.287-02	1.782+00	2.39552-01	4.949-01	2.420+00	1.98820-02	4.206+00	1.707+00	0.989	5.222
5.94051+00	1.671-02	2.026+00	2.22160-01	5.463-01	2.478+00	1.88192-02	4.154+00	1.596+00	0.990	5.839
5.24499+00	1.804-02	1.931+00	2.06591-01	6.077-01	2.563+00	1.77758-02	4.111+00	1.492+00	0.980	6.485
4.66484+00	1.973-02	1.879+00	1.92600-01	6.745-01	2.652+00	1.68169-02	4.009+00	1.376+00	0.960	7.104
4.17587+00	2.258-02	1.925+00	1.79980-01	7.535-01	2.768+00	1.59336-02	3.844+00	1.250+00	0.925	7.727
3.75994+00	2.600-02	1.996+00	1.68558-01	8.494-01	2.923+00	1.51180-02	3.776+00	1.165+00	0.875	8.344
3.40320+00	2.530-02	1.757+00	1.58187-01	9.285-01	2.998+00	1.43189-02	3.686+00	1.077+00	0.797	8.964
3.09492+00	2.748-02	1.736+00	1.48743-01	1.047+00	3.178+00	1.35393-02	3.544+00	9.795-01	0.670	9.604
2.82670+00	3.407-02	1.966+00	1.40117-01	1.173+00	3.355+00	1.28216-02	3.505+00	9.173-01		
2.59190+00	3.475-02	1.838+00	1.32219-01	1.276+00	3.443+00	1.21596-02	3.371+00	8.367-01		
2.38519+00	3.790-02	1.846+00	1.24969-01	1.432+00	3.653+00	1.15153-02	3.403+00	7.999-01		
2.20225+00	4.278-02	1.923+00	1.18298-01	1.580+00	3.815+00	1.08905-02	3.218+00	7.154-01		
2.03958+00	4.352-02	1.812+00	1.12146-01	1.733+00	3.967+00	1.03152-02	2.951+00	6.213-01		
1.89429+00	4.942-02	1.911+00	1.05568-01	1.956+00	4.215+00	9.78432-03	2.951+00	5.894-01		
1.76399+00	5.427-02	1.954+00	9.87187-02	2.158+00	4.348+00	9.27013-03	2.907+00	5.501-01		
1.64668+00	5.804-02	1.951+00	9.25138-02	2.361+00	4.460+00	8.77344-03	2.989+00	5.354-01		
1.54070+00	5.870-02	1.846+00	8.68747-02	2.610+00	4.628+00	8.31562-03	2.540+00	4.311-01		
1.44463+00	6.218-02	1.834+00	8.17347-02	2.925+00	4.881+00	7.89273-03	2.570+00	4.140-01		
1.35728+00	7.066-02	1.958+00	7.70368-02	3.050+00	4.797+00	7.48443-03	2.406+00	3.675-01		
1.27761+00	6.310-02	1.646+00	7.27316-02	3.342+00	4.963+00	7.09103-03	2.209+00	3.198-01		
1.20476+00	7.509-02	1.847+00	6.87767-02	3.561+00	5.000+00	6.72785-03	2.160+00	2.966-01		
1.13796+00	8.580-02	1.993+00	6.51352-02	3.732+00	4.963+00	6.37861-03	2.076+00	2.704-01		
1.07657+00	8.441-02	1.855+00	6.17748-02	3.872+00	4.883+00	6.04330-03	1.942+00	2.396-01		
1.02002+00	9.505-02	1.979+00	5.83008-02	4.078+00	4.853+00	5.73375-03	1.872+00	2.191-01		
9.43660-01	1.002-01	1.931+00	5.47676-02	4.370+00	4.886+00	5.43695-03	1.566+00	1.738-01		
8.53944-01	1.140-01	1.987+00	5.15455-02	4.465+00	4.698+00	5.15272-03	1.502+00	1.580-01		
7.76440-01	1.304-01	2.066+00	4.85992-02	4.642+00	4.606+00	4.89021-03	1.523+00	1.520-01		
7.09030-01	1.381-01	1.999+00	4.58981-02	4.656+00	4.362+00	4.63903-03	1.334+00	1.264-01		
6.50033-01	1.513-01	2.008+00	4.34158-02	4.841+00	4.290+00	4.39134-03	1.369+00	1.227-01		
5.98105-01	1.609-01	1.965+00	4.11294-02	4.915+00	4.126+00	4.15580-03	1.415+00	1.201-01		
5.52160-01	1.786-01	2.013+00	3.90187-02	4.900+00	3.903+00	3.89422-03	1.201+00	9.549-02		
5.11313-01	2.024-01	2.113+00	3.68806-02	4.865+00	3.663+00	3.57100-03	1.146+00	8.353-02		
4.74837-01	2.121-01	2.056+00	3.47337-02	4.930+00	3.495+00	3.25094-03	1.199+00	7.959-02		
4.42130-01	2.283-01	2.061+00	3.27732-02	4.863+00	3.253+00	2.73052-03	8.294-01	4.623-02		
4.12690-01	2.530-01	2.132+00								

GA-H₂O-1B

90° ANGULAR NEUTRON SPECTRUM IN BORATED H₂O

5.2 BARNS/HYDROGEN ATOM (0.0253 eV)

CALCULATION PARAMETERS

SCATTERING KERNEL: GAKER (300°K, H(H₂O), P₀ + P₁)

TRANSPORT THEORY CODE: GAPLSN (ID 050464)

TEMPERATURE: 0.0258 eV

SOURCE: DSZ CODE (GA3542, P.145)

ATOM DENSITIES

$$N_H = 6.605 \times 10^{22}$$

$$N_B = 4.240 \times 10^{20}$$

$$N_O = 3.366 \times 10^{22}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = -0.03881$$

EXPERIMENTAL ARRANGEMENT 3/4/64 T5, T6

PLAN VIEW

NOT TO SCALE

90° ANGULAR NEUTRON SPECTRUM IN BORATED H₂O
3-4-64 T5, T6

E(ev)	φ (E)	E φ (E)	E(ev)	φ (E)	E φ (E)	E(ev)	φ (E)	E φ (E)	Q (x)	x (cm)
3.32814+01	2.160-03	1.392+00	3.84920-01	3.195-01	2.382+00	2.92300-02	4.852+00	2.746+00	0.442	0.05
2.50658+01	3.616-03	1.755+00	3.60889-01	3.634-01	2.540+00	2.77090-02	4.840+00	2.597+00	0.604	0.742
1.95554+01	4.705-03	1.782+00	3.39040-01	3.863-01	2.536+00	2.61929-02	4.653+00	2.360+00	0.718	1.377
1.56809+01	6.356-03	1.930+00	3.19117-01	4.078-01	2.520+00	2.46937-02	4.555+00	2.178+00	0.800	1.986
1.28533+01	6.736-03	1.677+00	3.00900-01	4.339-01	2.528+00	2.33197-02	4.465+00	2.016+00	0.868	2.616
1.07269+01	9.767-03	2.029+00	2.84200-01	4.598-01	2.531+00	2.20572-02	4.434+00	1.894+00	0.914	3.236
9.08764+00	1.080-02	1.900+00	2.68852-01	4.948-01	2.576+00	2.08946-02	4.251+00	1.720+00	0.950	3.858
7.79731+00	1.311-02	1.979+00	2.54817-01	5.328-01	2.629+00	1.98215-02	4.160+00	1.597+00	0.978	4.615
6.76349+00	1.396-02	1.828+00	2.38823-01	5.677-01	2.625+00	1.87619-02	4.161+00	1.512+00	0.989	5.222
5.92243+00	1.826-02	2.094+00	2.21484-01	6.193-01	2.656+00	1.77217-02	3.884+00	1.333+00	0.990	5.839
5.22903+00	2.054-02	2.079+00	2.05963-01	6.918-01	2.759+00	1.67657-02	3.768+00	1.223+00	0.980	6.485
4.65064+00	2.332-02	2.100+00	1.92014-01	7.755-01	2.884+00	1.58851-02	3.796+00	1.168+00	0.960	7.104
4.16316+00	2.713-02	2.187+00	1.79432-01	8.504-01	2.955+00	1.50720-02	3.524+00	1.029+00	0.925	7.727
3.74850+00	2.927-02	2.125+00	1.68045-01	9.517-01	3.097+00	1.42753-02	3.506+00	9.691-01	0.875	8.344
3.39284+00	2.972-02	1.953+00	1.57706-01	1.062+00	3.243+00	1.34981-02	3.527+00	9.219-01	0.797	8.964
3.08550+00	3.626-02	2.166+00	1.48290-01	1.187+00	3.408+00	1.27826-02	3.195+00	7.908-01	0.670	9.604
2.81810+00	3.969-02	2.166+00	1.39691-01	1.269+00	3.433+00	1.21226-02	3.151+00	7.397-01		
2.58401+00	4.233-02	2.118+00	1.31817-01	1.426+00	3.640+00	1.14803-02	3.224+00	7.168-01		
2.37793+00	4.800-02	2.210+00	1.24589-01	1.617+00	3.902+00	1.08574-02	2.962+00	6.228-01		
2.19555+00	4.748-02	2.019+00	1.17938-01	1.776+00	4.055+00	1.02838-02	2.872+00	5.719-01		
2.03337+00	5.507-02	2.168+00	1.11804-01	1.944+00	4.209+00	9.75455-03	2.874+00	5.428-01		
1.88853+00	5.736-02	2.098+00	1.05246-01	2.155+00	4.391+00	9.24192-03	2.740+00	4.904-01		
1.75862+00	6.017-02	2.049+00	9.84183-02	2.350+00	4.478+00	8.74674-03	2.545+00	4.310-01		
1.64167+00	7.007-02	2.227+00	9.22323-02	2.602+00	4.647+00	8.29032-03	2.366+00	3.799-01		
1.53601+00	7.136-02	2.123+00	8.66103-02	2.833+00	4.752+00	7.86871-03	2.395+00	3.649-01		
1.44024+00	7.637-02	2.130+00	8.14860-02	3.051+00	4.814+00	7.46165-03	2.308+00	3.334-01		
1.35315+00	7.924-02	2.076+00	7.68023-02	3.252+00	4.836+00	7.06945-03	1.963+00	2.687-01		
1.27372+00	8.963-02	2.211+00	7.25103-02	3.558+00	4.996+00	6.70737-03	1.879+00	2.441-01		
1.20109+00	9.269-02	2.156+00	6.85674-02	3.766+00	5.000+00	6.35919-03	1.868+00	2.300-01		
1.13450+00	9.910-02	2.177+00	6.49370-02	3.931+00	4.943+00	6.02491-03	1.644+00	1.918-01		
1.07330+00	9.823-02	2.042+00	6.15868-02	4.089+00	4.876+00	5.71630-03	1.715+00	1.898-01		
1.01692+00	1.161-01	2.285+00	5.81234-02	4.273+00	4.810+00	5.42040-03	1.580+00	1.658-01		
9.40789-01	1.204-01	2.193+00	5.46009-02	4.486+00	4.743+00	5.13704-03	1.395+00	1.388-01		
8.51345-01	1.309-01	2.158+00	5.13886-02	4.594+00	4.571+00	4.87533-03	1.361+00	1.285-01		
7.74077-01	1.472-01	2.206+00	4.84513-02	4.814+00	4.517+00	4.62491-03	1.487+00	1.331-01		
7.06872-01	1.667-01	2.282+00	4.57584-02	4.791+00	4.245+00	4.38553-03	1.359+00	1.154-01		
6.48054-01	1.844-01	2.314+00	4.32837-02	4.910+00	4.115+00	4.15030-03	1.137+00	9.141-02		
5.96284-01	1.916-01	2.212+00	4.10042-02	4.904+00	3.894+00	3.92673-03	1.242+00	9.444-02		
5.50480-01	2.167-01	2.310+00	3.89000-02	5.000+00	3.766+00	3.68579-03	1.072+00	7.649-02		
5.09757-01	2.388-01	2.357+00	3.67683-02	4.976+00	3.543+00	3.40766-03	1.074+00	7.085-02		
4.73392-01	2.617-01	2.399+00	3.46280-02	4.923+00	3.301+00	3.13173-03	1.089+00	6.602-02		
4.40784-01	2.878-01	2.457+00	3.26735-02	4.891+00	3.094+00	2.78685-03	9.008-01	4.861-02		
4.11434-01	2.916-01	2.323+00	3.08799-02	4.903+00	2.932+00	2.38066-03	9.856-01	4.543-02		

GA-H₂O-1C

90° ANGULAR NEUTRON SPECTRUM IN BORATED H₂O5.2 BARNS/HYDROGEN ATOM (0.0253 eV)CALCULATION PARAMETERSSCATTERING KERNEL: GAKER (300°K, H(H₂O), P₀ + P₁)

TRANSPORT THEORY CODE: GAPLSN (ID 050464)

TEMPERATURE: 0.0258 eV

SOURCE: DSZ CODE (GA3542, P.145)

ATOM DENSITIES

$$N_H = 6.605 \times 10^{22}$$

$$N_B = 4.240 \times 10^{20}$$

$$N_O = 3.366 \times 10^{22}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = -0.03881$$

EXPERIMENTAL ARRANGEMENT 3/4/64 T3, T4PLAN VIEW NOT TO SCALE

90° ANGULAR NEUTRON SPECTRUM IN BORATED H₂O
3-4-64 T3, T4

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	Q (x)	x (cm)
4.61599+01	2.068-03	1.759+00	4.10075-01	3.808-01	2.876+00	3.25656-02	4.844+00	2.905+00	0.442	0.05
3.31715+01	3.036-03	1.855+00	3.83649-01	4.052-01	2.863+00	3.07779-02	4.804+00	2.724+00	0.604	0.742
2.49831+01	4.387-03	2.019+00	3.59697-01	4.278-01	2.834+00	2.91335-02	4.824+00	2.589+00	0.718	1.377
1.94909+01	5.960-03	2.140+00	3.37921-01	4.636-01	2.886+00	2.76175-02	4.650+00	2.365+00	0.800	1.986
1.56291+01	7.106-03	2.046+00	3.18064-01	4.818-01	2.823+00	2.61064-02	4.530+00	2.178+00	0.868	2.616
1.28109+01	9.996-03	2.359+00	2.99907-01	5.269-01	2.911+00	2.46122-02	4.428+00	2.007+00	0.914	3.236
1.06915+01	1.123-02	2.212+00	2.83262-01	5.410-01	2.822+00	2.32427-02	4.377+00	1.874+00	0.950	3.858
9.05763+00	1.389-02	2.317+00	2.67965-01	5.949-01	2.936+00	2.19844-02	4.333+00	1.754+00	0.978	4.615
7.77157+00	1.569-02	2.246+00	2.53976-01	6.353-01	2.972+00	2.08256-02	4.095+00	1.571+00	0.989	5.222
6.74116+00	1.778-02	2.208+00	2.38035-01	6.568-01	2.880+00	1.97560-02	3.919+00	1.426+00	0.990	5.839
5.90288+00	2.047-02	2.226+00	2.20753-01	7.504-01	3.051+00	1.86999-02	3.790+00	1.305+00	0.980	6.485
5.21176+00	2.420-02	2.323+00	2.05283-01	8.040-01	3.040+00	1.76632-02	3.718+00	1.210+00	0.960	7.104
4.63528+00	2.795-02	2.386+00	1.91380-01	9.105-01	3.210+00	1.67104-02	3.732+00	1.149+00	0.925	7.727
4.14942+00	3.349-02	2.560+00	1.78840-01	9.757-01	3.214+00	1.58326-02	3.463+00	1.010+00	0.875	8.344
3.73612+00	3.545-02	2.439+00	1.67490-01	1.096+00	3.380+00	1.50222-02	3.425+00	9.476-01	0.797	8.964
3.38164+00	4.102-02	2.555+00	1.57185-01	1.191+00	3.450+00	1.42282-02	3.263+00	8.551-01	0.670	9.604
3.07531+00	4.533-02	2.568+00	1.47800-01	1.332+00	3.625+00	1.34535-02	3.154+00	7.817-01		
2.80880+00	4.819-02	2.493+00	1.39230-01	1.447+00	3.711+00	1.27404-02	3.159+00	7.414-01		
2.57548+00	5.351-02	2.538+00	1.31382-01	1.598+00	3.867+00	1.20826-02	3.068+00	6.828-01		
2.37008+00	5.777-02	2.522+00	1.24177-01	1.759+00	4.023+00	1.14424-02	2.969+00	6.258-01		
2.18830+00	6.221-02	2.507+00	1.17548-01	1.927+00	4.173+00	1.08215-02	2.694+00	5.369-01		
2.02666+00	6.830-02	2.550+00	1.11435-01	2.075+00	4.259+00	1.02499-02	2.777+00	5.243-01		
1.88229+00	7.446-02	2.582+00	1.04899-01	2.295+00	4.434+00	9.72234-03	2.705+00	4.844-01		
1.75281+00	7.723-02	2.494+00	9.80933-02	2.525+00	4.563+00	9.21141-03	2.565+00	4.353-01		
1.63625+00	8.543-02	2.575+00	9.19277-02	2.772+00	4.693+00	8.71786-03	2.369+00	3.804-01		
1.53094+00	8.801-02	2.482+00	8.63244-02	3.025+00	4.810+00	8.26294-03	2.351+00	3.579-01		
1.43548+00	9.203-02	2.433+00	8.12169-02	3.287+00	4.918+00	7.84273-03	2.395+00	3.459-01		
1.34868+00	1.021-01	2.536+00	7.65487-02	3.442+00	4.854+00	7.43701-03	1.995+00	2.733-01		
1.26952+00	1.085-01	2.537+00	7.22708-02	3.756+00	5.000+00	7.04610-03	1.865+00	2.421-01		
1.19713+00	1.171-01	2.582+00	6.83410-02	3.912+00	4.924+00	6.68523-03	1.771+00	2.180-01		
1.13076+00	1.233-01	2.569+00	6.47226-02	4.124+00	4.916+00	6.33820-03	1.746+00	2.038-01		
1.06975+00	1.306-01	2.574+00	6.13835-02	4.277+00	4.836+00	6.00501-03	1.602+00	1.772-01		
1.01356+00	1.359-01	2.537+00	5.79314-02	4.442+00	4.740+00	5.69743-03	1.605+00	1.684-01		
9.37682-01	1.511-01	2.610+00	5.44206-02	4.617+00	4.628+00	5.40251-03	1.309+00	1.302-01		
8.48534-01	1.676-01	2.620+00	5.12190-02	4.800+00	4.528+00	5.12008-03	1.324+00	1.249-01		
7.71522-01	1.826-01	2.595+00	4.82913-02	4.937+00	4.391+00	4.84161-03	1.090+00	9.718-02		
7.04538-01	2.077-01	2.695+00	4.56074-02	4.959+00	4.166+00	4.57671-03	1.233+00	1.039-01		
6.45915-01	2.258-01	2.686+00	4.31408-02	4.972+00	3.951+00	4.34064-03	1.357+00	1.085-01		
5.94316-01	2.441-01	2.672+00	4.08688-02	5.000+00	3.764+00	4.06782-03	1.056+00	7.912-02		
5.48662-01	2.686-01	2.714+00	3.87715-02	4.980+00	3.556+00	3.72809-03	9.794-01	6.725-02		
5.08074-01	2.900-01	2.714+00	3.66469-02	4.918+00	3.319+00	3.38642-03	1.035+00	6.459-02		
4.71829-01	3.209-01	2.789+00	3.45137-02	4.864+00	3.092+00	2.97814-03	8.522-01	4.675-02		
4.39329-01	3.460-01	2.800+00								

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90° ANGULAR NEUTRON SPECTRUM IN BORATED H₂O

5.2 BARNS/HYDROGEN ATOM (0.0253 eV)

CALCULATION PARAMETERS

SCATTERING KERNEL: GAKER(300°K, H(H₂O, P₀ + P₁))

TRANSPORT THEORY CODE: GAPLSN (ID 050464)

TEMPERATURE: 0.0258 eV

SOURCE: DSZ CODE (GA3542, P.145)

ATOM DENSITIES

$$\begin{aligned} N_H &= 6.605 \times 10^{22} \\ N_B &= 4.240 \times 10^{20} \\ N_O &= 3.366 \times 10^{22} \end{aligned}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = -0.03881$$

90° ANGULAR NEUTRON SPECTRUM IN BORATED H₂O
3-4-64 T1, T2

E(ev)	ϕ (E)	E ϕ (E)	E(ev)	ϕ (E)	E ϕ (E)	E(ev)	ϕ (E)	E ϕ (E)	Q (x)	x (cm)
4.59837+01	5.138-03	3.853+00	5.46568-01	5.127-01	4.530+00	4.81071-02	4.948+00	3.848+00	0.442	0.05
3.30449+01	7.776-03	4.154+00	5.06135-01	5.693-01	4.658+00	4.54333-02	4.933+00	3.623+00	0.604	0.742
2.48877+01	1.080-02	4.346+00	4.70029-01	6.030-01	4.582+00	4.29762-02	5.000+00	3.474+00	0.718	1.377
1.94165+01	1.497-02	4.699+00	4.37653-01	6.392-01	4.523+00	4.07129-02	4.906+00	3.229+00	0.800	1.986
1.55695+01	1.775-02	4.467+00	4.08510-01	7.153-01	4.724+00	3.86236-02	4.688+00	2.927+00	0.868	2.616
1.27620+01	2.312-02	4.771+00	3.82185-01	7.465-01	4.613+00	3.65071-02	4.807+00	2.837+00	0.914	3.236
1.06507+01	2.667-02	4.592+00	3.58325-01	7.515-01	4.354+00	3.43820-02	4.763+00	2.647+00	0.950	3.858
9.02307+00	3.293-02	4.804+00	3.36631-01	8.006-01	4.357+00	3.24413-02	4.515+00	2.368+00	0.978	4.615
7.74191+00	3.933-02	4.923+00	3.16850-01	8.650-01	4.431+00	3.06605-02	4.426+00	2.194+00	0.989	5.222
6.71544+00	4.257-02	4.621+00	2.98762-01	9.132-01	4.411+00	2.90224-02	4.296+00	2.016+00	0.990	5.839
5.88035+00	4.782-02	4.546+00	2.82181-01	9.494-01	4.331+00	2.75121-02	4.079+00	1.814+00	0.980	6.485
5.19188+00	5.303-02	4.451+00	2.66942-01	1.015+00	4.381+00	2.60068-02	3.965+00	1.667+00	0.960	7.104
4.61760+00	6.392-02	4.772+00	2.53007-01	1.027+00	4.203+00	2.45183-02	3.920+00	1.554+00	0.925	7.727
4.13358+00	7.075-02	4.728+00	2.37127-01	1.105+00	4.236+00	2.31540-02	3.642+00	1.363+00	0.875	8.344
3.72187+00	8.303-02	4.996+00	2.19911-01	1.199+00	4.262+00	2.19005-02	3.735+00	1.323+00	0.797	8.964
3.36874+00	8.620-02	4.695+00	2.04499-01	1.295+00	4.280+00	2.07461-02	3.422+00	1.148+00	0.670	9.604
3.06358+00	9.418-02	4.665+00	1.90650-01	1.408+00	4.340+00	1.96806-02	3.399+00	1.082+00		
2.79808+00	1.018-01	4.604+00	1.78157-01	1.523+00	4.388+00	1.86286-02	3.014+00	9.078-01		
2.56566+00	1.105-01	4.582+00	1.66851-01	1.630+00	4.396+00	1.75958-02	3.013+00	8.571-01		
2.36103+00	1.187-01	4.529+00	1.56585-01	1.771+00	4.483+00	1.66466-02	3.129+00	8.422-01		
2.17995+00	1.382-01	4.870+00	1.47237-01	1.906+00	4.538+00	1.57722-02	2.817+00	7.184-01		
2.01893+00	1.474-01	4.810+00	1.38699-01	2.093+00	4.692+00	1.49649-02	2.732+00	6.610-01		
1.87511+00	1.526-01	4.627+00	1.30880-01	2.147+00	4.542+00	1.41739-02	2.755+00	6.313-01		
1.74613+00	1.645-01	4.645+00	1.23704-01	2.349+00	4.698+00	1.34022-02	2.504+00	5.425-01		
1.63001+00	1.712-01	4.512+00	1.17100-01	2.525+00	4.780+00	1.26918-02	2.433+00	4.992-01		
1.52510+00	1.797-01	4.431+00	1.11010-01	2.664+00	4.781+00	1.20365-02	2.290+00	4.456-01		
1.43000+00	1.983-01	4.585+00	1.04499-01	2.887+00	4.877+00	1.13987-02	2.252+00	4.149-01		
1.34353+00	2.125-01	4.616+00	9.77191-02	3.156+00	4.985+00	1.07802-02	2.276+00	3.966-01		
1.26467+00	2.272-01	4.646+00	9.15770-02	3.366+00	4.984+00	1.02108-02	2.070+00	3.417-01		
1.19256+00	2.357-01	4.543+00	8.59950-02	3.579+00	4.976+00	9.68524-03	2.190+00	3.429-01		
1.12644+00	2.491-01	4.537+00	8.09071-02	3.823+00	5.000+00	9.17626-03	1.936+00	2.871-01		
1.06567+00	2.677-01	4.612+00	7.62567-02	3.970+00	4.894+00	8.68460-03	1.831+00	2.571-01		
1.00969+00	2.868-01	4.682+00	7.19951-02	4.205+00	4.894+00	8.23142-03	1.800+00	2.396-01		
9.34104-01	3.141-01	4.744+00	6.80803-02	4.201+00	4.623+00	7.81280-03	1.572+00	1.985-01		
8.45296-01	3.377-01	4.615+00	6.44756-02	4.523+00	4.715+00	7.39201-03	1.556+00	1.860-01		
7.68578-01	3.757-01	4.669+00	6.11492-02	4.655+00	4.602+00	6.85337-03	1.323+00	1.465-01		
7.01850-01	4.027-01	4.569+00	5.77104-02	4.744+00	4.427+00	5.96924-03	9.997-01	9.648-02		
6.43450-01	4.411-01	4.589+00	5.42130-02	4.754+00	4.167+00	4.88126-03	1.048+00	8.269-02		
5.92048-01	4.775-01	4.571+00	5.10235-02	4.952+00	4.085+00					

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GA H₂O-2A

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED H₂O AT ROOM TEMPERATURE

5.2 BARNS /HYDROGEN ATOM (0.0253 ev)

CALCULATION PARAMETERS

SCATTERING KERNEL: GAKER

DIFFUSION THEORY CODE: B-SPECTRUM (1D71263)

TEMPERATURE: 23°C

SOURCE: erf $\sqrt{E/KT_{\text{eff}}}$ ($KT_{\text{eff}} = 0.117$)

ATOM DENSITIES

$$N_B = 4.2118 \times 10^{20}$$

$$N_O = 3.3679 \times 10^{22}$$

$$N_H = 6.609 \times 10^{22}$$

LOCAL BUCKLING

$$B^2 = 0.0$$

NEUTRON CONSERVATION

$$\left[\frac{\text{TOTAL ABSORPTIONS}}{\text{SLOWING DOWN DENSITY}} \right] = 0.946$$

COMMENTS

CALCULATION IS FOR 23°C

EXPERIMENTAL ARRANGEMENT 3/7/63 T26, T27

PLAN VIEW

NOT TO SCALE

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED WATER AT
ROOM TEMPERATURE
3-7-63 T26, T27

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$
9.79629+01	1.052-03	1.950+00	1.83040-01	8.425-01	2.917+00
6.16200+01	1.654-03	1.928+00	1.64132-01	1.020+00	3.168+00
4.23040+01	2.406-03	1.925+00	1.46564-01	1.256+00	3.483+00
3.08283+01	3.336-03	1.945+00	1.30386-01	1.501+00	3.703+00
2.34597+01	4.459-03	1.979+00	1.16741-01	1.837+00	4.056+00
1.84487+01	5.565-03	1.942+00	1.04262-01	2.257+00	4.452+00
1.48872+01	7.211-03	2.030+00	9.29085-02	2.662+00	4.679+00
1.22657+01	7.796-03	1.809+00	8.33093-02	3.105+00	4.892+00
1.02802+01	9.836-03	1.913+00	7.45978-02	3.544+00	5.000+00
8.74050+00	1.276-02	2.109+00	6.67137-02	3.891+00	4.909+00
7.52248+00	1.413-02	2.010+00	5.96399-02	4.322+00	4.875+00
6.54241+00	1.589-02	1.966+00	5.32980-02	4.609+00	4.646+00
5.74209+00	1.854-02	2.013+00	4.76477-02	4.750+00	4.281+00
5.08013+00	2.066-02	1.985+00	4.26102-02	4.976+00	4.010+00
4.52637+00	2.200-02	1.884+00	3.81391-02	5.000+00	3.607+00
3.85898+00	2.780-02	2.029+00	3.41558-02	4.860+00	3.140+00
3.16821+00	3.477-02	2.084+00	3.06309-02	4.705+00	2.726+00
2.64764+00	4.118-02	2.062+00	2.73843-02	4.642+00	2.404+00
2.24563+00	4.723-02	2.006+00	2.45234-02	4.523+00	2.098+00
1.92871+00	5.791-02	2.113+00	2.20045-02	4.307+00	1.793+00
1.67444+00	6.677-02	2.115+00	1.97080-02	4.037+00	1.505+00
1.46735+00	7.464-02	2.072+00	1.76290-02	3.300+00	1.100+00
1.29643+00	8.369-02	2.052+00	1.58084-02	3.205+00	9.583-01
1.15374+00	9.494-02	2.072+00	1.42124-02	3.192+00	8.582-01
1.03337+00	9.833-02	1.922+00	1.27700-02	3.125+00	7.549-01
9.08384-01	1.217-01	2.092+00	1.14715-02	2.969+00	6.442-01
7.85461-01	1.490-01	2.214+00	1.03060-02	2.400+00	4.678-01
6.85908-01	1.720-01	2.231+00	9.26236-03	2.214+00	3.879-01
6.04153-01	1.941-01	2.218+00	8.32933-03	2.256+00	3.555-01
5.36192-01	2.193-01	2.224+00	7.47953-03	1.623+00	2.296-01
4.79087-01	2.610-01	2.365+00	6.70936-03	1.441+00	1.829-01
4.23507-01	2.979-01	2.387+00	6.02755-03	1.439+00	1.640-01
3.70846-01	3.531-01	2.477+00	5.41327-03	1.238+00	1.267-01
3.27432-01	4.082-01	2.528+00	4.86116-03	1.388+00	1.277-01
2.91220-01	4.560-01	2.512+00	4.36669-03	1.290+00	1.066-01
2.60768-01	5.168-01	2.549+00	3.92431-03	1.215+00	9.021-02
2.32116-01	6.096-01	2.676+00	3.52941-03	7.990-01	5.334-02
2.05402-01	7.037-01	2.734+00

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED H₂O AT 150°C

5.2 BARNS/HYDROGEN ATOM (0.0253 eV)

CALCULATION PARAMETERS

SCATTERING KERNEL: THERMIDOR (150°C, H(H₂O))

DIFFUSION THEORY CODE: GATHER (ID 32202)

TEMPERATURE: 150°C

SOURCE: erf $\sqrt{E/KT_{\text{eff}}}$ ($KT_{\text{eff}} = 0.117$)

ATOM DENSITIES

$$N_B = 4.2118 \times 10^{20}$$

$$N_O = 3.3679 \times 10^{22}$$

$$N_H = 6.609 \times 10^{22}$$

LOCAL BUCKING

$$B^2 = 0.0$$

NEUTRON CONSERVATION

$$\left[\frac{\text{TOTAL ABSORPTIONS}}{\text{SLOWING DOWN DENSITY}} \right] = 0.940$$

EXPERIMENTAL ARRANGEMENT 3/8/63 T29, T28

PLAN VIEW

NOT TO SCALE

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED WATER AT 150°C

3-8-63

T29, T28

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$
9.79629+01	1.126-03	1.621+00	1.83040-01	1.278+00	3.437+00
6.16200+01	1.681-03	1.522+00	1.64132-01	1.583+00	3.819+00
4.23040+01	2.601-03	1.617+00	1.46564-01	1.969+00	4.241+00
3.08283+01	3.834-03	1.737+00	1.30386-01	2.325+00	4.455+00
2.34597+01	4.657-03	1.606+00	1.16741-01	2.746+00	4.712+00
1.84487+01	6.113-03	1.658+00	1.04262-01	3.203+00	4.909+00
1.48872+01	7.429-03	1.626+00	9.29085-02	3.662+00	5.000+00
1.22657+01	9.335-03	1.683+00	8.33093-02	3.989+00	4.885+00
1.02802+01	1.089-02	1.645+00	7.45978-02	4.391+00	4.815+00
8.74050+00	1.230-02	1.580+00	6.67137-02	4.572+00	4.483+00
7.52248+00	1.630-02	1.802+00	5.96399-02	4.901+00	4.296+00
6.54241+00	1.818-02	1.748+00	5.32980-02	4.982+00	3.903+00
5.74209+00	1.974-02	1.666+00	4.76477-02	4.997+00	3.500+00
5.08013+00	2.218-02	1.656+00	4.26102-02	5.000+00	3.131+00
4.52637+00	2.689-02	1.789+00	3.81391-02	4.893+00	2.743+00
3.85898+00	3.018-02	1.712+00	3.41558-02	4.616+00	2.317+00
3.16821+00	3.762-02	1.752+00	3.06309-02	4.404+00	1.983+00
2.64764+00	4.662-02	1.814+00	2.73843-02	4.384+00	1.765+00
2.24563+00	5.435-02	1.794+00	2.45234-02	4.122+00	1.486+00
1.92871+00	6.391-02	1.812+00	2.20045-02	3.852+00	1.246+00
1.67444+00	7.092-02	1.745+00	1.97080-02	3.537+00	1.025+00
1.46735+00	8.240-02	1.777+00	1.76290-02	2.966+00	7.686-01
1.29643+00	9.620-02	1.833+00	1.58084-02	2.780+00	6.459-01
1.15374+00	1.026-01	1.740+00	1.42124-02	2.824+00	5.898-01
1.03337+00	1.165-01	1.769+00	1.27700-02	2.565+00	4.815-01
9.08384-01	1.388-01	1.853+00	1.14715-02	2.509+00	4.231-01
7.85461-01	1.660-01	1.917+00	1.03060-02	2.099+00	3.179-01
6.85908-01	1.882-01	1.897+00	9.26236-03	1.876+00	2.554-01
6.04153-01	2.223-01	1.974+00	8.32933-03	1.808+00	2.213-01
5.36192-01	2.462-01	1.941+00	7.47953-03	1.055+00	1.160-01
4.79087-01	2.926-01	2.060+00	6.70936-03	9.964-01	9.826-02
4.23507-01	3.354-01	2.087+00	6.02755-03	1.116+00	9.890-02
3.70846-01	4.041-01	2.203+00	5.41327-03	1.025+00	8.159-02
3.27432-01	4.640-01	2.233+00	4.86116-03	1.186+00	8.472-02
2.91220-01	5.605-01	2.399+00	4.36669-03	1.107+00	7.105-02
2.60768-01	6.453-01	2.473+00	3.92431-03	1.062+00	6.124-02
2.32116-01	7.945-01	2.710+00	3.05843-03	5.039-01	2.265-02
2.05402-01	9.998-01	3.018+00			

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INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED H₂O AT 232 °C5.2 BARNS/HYDROGEN ATOM (0.0253 ev)CALCULATION PARAMETERSSCATTERING KERNEL: THERMIDOR (250°C, H(H₂O))

DIFFUSION THEORY CODE: GATHER (ID 32203)

TEMPERATURE: 250°C

SOURCE: erf $\sqrt{E/KT_{eff}}$ ($KT_{eff} = 0.117$)ATOM DENSITIES

$$N_B = 4.2118 \times 10^{20}$$

$$N_O = 3.3679 \times 10^{22}$$

$$N_H = 6.609 \times 10^{22}$$

LOCAL BUCKLING

$$B^2 = 0.0$$

NEUTRON CONSERVATION

$$\left[\frac{\text{TOTAL ABSORPTIONS}}{\text{SLOWING DOWN DENSITY}} \right] = 0.958$$

COMMENTS

CALCULATION IS FOR 250°C

EXPERIMENTAL ARRANGEMENT 3/11/63 T1, T2
PLAN VIEW NOT TO SCALE

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED WATER AT 232°C
3-11-63 T1, T2

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$
9.79629+01	1.126-03	1.395+00	2.05402-01	1.350+00	3.506+00
6.16200+01	1.846-03	1.438+00	1.83040-01	1.682+00	3.891+00
4.23040+01	2.866-03	1.533+00	1.64132-01	2.055+00	4.265+00
3.08283+01	3.923-03	1.529+00	1.46564-01	2.454+00	4.548+00
2.34597+01	5.074-03	1.505+00	1.30386-01	2.899+00	4.780+00
1.84487+01	6.526-03	1.522+00	1.16741-01	3.343+00	4.934+00
1.48872+01	8.269-03	1.556+00	1.04262-01	3.793+00	5.000+00
1.22657+01	1.027-02	1.593+00	9.29085-02	4.111+00	4.829+00
1.02802+01	1.203-02	1.564+00	8.33093-02	4.418+00	4.653+00
8.74050+00	1.437-02	1.588+00	7.45978-02	4.689+00	4.423+00
7.52248+00	1.654-02	1.573+00	6.67137-02	4.856+00	4.096+00
6.54241+00	1.864-02	1.542+00	5.96399-02	4.992+00	3.764+00
5.74209+00	2.212-02	1.606+00	5.32980-02	5.000+00	3.369+00
5.08013+00	2.466-02	1.584+00	4.76477-02	4.896+00	2.950+00
4.52637+00	2.828-02	1.618+00	4.26102-02	4.846+00	2.610+00
3.85898+00	3.283-02	1.602+00	3.81391-02	4.667+00	2.251+00
3.16821+00	4.105-02	1.644+00	3.41558-02	4.426+00	1.911+00
2.64764+00	4.801-02	1.607+00	3.06309-02	4.067+00	1.575+00
2.24563+00	5.615-02	1.594+00	2.73843-02	3.955+00	1.369+00
1.92871+00	6.722-02	1.639+00	2.45234-02	3.755+00	1.164+00
1.67444+00	7.628-02	1.615+00	2.20045-02	3.518+00	9.787-01
1.46735+00	8.850-02	1.642+00	1.97080-02	3.257+00	8.116-01
1.29643+00	1.025-01	1.680+00	1.76290-02	2.724+00	6.070-01
1.15374+00	1.116-01	1.628+00	1.58084-02	2.488+00	4.972-01
1.03337+00	1.224-01	1.599+00	1.42124-02	2.440+00	4.385-01
9.08384-01	1.485-01	1.706+00	1.27700-02	2.290+00	3.697-01
7.85461-01	1.721-01	1.709+00	1.14715-02	2.232+00	3.237-01
6.85908-01	2.040-01	1.769+00	1.03060-02	1.747+00	2.277-01
6.04153-01	2.389-01	1.825+00	9.26236-03	1.661+00	1.945-01
5.36192-01	2.746-01	1.862+00	8.32933-03	1.496+00	1.575-01
4.79087-01	3.126-01	1.894+00	7.47953-03	1.186+00	1.121-01
4.23507-01	3.719-01	1.992+00	6.70936-03	8.909-01	7.557-02
3.70846-01	4.580-01	2.147+00	5.84132-03	5.942-01	4.389-02
3.27432-01	5.490-01	2.273+00	5.08294-03	8.027-01	5.158-02
2.91220-01	6.695-01	2.465+00	4.56308-03	9.206-01	5.311-02
2.60768-01	8.316-01	2.742+00	4.09843-03	8.190-01	4.244-02
2.32116-01	1.046+00	3.070+00			

GA-H₂O-2D

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED H₂O AT 316 °C

5.2 BARNS / HYDROGEN ATOM (0.0253 eV)

CALCULATION PARAMETERS

SCATTERING KERNEL: THERMIDOR (310°C, H(H₂O))

DIFFUSION THEORY CODE: GATHER (ID 32204)

TEMPERATURE: 310°C

SOURCE: erf $\sqrt{E/KT_{\text{eff}}}$ ($KT_{\text{eff}} = 0.117$)

ATOM DENSITIES

$$N_B = 4.2118 \times 10^{20}$$

$$N_O = 3.3679 \times 10^{22}$$

$$N_H = 6.609 \times 10^{22}$$

LOCAL BUCKLING

$$B^2 = 0.0$$

NEUTRON CONSERVATION

$$\left[\frac{\text{TOTAL ABSORPTIONS}}{\text{SLOWING DOWN DENSITY}} \right] = 0.953$$

COMMENTS

CALCULATION IS FOR 310°C

EXPERIMENTAL ARRANGEMENT 3/11/63 T3, T4 PLAN VIEW

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INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED WATER AT 316°C
3-11-63 T3, T4

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$
9.79629+01	1.351-03	1.475+00	1.83040-01	2.073+00	4.227+00
6.16200+01	2.065-03	1.418+00	1.64132-01	2.503+00	4.577+00
4.23040+01	3.060-03	1.443+00	1.46564-01	2.986+00	4.877+00
3.08283+01	4.180-03	1.436+00	1.30386-01	3.397+00	4.936+00
2.34597+01	5.785-03	1.512+00	1.16741-01	3.844+00	5.000+00
1.84487+01	7.404-03	1.522+00	1.04262-01	4.180+00	4.856+00
1.48872+01	9.085-03	1.507+00	9.29085-02	4.560+00	4.721+00
1.22657+01	9.951-03	1.360+00	8.33093-02	4.813+00	4.468+00
1.02802+01	1.331-02	1.524+00	7.45978-02	4.896+00	4.070+00
8.74050+00	1.534-02	1.494+00	6.67137-02	4.965+00	3.691+00
7.52248+00	1.818-02	1.524+00	5.96399-02	5.000+00	3.323+00
6.54241+00	2.045-02	1.491+00	5.32980-02	4.961+00	2.946+00
5.74209+00	2.364-02	1.513+00	4.76477-02	4.833+00	2.566+00
5.08013+00	2.733-02	1.547+00	4.26102-02	4.697+00	2.230+00
4.52637+00	3.010-02	1.518+00	3.81391-02	4.505+00	1.914+00
3.85898+00	3.558-02	1.530+00	3.41558-02	4.181+00	1.591+00
3.16821+00	4.338-02	1.532+00	3.06309-02	3.921+00	1.338+00
2.64764+00	5.220-02	1.540+00	2.73843-02	3.697+00	1.128+00
2.24563+00	6.079-02	1.521+00	2.45234-02	3.413+00	9.325-01
1.92871+00	7.037-02	1.512+00	2.20045-02	3.228+00	7.915-01
1.67444+00	8.379-02	1.563+00	1.97080-02	3.003+00	6.595-01
1.46735+00	9.715-02	1.588+00	1.76290-02	2.503+00	4.917-01
1.29643+00	1.097-01	1.584+00	1.58084-02	2.323+00	4.092-01
1.15374+00	1.204-01	1.548+00	1.42124-02	2.238+00	3.544-01
1.03337+00	1.367-01	1.574+00	1.27700-02	2.098+00	2.985-01
9.08384-01	1.598-01	1.618+00	1.14715-02	1.982+00	2.534-01
7.85461-01	1.869-01	1.636+00	1.03060-02	1.660+00	1.907-01
6.85908-01	2.200-01	1.682+00	9.26236-03	1.456+00	1.503-01
6.04153-01	2.540-01	1.710+00	8.32933-03	1.545+00	1.434-01
5.36192-01	2.989-01	1.786+00	7.47953-03	1.088+00	9.070-02
4.79087-01	3.564-01	1.903+00	6.70936-03	9.402-01	7.029-02
4.23507-01	4.212-01	1.988+00	5.80768-03	6.522-01	4.221-02
3.70846-01	5.339-01	2.206+00	4.93632-03	9.165-01	5.041-02
3.27432-01	6.651-01	2.427+00	4.35152-03	8.521-01	4.132-02
2.91220-01	8.341-01	2.707+00	3.91138-03	7.067-01	3.080-02
2.60768-01	1.022+00	2.970+00	3.48128-03	6.619-01	2.567-02
2.32116-01	1.327+00	3.433+00	3.00384-03	6.152-01	2.059-02
2.05402-01	1.694+00	3.877+00			

GA-H₂O-3A

INFINITE MEDIUM NEUTRON SPECTRUM IN GADOLINIUM POISONED H₂O

~20 BARNS/HYDROGEN ATOM (0.0253 ev)

EXPERIMENTAL ARRANGEMENT 10/25/62 T6, T5

PLAN VIEW

CALCULATION PARAMETERS

SCATTERING KERNEL: NELKIN WATER (26°C)

DIFFUSION THEORY CODE: B-SPECTRUM (ID91362)

TEMPERATURE: 26°C

SOURCE: erf $\sqrt{E/KT_{\text{eff}}}$ ($KT_{\text{eff}} = .117$)

ATOM DENSITIES

$N_H = 6.6847 \times 10^{22}$ ATOMS/CC

$N_{Cl} = 8.4570 \times 10^{19}$ ATOMS/CC

$N_{Gd} = 2.8190 \times 10^{19}$ ATOMS/CC

LOCAL BUCKLING

$B^2 = 0.0$

NEUTRON CONSERVATION

$\left[\frac{\text{TOTAL ABSORPTIONS}}{\text{SLOWING DOWN DENSITY}} \right] = 1.090$

GENERAL ATOMIC LINAC-PULSED TIME-IN-FLIGHT TECHNIQUES

DATE ISSUED: 1/30/65

INFINITE MEDIUM NEUTRON SPECTRUM IN GADOLINUM POISONED H₂O
10-25-62 T6, T5

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$
4.20540+01	5.004-03	2.236+00	8.68220-02	4.759+00	4.391+00
1.83610+01	1.263-02	2.454+00	7.58435-02	5.000+00	4.030+00
1.02372+01	2.386-02	2.596+00	6.68228-02	4.923+00	3.495+00
6.51727+00	3.872-02	2.682+00	5.93205-02	4.931+00	3.109+00
4.51000+00	5.575-02	2.672+00	5.30140-02	4.850+00	2.732+00
3.30517+00	8.218-02	2.886+00	4.68734-02	4.536+00	2.259+00
2.52577+00	1.062-01	2.851+00	4.10531-02	4.315+00	1.882+00
1.99276+00	1.349-01	2.856+00	3.62531-02	3.941+00	1.518+00
1.61226+00	1.736-01	2.975+00	3.22482-02	3.701+00	1.268+00
1.33117+00	2.092-01	2.959+00	2.88718-02	3.548+00	1.089+00
1.11767+00	2.596-01	3.083+00	2.56797-02	3.171+00	8.652-01
9.51690-01	3.118-01	3.153+00	2.27074-02	2.982+00	7.194-01
8.20117-01	3.719-01	3.241+00	2.02222-02	2.675+00	5.749-01
7.14057-01	4.369-01	3.315+00	1.81230-02	2.567+00	4.944-01
6.27315-01	5.062-01	3.375+00	1.61755-02	2.441+00	4.196-01
5.55470-01	5.946-01	3.510+00	1.43842-02	2.156+00	3.296-01
4.95296-01	6.867-01	3.614+00	1.28749-02	1.953+00	2.672-01
4.22676-01	8.473-01	3.806+00	1.14957-02	1.899+00	2.320-01
3.47400-01	1.074+00	3.966+00	1.02419-02	1.785+00	1.942-01
2.91243-01	1.333+00	4.124+00	9.18263-03	1.553+00	1.515-01
2.47239-01	1.623+00	4.265+00	8.22184-03	1.460+00	1.276-01
2.12505-01	2.008+00	4.535+00	7.35273-03	1.245+00	9.730-02
1.84608-01	2.367+00	4.643+00	6.57326-03	1.140+00	7.962-02
1.61864-01	2.807+00	4.829+00	5.87464-03	1.003+00	6.262-02
1.43078-01	3.242+00	4.928+00	5.25233-03	8.518-01	4.754-02
1.27382-01	3.694+00	5.000+00	4.69758-03	7.607-01	3.797-02
1.14134-01	4.082+00	4.951+00	4.18434-03	6.305-01	2.803-02
1.00369-01	4.505+00	4.804+00	3.57945-03	5.393-01	2.051-02

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90° ANGULAR NEUTRON SPECTRUM IN BORATED H₂O5.2 BARNS/HYDROGEN ATOM (0.0253 ev)CALCULATION PARAMETERSSCATTERING KERNEL: GAKER (KOPPEL 296°K, P₀ + P₁)

TRANSPORT THEORY CODE: GAPLSN (8/1/63)

TEMPERATURE: 296°K

SOURCE: DSZ (GA 3542, P. 145)

ATOM DENSITIES

$$N_H = 6.6603 \times 10^{22} \text{ ATOMS/CC}$$

$$N_O = 3.3940 \times 10^{22} \text{ ATOMS/CC}$$

$$N_B = 4.2573 \times 10^{20} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = -0.02328 \text{ CM}^{-2}$$

COMMENTS

THE RELATIVE INTENSITY BETWEEN GA-H₂O-4A AND GA-H₂O-4B HAS BEEN PRESERVED FOR THE THEORY AND THE EXPERIMENT. THE THEORY WAS NORMALIZED TO GA-H₂O-4A.

90° ANGULAR NEUTRON SPECTRUM IN BORATED H₂O
1-17-63 T5, T4

E(ev)	φ(E)	Eφ(E)	E(ev)	φ(E)	Eφ(E)	x (cm)	Q (x)
7.76560+01	4.535+05	3.522+07	1.36526-01	4.257+08	5.813+07	0.218	0.618
5.11164+01	7.586+05	3.878+07	1.21919-01	5.047+08	6.154+07	0.537	0.715
3.61768+01	1.102+06	3.987+07	1.08611-01	6.011+08	6.529+07	0.855	0.796
2.69442+01	1.467+06	3.952+07	9.65483-02	7.080+08	6.836+07	1.174	0.853
2.08427+01	1.964+06	4.094+07	8.63846-02	8.153+08	7.043+07	1.492	0.904
1.66014+01	2.631+06	4.368+07	7.71903-02	9.292+08	7.172+07	1.811	0.939
1.35343+01	3.312+06	4.483+07	6.88944-02	1.023+09	7.049+07	2.129	0.974
1.12448+01	3.762+06	4.230+07	6.14730-02	1.134+09	6.976+07	2.445	0.982
9.49077+00	4.486+06	4.257+07	5.48375-02	1.209+09	6.634+07	2.766	1.000
8.11724+00	5.497+06	4.462+07	4.89410-02	1.251+09	6.124+07	3.085	0.982
7.02166+00	6.015+06	4.224+07	4.36969-02	1.291+09	5.644+07	3.403	0.920
6.13379+00	7.133+06	4.375+07	3.90532-02	1.285+09	5.022+07	3.722	0.845
5.40426+00	7.998+06	4.322+07	3.49279-02	1.258+09	4.395+07	4.040	0.875
4.79755+00	9.020+06	4.327+07	3.12802-02	1.232+09	3.856+07	4.359	0.831
4.28755+00	9.848+06	4.222+07	2.80490-02	1.206+09	3.383+07	4.677	0.774
3.66954+00	1.264+07	4.638+07	2.51908-02	1.136+09	2.863+07	4.996	0.660
3.02610+00	1.392+07	4.213+07	2.25681-02	1.081+09	2.441+07		
2.53824+00	1.718+07	4.362+07	2.01824-02	1.022+09	2.062+07		
2.15954+00	1.985+07	4.288+07	1.80897-02	9.359+08	1.693+07		
1.85970+00	2.292+07	4.264+07	1.62531-02	8.970+08	1.457+07		
1.61825+00	2.537+07	4.106+07	1.45892-02	8.546+08	1.246+07		
1.42095+00	2.920+07	4.149+07	1.30888-02	8.086+08	1.058+07		
1.25766+00	3.386+07	4.259+07	1.17411-02	7.438+08	8.734+06		
1.12098+00	3.730+07	4.181+07	1.05339-02	7.096+08	7.475+06		
9.80182-01	4.270+07	4.186+07	9.45515-03	6.443+08	6.092+06		
8.42793-01	5.053+07	4.259+07	8.49247-03	5.254+08	4.462+06		
7.32398-01	5.952+07	4.359+07	7.63432-03	3.770+08	2.878+06		
6.42359-01	6.745+07	4.333+07	6.85520-03	4.594+08	3.149+06		
5.67962-01	7.688+07	4.366+07	6.15081-03	4.278+08	2.631+06		
5.05782-01	8.527+07	4.313+07	5.52789-03	3.721+08	2.057+06		
4.53282-01	9.730+07	4.410+07	4.96743-03	3.459+08	1.718+06		
4.01943-01	1.116+08	4.486+07	4.46414-03	3.129+08	1.397+06		
3.53078-01	1.267+08	4.475+07	4.01361-03	2.966+08	1.190+06		
3.12613-01	1.442+08	4.508+07	3.60503-03	2.563+08	9.240+05		
2.78727-01	1.661+08	4.631+07	3.23627-03	2.408+08	7.793+05		
2.47051-01	1.893+08	4.677+07	2.90473-03	2.010+08	5.838+05		
2.17772-01	2.152+08	4.688+07	2.60752-03	1.790+08	4.668+05		
1.93396-01	2.530+08	4.894+07	2.32723-03	1.712+08	3.985+05		
1.72886-01	2.975+08	5.143+07	2.02449-03	1.597+08	3.234+05		
1.53917-01	3.569+08	5.494+07					

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90° ANGULAR NEUTRON SPECTRUM IN BORATED H₂O5.2 BARNS/HYDROGEN ATOM (0.0253 eV)CALCULATION PARAMETERSSCATTERING KERNEL: GAKER (KOPPEL 296°K, P₀ + P₁)

TRANSPORT THEORY CODE: GAPLSN (8/1/63)

TEMPERATURE: 0.0255 eV

SOURCE: DSZ (GA 3542, P. 145)

ATOM DENSITIES

$$N_H = 6.6603 \times 10^{22} \text{ ATOMS/CC}$$

$$N_O = 3.3940 \times 10^{22} \text{ ATOMS/CC}$$

$$N_B = 4.2573 \times 10^{20} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = -0.02328 \text{ CM}^{-2}$$

COMMENTS

THE RELATIVE INTENSITY BETWEEN GA-H₂O-4A AND GA-H₂O-4B HAS BEEN PRESERVED FOR THE THEORY AND THE EXPERIMENT. THE THEORY WAS NORMALIZED TO GA-H₂O-4A.

EXPERIMENTAL ARRANGEMENT 1/17/63 T7, T6PLAN VIEW NOT TO SCALE

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GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT TECHNIQUES

DATE ISSUED: 1/30/65

90° ANGULAR NEUTRON SPECTRUM IN BORATED H₂O
1-17-63 T7, T6

E(ev)	φ(E)	Eφ(E)	E(ev)	φ(E)	Eφ(E)	x (cm)	Q (x)
7.77547+01	4.471+05	3.477+07	1.36700-01	4.064+08	5.556+07	0.218	0.618
5.11813+01	7.359+05	3.766+07	1.22074-01	4.939+08	6.030+07	0.537	0.715
3.62228+01	9.583+05	3.471+07	1.08749-01	6.011+08	6.537+07	0.855	0.796
2.69785+01	1.321+06	3.563+07	9.66710-02	7.238+08	6.997+07	1.174	0.853
2.08692+01	1.800+06	3.758+07	8.64944-02	8.406+08	7.270+07	1.492	0.904
1.66225+01	2.161+06	3.593+07	7.72885-02	9.541+08	7.374+07	1.811	0.939
1.35515+01	2.588+06	3.507+07	6.89820-02	1.071+09	7.392+07	2.129	0.974
1.12591+01	3.236+06	3.643+07	6.15511-02	1.186+09	7.301+07	2.445	0.982
9.50284+00	3.887+06	3.693+07	5.49072-02	1.283+09	7.048+07	2.766	1.000
8.12756+00	4.617+06	3.752+07	4.90032-02	1.352+09	6.626+07	3.085	0.982
7.03058+00	5.468+06	3.844+07	4.37524-02	1.396+09	6.111+07	3.403	0.920
6.14159+00	5.771+06	3.544+07	3.91029-02	1.406+09	5.500+07	3.722	0.845
5.41113+00	7.046+06	3.812+07	3.49723-02	1.406+09	4.919+07	4.040	0.875
4.80365+00	7.440+06	3.574+07	3.13200-02	1.382+09	4.329+07	4.359	0.831
4.29300+00	8.647+06	3.712+07	2.80847-02	1.369+09	3.845+07	4.677	0.774
3.67421+00	1.004+07	3.690+07	2.52228-02	1.315+09	3.317+07	4.996	0.660
3.02995+00	1.203+07	3.645+07	2.25968-02	1.249+09	2.823+07		
2.54146+00	1.470+07	3.738+07	2.02080-02	1.184+09	2.393+07		
2.16228+00	1.846+07	3.991+07	1.81127-02	1.119+09	2.026+07		
1.86206+00	1.892+07	3.523+07	1.62738-02	1.071+09	1.744+07		
1.62030+00	2.285+07	3.702+07	1.46077-02	9.968+08	1.456+07		
1.42275+00	2.457+07	3.495+07	1.31054-02	9.534+08	1.249+07		
1.25926+00	2.805+07	3.532+07	1.17560-02	9.155+08	1.076+07		
1.12241+00	3.203+07	3.595+07	1.05473-02	8.635+08	9.107+06		
9.81428-01	3.645+07	3.577+07	9.46717-03	7.847+08	7.429+06		
8.43865-01	4.416+07	3.726+07	8.50326-03	6.598+08	5.610+06		
7.33329-01	5.044+07	3.699+07	7.64403-03	5.414+08	4.138+06		
6.43175-01	5.855+07	3.766+07	6.86391-03	4.533+08	3.111+06		
5.68684-01	6.625+07	3.767+07	6.15862-03	5.347+08	3.293+06		
5.06424-01	7.468+07	3.782+07	5.53492-03	4.478+08	2.479+06		
4.53859-01	8.446+07	3.833+07	4.97374-03	3.918+08	1.948+06		
4.02454-01	9.686+07	3.898+07	4.46982-03	3.674+08	1.642+06		
3.53527-01	1.103+08	3.902+07	4.01871-03	3.520+08	1.414+06		
3.13010-01	1.277+08	3.999+07	3.60961-03	3.528+08	1.273+06		
2.79081-01	1.454+08	4.060+07	3.24039-03	2.868+08	9.295+05		
2.47366-01	1.693+08	4.188+07	2.90842-03	2.752+08	8.005+05		
2.18049-01	1.939+08	4.228+07	2.61084-03	2.329+08	6.080+05		
1.93642-01	2.319+08	4.490+07	2.34467-03	2.330+08	5.464+05		
1.73106-01	2.785+08	4.822+07	2.08001-03	1.925+08	4.005+05		
1.54113-01	3.366+08	5.188+07	1.79444-03	1.894+08	3.399+05		

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SCALAR NEUTRON SPECTRUM IN BORATED H₂O5.2 BARNS/HYDROGEN ATOM (0.0253 ev)CALCULATION PARAMETERSSCATTERING KERNEL: GAKER (293.6°K, P₀ - P₃)

TRANSPORT THEORY CODE: GAPLSN (10/25/62)

TEMPERATURE: 293.6°K

SOURCE: DSZ (GA 3542, P. 145)

ATOM DENSITIES

$$N_H = 6.6097 \times 10^{22} \text{ ATOMS/CC}$$

$$N_O = 3.3687 \times 10^{22} \text{ ATOMS/CC}$$

$$N_B = 4.2597 \times 10^{20} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.00736 \text{ CM}^{-2}$$

EXPERIMENTAL ARRANGEMENT 8/30/62 T2, T1PLAN VIEW NOT TO SCALE

2/6

GENERAL ATOMIC LINAC-PULSED TIME-IN-FLIGHT
TECHNIQUES

DATE ISSUED: 1/30/65

SCALAR NEUTRON SPECTRUM IN BORATED H₂O
8-30-62 T2, T1

E(ev)	φ(E)	Eφ(E)	E(ev)	φ(E)	Eφ(E)	x (cm)	Q (x)
1.78184+01	7.781-03	2.626+00	6.18653-02	4.092+00	4.795+00	0.660	0.912
9.90993+00	1.557-02	2.923+00	5.50458-02	4.534+00	4.727+00	1.291	1.000
6.29957+00	2.311-02	2.758+00	4.92931-02	4.706+00	4.394+00	1.923	0.980
4.35506+00	3.295-02	2.718+00	4.36727-02	4.912+00	4.063+00	2.554	0.958
3.18939+00	4.445-02	2.685+00	3.83286-02	5.000+00	3.630+00	3.186	0.865
2.43602+00	5.740-02	2.649+00	3.39039-02	4.807+00	3.087+00	3.817	0.799
1.92117+00	7.683-02	2.796+00	3.01998-02	4.795+00	2.743+00	4.448	0.630
1.55382+00	8.739-02	2.572+00	2.70736-02	4.768+00	2.445+00	5.080	0.486
1.28259+00	1.020-01	2.477+00	2.41122-02	4.674+00	2.135+00		
1.07663+00	1.320-01	2.692+00	2.13496-02	4.584+00	1.854+00		
9.16581-01	1.554-01	2.698+00	1.90361-02	3.896+00	1.405+00		
7.89736-01	1.630-01	2.438+00	1.69055-02	3.539+00	1.133+00		
6.87509-01	2.068-01	2.694+00	1.49601-02	3.407+00	9.654-01		
6.03919-01	2.394-01	2.739+00	1.33322-02	3.422+00	8.641-01		
5.34696-01	2.662-01	2.696+00	1.19564-02	3.254+00	7.369-01		
4.76727-01	2.953-01	2.666+00	1.06955-02	2.718+00	5.506-01		
4.06780-01	3.479-01	2.681+00	9.54619-03	2.814+00	5.089-01		
3.34289-01	4.445-01	2.814+00	8.51066-03	2.537+00	4.089-01		
2.79587-01	5.199-01	2.753+00	7.57977-03	1.950+00	2.799-01		
2.37446-01	6.422-01	2.889+00	6.79368-03	1.774+00	2.282-01		
2.04275-01	7.971-01	3.084+00	6.08635-03	1.749+00	2.017-01		
1.77587-01	9.346-01	3.144+00	5.45044-03	1.933+00	1.995-01		
1.55797-01	1.158+00	3.416+00	4.88231-03	1.715+00	1.586-01		
1.37776-01	1.476+00	3.853+00	4.37448-03	1.701+00	1.409-01		
1.22705-01	1.764+00	4.100+00	3.92256-03	1.481+00	1.100-01		
1.07190-01	2.171+00	4.408+00	3.39315-03	1.145+00	7.359-02		
9.20658-02	2.656+00	4.632+00	2.75595-03	1.040+00	5.429-02		
7.99249-02	3.303+00	5.000+00					
7.00321-02	3.757+00	4.984+00					

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SCALAR NEUTRON SPECTRUM IN BORATED H₂O5.2 BARNS/HYDROGEN ATOM (0.0253 ev)CALCULATION PARAMETERSSCATTERING KERNEL: THERMIDOR (23°C, H(H₂O), P₀ + P₁)

TRANSPORT THEORY CODE: GAPLSN (8/7/62)

TEMPERATURE: 23°C

SOURCE: DSZ(GA 3542, P. 145)

ATOM DENSITIES

$$N_H = 6.6097 \times 10^{22} \text{ ATOMS/CC}$$

$$N_O = 3.3687 \times 10^{22} \text{ ATOMS/CC}$$

$$N_B = 4.2597 \times 10^{20} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.0$$

COMMENTS

THE RELATIVE INTENSITY BETWEEN GA-H₂O-6A AND GA-H₂O-6B HAS BEEN PRESERVED FOR THE THEORY AND THE EXPERIMENT. THE THEORY WAS NORMALIZED TO GA-H₂O-6A.

EXPERIMENTAL ARRANGEMENT 8/9/62 T1, T2

SCALAR NEUTRON SPECTRUM IN BORATED H₂O
8-9-62 T1, T2

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x (cm)	Q (x)
4.10715+01	3.448+05	1.416+07	8.00284-02	3.260+08	2.609+07	0.51	0.870
1.78415+01	8.276+05	1.476+07	7.01228-02	3.690+08	2.588+07	1.14	0.963
9.92277+00	1.525+06	1.513+07	6.19455-02	4.169+08	2.582+07	1.77	1.000
6.30773+00	2.292+06	1.446+07	5.51171-02	4.448+08	2.451+07	2.40	0.995
4.36070+00	3.350+06	1.461+07	4.93569-02	4.777+08	2.357+07	3.04	0.952
3.19352+00	4.640+06	1.481+07	4.37293-02	4.786+08	2.093+07	3.67	0.896
2.43917+00	5.953+06	1.452+07	3.83783-02	4.999+08	1.918+07	4.30	0.830
1.92365+00	7.242+06	1.393+07	3.39478-02	4.955+08	1.682+07	4.93	0.747
1.55583+00	9.043+06	1.407+07	3.02389-02	4.738+08	1.433+07	5.56	0.653
1.28424+00	1.143+07	1.468+07	2.71086-02	4.816+08	1.305+07	6.19	0.564
1.07803+00	1.256+07	1.354+07	2.41435-02	4.690+08	1.132+07	6.82	0.484
9.17769-01	1.435+07	1.317+07	2.13773-02	4.404+08	9.416+06	7.46	0.418
7.90759-01	1.767+07	1.397+07	1.90607-02	4.255+08	8.112+06	8.09	0.363
6.88400-01	2.089+07	1.438+07	1.69273-02	3.484+08	5.898+06	8.72	0.287
6.04701-01	2.364+07	1.429+07	1.49794-02	3.452+08	5.172+06	9.35	0.240
5.35389-01	2.729+07	1.461+07	1.33495-02	3.369+08	4.498+06	9.98	0.174
4.77345-01	2.945+07	1.406+07	1.19718-02	3.529+08	4.225+06		
4.07307-01	3.497+07	1.424+07	1.07094-02	2.623+08	2.809+06		
3.34722-01	4.355+07	1.457+07	9.55856-03	2.617+08	2.502+06		
2.79949-01	5.184+07	1.451+07	8.52169-03	2.765+08	2.356+06		
2.37754-01	6.183+07	1.470+07	7.58959-03	2.076+08	1.575+06		
2.04540-01	7.763+07	1.588+07	6.80249-03	1.708+08	1.162+06		
1.77817-01	9.163+07	1.629+07	6.09424-03	1.462+08	8.910+05		
1.55998-01	1.173+08	1.830+07	5.45750-03	1.702+08	9.290+05		
1.37955-01	1.373+08	1.895+07	4.88864-03	1.519+08	7.429+05		
1.22863-01	1.707+08	2.097+07	4.38014-03	1.627+08	7.129+05		
1.07329-01	2.117+08	2.272+07	3.92765-03	1.429+08	5.615+05		
9.21852-02	2.703+08	2.491+07	3.39755-03	7.194+07	2.444+05		

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SCALAR NEUTRON SPECTRUM IN BORATED H₂O5.2 BARNS/HYDROGEN ATOM (0.0253 eV)CALCULATION PARAMETERSSCATTERING KERNEL: THERMIDOR (23°C, H(H₂O), P₀ + P₁)

TRANSPORT THEORY CODE: GAPLSN (8/7/62)

TEMPERATURE: 23°C

SOURCE: DSZ (GA 3542, P. 145)

ATOM DENSITIES

$$N_H = 6.6097 \times 10^{22} \text{ ATOMS/CC}$$

$$N_O = 3.3687 \times 10^{22} \text{ ATOMS/CC}$$

$$N_B = 4.2597 \times 10^{20} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.0$$

COMMENTS

THE RELATIVE INTENSITY BETWEEN GA-H₂O-6A AND GA-H₂O-6B HAS BEEN PRESERVED FOR THE THEORY AND THE EXPERIMENT. THE THEORY WAS NORMALIZED TO GA-H₂O-6A.

EXPERIMENTAL ARRANGEMENT 8/9/62 T3, T2 NOT TO SCALEGENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
TECHNIQUES

DATE ISSUED: 1/30/65

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SCALAR NEUTRON SPECTRUM IN BORATED H₂O
8-9-62 T3, T2

E(ev)	φ(E)	Eφ(E)	E(ev)	φ(E)	Eφ(E)	x (cm)	Q (x)
1.77491+01	4.497+05	7.982+06	7.96143-02	2.304+08	1.834+07	0.51	0.870
9.87142+00	8.573+05	8.463+06	6.97599-02	2.798+08	1.952+07	1.14	0.963
6.27509+00	1.349+06	8.467+06	6.16250-02	3.028+08	1.866+07	1.77	1.000
4.33814+00	2.092+06	9.078+06	5.48319-02	3.181+08	1.744+07	2.40	0.995
3.17700+00	2.777+06	8.825+06	4.91015-02	3.531+08	1.734+07	3.04	0.952
2.42655+00	3.588+06	8.708+06	4.35030-02	3.554+08	1.546+07	3.67	0.896
1.91370+00	4.523+06	8.656+06	3.81797-02	3.690+08	1.408+07	4.30	0.830
1.54778+00	5.496+06	8.506+06	3.37721-02	3.540+08	1.195+07	4.93	0.747
1.27760+00	6.829+06	8.725+06	3.00824-02	3.546+08	1.066+07	5.56	0.653
1.07245+00	7.938+06	8.513+06	2.69684-02	3.453+08	9.314+06	6.19	0.564
9.13020-01	9.208+06	8.407+06	2.40185-02	3.225+08	7.746+06	6.82	0.484
7.86667-01	1.102+07	8.672+06	2.12667-02	3.097+08	6.587+06	7.46	0.418
6.84838-01	1.233+07	8.449+06	1.89621-02	2.782+08	5.275+06	8.09	0.363
6.01572-01	1.450+07	8.723+06	1.68398-02	2.375+08	4.000+06	8.72	0.287
5.32618-01	1.686+07	8.984+06	1.49019-02	2.463+08	3.670+06	9.35	0.240
4.74875-01	2.013+07	9.563+06	1.32804-02	2.395+08	3.181+06	9.98	0.174
4.05200-01	2.240+07	9.077+06	1.19099-02	2.337+08	2.783+06		
3.32989-01	2.789+07	9.290+06	1.06539-02	1.856+08	1.978+06		
2.78500-01	3.447+07	9.601+06	9.50910-03	1.723+08	1.639+06		
2.36523-01	4.150+07	9.816+06	8.47759-03	1.779+08	1.508+06		
2.03481-01	5.185+07	1.055+07	7.55032-03	1.352+08	1.021+06		
1.76897-01	6.625+07	1.172+07	6.76729-03	1.149+08	7.776+05		
1.55191-01	7.962+07	1.235+07	6.06270-03	1.065+08	6.460+05		
1.37241-01	1.003+08	1.377+07	5.42926-03	1.017+08	5.524+05		
1.22227-01	1.238+08	1.514+07	4.86334-03	1.006+08	4.895+05		
1.06773-01	1.600+08	1.709+07	4.35748-03	1.036+08	4.515+05		
9.17081-02	1.948+08	1.787+07	3.90732-03	8.870+07	3.465+05		

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30° ANGULAR NEUTRON SPECTRUM NEAR WATER INTERFACE1.3 BARNS/HYDROGEN ATOM (0.0253 ev) H₃BO₃ SIDE31.9 BARNS/HYDROGEN ATOM (0.0253 ev) CdSO₄ SIDECALCULATION PARAMETERSSCATTERING KERNEL: GAKER (312.66°K, P₀ + P₁) TO 1.00 ev
+ GAS (1157.5°K) TO 2.38 ev

TRANSPORT THEORY CODE: GAPLSN (6/19/64)

TEMPERATURE: 312.66°K

SOURCE: DSZ (GA 3542, P. 145)

ATOM DENSITIESH₃BO₃ SOLUTION $N_H = 6.67 \times 10^{22}$ ATOMS/CC $N_B = 9.74 \times 10^{19}$ ATOMS/CC $N_O = 3.35 \times 10^{22}$ ATOMS/CC

ALUMINUM WALL

 $N_{Al} = 6.02 \times 10^{22}$ ATOMS/CCCdSO₄ SOLUTION $N_H = 6.64 \times 10^{22}$ ATOMS/CC $N_O = 3.66 \times 10^{22}$ ATOMS/CC $N_{Cd} = 855 \times 10^{20}$ ATOMS/CCLOCAL BUCKLING B^2 TRANSVERSE = -0.02301 CM⁻² GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
TECHNIQUESDATE ISSUED: 1/30/65 CdSO₄ SIDE

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30° ANGULAR NEUTRON SPECTRUM NEAR WATER INTERFACE
5-28-64 T7, T6

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x (cm)	Q (x)
7.88459+01	9.758-03	3.906+00	2.36306-01	1.292+00	1.550+00	0.00	1.000
5.16854+01	1.633-02	4.285+00	2.13887-01	8.841-01	9.600-01	0.50	0.991
3.64766+01	2.343-02	4.339+00	1.94506-01	6.699-01	6.615-01	1.00	0.963
2.71121+01	3.206-02	4.413+00	1.77640-01	5.789-01	5.221-01	1.50	0.919
2.09401+01	4.183-02	4.447+00	1.62871-01	6.082-01	5.029-01	2.00	0.859
1.66587+01	5.314-02	4.495+00	1.48385-01	7.006-01	5.278-01	2.50	0.783
1.35677+01	6.458-02	4.449+00	1.34407-01	8.526-01	5.818-01	3.00	0.693
1.12636+01	7.830-02	4.478+00	1.22310-01	1.147+00	7.120-01	3.50	0.569
9.50012+00	9.298-02	4.484+00	1.11772-01	1.482+00	8.411-01	4.00	0.477
8.12059+00	1.096-01	4.517+00	1.02537-01	1.880+00	9.787-01	4.50	0.355
7.02110+00	1.260-01	4.492+00	9.36542-02	2.328+00	1.107+00	5.00	0.230
6.13067+00	1.482-01	4.614+00	8.52001-02	2.795+00	1.209+00		
5.39949+00	1.641-01	4.499+00	7.78388-02	3.282+00	1.297+00		
4.79172+00	1.919-01	4.669+00	7.13900-02	3.774+00	1.368+00		
4.28108+00	2.097-01	4.557+00	6.52760-02	4.176+00	1.384+00		
3.84792+00	2.385-01	4.660+00	5.95193-02	4.475+00	1.352+00		
3.47732+00	2.566-01	4.530+00	5.44906-02	4.770+00	1.320+00		
3.15779+00	2.897-01	4.644+00	4.97840-02	5.000+00	1.264+00		
2.88037+00	3.117-01	4.558+00	4.53982-02	4.902+00	1.130+00		
2.63795+00	3.452-01	4.623+00	4.15667-02	4.867+00	1.027+00		
2.33078+00	3.884-01	4.596+00	3.80078-02	4.608+00	8.892-01		
1.99497+00	4.660-01	4.719+00	3.47048-02	4.436+00	7.816-01		
1.72685+00	5.191-01	4.551+00	3.18152-02	4.039+00	6.523-01		
1.50938+00	6.199-01	4.750+00	2.91438-02	3.929+00	5.813-01		
1.33055+00	6.929-01	4.681+00	2.66770-02	3.584+00	4.855-01		
1.18172+00	7.805-01	4.683+00	2.44116-02	3.364+00	4.169-01		
1.05654+00	8.776-01	4.707+00	2.23323-02	3.021+00	3.426-01		
9.50247-01	9.786-01	4.721+00	2.04319-02	2.725+00	2.827-01		
8.59226-01	1.116+00	4.867+00	1.86948-02	2.443+00	2.319-01		
7.80685-01	1.209+00	4.793+00	1.71121-02	2.276+00	1.977-01		
7.12442-01	1.348+00	4.875+00	1.56689-02	1.992+00	1.585-01		
6.52772-01	1.509+00	5.000+00	1.43562-02	1.888+00	1.376-01		
5.88470-01	1.622+00	4.846+00	1.31609-02	1.602+00	1.070-01		
5.22791-01	1.828+00	4.852+00	1.20744-02	1.497+00	9.176-02		
4.67526-01	2.057+00	4.881+00	1.10855-02	1.253+00	7.050-02		
4.20583-01	2.241+00	4.785+00	1.01865-02	1.212+00	6.269-02		
3.80373-01	2.352+00	4.542+00	9.34465-03	1.195+00	5.668-02		
3.45666-01	2.395+00	4.203+00	8.56087-03	9.397-01	4.084-02		
3.15502-01	2.312+00	3.703+00	7.85285-03	9.158-01	3.651-02		
2.89121-01	2.113+00	3.102+00	7.11924-03	6.934-01	2.506-02		
2.62449-01	1.743+00	2.322+00	6.09677-03	6.135-01	1.899-02		

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0° ANGULAR NEUTRON SPECTRUM NEAR WATER INTERFACE

1.34 BARNS/HYDROGEN ATOM (0.0253 eV) H₃BO₃ SIDE
 31.9 BARNS/HYDROGEN ATOM (0.0253 eV) CdSO₄ SIDE

CALCULATION PARAMETERS

SCATTERING KERNEL: GAKER (312.66°K, P₀ + P₁) TO 1.00 eV
 + GAS (1157.5°K) TO 2.38 eV

TRANSPORT THEORY CODE: GAPLSN (6/19/64)

TEMPERATURE: 312.66°K

SOURCE: DSZ (GA 3542, P. 145)

ATOM DENSITIES

H₃BO₃ SOLUTION

N_H = 6.67 × 10²² ATOMS/CC

N_B = 9.74 × 10¹⁹ ATOMS/CC

N_O = 3.35 × 10²² ATOMS/CC

ALUMINUM WALL

N_{Al} = 6.02 × 10²² ATOMS/CC

CdSO₄ SOLUTION

N_H = 6.64 × 10²² ATOMS/CC

N_O = 3.66 × 10²² ATOMS/CC

N_{Cd} = 8.55 × 10²⁰ ATOMS/CC

LOCAL BUCKLING

B² TRANSVERSE = -0.02301 CM⁻²

EXPERIMENTAL ARRANGEMENT 5/28/64 T1, T2

NOT TO SCALE

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
 TECHNIQUES

DATE ISSUED: 1/30/65

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0° ANGULAR NEUTRON SPECTRUM NEAR WATER INTERFACE
5-28-64 T1, T2

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x (cm)	Q (x)
7.69051+01	7.713-03	4.087+00	2.13609-01	7.237-01	1.065+00	0.00	1.000
5.06517+01	1.234-02	4.306+00	1.94266-01	5.454-01	7.300-01	0.50	0.991
3.58623+01	1.736-02	4.290+00	1.77430-01	4.931-01	6.028-01	1.00	0.963
2.67177+01	2.228-02	4.102+00	1.62687-01	5.019-01	5.626-01	1.50	0.919
2.06721+01	3.073-02	4.376+00	1.48225-01	5.863-01	5.987-01	2.00	0.859
1.64683+01	3.786-02	4.296+00	1.34268-01	7.631-01	7.059-01	2.50	0.783
1.34277+01	4.707-02	4.355+00	1.22190-01	1.023+00	8.611-01	3.00	0.693
1.11575+01	5.747-02	4.418+00	1.11667-01	1.411+00	1.085+00	3.50	0.569
9.41796+00	6.792-02	4.407+00	1.02444-01	1.735+00	1.225+00	4.00	0.477
8.05562+00	8.146-02	4.521+00	9.35736-02	2.265+00	1.460+00	4.50	0.355
6.96885+00	9.502-02	4.562+00	8.51302-02	2.795+00	1.639+00	5.00	0.230
6.08803+00	1.040-01	4.363+00	7.77777-02	3.320+00	1.779+00		
5.36423+00	1.194-01	4.413+00	7.13363-02	3.708+00	1.822+00		
4.76224+00	1.421-01	4.663+00	6.52290-02	4.171+00	1.875+00		
4.25617+00	1.525-01	4.471+00	5.94784-02	4.550+00	1.865+00		
3.82669+00	1.681-01	4.432+00	5.44548-02	4.737+00	1.777+00		
3.45908+00	1.868-01	4.452+00	4.97527-02	5.000+00	1.714+00		
3.14200+00	2.091-01	4.526+00	4.53709-02	4.898+00	1.531+00		
2.86661+00	2.305-01	4.553+00	4.15428-02	4.820+00	1.380+00		
2.62590+00	2.459-01	4.449+00	3.79869-02	4.604+00	1.205+00		
2.32076+00	2.905-01	4.644+00	3.46865-02	4.414+00	1.055+00		
1.98703+00	3.392-01	4.643+00	3.17991-02	4.184+00	9.166-01		
1.72046+00	3.832-01	4.542+00	2.91298-02	3.856+00	7.739-01		
1.50415+00	4.515-01	4.679+00	2.66647-02	3.691+00	6.780-01		
1.32622+00	5.070-01	4.633+00	2.44008-02	3.336+00	5.608-01		
1.17810+00	5.737-01	4.656+00	2.23229-02	2.926+00	4.500-01		
1.05348+00	6.533-01	4.742+00	2.04237-02	2.681+00	3.773-01		
9.47636-01	7.435-01	4.854+00	1.86876-02	2.352+00	3.029-01		
8.56981-01	8.265-01	4.880+00	1.71057-02	2.199+00	2.592-01		
7.78740-01	9.061-01	4.861+00	1.56633-02	1.974+00	2.131-01		
7.10746-01	9.963-01	4.879+00	1.43513-02	1.805+00	1.785-01		
6.51285-01	1.096+00	4.920+00	1.31566-02	1.613+00	1.462-01		
5.87197-01	1.224+00	4.953+00	1.20707-02	1.442+00	1.200-01		
5.21724-01	1.391+00	5.000+00	1.10822-02	1.477+00	1.127-01		
4.66624-01	1.504+00	4.835+00	1.01836-02	1.132+00	7.943-02		
4.19814-01	1.711+00	4.949+00	9.34210-03	1.136+00	7.313-02		
3.79711-01	1.778+00	4.650+00	8.55863-03	8.596-01	5.069-02		
3.45093-01	1.870+00	4.446+00	7.85088-03	8.588-01	4.645-02		
3.15002-01	1.841+00	3.996+00	7.21153-03	8.034-01	3.992-02		
2.88683-01	1.644+00	3.270+00	6.29985-03	4.328-01	1.879-02		
2.62071-01	1.436+00	2.592+00	4.91513-03	4.210-01	1.426-02		
2.35984-01	1.055+00	1.716+00	3.40507-03	4.688-01	1.100-02		

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45° ANGULAR NEUTRON SPECTRUM NEAR WATER INTERFACE

1.34 BARNS/HYDROGEN ATOM (0.0253 eV) H₃BO₃ SIDE
 31.9 BARNS/HYDROGEN ATOM (0.0253 eV) CdSO₄ SIDE

EXPERIMENTAL ARRANGEMENT 5/28/64 T5, T4

CALCULATION PARAMETERS

SCATTERING KERNEL: GAKER (312.66°K, P₀ + P₁) TO 1.00 eV
 + GAS (1157.5°K) TO 2.38 eV

TRANSPORT THEORY CODE: GAPLSN (6/19/64)

TEMPERATURE: 312.66°K

SOURCE: DSZ (GA 3542, P. 145)

ATOM DENSITIES

H₃BO₃ SOLUTION

$N_H = 6.67 \times 10^{22}$ ATOMS/CC

$N_B = 9.74 \times 10^{19}$ ATOMS/CC

$N_O = 3.35 \times 10^{22}$ ATOMS/CC

ALUMINUM WALL

$N_{Al} = 6.02 \times 10^{22}$ ATOMS/CC

CdSO₄ SOLUTION

$N_H = 6.64 \times 10^{22}$ ATOMS/CC

$N_O = 3.66 \times 10^{22}$ ATOMS/CC

$N_{Cd} = 8.55 \times 10^{20}$ ATOMS/CC

LOCAL BUCKLING

B^2 TRANSVERSE = -0.02301 CM⁻²

45° ANGULAR NEUTRON SPECTRUM NEAR WATER INTERFACE
5-28-64 T5, T4

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x(cm)	Q(x)
7.88459+01	1.506-02	4.487+00	2.36306-01	1.605+00	1.433+00	0.00	1.000
5.16854+01	2.327-02	4.544+00	2.13887-01	1.159+00	9.370-01	0.50	0.991
3.64766+01	3.262-02	4.496+00	1.94506-01	8.689-01	6.386-01	1.00	0.963
2.71121+01	4.340-02	4.447+00	1.77640-01	8.010-01	5.377-01	1.50	0.919
2.09401+01	5.791-02	4.583+00	1.62871-01	7.933-01	4.883-01	2.00	0.859
1.66587+01	7.401-02	4.659+00	1.48385-01	9.368-01	5.253-01	2.50	0.783
1.35677+01	8.892-02	4.559+00	1.34407-01	1.064+00	5.404-01	3.00	0.693
1.12636+01	1.068-01	4.548+00	1.22310-01	1.347+00	6.224-01	3.50	0.569
9.50012+00	1.290-01	4.630+00	1.11772-01	1.604+00	6.775-01	4.00	0.477
8.12059+00	1.498-01	4.596+00	1.02537-01	1.995+00	7.729-01	4.50	0.355
7.02110+00	1.717-01	4.556+00	9.36542-02	2.430+00	8.599-01	5.00	0.230
6.13067+00	1.987-01	4.604+00	8.52001-02	2.943+00	9.476-01		
5.39949+00	2.293-01	4.678+00	7.78388-02	3.377+00	9.933-01		
4.79172+00	2.574-01	4.661+00	7.13900-02	3.697+00	9.973-01		
4.28108+00	2.821-01	4.563+00	6.52760-02	4.221+00	1.041+00		
3.84792+00	3.203-01	4.657+00	5.95193-02	4.557+00	1.025+00		
3.47732+00	3.594-01	4.723+00	5.44906-02	4.722+00	9.723-01		
3.15779+00	3.918-01	4.676+00	4.97840-02	5.000+00	9.407-01		
2.88037+00	4.339-01	4.723+00	4.53982-02	4.823+00	8.274-01		
2.63795+00	4.574-01	4.560+00	4.15667-02	4.951+00	7.777-01		
2.33078+00	5.371-01	4.731+00	3.80078-02	4.636+00	6.659-01		
1.99497+00	6.162-01	4.645+00	3.47048-02	4.523+00	5.932-01		
1.72685+00	7.263-01	4.740+00	3.18152-02	4.157+00	4.998-01		
1.50938+00	8.253-01	4.707+00	2.91438-02	3.944+00	4.344-01		
1.33055+00	9.477-01	4.765+00	2.66770-02	3.765+00	3.796-01		
1.18172+00	1.053+00	4.703+00	2.44116-02	3.414+00	3.149-01		
1.05654+00	1.185+00	4.733+00	2.23323-02	3.146+00	2.655-01		
9.50247-01	1.367+00	4.910+00	2.04319-02	2.935+00	2.266-01		
8.59226-01	1.540+00	5.000+00	1.86948-02	2.658+00	1.878-01		
7.80685-01	1.634+00	4.819+00	1.71121-02	2.365+00	1.530-01		
7.12442-01	1.838+00	4.948+00	1.56689-02	2.241+00	1.327-01		
6.52772-01	2.016+00	4.973+00	1.43562-02	1.927+00	1.046-01		
5.88470-01	2.227+00	4.952+00	1.31609-02	1.800+00	8.951-02		
5.22791-01	2.508+00	4.955+00	1.20744-02	1.826+00	8.332-02		
4.67526-01	2.759+00	4.874+00	1.10855-02	1.517+00	6.357-02		
4.20583-01	3.010+00	4.784+00	1.01865-02	1.388+00	5.343-02		
3.80373-01	3.096+00	4.450+00	9.34465-03	1.210+00	4.273-02		
3.45666-01	3.165+00	4.134+00	8.56087-03	1.243+00	4.022-02		
3.15502-01	3.051+00	3.638+00	7.85285-03	1.221+00	3.623-02		
2.89121-01	2.694+00	2.943+00	7.21326-03	1.084+00	2.955-02		
2.62449-01	2.255+00	2.236+00	6.33944-03	8.577-01	2.055-02		

GA-H₂O-8A

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INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED H₂O

1.025 BARNS/HYDROGEN ATOM (0.0253 eV)

CALCULATION PARAMETERS

SCATTERING KERNEL: GAKER (KOPPEL'S ANISOTROPIC H(H₂O), 0.0255 eV)
(GA 5798, P. 155)

TRANSPORT THEORY CODE: GATHER 2/3/65 (GA 4132)

TEMPERATURE: 0.0255 eV

SOURCE: $\text{erf } \sqrt{E/KT_{\text{eff}}}$ ($KT_{\text{eff}} = 0.117 \text{ eV}$)

ATOM DENSITIES

HYDROGEN = 6.656×10^{22} ATOMS/CC

BORON = 6.124×10^{19} ATOMS/CC

OXYGEN = 3.337×10^{22} ATOMS/CC

LOCAL BUCKLING

$B^2 \text{ TOTAL} = -0.0454 \text{ cm}^{-2}$

NEUTRON CONSERVATION

$\left[\frac{\text{TOTAL ABSORPTION}}{\text{SLOWING DOWN DENSITY}} \right] = 0.990$

EXPERIMENTAL ARRANGEMENT 12/10/64 T2, T1

PLAN VIEW

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GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
TECHNIQUES

DATE ISSUED: 7/10/65

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED H₂O

12-10-64

T2, T1

E(ev)	$\phi(E)$	E(ev)	$\phi(E)$
5.96050+01	7.683+05	1.14090-01	3.446+09
4.11120+01	1.181+06	1.01300-01	4.782+09
3.00590+01	1.592+06	9.04950-02	6.302+09
2.29310+01	2.075+06	8.07040-02	8.005+09
1.80670+01	2.575+06	7.18660-02	9.860+09
1.46020+01	3.615+06	6.43820-02	1.169+10
1.20450+01	3.957+06	5.76360-02	1.344+10
1.01060+01	4.965+06	5.15690-02	1.509+10
8.60000+00	6.609+06	4.61590-02	1.655+10
7.40710+00	6.793+06	4.13300-02	1.745+10
6.44620+00	8.706+06	3.70360-02	1.833+10
5.66090+00	9.182+06	3.32130-02	1.872+10
5.01070+00	1.059+07	2.98210-02	1.890+10
4.46650+00	1.197+07	2.66900-02	1.884+10
3.81010+00	1.409+07	2.39270-02	1.854+10
3.13010+00	1.849+07	2.14910-02	1.819+10
2.61720+00	1.990+07	1.92660-02	1.742+10
2.22080+00	2.557+07	1.72490-02	1.680+10
1.90810+00	2.913+07	1.54320-02	1.612+10
1.65710+00	3.418+07	1.38420-02	1.526+10
1.45260+00	3.859+07	1.24510-02	1.491+10
1.28370+00	4.390+07	1.11960-02	1.439+10
1.14270+00	4.988+07	1.00680-02	1.374+10
1.02370+00	5.719+07	9.05680-03	1.276+10
9.00070-01	6.806+07	8.13260-03	1.169+10
7.78460-01	7.685+07	7.29280-03	1.035+10
6.79930-01	9.461+07	6.54850-03	9.236+09
5.98990-01	1.120+08	5.88870-03	8.268+09
5.31700-01	1.289+08	5.29340-03	7.510+09
4.75140-01	1.491+08	4.75760-03	6.817+09
4.20080-01	1.772+08	4.27720-03	6.429+09
3.67900-01	2.041+08	3.84070-03	5.645+09
3.24870-01	2.350+08	3.45150-03	5.117+09
2.88970-01	2.789+08	3.10490-03	4.608+09
2.56090-01	3.270+08	2.79240-03	4.113+09
2.27150-01	4.236+08	2.51140-03	3.893+09
2.02370-01	5.506+08	2.25940-03	3.319+09
1.81310-01	7.676+08	2.03140-03	3.082+09
1.61650-01	1.097+09	1.82580-03	2.676+09
1.43500-01	1.654+09	1.64120-03	2.648+09
1.28150-01	2.399+09	1.47560-03	2.284+09

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED H₂O1.848 BARNS/HYDROGEN ATOM (0.0253 eV)EXPERIMENTAL ARRANGEMENT 12/10/64 T3, T4PLAN VIEWCALCULATION PARAMETERS

SCATTERING KERNEL: GAKER (KOPPEL'S ANISOTROPIC H(H₂O), 0.0255 eV)
(GA 5798, P. 155)

TRANSPORT THEORY CODE: GATHER 2/3/65 (GA 4132)

TEMPERATURE: 0.0255 eV

SOURCE: $\text{erf } \sqrt{E/KT_{\text{eff}}}$ ($KT_{\text{eff}} = 0.117 \text{ eV}$)

ATOM DENSITIES

HYDROGEN = 6.648×10^{22} ATOMS/CC

BORON = 1.3367×10^{20} ATOMS/CC

OXYGEN = 3.344×10^{22} ATOMS/CC

LOCAL BUCKLING

$B^2 \text{ TOTAL} = -0.0454 \text{ CM}^{-2}$

NEUTRON CONSERVATION

$$\left[\frac{\text{TOTAL ABSORPTION}}{\text{SLOWING DOWN DENSITY}} \right] = 1.023$$

NOT TO SCALE

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GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
TECHNIQUES

DATE ISSUED: 7/10/65

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED H₂O

12-10-64

T3, T4

E(ev)	$\phi(E)$	E(ev)	$\phi(E)$
9.40910+01	4.986+05	1.26130-01	1.668+09
5.96050+01	8.648+05	1.12260-01	2.275+09
4.11120+01	1.133+06	9.96730-02	3.029+09
3.00590+01	1.569+06	8.90710-02	3.873+09
2.29310+01	2.068+06	7.94820-02	4.792+09
1.80670+01	2.737+06	7.08350-02	5.744+09
1.46020+01	3.473+06	6.35150-02	6.686+09
1.20450+01	4.076+06	5.69150-02	7.575+09
1.01060+01	5.231+06	5.09740-02	8.371+09
8.60000+00	5.840+06	4.56620-02	8.920+09
7.40710+00	7.064+06	4.09120-02	9.480+09
6.44620+00	8.734+06	3.66880-02	9.822+09
5.66090+00	9.354+06	3.27690-02	9.868+09
5.01070+00	1.127+07	2.93050-02	9.982+09
4.46650+00	1.194+07	2.62540-02	9.837+09
3.81010+00	1.437+07	2.34640-02	9.659+09
3.13010+00	1.723+07	2.10130-02	9.335+09
2.61720+00	2.166+07	1.88600-02	8.999+09
2.22080+00	2.488+07	1.69050-02	8.598+09
1.90810+00	3.055+07	1.51400-02	8.166+09
1.65710+00	3.360+07	1.35540-02	7.746+09
1.45260+00	4.027+07	1.21330-02	7.406+09
1.28370+00	4.524+07	1.08650-02	7.120+09
1.14270+00	5.247+07	9.73460-03	6.725+09
1.02370+00	5.915+07	8.72860-03	6.358+09
9.00070-01	6.961+07	7.83400-03	5.590+09
7.78460-01	8.060+07	7.03880-03	4.986+09
6.79930-01	9.337+07	6.31920-03	4.525+09
5.98990-01	1.082+08	5.67020-03	4.005+09
5.31700-01	1.269+08	5.09700-03	3.502+09
4.75140-01	1.478+08	4.58210-03	3.406+09
4.20080-01	1.695+08	4.11330-03	3.015+09
3.67900-01	2.004+08	3.69500-03	2.812+09
3.24870-01	2.336+08	3.32220-03	2.576+09
2.88970-01	2.773+08	2.98580-03	2.226+09
2.55670-01	3.279+08	2.68330-03	2.075+09
2.25610-01	3.946+08	2.41190-03	1.868+09
2.00400-01	4.995+08	2.16900-03	1.580+09
1.79140-01	6.587+08	1.94970-03	1.464+09
1.59440-01	8.800+08	1.75220-03	1.316+09
1.41340-01	1.230+09	1.57500-03	1.205+09

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GA-H₂O-8C

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED H₂O2.99 BARNS/HYDROGEN ATOM (0.0253 eV)CALCULATION PARAMETERS

SCATTERING KERNEL: GAKER (KOPPEL'S ANISTROPIC H(H₂O), 0.0255 eV)
 (GA 5798, P. 155)

TRANSPORT THEORY CODE: GATHER 2/3/65 (GA 4132)

TEMPERATURE: 0.0255 eV

SOURCE: $\text{erf} \sqrt{E/KT_{\text{eff}}}$ ($KT_{\text{eff}} = 0.117 \text{ eV}$)

ATOM DENSITIES

HYDROGEN = 6.634×10^{22} ATOMS/CC
 BORON = 2.338×10^{20} ATOMS/CC
 OXYGEN = 3.352×10^{22} ATOMS/CC

LOCAL BUCKLING

$B^2 \text{ TOTAL} = -0.0454 \text{ CM}^{-2}$

NEUTRON CONSERVATION

$$\left[\frac{\text{TOTAL ABSORPTION}}{\text{SLOWING DOWN DENSITY}} \right] = 1.036$$

EXPERIMENTAL ARRANGEMENT 12/10/64 T5, T6PLAN VIEW NOT TO SCALE

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GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
 TECHNIQUES

DATE ISSUED: 7/10/65

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED H₂O
12-10-64 T5, T6

E(ev)	φ(E)	E(ev)	φ(E)
9.40910+01	4.921+05	1.25300-01	1.258+09
5.96050+01	8.307+05	1.11490-01	1.626+09
4.11120+01	1.169+06	9.89790-02	2.080+09
3.00590+01	1.568+06	8.84530-02	2.567+09
2.29310+01	2.179+06	7.89430-02	3.095+09
1.80670+01	2.977+06	7.03720-02	3.645+09
1.46020+01	3.808+06	6.31190-02	4.178+09
1.20450+01	4.250+06	5.65810-02	4.621+09
1.01060+01	5.147+06	5.06930-02	5.033+09
8.60000+00	6.303+06	4.54270-02	5.369+09
7.40710+00	7.175+06	4.07140-02	5.598+09
6.44620+00	8.498+06	3.65180-02	5.691+09
5.66090+00	9.908+06	3.26230-02	5.646+09
5.01070+00	1.085+07	2.91820-02	5.706+09
4.46650+00	1.246+07	2.61490-02	5.562+09
3.81010+00	1.438+07	2.33750-02	5.402+09
3.13010+00	1.794+07	2.09380-02	5.214+09
2.61720+00	2.097+07	1.87960-02	5.000+09
2.22080+00	2.622+07	1.68510-02	4.758+09
1.90810+00	3.099+07	1.50940-02	4.562+09
1.65710+00	3.461+07	1.35150-02	4.260+09
1.45260+00	4.030+07	1.21010-02	4.086+09
1.28370+00	4.612+07	1.08370-02	3.892+09
1.14270+00	5.175+07	9.71100-03	3.610+09
1.02370+00	5.776+07	8.70850-03	3.364+09
9.00070-01	7.027+07	7.81690-03	3.067+09
7.78460-01	8.182+07	7.02430-03	2.653+09
6.79930-01	9.421+07	6.30680-03	2.358+09
5.98990-01	1.074+08	5.65970-03	2.126+09
5.31700-01	1.247+08	5.08810-03	1.903+09
4.75140-01	1.447+08	4.57440-03	1.815+09
4.20080-01	1.698+08	4.10680-03	1.653+09
3.67900-01	1.993+08	3.68940-03	1.470+09
3.24870-01	2.273+08	3.31750-03	1.356+09
2.88970-01	2.622+08	2.98180-03	1.184+09
2.55580-01	3.085+08	2.67990-03	1.061+09
2.25150-01	3.737+08	2.40900-03	9.531+08
1.99710-01	4.639+08	2.16650-03	8.022+08
1.78330-01	5.713+08	1.94750-03	8.287+08
1.58570-01	7.487+08	1.75040-03	7.085+08
1.40480-01	9.706+08	1.57350-03	7.278+08

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INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED H₂O4.075 BARNS/HYDROGEN ATOM (0.0253 eV)EXPERIMENTAL ARRANGEMENT 12/10/64 T7, T6PLAN VIEWCALCULATION PARAMETERSSCATTERING KERNEL: GAKER (KOPPEL'S ANISOTROPIC H(H₂O), 0.0255 eV)

GA 5798, P. 155)

TRANSPORT THEORY CODE: GATHER 2/3/65 (GA 4132)

TEMPERATURE: 0.0255 eV

SOURCE: $\text{erf } \sqrt{E/KT_{\text{eff}}}$ ($KT_{\text{eff}} = 0.117 \text{ eV}$)ATOM DENSITIESHYDROGEN = 6.622×10^{22} ATOMS/CCBORON = 3.285×10^{20} ATOMS/CCOXYGEN = 3.360×10^{22} ATOMS/CCLOCAL BUCKLING $B^2 \text{ TOTAL} = -0.0454 \text{ CM}^{-2}$ NEUTRON CONSERVATION

$$\left[\frac{\text{TOTAL ABSORPTIONS}}{\text{SLOWING DOWN DENSITY}} \right] = 1.019$$

NOT TO SCALE

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GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
TECHNIQUES

DATE ISSUED: 7/10/65

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED H₂O

12-10-64

T7, T6

E(ev)	$\phi(E)$	E(eV)	$\phi(E)$
9.40910+01	4.984+05	1.24990-01	9.728+08
5.96050+01	7.964+05	1.11190-01	1.229+09
4.11120+01	1.082+06	9.87080-02	1.541+09
3.00590+01	1.572+06	8.82090-02	1.838+09
2.29310+01	2.065+06	7.87260-02	2.165+09
1.80670+01	2.748+06	7.01830-02	2.516+09
1.46020+01	3.614+06	6.29550-02	2.809+09
1.20450+01	4.065+06	5.64390-02	3.104+09
1.01060+01	4.565+06	5.05730-02	3.339+09
8.60000+00	6.075+06	4.53250-02	3.500+09
7.40710+00	6.825+06	4.06200-02	3.624+09
6.44620+00	8.019+06	3.64340-02	3.661+09
5.66090+00	9.044+06	3.25500-02	3.621+09
5.01070+00	1.054+07	2.91210-02	3.626+09
4.46650+00	1.167+07	2.60970-02	3.526+09
3.81010+00	1.408+07	2.33310-02	3.422+09
3.13010+00	1.698+07	2.09000-02	3.258+09
2.61720+00	1.962+07	1.87650-02	3.080+09
2.22080+00	2.441+07	1.68240-02	2.944+09
1.90810+00	2.892+07	1.50710-02	2.797+09
1.65710+00	3.353+07	1.34960-02	2.639+09
1.45260+00	3.725+07	1.20840-02	2.553+09
1.28370+00	4.316+07	1.08230-02	2.303+09
1.14270+00	4.889+07	9.69920-03	2.210+09
1.02370+00	5.519+07	8.69850-03	2.020+09
9.00070-01	6.652+07	7.80840-03	1.793+09
7.78460-01	7.651+07	7.01700-03	1.646+09
6.79930-01	8.669+07	6.30070-03	1.424+09
5.98990-01	1.007+08	5.65450-03	1.315+09
5.31700-01	1.169+08	5.08360-03	1.163+09
4.75140-01	1.343+08	4.57060-03	1.099+09
4.20080-01	1.586+08	4.10360-03	9.394+08
3.67900-01	1.846+08	3.68670-03	8.624+08
3.24870-01	2.115+08	3.31510-03	8.049+08
2.88970-01	2.420+08	2.97980-03	7.388+08
2.55570-01	2.828+08	2.67810-03	5.879+08
2.25010-01	3.336+08	2.40750-03	5.638+08
1.99470-01	4.072+08	2.16530-03	4.831+08
1.78040-01	4.920+08	1.94647-03	4.618+08
1.58260-01	6.077+08	1.74947-03	4.446+08
1.40160-01	7.806+08	1.57270-03	4.464+08

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GA-H₂O-8E

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED H₂O5.170 BARNS/HYDROGEN ATOM (0.0253 eV)CALCULATION PARAMETERS

SCATTERING KERNEL: GAKER (KOPPEL'S ANISOTROPIC H(H₂O), 0.0255 eV)
(GA 5798, P. 155)

TRANSPORT THEORY CODE: GATHER 2/3/65 (GA 4132)

TEMPERATURE: 0.0255 eV

SOURCE: $\text{erf } \sqrt{E/KT_{\text{eff}}}$ ($KT_{\text{eff}} = 0.117 \text{ eV}$)

ATOM DENSITIES

HYDROGEN = 6.607×10^{22} ATOMS/CC

BORON = 4.235×10^{20} ATOMS/CC

OXYGEN = 3.367×10^{22} ATOMS/CC

LOCAL BUCKLING

$B^2 \text{ TOTAL} = -0.0454 \text{ CM}^{-2}$

NEUTRON CONSERVATION

$$\left[\frac{\text{TOTAL ABSORPTION}}{\text{SLOWING DOWN DENSITY}} \right] = 1.028$$

EXPERIMENTAL ARRANGEMENT 12/10/64 T8, T6PLAN VIEW

NOT TO SCALE

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GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
TECHNIQUES

DATE ISSUED: 7/10/65

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED H₂O
12-10-64 T8, T6

E(ev)	$\phi(E)$	E(ev)	$\phi(E)$
9.40910+01	4.926+05	1.24820-01	8.442+08
5.96050+01	8.025+05	1.11030-01	1.051+09
4.11120+01	1.151+06	9.85610-02	1.270+09
3.00590+01	1.532+06	8.80740-02	1.511+09
2.29310+01	2.073+06	7.86060-02	1.759+09
1.80670+01	2.758+06	7.00770-02	2.003+09
1.46020+01	3.629+06	6.28610-02	2.208+09
1.20450+01	4.090+06	5.63580-02	2.435+09
1.01060+01	4.973+06	5.05030-02	2.610+09
8.60000+00	6.030+06	4.52650-02	2.680+09
7.40710+00	7.138+06	4.05770-02	2.745+09
6.44620+00	8.180+06	3.63990-02	2.779+09
5.66090+00	9.517+06	3.25190-02	2.715+09
5.01070+00	1.079+07	2.90940-02	2.716+09
4.46650+00	1.176+07	2.60750-02	2.600+09
3.81010+00	1.381+07	2.33120-02	2.536+09
3.13010+00	1.722+07	2.08850-02	2.393+09
2.61720+00	2.016+07	1.87510-02	2.255+09
2.22080+00	2.444+07	1.68120-02	2.146+09
1.90810+00	2.852+07	1.50620-02	2.032+09
1.65710+00	3.332+07	1.34870-02	1.885+09
1.45260+00	3.803+07	1.20770-02	1.838+09
1.28370+00	4.258+07	1.08170-02	1.706+09
1.14270+00	4.855+07	9.69410-03	1.588+09
1.02370+00	5.511+07	8.69420-03	1.442+09
9.00070-01	6.521+07	7.80470-03	1.303+09
7.78460-01	7.601+07	7.01390-03	1.186+09
6.79930-01	8.613+07	6.29800-03	1.015+09
5.98990-01	1.002+08	5.65220-03	9.328+08
5.31700-01	1.141+08	5.08170-03	8.176+08
4.75140-01	1.314+08	4.56900-03	7.814+08
4.20080-01	1.537+08	4.10220-03	6.882+08
3.67900-01	1.781+08	3.68550-03	6.247+08
3.24870-01	2.057+08	3.31410-03	5.386+08
2.88970-01	2.328+08	2.97890-03	5.010+08
2.55560-01	2.678+08	2.67740-03	4.750+08
2.24940-01	3.208+08	2.40690-03	4.215+08
1.99360-01	3.868+08	2.16474-03	3.040+08
1.77890-01	4.514+08	1.94602-03	3.320+08
1.58090-01	5.609+08	1.74909-03	3.248+08
1.39990-01	7.012+08	1.57237-03	2.865+08

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GA-H₂O-8F

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED H₂O6.35 BARNS/HYDROGEN ATOM (0.0253 eV)CALCULATION PARAMETERS

SCATTERING KERNEL: GAKER (KOPPEL'S ANISOTROPIC H(H₂O), 0.0255 eV)
(GA 5798, P. 155)

TRANSPORT THEORY CODE: GATHER 3/19/65 (GA 4132)

TEMPERATURE: 0.0255 eV

SOURCE: $\text{erf } \sqrt{E/KT_{\text{eff}}}$ ($KT_{\text{eff}} = 0.117 \text{ eV}$)

ATOM DENSITIES

HYDROGEN = 6.581×10^{22} ATOMS/CC
BORON = 5.248×10^{20} ATOMS/CC
OXYGEN = 3.369×10^{22} ATOMS/CC

LOCAL BUCKLING

$B^2 \text{ TOTAL} = 0.0$

NEUTRON CONSERVATION

$$\left[\frac{\text{TOTAL ABSORPTION}}{\text{SLOWING DOWN DENSITY}} \right] = 1.041$$

EXPERIMENTAL ARRANGEMENT 2/11/65 T5, T6PLAN VIEW NOT TO SCALE

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INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED H₂O
2-11-65 T5, T6

E(ev)	φ(E)	E(ev)	φ(E)
9.40910+01	5.049+05	1.39990-01	5.774+08
5.96050+01	7.569+05	1.24820-01	7.116+08
4.11120+01	1.027+06	1.11030-01	8.518+08
3.00590+01	1.535+06	9.85610-02	1.020+09
2.29310+01	2.122+06	8.80740-02	1.169+09
1.80670+01	2.645+06	7.86060-02	1.348+09
1.46020+01	3.434+06	7.00770-02	1.521+09
1.20450+01	3.901+06	6.28610-02	1.655+09
1.01060+01	4.965+06	5.63580-02	1.784+09
8.60000+00	5.611+06	5.05030-02	1.896+09
7.40710+00	6.905+06	4.52650-02	1.927+09
6.44620+00	7.926+06	4.05770-02	1.949+09
5.66090+00	8.611+06	3.63990-02	1.945+09
5.01070+00	1.007+07	3.25190-02	1.903+09
4.46650+00	1.150+07	2.90940-02	1.882+09
3.81010+00	1.335+07	2.60750-02	1.783+09
3.13010+00	1.676+07	2.33120-02	1.706+09
2.61720+00	1.979+07	2.08850-02	1.613+09
2.22020+00	2.345+07	1.87510-02	1.511+09
1.90810+00	2.628+07	1.68120-02	1.453+09
1.65710+00	3.137+07	1.50620-02	1.371+09
1.45260+00	3.596+07	1.34870-02	1.276+09
1.28370+00	3.978+07	1.20770-02	1.209+09
1.14270+00	4.593+07	1.08170-02	1.140+09
1.02370+00	5.150+07	9.69410-03	1.067+09
9.00070-01	5.955+07	8.69420-03	9.522+08
7.78460-01	6.924+07	7.80470-03	8.766+08
6.79930-01	8.227+07	7.01390-03	7.874+08
5.98990-01	9.190+07	6.29800-03	7.148+08
5.31700-01	1.076+08	5.65220-03	5.604+08
4.75140-01	1.222+08	5.08170-03	5.270+08
4.20080-01	1.410+08	4.56900-03	4.842+08
3.67900-01	1.615+08	4.10220-03	4.429+08
3.24870-01	1.877+08	3.68550-03	4.226+08
2.88970-01	2.123+08	3.31410-03	3.983+08
2.55560-01	2.398+08	2.97890-03	3.585+08
2.24940-01	2.826+08	2.67740-03	2.866+08
1.99360-01	3.384+08	2.40690-03	2.811+08
1.77890-01	4.037+08	2.16470-03	2.747+08
1.58090-01	4.876+08	1.68740-03	1.933+08

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CALCULATION PARAMETERSScattering kernel: GASKET (300°K , H (H_2C)) code (1)

Diffusion theory: GATHER code (6)

Temperature: 300°K Source: $\text{erf } \sqrt{E/KT}$ ($KT_{\text{eff.}} = 0.117$)LAPLACIANS AT POINT OF MEASUREMENT $B^2 = -0.043 \text{ cm}^{-2}$ (total buckling)

The buckling axial to the source - assembly axis was deduced from flux plots, using cadmium-covered indium detectors. The buckling transverse to this axis was deduced from a cosine distribution with an extrapolation length of 3 centimeters.

COMMENTS

Infinite medium neutron spectrum in H_2O , poisoned to 2.02 barns/hydrogen atom (0.0253 eV) with SmCl_3 at room temperature.

Method of measurement: Time-of-flight measurements, using a pulsed neutron source.

Neutron conservation: $\frac{\text{total absorption}}{\text{slowing down density}} = 1.062$

The absorber cross sections are listed in Tables 2 and 4.

CORRECTIONS APPLIED TO DATA

Detector sensitivity Flight path transmission

Mean emission time Count loss correction

Background subtraction

EXPERIMENTAL ARRANGEMENT

NOT TO SCALE

ATOM DENSITIES IN THE ASSEMBLY

Absorber: $1.972 \times 10^{19} / \text{cm}^3$ (Sm) Moderator: $6.662 \times 10^{22} / \text{cm}^3$ (H)
 $5.917 \times 10^{19} / \text{cm}^3$ (Cl) $3.331 \times 10^{22} / \text{cm}^3$ (O)

LISTING OF EXPERIMENTAL POINTS $[\phi(E) \text{ v. } E]$

E(eV)	$\phi(E)$	E(eV)	$\phi(E)$	E(eV)	$\phi(E)$	E(eV)	$\phi(E)$
1.239+01	1.615+04	2.830-01	9.960+05	4.828+00	3.961+04	3.795-02	1.901+07
1.030+01	1.948+04	2.528-01	1.167+06	3.138+00	6.675+04	3.352-02	1.984+07
8.711+00	2.266+04	2.244-01	1.402+06	2.202+00	9.800+04	2.983-02	2.020+07
7.458+00	2.719+04	1.981-01	1.696+06	1.630+00	1.363+05	2.671-02	2.030+07
6.457+00	3.094+04	1.761-01	2.068+06	1.255+00	1.774+05	2.367-02	1.986+07
5.645+00	3.213+04	1.576-01	2.591+06	9.969-01	2.314+05	2.077-02	1.909+07
4.977+00	3.601+04	1.405-01	3.218+06	8.105-01	2.826+05	1.838-02	1.828+07
4.421+00	4.383+04	1.248-01	3.905+06	6.720-01	3.596+05	1.638-02	1.730+07
3.953+00	4.975+04	1.116-01	4.706+06	5.662-01	4.394+05	1.469-02	1.650+07
3.386+00	6.226+04	9.960-02	5.753+06	4.836-01	5.372+05	1.308-02	1.563+07
2.794+00	7.459+04	8.867-02	7.039+06	4.178-01	6.413+05	1.158-02	1.455+07
2.346+00	9.106+04	7.945-02	8.774+06	3.646-01	7.733+05	1.033-02	1.326+07
1.997+00	1.067+05	7.111-02	1.042+07	3.210-01	8.806+05	9.181-03	1.247+07
1.721+00	1.211+05	6.356-02	1.231+07	2.848-01	1.038+06	8.126-03	1.128+07
1.498+00	1.443+05	5.677-02	1.398+07	2.544-01	1.199+06	7.243-03	1.008+07
1.316+00	1.655+05	5.065-02	1.562+07	2.176-01	1.514+06	6.441-03	9.266+06
1.165+00	1.888+05	4.521-02	1.701+07	1.793-01	2.115+06	5.716-03	8.389+06
1.039+00	2.164+05	4.038-02	1.824+07	1.504-01	2.905+06	5.108-03	7.491+06
9.094-01	2.471+05	3.609-02	1.905+07	1.279-01	3.893+06	4.558-03	6.946+06
7.824-01	2.906+05	3.229-02	1.946+07	1.101-01	5.059+06	4.063-03	6.689+06
6.803-01	3.399+05	2.893-02	1.974+07	9.588-02	6.310+06	3.622-03	6.363+06
5.969-01	3.989+05	2.595-02	1.978+07	8.420-02	8.006+06	3.228-03	5.147+06
5.280-01	4.641+05	2.331-02	1.944+07	7.454-02	1.003+07	2.895-03	5.255+06
4.704-01	5.411+05	2.089-02	1.898+07	6.646-02	1.191+07	2.596-03	4.312+06
4.146-01	6.431+05			5.811-02	1.404+07	2.317-03	3.980+06
3.620-01	7.473+05	1.792+01	1.016+04	4.990-02	1.634+07	2.070-03	3.522+06
3.188-01	8.713+05	8.369+00	2.349+04	4.331-02	1.810+07	1.779-03	3.431+06

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CALCULATION PARAMETERS

Scattering kernel: GASKET (300°K, H (H₂O)) code (1)
 Diffusion theory: GATHER code (6)
 Temperature: 300°K
 Source: $\text{erf} \sqrt{E/KT}$ ($KT_{\text{eff.}} = 0.117$)

LAPLACIANS AT POINT OF MEASUREMENT

$$B^2 = -0.043 \text{ cm}^{-2} \text{ (total buckling)}$$

The buckling axial to the source - assembly axis was deduced from flux plots, using cadmium-covered indium detectors. The buckling transverse to this axis was deduced from a cosine distribution with an extrapolation length of 3 centimeters.

COMMENTS

Infinite medium neutron spectrum in H₂O, poisoned to 3.76 barns/hydrogen atom (0.0253 eV) with SmCl₃ at room temperature.

Method of measurement: Time-of-flight measurements, using a pulsed neutron source.

Neutron conservation: $\frac{\text{total absorption}}{\text{slowing down density}} = 1.060$

The absorber cross sections are listed in Tables 2 and 4.

CORRECTIONS APPLIED TO DATA

Detector sensitivity Flight path transmission
 Mean emission time Count loss correction
 Background subtraction

EXPERIMENTAL ARRANGEMENT ATOM DENSITIES IN THE ASSEMBLY

Absorber: $4.010 \times 10^{19} / \text{cm}^3$ (Sm) Moderator: $6.660 \times 10^{22} / \text{cm}^3$ (H)
 $1.203 \times 10^{20} / \text{cm}^3$ (Cl) $3.330 \times 10^{22} / \text{cm}^3$ (O)

LISTING OF EXPERIMENTAL POINTS [$\phi(E)$ v. E]

E(eV)	$\phi(E)$	E(eV)	$\phi(E)$	E(eV)	$\phi(E)$	E(eV)	$\phi(E)$
1.240+01	1.164+05	2.826-01	7.023+06	4.831+00	2.749+05	3.783-02	6.175+07
1.031+01	1.375+05	2.525-01	8.035+06	3.139+00	4.681+05	3.342-02	6.400+07
8.717+00	1.513+05	2.241-01	9.380+06	2.203+00	6.851+05	2.974-02	6.461+07
7.463+00	1.898+05	1.978-01	1.103+07	1.630+00	9.469+05	2.664-02	6.436+07
6.461+00	2.144+05	1.758-01	1.268+07	1.255+00	1.252+06	2.361-02	6.380+07
5.648+00	2.305+05	1.573-01	1.453+07	9.967-01	1.568+06	2.072-02	6.040+07
4.980+00	2.540+05	1.402-01	1.645+07	8.103-01	1.935+06	1.834-02	5.745+07
4.423+00	3.138+05	1.245-01	1.811+07	6.717-01	2.470+06	1.634-02	5.500+07
3.955+00	3.587+05	1.113-01	1.952+07	5.659-01	3.051+06	1.447-02	5.086+07
3.387+00	4.312+05	9.932-02	2.167+07	4.833-01	3.719+06	1.274-02	4.836+07
2.795+00	5.347+05	8.840-02	2.498+07	4.175-01	4.497+06	1.130-02	4.475+07
2.346+00	6.415+05	7.919-02	3.079+07	3.643-01	5.176+06	1.009-02	4.108+07
1.997+00	7.505+05	7.085-02	3.615+07	3.207-01	6.049+06	8.977-03	3.820+07
1.721+00	8.808+05	6.332-02	4.191+07	2.845-01	7.033+06	7.956-03	3.285+07
1.498+00	1.012+06	5.655-02	4.716+07	2.540-01	7.920+06	7.100-03	3.100+07
1.316+00	1.179+06	5.046-02	5.222+07	2.172-01	9.963+06	6.321-03	2.704+07
1.165+00	1.339+06	4.506-02	5.683+07	1.790-01	1.269+07	5.616-03	2.544+07
1.039+00	1.538+06	4.024-02	5.924+07	1.500-01	1.550+07	5.023-03	2.356+07
9.092-01	1.706+06	3.598-02	6.116+07	1.276-01	1.820+07	4.487-03	2.163+07
7.822-01	2.501+06	3.220-02	6.257+07	1.098-01	1.996+07	4.003-03	2.247+07
6.800-01	2.410+06	2.885-02	6.332+07	9.560-02	2.286+07	3.571-03	1.860+07
5.966-01	2.805+06	2.588-02	6.206+07	8.393-02	2.774+07	3.185-03	1.810+07
5.277-01	3.245+06	2.326-02	6.145+07	7.429-02	3.400+07	2.842-03	1.367+07
4.701-01	3.804+06	2.084-02	5.917+07	6.622-02	3.964+07	2.537-03	1.284+07
4.143-01	4.496+06			5.789-02	4.659+07	2.267-03	1.562+07
3.617-01	5.223+06	1.794+01	7.327+04	4.972-02	5.402+07	1.953-03	1.505+07
3.185-01	6.011+06	8.375+00	1.660+05	4.317-02	5.804+07

CALCULATION PARAMETERS

Scattering kernel: GASKET (300°K, H (H₂O)) code (1)
Diffusion theory: GATHER code (6)
Temperature: 300°K
Source: $\text{erf } \sqrt{E/KT}$ ($KT_{\text{eff.}} = 0.117$)

LAPLACIANS AT POINT OF MEASUREMENT

$B^2 = -0.043 \text{ cm}^{-2}$ (total buckling).

The buckling axial to the source - assembly axis was deduced from flux plots, using cadmium-covered indium detectors. The buckling transverse to this axis was deduced from a cosine distribution with an extrapolation length of 3 centimeters.

COMMENTS

Infinite medium neutron spectrum in H₂O, poisoned to 6.37 barns/hydrogen atom (0.0253 eV) with SmCl₃ at room temperature.

Method of measurement: Time-of-flight measurements, using a pulsed neutron source.

Neutron conservation: $\frac{\text{total absorption}}{\text{slowing down density}} = 0.916$

The absorber cross sections are listed in Tables 2 and 4.

CORRECTIONS APPLIED TO DATA

Detector sensitivity Flight path transmission
Mean emission time Count loss correction
Background subtraction

EXPERIMENTAL ARRANGEMENT

ATOM DENSITIES IN THE ASSEMBLY

Absorber: $7.047 \times 10^{19} / \text{cm}^3$ (Sm) Moderator: $6.655 \times 10^{22} / \text{cm}^3$ (H)
 $2.114 \times 10^{20} / \text{cm}^3$ (Cl) $3.328 \times 10^{22} / \text{cm}^3$ (O)

LISTING OF EXPERIMENTAL POINTS $[\phi(E) \text{ v. } E]$

E(eV)	$\phi(E)$	E(eV)	$\phi(E)$	E(eV)	$\phi(E)$	E(eV)	$\phi(E)$
1.240+01	1.148+05	3.282-01	5.507+06	1.794+01	6.990+04	6.568-02	1.723+07
1.032+01	1.417+05	2.907-01	6.369+06	8.377+00	1.519+05	5.758-02	1.961+07
8.723+00	1.390+05	2.593-01	7.191+06	4.831+00	2.632+05	4.956-02	2.260+07
7.467+00	1.812+05	2.297-01	8.162+06	3.138+00	4.372+05	4.304-02	2.472+07
6.465+00	2.101+05	2.023-01	9.302+06	2.202+00	6.423+05	3.772-02	2.537+07
5.651+00	2.255+05	1.796-01	1.031+07	1.629+00	8.910+05	3.333-02	2.606+07
4.982+00	2.520+05	1.605-01	1.118+07	1.254+00	1.185+06	2.967-02	2.593+07
4.425+00	3.088+05	1.428-01	1.275+07	9.954-01	1.450+06	2.658-02	2.530+07
3.957+00	3.538+05	1.267-01	1.124+07	8.090-01	1.766+06	2.356-02	2.539+07
3.389+00	4.162+05	1.131-01	1.073+07	6.705-01	2.303+06	2.068-02	2.364+07
2.796+00	5.076+05	1.008-01	1.047+07	5.647-01	2.832+06	1.830-02	2.244+07
2.347+00	6.167+05	8.961-02	1.131+07	4.821-01	3.420+06	1.631-02	2.152+07
1.998+00	7.173+05	8.018-02	1.299+07	4.164-01	4.088+06	1.444-02	2.035+07
1.721+00	8.575+05	7.166-02	1.556+07	3.633-01	4.802+06	1.272-02	1.831+07
1.498+00	9.904+05	6.398-02	1.810+07	3.197-01	5.570+06	1.128-02	1.720+07
1.316+00	1.129+06	5.709-02	2.054+07	2.835-01	6.346+06	1.007-02	1.575+07
1.165+00	1.304+06	5.093-02	2.255+07	2.531-01	7.244+06	8.965-03	1.371+07
1.039+00	1.487+06	4.544-02	2.432+07	2.164-01	8.517+06	7.946-03	1.236+07
9.091-01	1.598+06	4.057-02	2.538+07	1.782-01	1.035+07	7.091-03	1.121+07
7.820-01	1.960+06	3.626-02	2.613+07	1.493-01	1.120+07	6.314-03	9.328+06
6.798-01	2.304+06	3.243-02	2.639+07	1.269-01	1.104+07	5.610-03	9.826+06
5.964-01	2.664+06	2.905-02	2.621+07	1.092-01	1.043+07	5.018-03	7.878+06
5.275-01	3.113+06	2.605-02	2.655+07	9.497-02	1.068+07	4.482-03	7.749+06
4.698-01	3.628+06	2.340-02	2.551+07	8.334-02	1.220+07	3.999-03	8.658+06
4.212-01	4.097+06	2.097-02	2.425+07	7.372-02	1.436+07	3.396-03	5.817+06
3.736-01	4.750+06

CALCULATION PARAMETERS

Scattering kernel: GASKET (300°K, H (H₂O)) code (1)
Diffusion theory: GATHER code (6)
Temperature: 300°K
Source: $\text{erf } \sqrt{E/KT}$ ($KT_{\text{eff.}} = 0.117$)

LAPLACIANS AT POINT OF MEASUREMENT

$B^2 = -0.043 \text{ cm}^{-2}$ (total buckling).

The buckling axial to the source - assembly axis was deduced from flux plots, using cadmium-covered indium detectors. The buckling transverse to this axis was deduced from a cosine distribution with an extrapolation length of 3 centimeters.

COMMENTS

Infinite medium neutron spectrum in H₂O, poisoned to 8.94 barns/hydrogen atom (0.0253 eV) with SmCl₃ at room temperature.

Method of measurement: Time-of-flight measurements, using a pulsed neutron source.

Neutron conservation: $\frac{\text{total absorption}}{\text{slowing down density}} = 0.916$

The absorber cross sections are listed in Tables 2 and 4.

CORRECTIONS APPLIED TO DATA

Detector sensitivity Flight path transmission
Mean emission time Count loss correction
Background subtraction

EXPERIMENTAL ARRANGEMENT

ATOM DENSITIES IN THE ASSEMBLY

Absorber: $1.006 \times 10^{20} / \text{cm}^3$ (Sm) Moderator: $6.648 \times 10^{22} / \text{cm}^3$ (H)
 $3.018 \times 10^{20} / \text{cm}^3$ (Cl) $3.324 \times 10^{22} / \text{cm}^3$ (O)

LISTING OF EXPERIMENTAL POINTS $[\phi(E) \text{ v. } E]$

E(eV)	$\phi(E)$	E(eV)	$\phi(E)$	E(eV)	$\phi(E)$	E(eV)	$\phi(E)$
1.240+01	1.687+05	3.282-01	7.573+06	1.795+01	1.018+05	7.406-02	1.356+07
1.032+01	2.004+05	2.907-01	8.621+06	8.381+00	2.182+05	6.600-02	1.606+07
8.723+00	1.887+05	2.593-01	9.689+06	4.833+00	3.757+05	5.769-02	1.842+07
7.467+00	2.632+05	2.297-01	1.102+07	3.141+00	6.296+05	4.956-02	2.102+07
6.465+00	3.041+05	2.023-01	1.226+07	2.203+00	9.212+05	4.304-02	2.240+07
5.651+00	3.219+05	1.796-01	1.328+07	1.631+00	1.264+06	3.772-02	2.328+07
4.982+00	3.585+05	1.605-01	1.362+07	1.255+00	1.661+06	3.333-02	2.370+07
4.425+00	4.451+05	1.428-01	1.338+07	9.967-01	2.042+06	2.967-02	2.323+07
3.957+00	5.040+05	1.267-01	1.231+07	8.102-01	2.435+06	2.658-02	2.367+07
3.389+00	5.985+05	1.131-01	1.094+07	6.715-01	3.221+06	2.356-02	2.337+07
2.796+00	7.260+05	1.008-01	1.015+07	5.656-01	3.998+06	2.068-02	2.200+07
2.347+00	8.654+05	8.961-02	1.103+07	4.830-01	4.828+06	1.830-02	2.079+07
1.998+00	1.035+06	8.018-02	1.234+07	4.172-01	5.803+06	1.631-02	1.976+07
1.721+00	1.218+06	7.166-02	1.461+07	3.640-01	6.732+06	1.444-02	1.782+07
1.498+00	1.394+06	6.398-02	1.670+07	3.204-01	7.772+06	1.272-02	1.687+07
1.316+00	1.599+06	5.709-02	1.866+07	2.842-01	8.816+06	1.128-02	1.500+07
1.165+00	1.793+06	5.093-02	2.072+07	2.537-01	9.876+06	1.007-02	1.289+07
1.039+00	2.049+06	4.544-02	2.226+07	2.170-01	1.154+07	8.965-03	1.249+07
9.091-01	2.164+06	4.057-02	2.310+07	1.787-01	1.324+07	7.946-03	1.146+07
7.820-01	2.649+06	3.626-02	2.358+07	1.498-01	1.354+07	7.091-03	1.025+07
6.798-01	3.212+06	3.243-02	2.425+07	1.273-01	1.221+07	6.314-03	7.164+06
5.964-01	3.774+06	2.905-02	2.466+07	1.096-01	1.071+07	5.610-03	8.364+06
5.275-01	4.304+06	2.605-02	2.397+07	9.535-02	1.024+07	5.018-03	8.038+06
4.698-01	5.032+06	2.340-02	2.270+07	8.370-02	1.155+07	4.482-03	7.977+06
4.212-01	5.797+06	2.097-02	2.214+07				
3.736-01	6.560+06

CALCULATION PARAMETERS

Scattering kernel: GASKET (300°K, H (H_2O)) code. (1)
Diffusion theory: GATHER code (6)
Temperature: 300°K
Source: $\text{erf } \sqrt{E/KT}$ ($KT_{\text{eff.}} = 0.117$)

LAPLACIANS AT POINT OF MEASUREMENT

$B^2 = 0.0438 \text{ cm}^{-2}$ (total buckling).
The buckling axial to the source - assembly axis was deduced from flux plots, using cadmium-covered indium detectors. The buckling transverse to this axis was deduced from a cosine distribution with an extrapolation length of 3 centimeters.

COMMENTS

Infinite medium neutron spectrum in H_2O , poisoned to 8.41 barns/hydrogen atom (0.0253 eV) with $\text{Sm}(\text{NO}_3)_3$ at room temperature.
Method of measurement: Time-of-flight measurements, using a pulsed neutron source.
Neutron conservation: $\frac{\text{total absorption}}{\text{slowing down density}} = 1.011$
The absorber cross sections are listed in Table 4.

CORRECTIONS APPLIED TO DATA

Detector sensitivity	Flight path transmission
Mean emission time	Count loss correction
Background subtraction	

EXPERIMENTAL ARRANGEMENT

ATOM DENSITIES IN THE ASSEMBLY

Absorber:	$9.537 \times 10^{19} / \text{cm}^3$ (Sm)	Moderator:	$6.617 \times 10^{22} / \text{cm}^3$ (H)
	$2.861 \times 10^{20} / \text{cm}^3$ (N)		$3.395 \times 10^{22} / \text{cm}^3$ (O)

LISTING OF EXPERIMENTAL POINTS $[\phi(E) \text{ v. } E]$

E(eV)	$\phi(E)$	E(eV)	$\phi(E)$	E(eV)	$\phi(E)$
4.298 01	5.913 05	2.287-02	3.623 08	1.980 00	1.462 07
1.867 01	1.369 06	2.037-02	3.647 08	1.701 00	1.714 07
1.038 01	2.652 06	1.825-02	3.344 08	1.477 00	1.995 07
6.601 00	4.008 06	1.629-02	3.153 08	1.294 00	2.307 07
4.563 00	5.866 06	1.448-02	3.052 08	1.143 00	2.616 07
3.342 00	8.204 06	1.296-02	2.854 08	1.017 00	2.964 07
2.552 00	1.118 07	1.157-02	2.690 08	9.118-01	3.159 07
2.013 00	1.437 07	1.031-02	2.552 08	8.015-01	3.649 07
1.628 00	1.793 07	9.249-03	2.360 08	6.931-01	4.632 07
1.344 00	2.159 07	8.281-03	2.107 08	6.052-01	5.409 07
1.128 00	2.642 07	7.405-03	1.928 08	5.331-01	6.471 07
9.605-01	3.082 07	6.620-03	1.905 08	4.731-01	7.332 07
8.275-01	3.432 07	5.916-03	1.403 08	4.228-01	8.534 07
7.204-01	4.319 07	5.290-03	1.270 08	3.737-01	9.941 07
6.328-01	5.199 07	4.731-03	1.414 08	3.274-01	1.164 08
5.603-01	5.998 07	4.235-03	1.191 08	2.895-01	1.328 08
4.995-01	6.967 07	3.794-03	1.193 08	2.575-01	1.471 08
4.262-01	8.359 07	3.403-03	8.861 07	2.305-01	1.711 08
3.503-01	1.070 08	2.932-03	7.385 07	2.050-01	1.910 08
2.935-01	1.308 08			1.812-01	2.088 08
2.491-01	1.536 08			1.614-01	2.201 08
2.141-01	1.834 08	8.601 01	3.183 05	1.446-01	2.229 08
1.859-01	2.031 08	5.416 01	5.249 05	1.291-01	2.070 08
1.630-01	2.202 08	3.721 01	7.353 05	1.148-01	1.886 08
1.441-01	2.231 08	2.713 01	1.262 06	1.028-01	1.762 08
1.283-01	2.032 08	2.065 01	1.358 06	9.179-02	1.795 08
1.149-01	1.892 08	1.624 01	1.601 06	8.178-02	2.031 08
1.010-01	1.746 08	1.311 01	2.167 06	7.332-02	2.357 08
8.744-02	1.846 08	1.080 01	2.602 06	6.565-02	2.791 08
7.639-02	2.199 08	9.060 00	3.074 06	5.871-02	3.135 08
6.730-02	2.702 08	7.704 00	2.964 06	5.249-02	3.493 08
5.975-02	3.061 08	6.631 00	4.144 06	4.691-02	3.766 08
5.340-02	3.413 08	5.767 00	4.855 06	4.194-02	3.927 08
4.721-02	3.725 08	5.062 00	5.304 06	3.751-02	3.938 08
4.135-02	3.934 08	4.479 00	6.220 06	3.358-02	3.975 08
3.652-02	3.945 08	3.991 00	6.522 06	3.008-02	4.003 08
3.248-02	3.939 08	3.403 00	8.234 06	2.698-02	3.948 08
2.908-02	3.967 08	2.794 00	1.015 07	2.412-02	3.759 08
2.587-02	3.851 08	2.335 00	1.237 07	2.161-02	3.623 08

CALCULATION PARAMETERS

Scattering kernel: GASKET (300°K, H (H_2O)) code (1)
 Diffusion theory: GATHER code (6)
 Temperature: 300°K
 Source: $\text{erf } \sqrt{E/KT}$ ($KT_{\text{eff.}} = 0.117$)

LAPLACIANS AT POINT OF MEASUREMENT

$$B^2 = -0.043 \text{ cm}^{-2} \text{ (total buckling).}$$

The buckling axial to the source - assembly axis was deduced from flux plots, using cadmium-covered indium detectors. The buckling transverse to this axis was deduced from a cosine distribution with an extrapolation length of 3 centimeters.

COMMENTS

Infinite medium neutron spectrum in H_2O , poisoned to 2.62 barns/hydrogen atom (0.0253 eV) with $CdSO_4$ at room temperature.

Method of measurement: Time-of-flight measurements, using a pulsed neutron source.

Neutron conservation: $\frac{\text{total absorption}}{\text{slowing down density}} = 1.002$

The absorber cross sections are obtained from Table 3 and BNL 325.

CORRECTIONS APPLIED TO DATA

Detector sensitivity	Flight path transmission
Mean emission time	Count loss correction
Background subtraction	

EXPERIMENTAL ARRANGEMENT

NOT TO SCALE

ATOM DENSITIES IN THE ASSEMBLY

Absorber: $6.222 \times 10^{19} / \text{cm}^3$ (Cd)	Moderator: $6.662 \times 10^{22} / \text{cm}^3$ (H)
$6.222 \times 10^{19} / \text{cm}^3$ (S)	$3.356 \times 10^{22} / \text{cm}^3$ (O)

LISTING OF EXPERIMENTAL POINTS [$\phi(E)$ v. E]

$E(eV)$	$\phi(E)$	$E(eV)$	$\phi(E)$	$E(eV)$	$\phi(E)$
1.793+01	1.653+04	1.277-01	3.993+06	1.131-02	1.443+07
8.372+00	3.648+04	1.100-01	5.532+06	1.010-02	1.361+07
4.829+00	6.100+04	9.574-02	7.421+06	8.985-03	1.279+07
3.139+00	9.898+04	8.407-02	9.636+06	7.962-03	1.154+07
2.202+00	1.434+05	7.442-02	1.153+07	7.105-03	1.033+07
1.630+00	2.002+05	6.634-02	1.351+07	6.326-03	9.195+06
1.255+00	2.634+05	5.800-02	1.560+07	5.620-03	8.015+06
9.968-01	3.344+05	4.981-02	1.788+07	5.026-03	7.840+06
8.104-01	4.338+05	4.324-02	1.911+07	4.489-03	7.516+06
6.719-01	5.322+05	3.789-02	2.039+07	4.005-03	6.648+06
5.660-01	6.421+05	3.347-02	2.080+07	3.573-03	6.762+06
4.834-01	7.858+05	2.979-02	2.110+07	3.186-03	5.621+06
4.177-01	9.184+05	2.668-02	2.113+07	2.843-03	5.380+06
3.645-01	1.095+06	2.364-02	2.079+07	2.538-03	5.199+06
3.209-01	1.241+06	2.075-02	1.977+07	2.268-03	4.788+06
2.846-01	1.380+06	1.836-02	1.889+07	2.029-03	4.931+06
2.542-01	1.513+06	1.636-02	1.802+07	1.817-03	4.908+06
2.174-01	1.652+06	1.448-02	1.706+07	1.630-03	4.046+06
1.792-01	1.987+06	1.275-02	1.597+07	1.464-03	4.723+06
1.502-01	2.692+06

CALCULATION PARAMETERS

Scattering kernel: GASKET (300°K, H (H_2O)) code (1)
 Diffusion theory: GATHER code (6)
 Temperature: 300°K
 Source: $\text{erf } \sqrt{E/KT}$ ($KT_{\text{eff.}} = 0.117$)

LAPLACIANS AT POINT OF MEASUREMENT

$$B^2 = -0.043 \text{ cm}^{-2} \text{ (total buckling)}$$

The buckling axial to the source - assembly axis was deduced from flux plots, using cadmium-covered indium detectors. The buckling transverse to this axis was deduced from a cosine distribution with an extrapolation length of 3 centimeters.

COMMENTS

Infinite medium neutron spectrum in H_2O , poisoned to 5.27 barns/hydrogen atom (0.0253 eV) with $CdSO_4$ at room temperature.

Method of measurement: Time-of-flight measurements, using a pulsed neutron source.

Neutron conservation: $\frac{\text{total absorption}}{\text{slowing down density}} = 0.994$

The absorber cross sections are obtained from Table 3 and BNL 325.

CORRECTIONS APPLIED TO DATA

Detector sensitivity Flight path transmission
 Mean emission time Count loss correction.
 Background subtraction

EXPERIMENTAL ARRANGEMENT ATOM DENSITIES IN THE ASSEMBLY

Absorber: $1.341 \times 10^{20} / \text{cm}^3$ (Cd) Moderator: $6.656 \times 10^{22} / \text{cm}^3$ (H)
 $1.341 \times 10^{20} / \text{cm}^3$ (S) $3.382 \times 10^{22} / \text{cm}^3$ (O)

LISTING OF EXPERIMENTAL POINTS $[\phi(E) \text{ v. } E]$

E(eV)	$\phi(E)$	E(eV)	$\phi(E)$	E(eV)	$\phi(E)$	E(eV)	$\phi(E)$
1.235+01	2.316+04	3.173-01	1.114+06	1.787+01	1.395+04	4.961-02	6.476+06
1.027+01	2.786+04	2.815-01	1.171+06	8.343+00	3.239+04	4.307-02	6.857+06
8.684+00	3.330+04	2.515-01	1.200+06	4.812+00	5.486+04	3.775-02	7.052+06
7.434+00	3.946+04	2.232-01	1.177+06	3.127+00	9.128+04	3.336-02	7.010+06
6.436+00	4.510+04	1.970-01	1.128+06	2.194+00	1.339+05	2.969-02	7.080+06
5.626+00	4.801+04	1.751-01	1.189+06	1.624+00	1.858+05	2.660-02	6.886+06
4.960+00	5.182+04	1.567-01	1.346+06	1.251+00	2.449+05	2.357-02	6.592+06
4.406+00	6.324+04	1.397-01	1.616+06	9.929-01	3.179+05	2.069-02	6.318+06
3.940+00	7.359+04	1.240-01	2.020+06	8.072-01	3.926+05	1.831-02	5.974+06
3.374+00	8.721+04	1.109-01	2.503+06	6.692-01	4.900+05	1.632-02	5.740+06
2.785+00	1.068+05	9.894-02	3.051+06	5.637-01	5.978+05	1.445-02	5.285+06
2.337+00	1.284+05	8.811-02	3.671+06	4.814-01	7.275+05	1.272-02	4.756+06
1.990+00	1.533+05	7.915-02	4.257+06	4.159-01	8.605+05	1.128-02	4.480+06
1.714+00	1.786+05	7.076-02	4.866+06	3.629-01	9.824+05	1.008-02	4.126+06
1.492+00	2.047+05	6.319-02	5.423+06	3.195-01	1.098+06	8.969-03	3.627+06
1.311+00	2.359+05	5.641-02	6.014+06	2.834-01	1.161+06	7.949-03	3.334+06
1.161+00	2.701+05	5.035-02	6.476+06	2.531-01	1.194+06	7.094-03	3.076+06
1.035+00	3.057+05	4.496-02	6.763+06	2.164-01	1.157+06	6.316-03	2.803+06
9.058-01	3.526+05	4.016-02	7.043+06	1.783-01	1.164+06	5.612-03	2.446+06
7.792-01	4.210+05	3.591-02	7.107+06	1.495-01	1.432+06	5.019-03	2.232+06
6.774-01	4.891+05	3.214-02	7.217+06	1.271-01	1.893+06	4.483-03	2.133+06
5.944-01	5.746+05	2.880-02	7.106+06	1.094-01	2.525+06	4.001-03	1.796+06
5.257-01	6.582+05	2.573-02	7.007+06	9.523-02	3.240+06	3.569-03	1.555+06
4.683-01	7.538+05	2.303-02	6.729+06	8.376-02	3.884+06	3.183-03	1.695+06
4.127-01	8.763+05	2.065-02	6.414+06	7.422-02	4.559+06	2.841-03	1.626+06
3.603-01	9.960+05			6.610-02	5.236+06	2.000-03	1.089+06
				5.775-02	5.870+06

<p><u>CALCULATION PARAMETERS</u></p> <p>Scattering kernel: GASKET (300°K, H (H_2O) code (1)</p> <p>Diffusion theory: GATHER code (6)</p> <p>Temperature: 300°K</p> <p>Source: $\text{erf } \sqrt{E/KT}$ ($KT_{\text{eff.}} = 0.117$)</p>	<p><u>EXPERIMENTAL ARRANGEMENT</u></p> <p>16 METER FLIGHT PATH</p> <p>1.4 CM DIAM. PRECOLLIMATOR</p> <p>2.5 CM DIAM. REENTRANT TUBE</p> <p>5 X 10 X 10 CM LEAD TARGET</p> <p>LINAC BEAM</p> <p>10.2 CM</p> <p>45.7 CM</p> <p>45.7 CM HIGH</p> <p>45.7 CM</p> <p>ALUMINUM TANK WITH 0.04 CM CADMIUM COVER</p> <p>PLAN VIEW</p> <p>NOT TO SCALE</p>
<p><u>LAPLACIANS AT POINT OF MEASUREMENT</u></p> <p>$B^2 = -0.043 \text{ cm}^{-2}$ (total buckling)</p> <p>The buckling axial to the source - assembly axis was deduced from flux plots, using cadmium-covered indium detectors. The buckling transverse to this axis was deduced from a cosine distribution with an extrapolation length of 3 centimeters.</p>	
<p><u>COMMENTS</u></p> <p>Infinite medium neutron spectrum in H_2O, poisoned to 9.35 barns/hydrogen atom (0.0253 eV) with $CdSO_4$ at room temperature.</p> <p>Method of measurement: Time-of-flight measurements, using a pulsed neutron source.</p> <p>Neutron conservation: $\frac{\text{total absorption}}{\text{slowing down density}} = 1.043$</p> <p>The absorber cross sections are obtained from Table 3 and BNL 325.</p>	<p><u>ATOM DENSITIES IN THE ASSEMBLY</u></p> <p>Absorber: $2.444 \times 10^{20} / \text{cm}^3$ (Cd) Moderator: $6.642 \times 10^{22} / \text{cm}^3$ (H)</p> <p>$2.444 \times 10^{20} / \text{cm}^3$ (S) $3.419 \times 10^{22} / \text{cm}^3$ (O)</p>
<p><u>CORRECTIONS APPLIED TO DATA</u></p> <p>Detector sensitivity Flight path transmission</p> <p>Mean emission time Count loss correction</p> <p>Background subtraction</p>	

LISTING OF EXPERIMENTAL POINTS $[\phi(E) \text{ v. } E]$

E(eV)	$\phi(E)$	E(eV)	$\phi(E)$	E(eV)	$\phi(E)$
1.840+01	7.357+03	2.197-01	4.328+05	2.436-02	1.617+06
8.465+00	1.722+04	1.814-01	3.875+05	2.134-02	1.534+06
4.850+00	2.925+04	1.525-01	4.559+05	1.885-02	1.424+06
3.142+00	4.877+04	1.300-01	5.754+05	1.678-02	1.379+06
2.201+00	7.018+04	1.122-01	7.334+05	1.502-02	1.255+06
1.628+00	9.751+04	9.785-02	9.076+05	1.337-02	1.184+06
1.254+00	1.272+05	8.610-02	1.036+06	1.182-02	1.172+06
9.959-01	1.631+05	7.636-02	1.190+06	1.053-02	1.069+06
8.102-01	2.089+05	6.819-02	1.324+06	9.444-03	8.890+05
6.722-01	2.567+05	6.023-02	1.472+06	8.431-03	8.535+05
5.669-01	3.092+05	5.205-02	1.596+06	7.500-03	7.789+05
4.846-01	3.733+05	4.505-02	1.684+06	6.714-03	6.199+05
4.192-01	4.360+05	3.937-02	1.712+06	5.996-03	6.532+05
3.662-01	4.925+05	3.470-02	1.730+06	5.222-03	5.350+05
3.228-01	5.243+05	3.081-02	1.764+06	4.452-03	5.701+05
2.867-01	5.337+05	2.755-02	1.708+06	3.434-03	5.470+05
2.564-01	5.084+05

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<p><u>CALCULATION PARAMETERS</u></p> <p>Scattering kernel: GASKET (300°K, H (H₂O)) code (1)</p> <p>Diffusion theory: GATHER code (6)</p> <p>Temperature: 300°K</p> <p>Source: $\text{erf } \sqrt{E/KT}$ ($KT_{\text{eff.}} = 0.117$)</p>	<p><u>EXPERIMENTAL ARRANGEMENT</u></p> <p>16-METER FLIGHT PATH</p> <p>1.4 CM DIAM. PRECOLLIMATOR</p> <p>2.5 CM DIAM. REENRANT TUBE</p> <p>5 X 10 X 10 CM LEAD TARGET</p> <p>LINAC BEAM</p> <p>10.2 CM</p> <p>45.7 CM</p> <p>45.7 CM HIGH</p> <p>45.7 CM</p> <p>ALUMINUM TANK WITH 0.04 CM CADMIUM COVER</p> <p>PLAN VIEW</p> <p>NOT TO SCALE</p>
<p><u>LAPLACIANS AT POINT OF MEASUREMENT</u></p> <p>$B^2 = -0.043 \text{ cm}^{-2}$ (total buckling).</p> <p>The buckling axial to the source - assembly axis was deduced from flux plots, using cadmium-covered indium detectors. The buckling transverse to this axis was deduced from a cosine distribution with an extrapolation length of 3 centimeters.</p>	
<p><u>COMMENTS</u></p> <p>Infinite medium neutron spectrum in H₂O, poisoned to 14.97 barns/hydrogen atom (0.0253 eV) with CdSO₄ at room temperature.</p> <p>Method of measurement: Time-of-flight measurements, using a pulsed neutron source.</p> <p>Neutron conservation: $\frac{\text{total absorption}}{\text{slowing down density}} = 1.024$</p> <p>The absorber cross sections are obtained from Table 3 and BNL 325.</p>	<p><u>ATOM DENSITIES IN THE ASSEMBLY</u></p> <p>Absorber: $3.951 \times 10^{20} / \text{cm}^3$ (Cd) Moderator: $6.641 \times 10^{22} / \text{cm}^3$ (H)</p> <p>$3.951 \times 10^{20} / \text{cm}^3$ (S) $3.465 \times 10^{22} / \text{cm}^3$ (O)</p>
<p><u>CORRECTIONS APPLIED TO DATA</u></p> <p>Detector sensitivity Flight path transmission</p> <p>Mean emission time Count loss correction</p> <p>Background subtraction</p>	

LISTING OF EXPERIMENTAL POINTS $[\phi(E) \text{ v. } E]$

E(eV)	$\phi(E)$	E(eV)	$\phi(E)$	E(eV)	$\phi(E)$
1.795+01	1.281+04	2.841-01	7.948+05	3.332-02	1.415+06
8.381+00	2.934+04	2.537-01	7.161+05	2.966-02	1.413+06
4.834+00	4.901+04	2.169-01	5.377+05	2.657-02	1.359+06
3.141+00	8.462+04	1.787-01	4.264+05	2.355-02	1.295+06
2.203+00	1.210+05	1.497-01	4.619+05	2.068-02	1.261+06
1.631+00	1.669+05	1.273-01	5.875+05	1.830-02	1.133+06
1.255+00	2.227+05	1.096-01	7.596+05	1.631-02	1.018+06
9.966-01	2.805+05	9.533-02	8.997+05	1.444-02	9.503+05
8.101-01	3.564+05	8.367-02	1.042+06	1.271-02	8.172+05
6.715-01	4.381+05	7.404-02	1.127+06	1.128-02	7.711+05
5.656-01	5.281+05	6.598-02	1.271+06	1.007-02	7.415+05
4.830-01	6.330+05	5.767-02	1.345+06	8.964-03	6.827+05
4.172-01	7.262+05	4.954-02	1.412+06	7.945-03	5.354+05
3.640-01	7.877+05	4.302-02	1.454+06	7.091-03	4.869+05
3.204-01	8.192+05	3.771-02	1.432+06	6.260-03	4.506+05

CALCULATION PARAMETERS

Scattering kernel: GASKET (296°K, H (H₂O)) code (1)
Diffusion theory: GATHER code (6)
Temperature: 296°K
Source: $\text{erf } \sqrt{E/KT}$ ($KT_{\text{eff.}} = 0.117$)

LAPLACIANS AT POINT OF MEASUREMENT

$B^2 = -0.031 \text{ cm}^{-2}$

The total buckling used in these calculations was estimated
to be -0.031.

COMMENTS

Infinite medium neutron spectrum of H₂O in a pressure vessel,
poisoned to 2.00 barns/hydrogen atom (0.0253 eV) with ErCl₃
at 296°K.

Method of measurement: Time-of-flight measurements, using a
pulsed neutron source.

Neutron conservation: $\frac{\text{total absorption}}{\text{slowing down density}} = 0.975$

The absorber cross sections are listed in Tables 2 and 6.

CORRECTIONS APPLIED TO DATA

Detector sensitivity Flight path transmission
Mean emission time Count loss correction.
Background subtraction

EXPERIMENTAL ARRANGEMENT

NOT TO SCALE

ATOM DENSITIES IN THE ASSEMBLY

Absorber: $4.004 \times 10^{20} / \text{cm}^3$ (Er) Moderator: $6.574 \times 10^{22} / \text{cm}^3$ (H)
 $12.012 \times 10^{20} / \text{cm}^3$ (Cl) $3.287 \times 10^{22} / \text{cm}^3$ (O)

LISTING OF EXPERIMENTAL POINTS [$\Phi(E)$ v. E]

E(eV)	$\Phi(E)$	E(eV)	$\Phi(E)$	E(eV)	$\Phi(E)$	E(eV)	$\Phi(E)$	E(eV)	$\Phi(E)$
6.512+01	3.983+05	3.991+00	6.531+06	3.532-01	6.803+07	4.233-01	4.449+07	1.516-02	2.192+09
6.155+01	4.323+05	3.775+00	6.990+06	3.348-01	7.404+07	3.676-01	6.285+07	1.435-02	2.141+09
5.827+01	4.749+05	3.576+00	7.515+06	3.177-01	8.028+07	3.221-01	7.850+07	1.360-02	2.100+09
5.524+01	5.128+05	3.392+00	7.633+06	3.014-01	8.811+07	2.847-01	9.473+07	1.275-02	2.047+09
5.115+01	5.894+05	3.202+00	8.753+06	2.858-01	9.428+07	2.534-01	1.122+08	1.182-02	1.994+09
4.634+01	5.942+05	3.009+00	8.844+06	2.708-01	1.032+08	2.270-01	1.343+08	1.100-02	1.897+09
4.218+01	6.451+05	2.833+00	9.244+06	2.566-01	1.101+08	2.045-01	1.666+08	1.025-02	1.841+09
3.855+01	7.030+05	2.672+00	1.003+07	2.434-01	1.188+08	1.853-01	2.033+08	9.588-03	1.763+09
3.537+01	7.576+05	2.524+00	1.044+07	2.309-01	1.311+08	1.686-01	2.576+08	8.981-03	1.665+09
3.257+01	8.132+05	2.388+00	1.119+07	2.189-01	1.428+08	1.541-01	3.203+08	8.430-03	1.568+09
3.009+01	8.756+05	2.263+00	1.175+07	2.075-01	1.656+08	1.414-01	3.978+08	7.929-03	1.494+09
2.788+01	1.184+06	2.147+00	1.233+07	1.967-01	1.783+08	1.302-01	4.959+08	7.470-03	1.427+09
2.591+01	9.228+05	2.030+00	1.326+07	1.867-01	1.987+08	1.203-01	6.041+08	7.051-03	1.320+09
2.414+01	1.119+06	1.913+00	1.434+07	1.772-01	2.282+08	1.115-01	7.314+08	6.666-03	1.233+09
2.254+01	1.196+06	1.805+00	1.509+07	1.681-01	2.602+08	1.036-01	8.670+08	6.311-03	1.197+09
2.110+01	1.209+06	1.707+00	1.591+07	1.596-01	2.963+08	9.657-02	1.013+09	5.984-03	1.123+09
1.979+01	1.387+06	1.616+00	1.634+07	1.514-01	3.361+08	9.020-02	1.163+09	5.635-03	1.066+09
1.860+01	1.505+06	1.449+00	1.844+07	1.437-01	3.797+08	8.445-02	1.307+09	5.270-03	9.493+08
1.752+01	1.973+06	1.367+00	1.934+07	1.363-01	4.402+08	7.923-02	1.455+09	4.941-03	8.988+08
1.652+01	1.582+06	1.291+00	2.118+07	1.294-01	5.069+08	7.449-02	1.603+09	4.641-03	8.902+08
1.561+01	1.683+06	1.221+00	2.306+07	1.228-01	5.764+08	7.016-02	1.767+09	4.367-03	8.705+08
1.477+01	1.673+06	1.157+00	2.415+07	1.166-01	6.564+08	6.620-02	1.901+09	4.117-03	8.153+08
1.400+01	1.862+06	1.098+00	2.539+07	1.106-01	7.475+08	6.256-02	2.044+09	3.888-03	7.507+08
1.312+01	2.090+06	1.040+00	2.720+07	1.049-01	8.335+08	5.922-02	2.139+09	3.678-03	7.172+08
1.217+01	2.198+06	9.829-01	2.896+07	9.958-02	9.520+08	5.614-02	2.245+09	3.484-03	7.265+08
1.131+01	2.354+06	9.301-01	2.993+07	9.452-02	1.061+09	5.325-02	2.381+09	3.305-03	6.567+08
1.055+01	2.644+06	8.367-01	3.514+07	8.975-02	1.178+09	4.933-02	2.497+09	3.120-03	6.466+08
9.859+00	2.716+06	7.927-01	3.670+07	8.515-02	1.290+09	4.473-02	2.633+09	2.932-03	5.941+08
9.234+00	2.716+06	7.497-01	3.883+07	8.082-02	1.401+09	4.073-02	2.722+09	2.760-03	5.675+08
8.666+00	3.017+06	7.102-01	4.098+07			3.725-02	2.772+09	2.603-03	5.369+08
8.149+00	3.324+06	6.737-01	4.077+07	E(eV)	$\Phi(E)$	3.420-02	2.774+09	2.459-03	4.858+08
7.677+00	3.256+06	6.382-01	4.052+07			3.151-02	2.786+09	2.327-03	4.864+08
7.245+00	3.528+06	6.038-01	3.860+07	5.987+00	3.924+06	2.912-02	2.786+09	2.205-03	4.372+08
6.848+00	3.750+06	5.720-01	3.679+07	3.673+00	7.126+06	2.700-02	2.745+09	2.092-03	4.298+08
6.483+00	3.868+06	5.427-01	4.045+07	2.481+00	1.048+07	2.510-02	2.682+09	1.978-03	4.231+08
6.147+00	3.717+06	5.144-01	4.192+07	1.788+00	1.487+07	2.339-02	2.669+09	1.864-03	3.927+08
5.787+00	3.223+06	4.870-01	3.992+07	1.350+00	1.990+07	2.185-02	2.589+09	1.759-03	3.778+08
5.412+00	4.448+06	4.617-01	3.892+07	1.055+00	2.646+07	2.046-02	2.496+09	1.663-03	3.454+08
5.073+00	4.962+06	4.373-01	4.089+07	8.474-01	3.391+07	1.920-02	2.463+09	1.575-03	3.516+08
4.765+00	5.375+06	4.139-01	4.726+07	6.955-01	4.055+07	1.805-02	2.376+09	1.493-03	3.867+08
4.484+00	5.993+06	3.923-01	5.650+07	5.812-01	3.870+07	1.700-02	2.335+09	1.412-03	3.448+08
4.227+00	6.528+06	3.724-01	6.138+07	4.929-01	4.093+07	1.604-02	2.297+09	1.316-03	2.799+08

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CALCULATION PARAMETERS

Scattering kernel: GASKET ($423^\circ K$, H (H_2O)) code (1)
 Diffusion theory: GATHER code (6)
 Temperature: $423^\circ K$
 Source: $\text{erf } \sqrt{E/KT}$ ($KT_{\text{eff.}} = 0.117$)

LAPLACIANS AT POINT OF MEASUREMENT

$$B^2 = -0.031 \text{ cm}^{-2}$$

The total buckling used in these calculations was estimated
 to be -0.031.

COMMENTS

Infinite medium neutron spectrum of H_2O in a pressure $ErCl_3$
 vessel, poisoned to 2.03 barns/hydrogen atom
 (0.0253 eV) with $GdCl_3$ at $423^\circ K$.

Method of measurement: Time-of-flight measurements,
 using a pulsed neutron source.

Neutron conservation: $\frac{\text{total absorption}}{\text{slowing down density}} = 1.043$

The absorber cross sections are listed in Tables 2 and 6.

CORRECTIONS APPLIED TO DATA

Detector sensitivity Flight path transmission
 Mean emission time Count loss correction
 Background subtraction

EXPERIMENTAL ARRANGEMENT

ATOM DENSITIES IN THE ASSEMBLY

Absorber: $4.07 \times 10^{20} / \text{cm}^3$ (Er) Moderator: $6.56 \times 10^{22} / \text{cm}^3$ (H)
 $12.22 \times 10^{20} / \text{cm}^3$ (Cl) $3.28 \times 10^{22} / \text{cm}^3$ (O)

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Date Submitted : April 22, 1966

LISTING OF EXPERIMENTAL POINTS $[\Phi(E) \text{ v. } E]$

E(eV)	$\Phi(E)$	E(eV)	$\Phi(E)$	E(eV)	$\Phi(E)$	E(eV)	$\Phi(E)$	E(eV)	$\Phi(E)$
6.512+01	3.888+05	3.991+00	6.935+06	3.532-01	7.884+07	4.233-01	5.018+07	1.516-02	1.741+09
6.155+01	4.383+05	3.775+00	7.347+06	3.348-01	8.750+07	3.676-01	7.228+07	1.435-02	1.710+09
5.827+01	4.904+05	3.576+00	7.903+06	3.177-01	9.802+07	3.221-01	9.464+07	1.360-02	1.647+09
5.524+01	4.967+05	3.392+00	8.064+06	3.014-01	1.090+08	2.847-01	1.241+08	1.275-02	1.597+09
5.115+01	5.162+05	3.202+00	8.845+06	2.858-01	1.231+08	2.534-01	1.624+08	1.182-02	1.555+09
4.634+01	5.961+05	3.009+00	9.395+06	2.708-01	1.405+08	2.270-01	2.151+08	1.100-02	1.496+09
4.218+01	6.316+05	2.833+00	9.882+06	2.566-01	1.577+08	2.045-01	2.925+08	1.025-02	1.383+09
3.855+01	6.959+05	2.672+00	1.086+07	2.434-01	1.817+08	1.853-01	3.843+08	9.588-03	1.368+09
3.537+01	8.134+05	2.524+00	1.079+07	2.309-01	2.055+08	1.686-01	4.989+08	8.981-03	1.286+09
3.257+01	7.841+05	2.388+00	1.220+07	2.189-01	2.392+08	1.541-01	6.339+08	8.430-03	1.213+09
3.009+01	9.531+05	2.263+00	1.262+07	2.075-01	2.819+08	1.414-01	7.755+08	7.929-03	1.151+09
2.788+01	9.911+05	2.147+00	1.356+07	1.967-01	3.287+08	1.302-01	9.258+08	7.470-03	1.099+09
2.591+01	1.048+06	2.030+00	1.448+07	1.867-01	3.775+08	1.203-01	1.095+09	7.051-03	1.005+09
2.414+01	1.113+06	1.913+00	1.497+07	1.772-01	4.397+08	1.115-01	1.261+09	6.666-03	9.594+08
2.254+01	1.297+06	1.805+00	1.606+07	1.681-01	5.040+08	1.036-01	1.425+09	6.311-03	8.832+08
2.110+01	1.351+06	1.707+00	1.742+07	1.596-01	5.806+08	9.657-02	1.583+09	5.984-03	8.249+08
1.979+01	1.339+06	1.616+00	1.807+07	1.514-01	6.653+08	9.020-02	1.735+09	5.635-03	7.780+08
1.860+01	1.371+06	1.449+00	1.975+07	1.437-01	7.562+08	8.445-02	1.873+09	5.270-03	7.134+08
1.752+01	1.474+06	1.367+00	2.107+07	1.363-01	8.400+08	7.923-02	1.988+09	4.941-03	6.531+08
1.652+01	1.555+06	1.291+00	2.320+07	1.294-01	9.435+08	7.449-02	2.116+09	4.641-03	6.914+08
1.561+01	1.815+06	1.221+00	2.396+07	1.228-01	1.049+09	7.016-02	2.209+09	4.367-03	6.383+08
1.477+01	1.906+06	1.157+00	2.501+07	1.166-01	1.170+09	6.620-02	2.347+09	4.117-03	6.133+08
1.400+01	1.986+06	1.098+00	2.678+07	1.106-01	1.284+09	6.256-02	2.407+09	3.888-03	5.825+08
1.312+01	2.076+06	1.040+00	2.856+07	1.049-01	1.402+09	5.922-02	2.472+09	3.678-03	5.313+08
1.217+01	2.211+06	9.829-01	3.067+07	9.958-02	1.508+09	5.614-02	2.525+09	3.484-03	5.272+08
1.131+01	2.540+06	9.301-01	3.300+07	9.452-02	1.641+09	5.325-02	2.578+09	3.305-03	4.883+08
1.055+01	2.306+06	8.367-01	3.811+07	8.975-02	1.746+09	4.933-02	2.652+09	3.120-03	4.718+08
9.859+00	2.842+06	7.927-01	3.923+07	8.515-02	1.861+09	4.473-02	2.646+09	2.932-03	4.296+08
9.234+00	2.863+06	7.497-01	4.064+07	8.082-02	1.949+09	4.073-02	2.665+09	2.760-03	4.021+08
8.666+00	3.123+06	7.102-01	4.233+07			3.725-02	2.657+09	2.603-03	4.001+08
8.149+00	3.409+06	6.737-01	4.384+07	E(eV)	$\Phi(E)$	3.420-02	2.571+09	2.459-03	3.643+08
7.677+00	3.553+06	6.382-01	4.539+07			3.151-02	2.535+09	2.327-03	3.466+08
7.245+00	3.922+06	6.038-01	4.393+07	5.987+00	4.376+06	2.912-02	2.494+09	2.205-03	3.749+08
6.848+00	4.156+06	5.720-01	4.186+07	3.673+00	7.470+06	2.700-02	2.407+09	2.092-03	3.583+08
6.483+00	4.424+06	5.427-01	4.310+07	2.481+00	1.131+07	2.510-02	2.330+09	1.978-03	3.336+08
6.147+00	4.135+06	5.144-01	4.575+07	1.788+00	1.611+07	2.339-02	2.254+09	1.864-03	3.483+08
5.787+00	3.551+06	4.870-01	4.487+07	1.350+00	2.136+07	2.185-02	2.179+09	1.759-03	2.656+08
5.412+00	4.734+06	4.617-01	4.344+07	1.055+00	2.800+07	2.046-02	2.113+09	1.663-03	2.953+08
5.073+00	5.190+06	4.373-01	4.604+07	8.474-01	3.648+07	1.920-02	2.000+09	1.575-03	2.919+08
4.765+00	5.670+06	4.139-01	5.367+07	6.955-01	4.289+07	1.805-02	1.949+09	1.481-03	2.607+08
4.484+00	5.875+06	3.923-01	6.268+07	5.812-01	4.328+07	1.700-02	1.881+09	1.383-03	2.971+08
4.227+00	6.454+06	3.724-01	7.080+07	4.929-01	4.505+07	1.604-02	1.832+09		

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CALCULATION PARAMETERS

Scattering kernel: GASKET (296°K, H (H₂O)) code (1)
Diffusion theory: GATHER code (6)
Temperature: 296°K
Source: $\text{erf } \sqrt{E/KT}$ ($KT_{\text{eff.}} = 0.117$)

LAPLACIANS AT POINT OF MEASUREMENT

$B^2 = -0.031 \text{ cm}^{-2}$

The total buckling used in these calculations was estimated to be -0.031.

COMMENTS

Infinite medium neutron spectrum of H₂O in a pressure vessel, poisoned to 19.58 barns/hydrogen atom (0.0253 eV) with Gd Cl₃ at 296°K.

Method of measurement: Time-of-flight measurements, using a pulsed neutron source.

Neutron conservation: $\frac{\text{total absorption}}{\text{slowing down density}} = 1.020$

The absorber cross sections are listed in Tables 2 and 5.

CORRECTIONS APPLIED TO DATA

Detector sensitivity Flight path transmission
Mean emission time Count loss correction
Background subtraction

EXPERIMENTAL ARRANGEMENT

ATOM DENSITIES IN THE ASSEMBLY

Absorber: $2.786 \times 10^{19} / \text{cm}^3$ (Gd) Moderator: $6.656 \times 10^{22} / \text{cm}^3$ (H)
 $8.358 \times 10^{19} / \text{cm}^3$ (Cl) $3.328 \times 10^{22} / \text{cm}^3$ (O)

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LISTING OF EXPERIMENTAL POINTS $[\phi(E) \text{ v. } E]$

E(eV)	$\phi(E)$	E(eV)	$\phi(E)$	E(eV)	$\phi(E)$
4.089+01	9.488+05	8.953-01	5.546+07	5.877-02	8.056+08
2.990+01	1.324+06	7.743-01	6.542+07	5.252-02	8.034+08
2.281+01	1.744+06	6.763-01	7.723+07	4.696-02	7.651+08
1.797+01	2.163+06	5.958-01	9.080+07	4.200-02	7.197+08
1.452+01	2.942+06	5.289-01	1.055+08	3.759-02	6.817+08
1.198+01	3.599+06	4.726-01	1.202+08	3.368-02	6.337+08
1.005+01	4.188+06	4.178-01	1.407+08	3.021-02	6.004+08
8.555+00	4.925+06	3.659-01	1.664+08	2.701-02	5.629+08
7.368+00	5.813+06	3.233-01	1.936+08	2.419-02	5.254+08
6.412+00	6.646+06	2.881-01	2.205+08	2.171-02	4.908+08
5.631+00	7.647+06	2.579-01	2.505+08	1.945-02	4.371+08
4.984+00	8.844+06	2.294-01	2.903+08	1.740-02	4.099+08
4.443+00	9.691+06	2.029-01	3.465+08	1.560-02	3.834+08
3.790+00	1.187+07	1.807-01	4.024+08	1.403-02	3.577+08
3.113+00	1.460+07	1.619-01	4.647+08	1.260-02	3.426+08
2.603+00	1.676+07	1.445-01	5.241+08	1.132-02	3.154+08
2.209+00	2.053+07	1.285-01	5.965+08	1.017-02	2.913+08
1.898+00	2.432+07	1.151-01	6.584+08	9.147-03	2.667+08
1.648+00	2.847+07	1.027-01	7.252+08	8.227-03	2.562+08
1.445+00	3.305+07	9.157-02	7.690+08	7.388-03	2.155+08
1.277+00	3.742+07	8.210-02	8.013+08	6.627-03	1.825+08
1.136+00	4.187+07	7.351-02	8.276+08	5.954-03	1.700+08
1.018+00	4.661+07	6.574-02	8.254+08

CALCULATION PARAMETERS

Scattering kernel: GASKET (423°K, H (H₂O)) code (1)
Diffusion theory: GATHER code (6)
Temperature: 423°K
Source: $\text{erf } \sqrt{E/KT}$ ($KT_{\text{eff.}} = 0.117$)

LAPLACIANS AT POINT OF MEASUREMENT

$B^2 = -0.031 \text{ cm}^{-2}$

The total buckling used in these calculations was estimated to be -0.031.

COMMENTS

Infinite medium neutron spectrum of H₂O in a pressure vessel, poisoned to 20.37 barns/hydrogen atom (0.0253 eV) with Gd Cl₃ at 423°K.

Method of measurement: Time-of-flight measurements, using a pulsed neutron source.

Neutron conservation: $\frac{\text{total absorption}}{\text{slowing down density}} = 1.076$

The absorber cross sections are listed in Tables 2 and 5.

CORRECTIONS APPLIED TO DATA

Detector sensitivity Flight path transmission
Mean emission time Count loss correction
Background subtraction

EXPERIMENTAL ARRANGEMENT

ATOM DENSITIES IN THE ASSEMBLY

absorber: $2.9 \times 10^{19} / \text{cm}^3$ (Gd) Moderator: $6.656 \times 10^{22} / \text{cm}^3$ (H)
 $8.7 \times 10^{19} / \text{cm}^3$ (Cl) $3.328 \times 10^{22} / \text{cm}^3$ (O)

LISTING OF EXPERIMENTAL POINTS $[\Phi(E) \text{ v. } E]$

E(eV)	$\Phi(E)$	E(eV)	$\Phi(E)$	E(eV)	$\Phi(E)$
4.089+01	7.852+05	8.953-01	4.489+07	5.877-02	6.444+08
2.990+01	1.119+06	7.743-01	5.235+07	5.252-02	6.153+08
2.281+01	1.528+06	6.763-01	6.237+07	4.696-02	5.894+08
1.797+01	1.918+06	5.958-01	7.130+07	4.200-02	5.551+08
1.452+01	2.443+06	5.289-01	8.161+07	3.759-02	5.366+08
1.198+01	2.957+06	4.726-01	9.502+07	3.368-02	4.853+08
1.005+01	3.482+06	4.178-01	1.123+08	3.021-02	4.715+08
8.555+00	4.082+06	3.659-01	1.350+08	2.701-02	4.271+08
7.368+00	4.872+06	3.233-01	1.597+08	2.419-02	4.005+08
6.412+00	5.676+06	2.881-01	1.869+08	2.171-02	3.575+08
5.631+00	6.465+06	2.579-01	2.155+08	1.945-02	3.241+08
4.984+00	7.109+06	2.294-01	2.590+08	1.740-02	2.911+08
4.443+00	8.070+06	2.029-01	3.102+08	1.560-02	2.954+08
3.790+00	9.927+06	1.807-01	3.678+08	1.403-02	2.716+08
3.113+00	1.187+07	1.619-01	4.224+08	1.260-02	2.514+08
2.603+00	1.421+07	1.445-01	4.787+08	1.132-02	2.442+08
2.209+00	1.678+07	1.285-01	5.333+08	1.017-02	2.225+08
1.898+00	1.951+07	1.151-01	5.800+08	9.147-03	2.204+08
1.648+00	2.258+07	1.027-01	6.264+08	8.227-03	1.907+08
1.445+00	2.668+07	9.157-02	6.518+08	7.388-03	1.696+08
1.277+00	2.977+07	8.210-02	6.581+08	6.627-03	1.400+08
1.136+00	3.378+07	7.351-02	6.632+08	5.965-03	1.461+08
1.018+00	3.838+07	6.574-02	6.645+08

CALCULATION PARAMETERS

Scattering kernel: GASKET (600°K , H (H_2O)) code (1)
Diffusion theory: GATHER code (6)
Temperature: 600°K
Source: $\text{erf } \sqrt{E/KT}$ ($KT_{\text{eff.}} = 0.117$)

LAPLACIANS AT POINT OF MEASUREMENT

$$B^2 = -0.031 \text{ cm}^{-2}$$

The total buckling used in these calculations was estimated to be -0.031.

COMMENTS

Infinite medium neutron spectrum of H_2O in a pressure vessel, poisoned to 19.28 barns/hydrogen atom (0.0253 eV) with Gd Cl_3 at 600°K .

Method of measurement: Time-of-flight measurements, using a pulsed neutron source.

Neutron conservation: $\frac{\text{total absorption}}{\text{slowing down density}} = 1.006$

The absorber cross sections are listed in Tables 2 and 5.

CORRECTIONS APPLIED TO DATA

Detector sensitivity Flight path transmission
Mean emission time Count loss correction
Background subtraction

EXPERIMENTAL ARRANGEMENT

NOT TO SCALE

ATOM DENSITIES IN THE ASSEMBLY

Absorber: $2.74 \times 10^{19}/\text{cm}^3$ (Gd) Moderator: $6.650 \times 10^{22}/\text{cm}^3$ (H)
 $8.22 \times 10^{19}/\text{cm}^3$ (Cl) $3.325 \times 10^{22}/\text{cm}^3$ (O)

LISTING OF EXPERIMENTAL POINTS $[\phi(E) \text{ v. } E]$

E(eV)	$\phi(E)$	E(eV)	$\phi(E)$	E(eV)	$\phi(E)$
4.089+01	5.571+05	8.953-01	2.967+07	6.574-02	4.636+08
2.990+01	7.262+05	7.743-01	3.575+07	5.877-02	4.508+08
2.281+01	1.042+06	6.763-01	4.311+07	5.252-02	4.204+08
1.797+01	1.279+06	5.958-01	4.704+07	4.696-02	4.222+08
1.452+01	1.596+06	5.289-01	5.898+07	4.200-02	3.695+08
1.198+01	1.962+06	4.726-01	6.932+07	3.759-02	3.486+08
1.005+01	2.313+06	4.178-01	8.554+07	3.368-02	3.202+08
8.555+00	2.910+06	3.659-01	9.810+07	3.021-02	3.104+08
7.368+00	3.409+06	3.233-01	1.234+08	2.701-02	2.947+08
6.412+00	3.773+06	2.881-01	1.539+08	2.419-02	2.487+08
5.631+00	4.167+06	2.579-01	1.855+08	2.171-02	2.481+08
4.984+00	4.176+06	2.294-01	2.220+08	1.945-02	2.118+08
4.443+00	5.287+06	2.029-01	2.698+08	1.740-02	2.066+08
3.790+00	6.471+06	1.807-01	3.090+08	1.560-02	1.891+08
3.113+00	7.557+06	1.619-01	3.498+08	1.403-02	1.660+08
2.603+00	8.890+06	1.445-01	3.955+08	1.260-02	1.507+08
2.209+00	1.119+07	1.285-01	4.369+08	1.132-02	1.380+08
1.898+00	1.294+07	1.151-01	4.576+08	1.017-02	1.280+08
1.648+00	1.537+07	1.027-01	4.724+08	9.147-03	1.157+08
1.445+00	1.781+07	9.157-02	4.899+08	8.227-03	1.087+08
1.277+00	2.019+07	8.210-02	4.817+08	7.135-03	8.322+07
1.136+00	2.207+07	7.351-02	4.793+08	5.431-03	6.148+07
1.018+00	2.345+07				

GA-D₂O-1A

90° ANGULAR NEUTRON SPECTRUM IN BORATED D₂O 6 IN. FROM SOURCE

2.1 BARNS/DEUTERIUM ATOM (0.0253 ev)

CALCULATION PARAMETERS

SCATTERING KERNEL: (300°K, D(D₂O), P₀ + P₁)

TRANSPORT THEORY CODE: GAPLSN (ID 030464)

TEMPERATURE: 0.0258 ev

SOURCE: DSZ CODE (GA3542, P.145)

ATOM DENSITIES

$$N_D = 5.670 \times 10^{22}$$

$$N_H = 2.608 \times 10^{20}$$

$$N_O = 2.849 \times 10^{22}$$

$$N_B = 1.430 \times 10^{20}$$

$$N_{Al} = 9.150 \times 10^{21}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.0126$$

90° ANGULAR NEUTRON SPECTRUM IN BORATED D₂O AT 6 INCHES FROM THE SOURCE
1-4-64 T4, T3

E(ev)	φ(E)	Eφ(E)	E(ev)	φ(E)	Eφ(E)	Q (x)	x (cm)
1.88736+01	3.493-02	4.893+00	1.40039-01	3.120+00	3.244+00	0.813	1.27
1.51947+01	4.382-02	4.943+00	1.24991-01	3.418+00	3.171+00	0.950	3.81
1.24953+01	5.338-02	4.951+00	1.11296-01	3.726+00	3.078+00	1.000	6.35
1.04562+01	6.442-02	5.000+00	9.88932-02	4.052+00	2.975+00	0.953	8.89
8.87832+00	7.574-02	4.992+00	8.84515-02	4.282+00	2.812+00	0.879	11.43
7.63243+00	8.626-02	4.887+00	7.90120-02	4.531+00	2.658+00	0.792	13.97
6.63152+00	1.005-01	4.949+00	7.04995-02	4.695+00	2.457+00	0.680	16.51
5.81532+00	1.154-01	4.983+00	6.28876-02	4.832+00	2.256+00	0.550	19.05
5.14103+00	1.289-01	4.920+00	5.60841-02	4.901+00	2.041+00	0.454	21.59
4.57756+00	1.454-01	4.942+00	5.00397-02	5.000+00	1.857+00	0.353	24.13
3.89930+00	1.659-01	4.802+00	4.46646-02	4.903+00	1.626+00	0.279	26.67
3.19817+00	2.007-01	4.766+00	3.99050-02	4.820+00	1.428+00	0.220	29.21
2.67052+00	2.329-01	4.617+00	3.56826-02	4.647+00	1.231+00	0.169	31.75
2.26348+00	2.705-01	4.544+00	3.19477-02	4.352+00	1.032+00	0.126	34.29
1.94291+00	3.064-01	4.418+00	2.86361-02	4.212+00	8.955-01	0.0934	36.83
1.68593+00	3.502-01	4.383+00	2.57054-02	3.965+00	7.565-01	0.0686	39.37
1.47677+00	3.880-01	4.254+00	2.30151-02	3.620+00	6.185-01	0.0491	41.91
1.30182+00	4.320-01	4.175+00	2.06427-02	3.200+00	4.904-01	0.0320	44.45
1.15727+00	4.767-01	4.096+00	1.85484-02	3.049+00	4.197-01		
1.01168+00	5.433-01	4.080+00	1.66399-02	2.743+00	3.389-01		
8.69674-01	6.282-01	4.055+00	1.49198-02	2.625+00	2.908-01		
7.55605-01	7.041-01	3.950+00	1.33714-02	2.474+00	2.456-01		
6.62597-01	7.934-01	3.902+00	1.19825-02	2.245+00	1.997-01		
5.85766-01	8.864-01	3.854+00	1.07404-02	2.092+00	1.668-01		
5.21566-01	9.802-01	3.795+00	9.63189-03	1.909+00	1.365-01		
4.67371-01	1.081+00	3.749+00	8.64396-03	1.817+00	1.166-01		
4.14384-01	1.201+00	3.695+00	7.76439-03	1.663+00	9.582-02		
3.63958-01	1.356+00	3.663+00	6.98168-03	1.389+00	7.200-02		
3.22207-01	1.517+00	3.629+00	6.27249-03	1.269+00	5.907-02		
2.87250-01	1.677+00	3.576+00	5.63224-03	1.162+00	4.858-02		
2.54414-01	1.869+00	3.530+00	5.05693-03	8.973-01	3.368-02		
2.24028-01	2.079+00	3.457+00	4.54094-03	8.652-01	2.917-02		
1.98777-01	2.307+00	3.404+00	4.07958-03	9.694-01	2.936-02		
1.77566-01	2.554+00	3.366+00	3.62228-03	7.337-01	1.973-02		
1.57976-01	2.828+00	3.317+00					

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90° ANGULAR NEUTRON SPECTRUM IN BORATED D₂O 9 IN. FROM SOURCE

2.1 BARNS/DEUTERIUM ATOM (0.0253 ev)

CALCULATION PARAMETERS

SCATTERING KERNEL: GAKER (300°K, D(D₂O), P₀ + P₁)

TRANSPORT THEORY CODE: GAPLSN (ID 030464)

TEMPERATURE: 0.0258 ev

SOURCE: DSZ CODE (GA3542, P.145)

ATOM DENSITIES

$$N_D = 5.670 \times 10^{22}$$

$$N_H = 2.608 \times 10^{20}$$

$$N_O = 2.849 \times 10^{22}$$

$$N_B = 1.430 \times 10^{20}$$

$$N_{Al} = 9.150 \times 10^{21}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.0126$$

90° ANGULAR NEUTRON SPECTRUM IN BORATED D₂O AT 9 INCHES FROM THE SOURCE
1-4-64 T2, T1

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	Q (x)	x (cm)
1.52429+01	3.352-02	4.849+00	1.25388-01	3.303+00	3.931+00	0.813	1.27
1.25349+01	4.000-02	4.760+00	1.11650-01	3.631+00	3.848+00	0.950	3.81
1.04894+01	4.918-02	4.896+00	9.92071-02	3.941+00	3.711+00	1.000	6.35
8.90651+00	5.914-02	5.000+00	8.87323-02	4.204+00	3.541+00	0.953	8.89
7.65667+00	6.826-02	4.961+00	7.92629-02	4.444+00	3.344+00	0.879	11.43
6.65257+00	7.726-02	4.879+00	7.07233-02	4.648+00	3.120+00	0.792	13.97
5.83378+00	9.008-02	4.988+00	6.30873-02	4.782+00	2.863+00	0.680	16.51
5.15735+00	1.005-01	4.920+00	5.62622-02	4.913+00	2.624+00	0.550	19.05
4.59210+00	1.114-01	4.855+00	5.01985-02	5.000+00	2.382+00	0.450	21.59
3.91168+00	1.319-01	4.898+00	4.48064-02	4.916+00	2.091+00	0.353	24.13
3.20832+00	1.628-01	4.958+00	4.00317-02	4.833+00	1.837+00	0.279	26.67
2.67900+00	1.898-01	4.825+00	3.57959-02	4.638+00	1.576+00	0.220	29.21
2.27067+00	2.227-01	4.800+00	3.20491-02	4.372+00	1.330+00	0.169	31.75
1.94908+00	2.551-01	4.719+00	2.87270-02	4.249+00	1.159+00	0.126	34.29
1.69128+00	2.907-01	4.666+00	2.57870-02	3.941+00	9.646-01	0.0934	36.83
1.48146+00	3.283-01	4.617+00	2.30882-02	3.642+00	7.981-01	0.0686	39.37
1.30596+00	3.620-01	4.487+00	2.07083-02	3.350+00	6.586-01	0.0491	41.91
1.16095+00	4.059-01	4.473+00	1.86073-02	3.091+00	5.458-01	0.0320	44.45
1.01489+00	4.605-01	4.437+00	1.66928-02	2.929+00	4.640-01		
8.72435-01	5.355-01	4.434+00	1.49672-02	2.706+00	3.844-01		
7.58004-01	6.188-01	4.452+00	1.34138-02	2.410+00	3.069-01		
6.64701-01	6.951-01	4.386+00	1.20206-02	2.338+00	2.668-01		
5.87626-01	7.692-01	4.290+00	1.07745-02	2.152+00	2.201-01		
5.23222-01	8.710-01	4.326+00	9.66247-03	2.014+00	1.847-01		
4.68855-01	9.533-01	4.242+00	8.67141-03	1.853+00	1.525-01		
4.15699-01	1.072+00	4.228+00	7.78904-03	1.583+00	1.170-01		
3.65113-01	1.219+00	4.226+00	7.00384-03	1.551+00	1.031-01		
3.23230-01	1.376+00	4.222+00	6.29241-03	1.327+00	7.924-02		
2.88162-01	1.515+00	4.145+00	5.65012-03	1.106+00	5.929-02		
2.55222-01	1.714+00	4.153+00	5.07298-03	1.062+00	5.116-02		
2.24739-01	1.927+00	4.111+00	4.55536-03	9.503-01	4.109-02		
1.99408-01	2.175+00	4.117+00	4.09253-03	8.909-01	3.461-02		
1.78130-01	2.408+00	4.071+00	3.62266-03	7.804-01	2.683-02		
1.58477-01	2.656+00	3.996+00	3.11698-03	7.563-01	2.237-02		
1.40484-01	2.972+00	3.963+00					

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90° ANGULAR NEUTRON SPECTRUM IN BORATED D₂O 12 IN. FROM SOURCE2.1 BARNS/DEUTERIUM ATOM (0.0253 ev)CALCULATION PARAMETERSSCATTERING KERNEL: GAKER (300°K, D(D₂O), P₀ + P₁)

TRANSPORT THEORY CODE: GAPLSN (ID 030464)

TEMPERATURE: 0.0258 ev

SOURCE: DSZ CODE (GA3542, P.145)

ATOM DENSITIES

$$N_D = 5.670 \times 10^{22}$$

$$N_H = 2.608 \times 10^{20}$$

$$N_O = 2.849 \times 10^{22}$$

$$N_B = 1.430 \times 10^{20}$$

$$N_{Al} = 9.150 \times 10^{21}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.0126$$

90° ANGULAR NEUTRON SPECTRUM IN BORATED D₂O AT 12 INCHES FROM THE SOURCE
1-4-64 T7, T6

E(ev)	φ(E)	Eφ(E)	E(ev)	φ(E)	Eφ(E)	Q (x)	x (cm)
1.89936+01	2.163-02	4.344+00	2.00041-01	2.113+00	4.469+00	0.813	1.27
1.52913+01	2.727-02	4.408+00	1.78695-01	2.335+00	4.412+00	0.950	3.81
1.25747+01	3.445-02	4.581+00	1.58980-01	2.621+00	4.405+00	1.000	6.35
1.05226+01	4.085-02	4.545+00	1.40929-01	2.930+00	4.367+00	0.953	8.89
8.93474+00	5.156-02	4.871+00	1.25785-01	3.246+00	4.317+00	0.879	11.43
7.68094+00	5.719-02	4.645+00	1.12004-01	3.605+00	4.270+00	0.792	13.97
6.67366+00	6.946-02	4.901+00	9.95216-02	3.934+00	4.139+00	0.680	16.51
5.85228+00	7.598-02	4.701+00	8.90136-02	4.227+00	3.979+00	0.550	19.05
5.17370+00	8.487-02	4.643+00	7.95142-02	4.343+00	3.651+00	0.454	21.59
4.60665+00	1.027-01	5.000+00	7.09475-02	4.649+00	3.488+00	0.353	24.13
3.92408+00	1.137-01	4.719+00	6.32873-02	4.840+00	3.239+00	0.279	26.67
3.21849+00	1.424-01	4.846+00	5.64405-02	4.899+00	2.924+00	0.220	29.21
2.68749+00	1.687-01	4.795+00	5.03577-02	5.000+00	2.662+00	0.169	31.75
2.27787+00	2.042-01	4.918+00	4.49484-02	4.974+00	2.364+00	0.126	34.29
1.95526+00	2.278-01	4.710+00	4.01586-02	4.791+00	2.034+00	0.0934	36.83
1.69664+00	2.745-01	4.925+00	3.59094-02	4.737+00	1.799+00	0.0686	39.37
1.48615+00	2.960-01	4.652+00	3.21507-02	4.557+00	1.549+00	0.0491	41.91
1.31010+00	3.392-01	4.699+00	2.88181-02	4.172+00	1.271+00	0.0320	44.45
1.16463+00	3.799-01	4.678+00	2.58688-02	3.893+00	1.065+00		
1.01811+00	4.324-01	4.655+00	2.31614-02	3.774+00	9.241-01		
8.75201-01	5.036-01	4.661+00	2.07739-02	3.549+00	7.795-01		
7.60407-01	5.787-01	4.653+00	1.86662-02	3.213+00	6.342-01		
6.66808-01	6.521-01	4.598+00	1.67457-02	2.877+00	5.094-01		
5.89489-01	7.290-01	4.544+00	1.50146-02	2.362+00	3.750-01		
5.24881-01	8.312-01	4.613+00	1.34563-02	2.421+00	3.445-01		
4.70342-01	9.053-01	4.502+00	1.20587-02	2.236+00	2.851-01		
4.17017-01	1.022+00	4.508+00	1.08087-02	2.035+00	2.325-01		
3.66271-01	1.162+00	4.501+00	9.69310-03	1.951+00	2.000-01		
3.24255-01	1.305+00	4.474+00	8.69890-03	1.854+00	1.705-01		
2.89075-01	1.474+00	4.504+00	7.31734-03	1.316+00	1.018-01		
2.56031-01	1.682+00	4.554+00	5.36088-03	1.251+00	7.092-02		
2.25452-01	1.864+00	4.443+00					

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90° ANGULAR NEUTRON SPECTRUM IN BORATED D₂O2.1 BARNS/DEUTERIUM ATOM (0.0253 ev)CALCULATION PARAMETERSSCATTERING KERNEL: GAKER (300°K, D(D₂O), P₀ + P₁)

TRANSPORT THEORY CODE: GAPLSN (ID 043064)

TEMPERATURE: 0.0258 ev

SOURCE: DSZ CODE (GA3542, P.145)

ATOM DENSITIES

$$N_H = 2.608 \times 10^{20}$$

$$N_D = 5.672 \times 10^{22}$$

$$N_B = 1.430 \times 10^{20}$$

$$N_O = 2.849 \times 10^{22}$$

$$N_{Al} = 9.150 \times 10^{21}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.00527$$

EXPERIMENTAL ARRANGEMENT 4/1/64 T1, T2PLAN VIEW NOT TO SCALE

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90° ANGULAR NEUTRON SPECTRUM IN BORATED D₂O
4-1-64 T1, T2

E(ev)	ϕ (E)	E ϕ (E)	E(ev)	ϕ (E)	E ϕ (E)	E(ev)	ϕ (E)	E ϕ (E)	Q (x)	x (cm)
3.04910+01	2.353-02	4.833+00	3.61712-01	1.361+00	3.315+00	2.66273-02	3.993+00	7.161-01	0.0142	0.254
2.32318+01	3.077-02	4.815+00	3.40077-01	1.446+00	3.312+00	2.52046-02	3.832+00	6.506-01	0.0181	1.27
1.82870+01	4.003-02	4.931+00	3.20325-01	1.529+00	3.299+00	2.37939-02	3.696+00	5.923-01	0.0242	2.79
1.47680+01	4.906-02	4.880+00	3.02246-01	1.609+00	3.275+00	2.24976-02	3.628+00	5.498-01	0.0288	4.34
1.21751+01	5.980-02	4.904+00	2.85655-01	1.688+00	3.248+00	2.13036-02	3.423+00	4.912-01	0.0324	5.84
1.02095+01	7.035-02	4.838+00	2.70393-01	1.775+00	3.233+00	2.02013-02	3.314+00	4.509-01	0.0351	7.37
8.68424+00	8.249-02	4.825+00	2.56322-01	1.860+00	3.211+00	1.91128-02	3.228+00	4.156-01	0.0376	8.89
7.47687+00	9.241-02	4.654+00	2.40274-01	1.958+00	3.169+00	1.80388-02	3.053+00	3.709-01	0.0389	10.41
6.50484+00	1.043-01	4.569+00	2.22876-01	2.098+00	3.149+00	1.70550-02	2.936+00	3.373-01	0.0397	11.94
5.71074+00	1.195-01	4.597+00	2.07300-01	2.229+00	3.112+00	1.61525-02	2.845+00	3.095-01	0.0397	13.46
5.05365+00	1.345-01	4.578+00	1.93301-01	2.409+00	3.137+00	1.53198-02	2.683+00	2.769-01	0.0382	14.98
4.50377+00	1.483-01	4.500+00	1.80674-01	2.520+00	3.066+00	1.45043-02	2.621+00	2.561-01	0.0370	16.51
4.03900+00	1.642-01	4.468+00	1.69244-01	2.696+00	3.073+00	1.37093-02	2.488+00	2.297-01	0.0350	18.03
3.64262+00	1.817-01	4.458+00	1.58864-01	2.813+00	3.010+00	1.29778-02	2.365+00	2.067-01	0.0316	19.56
3.30185+00	1.954-01	4.346+00	1.49410-01	2.959+00	2.978+00	1.23034-02	2.303+00	1.909-01	0.0279	21.08
3.00676+00	2.107-01	4.267+00	1.40776-01	3.157+00	2.993+00	1.16474-02	2.271+00	1.781-01	0.0226	22.61
2.74953+00	2.276-01	4.215+00	1.32868-01	3.243+00	2.902+00	1.10116-02	2.106+00	1.562-01	0.0166	24.13
2.52395+00	2.493-01	4.238+00	1.25607-01	3.457+00	2.925+00	1.04264-02	2.112+00	1.483-01	0.0135	25.14
2.32503+00	2.604-01	4.078+00	1.18926-01	3.567+00	2.857+00	9.88672-03	1.994+00	1.328-01		
2.14873+00	2.806-01	4.061+00	1.12763-01	3.674+00	2.790+00	9.36423-03	1.958+00	1.235-01		
1.99176+00	3.049-01	4.091+00	1.06172-01	3.924+00	2.806+00	8.85975-03	1.873+00	1.118-01		
1.85137+00	3.224-01	4.020+00	9.93088-02	4.042+00	2.703+00	8.39496-03	1.782+00	1.008-01		
1.72532+00	3.458-01	4.019+00	9.30892-02	4.220+00	2.646+00	7.96582-03	1.685+00	9.042-02		
1.61172+00	3.667-01	3.981+00	8.74352-02	4.350+00	2.562+00	7.55165-03	1.548+00	7.875-02		
1.50898+00	3.863-01	3.926+00	8.22804-02	4.481+00	2.483+00	7.15277-03	1.365+00	6.577-02		
1.41576+00	3.976-01	3.791+00	7.75677-02	4.544+00	2.374+00	6.78468-03	1.364+00	6.232-02		
1.33092+00	4.228-01	3.790+00	7.32478-02	4.648+00	2.293+00	6.43084-03	1.279+00	5.541-02		
1.24881+00	4.503-01	3.787+00	6.92783-02	4.710+00	2.198+00	6.09125-03	1.200+00	4.921-02		
1.17920+00	4.809-01	3.819+00	6.56222-02	4.787+00	2.116+00	5.77787-03	1.121+00	4.364-02		
1.11525+00	4.982-01	3.742+00	6.22475-02	4.892+00	2.051+00	5.47750-03	1.004+00	3.702-02		
1.05636+00	5.179-01	3.685+00	5.87576-02	4.928+00	1.950+00	5.18995-03	9.024-01	3.154-02		
1.00202+00	5.481-01	3.699+00	5.52070-02	4.932+00	1.834+00	4.92447-03	1.009+00	3.347-02		
9.28480-01	5.925-01	3.705+00	5.19678-02	4.980+00	1.743+00	4.67052-03	8.895-01	2.798-02		
8.41864-01	6.407-01	3.633+00	4.90048-02	5.000+00	1.650+00	4.42784-03	1.034+00	3.083-02		
7.66828-01	6.968-01	3.599+00	4.62874-02	4.888+00	1.524+00	4.19651-03	8.883-01	2.511-02		
7.01396-01	7.545-01	3.564+00	4.37890-02	4.919+00	1.451+00	3.97614-03	8.030-01	2.150-02		
6.43996-01	8.212-01	3.562+00	4.14869-02	4.947+00	1.382+00	3.77268-03	8.539-01	2.170-02		
5.93366-01	8.733-01	3.490+00	3.93610-02	4.749+00	1.259+00	3.57887-03	7.239-01	1.745-02		
5.48480-01	9.372-01	3.462+00	3.72077-02	4.723+00	1.184+00	3.39433-03	7.156-01	1.636-02		
5.08501-01	9.885-01	3.386+00	3.50506-02	4.580+00	1.081+00	3.21894-03	6.858-01	1.487-02		
4.72740-01	1.052+00	3.350+00	3.30749-02	4.463+00	9.943-01	3.05229-03	7.044-01	1.448-02		
4.40622-01	1.143+00	3.393+00	3.12608-02	4.287+00	9.026-01	2.89420-03	6.854-01	1.336-02		
4.11670-01	1.202+00	3.332+00	2.95911-02	4.260+00	8.490-01	2.69283-03	5.984-01	1.085-02		
3.85480-01	1.308+00	3.396+00	2.80510-02	4.136+00	7.815-01					

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90° ANGULAR NEUTRON SPECTRUM IN BORATED D₂O

2.1 BARNS /DEUTERIUM ATOM (0.0253 ev)

CALCULATION PARAMETERS

SCATTERING KERNEL: GAKER (300°K, D, (D₂O), P₀ + P₁)

TRANSPORT THEORY CODE: GAPLSN (ID 043064)

TEMPERATURE: 0.0258 ev

SOURCE: DSZ CODE (GA3542, P.145)

ATOM DENSITIES

$$N_H = 2.608 \times 10^{20}$$

$$N_D = 5.672 \times 10^{22}$$

$$N_B = 1.430 \times 10^{20}$$

$$N_O = 2.849 \times 10^{22}$$

$$N_{Al} = 9.150 \times 10^{21}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.00527$$

EXPERIMENTAL ARRANGEMENT 4/1/64 T9, T10

PLAN VIEW

NOT TO SCALE

90° ANGULAR NEUTRON SPECTRUM IN BORATED D₂O
4-1-64 T9, T10

E(ev)	ϕ (E)	E ϕ (E)	E(ev)	ϕ (E)	E ϕ (E)	E(ev)	ϕ (E)	E ϕ (E)	Q (x)	x (cm)
3.02977+01	2.881-02	5.000+00	3.83037-01	1.408+00	3.089+00	2.94036-02	4.012+00	6.757-01	0.0142	0.254
2.30845+01	3.716-02	4.914+00	3.59420-01	1.476+00	3.038+00	2.78732-02	3.974+00	6.344-01	0.0181	1.27
1.81711+01	4.744-02	4.937+00	3.37921-01	1.583+00	3.063+00	2.64585-02	3.833+00	5.809-01	0.0242	2.79
1.46744+01	5.747-02	4.830+00	3.18295-01	1.669+00	3.042+00	2.50448-02	3.609+00	5.177-01	0.0288	4.34
1.20979+01	6.796-02	4.709+00	3.00330-01	1.738+00	2.989+00	2.36431-02	3.458+00	4.683-01	0.0324	5.84
1.01448+01	8.047-02	4.676+00	2.83844-01	1.817+00	2.954+00	2.23550-02	3.352+00	4.292-01	0.0351	7.37
8.62919+00	9.318-02	4.605+00	2.68679-01	1.903+00	2.928+00	2.11685-02	3.256+00	3.947-01	0.0376	8.89
7.42947+00	1.062-01	4.518+00	2.54697-01	2.025+00	2.953+00	2.00733-02	3.103+00	3.567-01	0.0389	10.41
6.46360+00	1.211-01	4.481+00	2.38751-01	2.100+00	2.871+00	1.89916-02	2.941+00	3.199-01	0.0397	11.94
5.67454+00	1.350-01	4.389+00	2.21463-01	2.256+00	2.861+00	1.79244-02	2.795+00	2.869-01	0.0397	13.46
5.02161+00	1.514-01	4.353+00	2.05986-01	2.409+00	2.842+00	1.69469-02	2.683+00	2.604-01	0.0382	14.98
4.47522+00	1.666-01	4.271+00	1.92076-01	2.549+00	2.805+00	1.60501-02	2.651+00	2.437-01	0.0370	16.51
4.01339+00	1.861-01	4.279+00	1.79528-01	2.687+00	2.763+00	1.52227-02	2.508+00	2.187-01	0.0350	18.03
3.61953+00	2.020-01	4.188+00	1.68171-01	2.835+00	2.731+00	1.44124-02	2.366+00	1.953-01	0.0316	19.56
3.28092+00	2.188-01	4.112+00	1.57857-01	2.987+00	2.701+00	1.36224-02	2.266+00	1.768-01	0.0279	21.08
2.98770+00	2.424-01	4.148+00	1.48463-01	3.157+00	2.684+00	1.28955-02	2.177+00	1.608-01	0.0226	22.61
2.73210+00	2.564-01	4.012+00	1.39883-01	3.312+00	2.654+00	1.22254-02	2.088+00	1.462-01	0.0166	24.13
2.50795+00	2.761-01	3.967+00	1.32025-01	3.392+00	2.565+00	1.15736-02	2.037+00	1.350-01	0.0135	25.14
2.31029+00	2.956-01	3.911+00	1.24811-01	3.543+00	2.533+00	1.09418-02	1.890+00	1.184-01		
2.13511+00	3.209-01	3.925+00	1.18172-01	3.764+00	2.548+00	1.03603-02	1.860+00	1.103-01		
1.97913+00	3.415-01	3.872+00	1.12048-01	3.854+00	2.473+00	9.82404-03	1.792+00	1.008-01		
1.83964+00	3.667-01	3.863+00	1.05499-01	4.061+00	2.454+00	9.30487-03	1.688+00	8.996-02		
1.71439+00	3.775-01	3.706+00	9.86792-02	4.236+00	2.394+00	8.80358-03	1.726+00	8.703-02		
1.60151+00	4.080-01	3.742+00	9.24991-02	4.327+00	2.292+00	8.34175-03	1.459+00	6.971-02		
1.49942+00	4.223-01	3.627+00	8.68810-02	4.458+00	2.218+00	7.91532-03	1.555+00	7.049-02		
1.40679+00	4.429-01	3.568+00	8.17589-02	4.582+00	2.146+00	7.50378-03	1.359+00	5.841-02		
1.32248+00	4.744-01	3.593+00	7.70760-02	4.731+00	2.089+00	7.10743-03	1.185+00	4.825-02		
1.24090+00	4.940-01	3.511+00	7.27835-02	4.759+00	1.984+00	6.74167-03	1.150+00	4.441-02		
1.17172+00	5.213-01	3.499+00	6.88391-02	4.800+00	1.892+00	6.39008-03	1.108+00	4.053-02		
1.10818+00	5.509-01	3.497+00	6.52063-02	4.895+00	1.828+00	6.05264-03	1.069+00	3.704-02		
1.04966+00	5.818-01	3.498+00	6.18529-02	4.859+00	1.721+00	5.74125-03	9.496-01	3.123-02		
9.95665-01	5.938-01	3.386+00	5.83851-02	4.954+00	1.657+00	5.44278-03	8.659-01	2.699-02		
9.22594-01	6.583-01	3.479+00	5.48570-02	4.977+00	1.564+00	5.15705-03	8.435-01	2.491-02		
8.36527-01	7.125-01	3.413+00	5.16384-02	5.000+00	1.479+00	4.89325-03	8.633-01	2.419-02		
7.61967-01	7.650-01	3.338+00	4.86942-02	4.933+00	1.376+00	4.64092-03	8.530-01	2.267-02		
6.96950-01	8.277-01	3.304+00	4.59939-02	4.896+00	1.290+00	4.39977-03	7.867-01	1.982-02		
6.39914-01	8.932-01	3.274+00	4.35115-02	4.788+00	1.193+00	4.16991-03	7.544-01	1.802-02		
5.89604-01	9.677-01	3.268+00	4.12239-02	4.741+00	1.119+00	3.95093-03	6.893-01	1.560-02		
5.45003-01	1.044+00	3.259+00	3.91115-02	4.662+00	1.044+00	3.73681-03	6.323-01	1.353-02		
5.05278-01	1.104+00	3.195+00	3.69718-02	4.615+00	9.772-01	3.51204-03	5.447-01	1.096-02		
4.69743-01	1.154+00	3.105+00	3.48284-02	4.479+00	8.934-01	3.29660-03	5.749-01	1.086-02		
4.37829-01	1.242+00	3.115+00	3.28652-02	4.252+00	8.003-01	3.10053-03	6.043-01	1.073-02		
4.09060-01	1.337+00	3.133+00	3.10626-02	4.141+00	7.367-01					

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90° ANGULAR NEUTRON SPECTRUM IN BORATED D₂O2.1 BARNS/DEUTERIUM ATOM (0.0253 ev)CALCULATION PARAMETERSSCATTERING KERNEL: GAKER (300°K, D(D₂O), P₀ + P₁)

TRANSPORT THEORY CODE: GAPLSN (ID 043064)

TEMPERATURE: 0.0258 ev

SOURCE: DSZ CODE (GA3542, P.145)

ATOM DENSITIES

$$N_H = 2.608 \times 10^{20}$$

$$N_D = 5.672 \times 10^{22}$$

$$N_B = 1.430 \times 10^{20}$$

$$N_O = 2.849 \times 10^{22}$$

$$N_{Al} = 9.150 \times 10^{21}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.00527$$

90° ANGULAR NEUTRON SPECTRUM IN BORATED D₂O
4-1-64 T5, T6

E(ev)	ϕ (E)	E ϕ (E)	E(ev)	ϕ (E)	E ϕ (E)	E(ev)	ϕ (E)	E ϕ (E)	Q (x)	x (cm)
2.95307+01	3.136-02	4.889+00	3.98705-01	1.385+00	2.916+00	3.39467-02	4.330+00	7.759-01	0.0142	0.254
2.25001+01	4.015-02	4.769+00	3.73340-01	1.455+00	2.867+00	3.20332-02	4.212+00	7.122-01	0.0181	1.27
1.77111+01	5.138-02	4.804+00	3.50321-01	1.557+00	2.880+00	3.02763-02	4.164+00	6.656-01	0.0242	2.79
1.43029+01	6.288-02	4.748+00	3.29366-01	1.628+00	2.830+00	2.86592-02	3.976+00	6.016-01	0.0288	4.34
1.17916+01	7.406-02	4.611+00	3.10237-01	1.728+00	2.829+00	2.71676-02	3.812+00	5.468-01	0.0324	5.84
9.88800+00	8.763-02	4.574+00	2.92727-01	1.798+00	2.779+00	2.57887-02	3.700+00	5.038-01	0.0351	7.37
8.41073+00	9.996-02	4.438+00	2.76658-01	1.872+00	2.734+00	2.44108-02	3.555+00	4.582-01	0.0376	8.89
7.24139+00	1.118-01	4.272+00	2.61877-01	1.998+00	2.762+00	2.30445-02	3.471+00	4.223-01	0.0389	10.41
6.29997+00	1.299-01	4.321+00	2.48249-01	2.066+00	2.708+00	2.17890-02	3.346+00	3.849-01	0.0397	11.94
5.53088+00	1.438-01	4.199+00	2.32707-01	2.176+00	2.673+00	2.06326-02	3.181+00	3.465-01	0.0397	13.46
4.89449+00	1.618-01	4.180+00	2.15856-01	2.333+00	2.658+00	1.95651-02	3.043+00	3.143-01	0.0382	14.98
4.36193+00	1.763-01	4.059+00	2.00771-01	2.482+00	2.631+00	1.85108-02	2.875+00	2.810-01	0.0370	16.51
3.91179+00	1.967-01	4.063+00	1.87214-01	2.622+00	2.591+00	1.74707-02	2.738+00	2.525-01	0.0350	18.03
3.52790+00	2.153-01	4.009+00	1.74984-01	2.754+00	2.544+00	1.65179-02	2.645+00	2.306-01	0.0316	19.56
3.19786+00	2.367-01	3.995+00	1.63913-01	2.883+00	2.495+00	1.56438-02	2.513+00	2.075-01	0.0279	21.08
2.91206+00	2.537-01	3.901+00	1.53861-01	3.092+00	2.512+00	1.48373-02	2.391+00	1.873-01	0.0226	22.61
2.66293+00	2.740-01	3.852+00	1.44705-01	3.203+00	2.447+00	1.40475-02	2.336+00	1.732-01	0.0166	24.13
2.44446+00	2.930-01	3.781+00	1.36342-01	3.334+00	2.400+00	1.32775-02	2.105+00	1.475-01	0.0135	25.14
2.25181+00	3.173-01	3.772+00	1.28683-01	3.471+00	2.358+00	1.25691-02	2.090+00	1.387-01		
2.08106+00	3.378-01	3.711+00	1.21651-01	3.655+00	2.347+00	1.19159-02	2.045+00	1.286-01		
1.92903+00	3.605-01	3.671+00	1.15180-01	3.805+00	2.314+00	1.12806-02	1.909+00	1.137-01		
1.79306+00	3.809-01	3.606+00	1.09211-01	3.973+00	2.291+00	1.06648-02	1.895+00	1.067-01		
1.67099+00	4.012-01	3.539+00	1.02828-01	4.085+00	2.218+00	1.00981-02	1.827+00	9.742-02		
1.56096+00	4.229-01	3.485+00	9.61811-02	4.275+00	2.171+00	9.57534-03	1.702+00	8.602-02		
1.46146+00	4.446-01	3.430+00	9.01574-02	4.434+00	2.110+00	9.06931-03	1.614+00	7.726-02		
1.37117+00	4.744-01	3.434+00	8.46816-02	4.560+00	2.039+00	8.58072-03	1.474+00	6.677-02		
1.28901+00	5.063-01	3.445+00	7.96891-02	4.604+00	1.937+00	8.13057-03	1.451+00	6.227-02		
1.20948+00	5.280-01	3.371+00	7.51248-02	4.650+00	1.844+00	7.71495-03	1.397+00	5.692-02		
1.14206+00	5.532-01	3.335+00	7.09409-02	4.754+00	1.780+00	7.31382-03	1.262+00	4.875-02		
1.08012+00	5.880-01	3.353+00	6.70964-02	4.866+00	1.724+00	6.92750-03	1.208+00	4.417-02		
1.02309+00	6.192-01	3.344+00	6.35555-02	4.930+00	1.654+00	6.57100-03	1.140+00	3.956-02		
9.70459-01	6.410-01	3.284+00	6.02871-02	4.860+00	1.547+00	6.22831-03	9.383-01	3.085-02		
8.99238-01	6.828-01	3.241+00	5.69071-02	5.000+00	1.502+00	5.89942-03	1.108+00	3.450-02		
8.15350-01	7.428-01	3.197+00	5.34683-02	4.911+00	1.386+00	5.59590-03	9.042-01	2.671-02		
7.42677-01	8.119-01	3.183+00	5.03312-02	4.965+00	1.319+00	5.30499-03	8.275-01	2.318-02		
6.79306-01	8.770-01	3.145+00	4.74615-02	4.864+00	1.219+00	5.02650-03	7.355-01	1.952-02		
6.23714-01	9.412-01	3.099+00	4.48296-02	4.865+00	1.151+00	4.76937-03	7.443-01	1.874-02		
5.74678-01	1.012+00	3.069+00	4.24099-02	4.705+00	1.053+00	4.52343-03	7.712-01	1.842-02		
5.31206-01	1.077+00	3.021+00	4.01803-02	4.677+00	9.921-01	4.28839-03	6.905-01	1.563-02		
4.92486-01	1.155+00	3.002+00	3.81214-02	4.634+00	9.327-01	4.06435-03	6.048-01	1.298-02		
4.57851-01	1.218+00	2.944+00	3.60359-02	4.414+00	8.397-01	3.85091-03	6.676-01	1.357-02		
4.26745-01	1.295+00	2.917+00								

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90° ANGULAR NEUTRON SPECTRUM IN BORATED D₂O2.1 BARNS/DEUTERIUM ATOM (0.0253 ev)CALCULATION PARAMETERSSCATTERING KERNEL: GAKER (300°K, D(D₂O), P₀ + P₁)

TRANSPORT THEORY CODE: GAPLSN (ID 040364)

TEMPERATURE: 0.0258 ev

SOURCE: DSZ CODE (GA3542, P.145)

ATOM DENSITIES

$$N = 2.608 \times 10^{20}$$

$$N = 5.672 \times 10^{22}$$

$$N = 1.430 \times 10^{20}$$

$$N = 2.849 \times 10^{22}$$

$$N = 9.150 \times 10^{21}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.00527$$

EXPERIMENTAL ARRANGEMENT 4/1/64 T7, T8PLAN VIEW NOT TO SCALE

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90° ANGULAR NEUTRON SPECTRUM IN BORATED D₂O
4-1-64 T7, T8

E(ev)	ϕ (E)	E ϕ (E)	E(ev)	ϕ (E)	E ϕ (E)	E(ev)	ϕ (E)	E ϕ (E)	Q (x)	x (cm)
3.01050+01	3.772-02	4.983+00	4.35045-01	1.438+00	2.744+00	3.67367-02	4.423+00	7.128-01	0.0142	0.254
2.29377+01	4.761-02	4.791+00	4.06459-01	1.540+00	2.746+00	3.46069-02	4.127+00	6.266-01	0.0181	1.27
1.80555+01	6.048-02	4.791+00	3.80601-01	1.629+00	2.720+00	3.26562-02	4.065+00	5.824-01	0.0242	2.79
1.45811+01	7.192-02	4.601+00	3.57134-01	1.705+00	2.671+00	3.08651-02	3.872+00	5.243-01	0.0288	4.32
1.20209+01	8.497-02	4.481+00	3.35772-01	1.803+00	2.656+00	2.92166-02	3.797+00	4.867-01	0.0324	5.84
1.00803+01	1.007-01	4.454+00	3.16271-01	1.892+00	2.625+00	2.76959-02	3.573+00	4.341-01	0.0351	7.37
8.57431+00	1.173-01	4.413+00	2.98420-01	2.016+00	2.639+00	2.62903-02	3.553+00	4.098-01	0.0376	8.89
7.38222+00	1.335-01	4.325+00	2.82039-01	2.061+00	2.550+00	2.48855-02	3.384+00	3.695-01	0.0389	10.41
6.42250+00	1.509-01	4.252+00	2.66970-01	2.164+00	2.534+00	2.34927-02	3.231+00	3.330-01	0.0397	11.94
5.63845+00	1.675-01	4.144+00	2.53077-01	2.230+00	2.476+00	2.22128-02	3.046+00	2.969-01	0.0397	13.46
4.98968+00	1.868-01	4.090+00	2.37233-01	2.368+00	2.464+00	2.10339-02	3.041+00	2.807-01	0.0382	14.98
4.44677+00	2.058-01	4.015+00	2.20055-01	2.522+00	2.435+00	1.99456-02	2.730+00	2.389-01	0.0370	16.51
3.98787+00	2.291-01	4.008+00	2.04676-01	2.698+00	2.423+00	1.88709-02	2.681+00	2.220-01	0.0350	18.03
3.59651+00	2.474-01	3.904+00	1.90855-01	2.802+00	2.346+00	1.78104-02	2.539+00	1.984-01	0.0316	19.56
3.26006+00	2.736-01	3.913+00	1.78387-01	2.989+00	2.339+00	1.68391-02	2.410+00	1.780-01	0.0279	21.08
2.96870+00	2.972-01	3.870+00	1.67101-01	3.109+00	2.280+00	1.59480-02	2.460+00	1.721-01	0.0226	22.61
2.71472+00	3.179-01	3.787+00	1.56853-01	3.257+00	2.242+00	1.51259-02	2.210+00	1.466-01	0.0166	24.13
2.49200+00	3.409-01	3.727+00	1.47519-01	3.446+00	2.230+00	1.43207-02	1.977+00	1.242-01	0.0135	25.14
2.29560+00	3.634-01	3.660+00	1.38994-01	3.578+00	2.182+00	1.35357-02	1.966+00	1.168-01		
2.12154+00	3.890-01	3.621+00	1.31186-01	3.726+00	2.145+00	1.28135-02	1.885+00	1.060-01		
1.96654+00	4.157-01	3.586+00	1.24017-01	3.856+00	2.098+00	1.21476-02	1.921+00	1.024-01		
1.82794+00	4.326-01	3.469+00	1.17420-01	3.922+00	2.021+00	1.15000-02	1.782+00	8.991-02		
1.70348+00	4.717-01	3.526+00	1.11335-01	4.130+00	2.017+00	1.08722-02	1.624+00	7.748-02		
1.59132+00	4.892-01	3.416+00	1.04828-01	4.224+00	1.943+00	1.02945-02	1.616+00	7.299-02		
1.48988+00	5.168-01	3.378+00	9.80517-02	4.408+00	1.896+00	9.76157-03	1.572+00	6.731-02		
1.39784+00	5.341-01	3.276+00	9.19108-02	4.581+00	1.847+00	9.24569-03	1.416+00	5.742-02		
1.31407+00	5.736-01	3.307+00	8.63285-02	4.613+00	1.747+00	8.74760-03	1.296+00	4.973-02		
1.23301+00	5.987-01	3.238+00	8.12389-02	4.758+00	1.696+00	8.28870-03	1.128+00	4.102-02		
1.16427+00	6.336-01	3.237+00	7.65858-02	4.835+00	1.625+00	7.86499-03	1.230+00	4.243-02		
1.10113+00	6.589-01	3.183+00	7.23206-02	4.871+00	1.546+00	7.45606-03	1.109+00	3.629-02		
1.04299+00	7.063-01	3.232+00	6.84013-02	4.906+00	1.472+00	7.06223-03	1.044+00	3.235-02		
9.89333-01	7.278-01	3.159+00	6.47916-02	4.934+00	1.402+00	6.69880-03	9.112-01	2.678-02		
9.16727-01	7.809-01	3.141+00	6.14596-02	5.000+00	1.348+00	6.34944-03	8.922-01	2.485-02		
8.31207-01	8.397-01	3.062+00	5.80138-02	4.975+00	1.266+00	6.01415-03	7.498-01	1.979-02		
7.57121-01	9.139-01	3.036+00	5.45081-02	4.912+00	1.175+00	5.70474-03	7.480-01	1.872-02		
6.92518-01	9.836-01	2.988+00	5.13100-02	4.963+00	1.117+00	5.40817-03	7.874-01	1.868-02		
6.35845-01	1.062+00	2.964+00	4.83845-02	4.800+00	1.019+00	5.11467-03	6.157-01	1.382-02		
5.85855-01	1.147+00	2.947+00	4.57014-02	4.725+00	9.474-01	4.79175-03	5.682-01	1.195-02		
5.41537-01	1.189+00	2.824+00	4.32348-02	4.596+00	8.718-01	4.44258-03	5.727-01	1.116-02		
5.02064-01	1.284+00	2.827+00	4.09618-02	4.569+00	8.211-01	4.12279-03	6.172-01	1.116-02		
4.66756-01	1.344+00	2.753+00	3.88628-02	4.423+00	7.541-01					

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90° ANGULAR NEUTRON SPECTRUM IN BORATED D₂O2.1 BARNS/DEUTERIUM ATOM (0.0253 ev)CALCULATION PARAMETERSSCATTERING KERNEL: GAKER (300°K, D(D₂O), P₀ + P₁)

TRANSPORT THEORY CODE: GAPLSN (ID 043064)

TEMPERATURE: 0.0258 ev

SOURCE: DSZ CODE (GA3542, P.145)

ATOM DENSITIES

$$N_H = 2.608 \times 10^{20}$$

$$N_D = 5.672 \times 10^{22}$$

$$N_B = 1.430 \times 10^{20}$$

$$N_O = 2.849 \times 10^{22}$$

$$N_{Al} = 9.150 \times 10^{21}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.00527$$

EXPERIMENTAL ARRANGEMENT 4/1/64 T3, T4PLAN VIEW NOT TO SCALE

90° ANGULAR NEUTRON SPECTRUM IN BORATED D₂O
4-1-64 T3, T4

E(ev)	ϕ (E)	E ϕ (E)	E(ev)	ϕ (E)	E ϕ (E)	E(ev)	ϕ (E)	E ϕ (E)	Q (x)	x (cm)
2.99897+01	4.527-02	4.811+00	4.64968-01	1.550+00	2.554+00	4.08049-02	4.526+00	6.544-01	0.0142	0.254
2.28498+01	5.762-02	4.666+00	4.33378-01	1.638+00	2.515+00	3.87139-02	4.390+00	6.023-01	0.0181	1.27
1.79864+01	7.117-02	4.537+00	4.04902-01	1.739+00	2.496+00	3.65960-02	4.297+00	5.573-01	0.0242	2.79
1.45253+01	8.771-02	4.515+00	3.79143-01	1.826+00	2.453+00	3.44743-02	4.067+00	4.969-01	0.0288	4.32
1.19749+01	1.014-01	4.304+00	3.55766-01	1.938+00	2.443+00	3.25311-02	3.904+00	4.500-01	0.0324	5.84
1.00417+01	1.207-01	4.294+00	3.34486-01	2.025+00	2.401+00	3.07469-02	3.844+00	4.188-01	0.0351	7.37
8.54147+00	1.386-01	4.195+00	3.15059-01	2.106+00	2.351+00	2.91047-02	3.718+00	3.835-01	0.0376	8.89
7.35395+00	1.571-01	4.096+00	2.97277-01	2.213+00	2.331+00	2.75899-02	3.514+00	3.436-01	0.0389	10.41
6.39790+00	1.731-01	3.924+00	2.80959-01	2.301+00	2.291+00	2.61896-02	3.494+00	3.243-01	0.0397	11.94
5.61686+00	1.973-01	3.927+00	2.65948-01	2.444+00	2.303+00	2.47902-02	3.270+00	2.873-01	0.0397	13.46
4.97057+00	2.197-01	3.871+00	2.52108-01	2.498+00	2.232+00	2.34027-02	3.045+00	2.526-01	0.0382	14.98
4.42973+00	2.404-01	3.774+00	2.36324-01	2.590+00	2.169+00	2.21277-02	3.081+00	2.416-01	0.0370	16.51
3.97260+00	2.596-01	3.655+00	2.19212-01	2.780+00	2.159+00	2.09533-02	2.944+00	2.186-01	0.0350	18.03
3.58273+00	2.880-01	3.657+00	2.03892-01	2.923+00	2.112+00	1.98692-02	2.637+00	1.857-01	0.0316	19.56
3.24757+00	3.106-01	3.575+00	1.90124-01	3.040+00	2.049+00	1.87986-02	2.560+00	1.706-01	0.0279	21.08
2.95733+00	3.453-01	3.619+00	1.77703-01	3.160+00	1.990+00	1.77422-02	2.343+00	1.473-01	0.0226	22.61
2.70433+00	3.697-01	3.543+00	1.66461-01	3.301+00	1.947+00	1.67746-02	2.240+00	1.332-01	0.0166	24.13
2.48245+00	3.890-01	3.422+00	1.56252-01	3.467+00	1.920+00	1.58870-02	2.314+00	1.303-01	0.0135	25.14
2.28681+00	4.187-01	3.393+00	1.46954-01	3.644+00	1.898+00	1.50680-02	2.012+00	1.074-01		
2.11341+00	4.571-01	3.424+00	1.38461-01	3.740+00	1.835+00	1.42659-02	1.927+00	9.742-02		
1.95901+00	4.748-01	3.296+00	1.30683-01	3.872+00	1.793+00	1.34839-02	1.837+00	8.776-02		
1.82094+00	5.022-01	3.241+00	1.23542-01	4.033+00	1.766+00	1.27645-02	1.826+00	8.259-02		
1.69696+00	5.276-01	3.173+00	1.16971-01	4.203+00	1.742+00	1.21011-02	1.701+00	7.297-02		
1.58523+00	5.590-01	3.141+00	1.10909-01	4.308+00	1.693+00	1.14559-02	1.551+00	6.295-02		
1.48418+00	5.952-01	3.131+00	1.04427-01	4.427+00	1.638+00	1.08306-02	1.592+00	6.109-02		
1.39249+00	6.241-01	3.080+00	9.76762-02	4.665+00	1.615+00	1.02550-02	1.448+00	5.263-02		
1.30904+00	6.553-01	3.040+00	9.15588-02	4.754+00	1.543+00	9.72418-03	1.384+00	4.769-02		
1.22828+00	6.904-01	3.005+00	8.59978-02	4.825+00	1.470+00	9.21028-03	1.331+00	4.345-02		
1.15981+00	7.081-01	2.910+00	8.09278-02	4.872+00	1.397+00	8.71409-03	1.360+00	4.199-02		
1.09691+00	7.455-01	2.898+00	7.62925-02	4.839+00	1.308+00	8.25695-03	1.137+00	3.328-02		
1.03899+00	7.805-01	2.874+00	7.20436-02	4.897+00	1.250+00	7.83486-03	1.081+00	3.002-02		
9.85544-01	8.314-01	2.904+00	6.81394-02	4.983+00	1.203+00	7.42751-03	9.721-01	2.559-02		
9.13216-01	8.828-01	2.857+00	6.45434-02	4.999+00	1.144+00	7.03518-03	8.927-01	2.226-02		
8.28024-01	9.573-01	2.809+00	6.12242-02	4.943+00	1.072+00	6.67314-03	8.875-01	2.099-02		
7.54221-01	1.048+00	2.801+00	5.77916-02	5.000+00	1.024+00	6.32512-03	7.487-01	1.678-02		
6.89865-01	1.116+00	2.728+00	5.42994-02	4.831+00	9.297-01	5.99112-03	7.407-01	1.573-02		
6.33409-01	1.197+00	2.687+00	5.11135-02	4.856+00	8.797-01	5.64935-03	6.909-01	1.383-02		
5.83611-01	1.280+00	2.648+00	4.81992-02	4.715+00	8.054-01	5.31473-03	6.806-01	1.282-02		
5.39463-01	1.364+00	2.607+00	4.55264-02	4.674+00	7.541-01	4.99076-03	6.568-01	1.162-02		
5.00141-01	1.444+00	2.559+00	4.30692-02	4.609+00	7.035-01					

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90° ANGULAR NEUTRON SPECTRUM IN D₂O + Cd(NO₃)₂ 6IN. FROM SOURCE

2.4 BARNS/DEUTERIUM ATOM (0.0253 ev)

CALCULATION PARAMETERS

SCATTERING KERNEL: GAKER (300°K, D(D₂O), P₀ + P₁)

TRANSPORT THEORY CODE: GAPLSN ID 061064

TEMPERATURE: 0.0258 ev

SOURCE: DSZ CODE (GA3542 P.145)

ATOM DENSITIES

$$N_D = 6.5996 \times 10^{22}$$

$$N_H = 1.584 \times 10^{20}$$

$$N_O = 3.347 \times 10^{22}$$

$$N_{Cd} = 6.569 \times 10^{19}$$

$$N_N = 1.314 \times 10^{20}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.01242$$

NOT TO SCALE

90° ANGULAR NEUTRON SPECTRUM IN D₂O + Cd (NO₃)₂ 6 INCHES FROM SOURCE
4-18-64 T5, T4

E(ev)	φ(E)	E φ(E)	E(ev)	φ(E)	E φ(E)	E(ev)	φ(E)	E φ(E)	Q(x)	x(cm)
9.62079+01	2.101-02	4.982+00	5.48758-01	3.302+00	4.466+00	4.38113-02	4.444+00	4.799-01	0.7143	0.12
6.07325+01	3.337-02	4.994+00	5.08759-01	3.542+00	4.442+00	4.15080-02	4.343+00	4.443-01	0.8843	1.62
4.17928+01	4.832-02	4.977+00	4.72980-01	3.801+00	4.431+00	3.93810-02	4.233+00	4.109-01	0.9833	4.12
3.05065+01	6.650-02	5.000+00	4.40846-01	4.050+00	4.401+00	3.72266-02	4.247+00	3.896-01	1.0000	6.66
2.32436+01	8.630-02	4.944+00	4.11879-01	4.329+00	4.394+00	3.50684-02	4.148+00	3.585-01	0.9222	9.19
1.82963+01	1.085-01	4.891+00	3.85676-01	4.552+00	4.327+00	3.30917-02	4.085+00	3.331-01	0.8846	11.72
1.47755+01	1.322-01	4.815+00	3.61896-01	4.711+00	4.202+00	3.12767-02	3.862+00	2.977-01	0.7229	14.25
1.21812+01	1.588-01	4.766+00	3.40249-01	4.913+00	4.120+00	2.96062-02	3.845+00	2.805-01	0.6223	16.78
1.02147+01	1.891-01	4.761+00	3.20488-01	4.967+00	3.923+00	2.80653-02	3.772+00	2.609-01	0.4595	19.31
8.68865+00	2.241-01	4.798+00	3.02400-01	5.000+00	3.726+00	2.66408-02	3.582+00	2.352-01	0.3739	21.86
7.48066+00	2.529-01	4.662+00	2.85800-01	4.855+00	3.420+00	2.52174-02	3.476+00	2.160-01	0.2756	24.40
6.50814+00	2.898-01	4.649+00	2.70530-01	4.699+00	3.133+00	2.38060-02	3.355+00	1.968-01	0.2100	26.93
5.71364+00	3.310-01	4.661+00	2.56452-01	4.438+00	2.805+00	2.25090-02	3.218+00	1.785-01	0.1506	29.45
5.05622+00	3.711-01	4.624+00	2.40396-01	3.982+00	2.359+00	2.13144-02	3.199+00	1.681-01	0.1104	31.99
4.50606+00	4.134-01	4.591+00	2.22989-01	3.482+00	1.913+00	2.02116-02	2.955+00	1.472-01	0.0830	34.51
4.04105+00	4.601-01	4.583+00	2.07405-01	3.002+00	1.535+00	1.91225-02	2.737+00	1.290-01	0.0598	37.04
3.64447+00	5.071-01	4.555+00	1.93400-01	2.604+00	1.241+00	1.80479-02	2.802+00	1.246-01	0.0422	39.56
3.30353+00	5.650-01	4.600+00	1.80765-01	2.393+00	1.066+00	1.70636-02	2.645+00	1.112-01	0.0311	42.08
3.00829+00	6.165-01	4.571+00	1.69329-01	2.353+00	9.819-01	1.61607-02	2.524+00	1.005-01	0.0197	44.62
2.75092+00	6.674-01	4.525+00	1.58945-01	2.356+00	9.230-01	1.53276-02	2.444+00	9.234-02	0.0140	46.47
2.52523+00	7.193-01	4.477+00	1.49486-01	2.436+00	8.974-01	1.45117-02	2.379+00	8.508-02		
2.32621+00	7.758-01	4.448+00	1.40847-01	2.604+00	9.040-01	1.37162-02	2.322+00	7.848-02		
2.14983+00	8.449-01	4.477+00	1.32935-01	2.742+00	8.983-01	1.29844-02	2.013+00	6.441-02		
1.99277+00	9.042-01	4.441+00	1.25671-01	2.896+00	8.969-01	1.23096-02	2.094+00	6.353-02		
1.85231+00	9.715-01	4.435+00	1.18986-01	3.052+00	8.951-01	1.16533-02	2.070+00	5.946-02		
1.72620+00	1.035+00	4.403+00	1.12820-01	3.193+00	8.877-01	1.10172-02	1.967+00	5.341-02		
1.61254+00	1.120+00	4.449+00	1.06226-01	3.352+00	8.775-01	1.04317-02	1.834+00	4.714-02		
1.50975+00	1.186+00	4.412+00	9.93592-02	3.610+00	8.839-01	9.89174-03	1.697+00	4.137-02		
1.41648+00	1.258+00	4.393+00	9.31364-02	3.708+00	8.512-01	9.36898-03	1.743+00	4.025-02		
1.33160+00	1.327+00	4.355+00	8.74797-02	3.825+00	8.247-01	8.86425-03	1.651+00	3.607-02		
1.24945+00	1.422+00	4.379+00	8.23222-02	3.930+00	7.974-01	8.39923-03	1.571+00	3.253-02		
1.17980+00	1.485+00	4.317+00	7.76071-02	4.113+00	7.866-01	7.96987-03	1.438+00	2.824-02		
1.11581+00	1.580+00	4.345+00	7.32850-02	4.123+00	7.446-01	7.55549-03	1.283+00	2.389-02		
1.05690+00	1.676+00	4.365+00	6.93135-02	4.186+00	7.151-01	7.15640-03	1.250+00	2.205-02		
1.00253+00	1.765+00	4.360+00	6.56556-02	4.217+00	6.824-01	6.78812-03	1.156+00	1.934-02		
9.28951-01	1.936+00	4.433+00	6.22791-02	4.439+00	6.813-01	6.43411-03	9.995-01	1.585-02		
8.42291-01	2.141+00	4.444+00	5.87874-02	4.342+00	6.291-01	6.09435-03	1.146+00	1.721-02		
7.67217-01	2.360+00	4.462+00	5.52350-02	4.433+00	6.035-01	5.78081-03	1.039+00	1.480-02		
7.01752-01	2.585+00	4.471+00	5.19942-02	4.465+00	5.721-01	5.48029-03	9.832-01	1.328-02		
6.44324-01	2.789+00	4.429+00	4.90297-02	4.521+00	5.463-01	5.19259-03	9.628-01	1.232-02		
5.93667-01	3.028+00	4.430+00	4.63109-02	4.480+00	5.113-01	4.92697-03	8.666-01	1.052-02		

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90° ANGULAR NEUTRON SPECTRUM IN D₂O + Cd(NO₃)₂ 9 IN. FROM SOURCE

2.4 BARNS/DEUTERIUM ATOM (0.0253 ev)

CALCULATION PARAMETERS

SCATTERING KERNEL: GAKER (300°K, D(D₂O), P₀ + P₁)

TRANSPORT THEORY CODE: GAPLSN ID 061064

TEMPERATURE: 0.0258 ev

SOURCE: DSZ CODE (GA3542 P.145)

ATOM DENSITIES

$$\begin{aligned} N_D &= 6.5996 \times 10^{22} \\ N_H &= 1.584 \times 10^{20} \\ N_O &= 3.347 \times 10^{22} \\ N_{cd} &= 6.569 \times 10^{19} \\ N_N &= 1.314 \times 10^{20} \end{aligned}$$

LOCAL BUCKLING

$$B^2_{\text{TRANSVERSE}} = 0.01242$$

NOT TO SCALE

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90° ANGULAR NEUTRON SPECTRUM IN D₂O + Cd (NO₃)₂ 9 INCHES FROM SOURCE
4-18-64 T11, T10

E(ev)	φ(E)	E φ(E)	E(ev)	φ(E)	E φ(E)	E(ev)	φ(E)	E φ(E)	Q(x)	x(cm)
9.63301+01	1.488-02	4.063+00	5.49455-01	3.156+00	4.915+00	4.38669-02	4.446+00	5.528-01	0.7143	0.12
6.08906+01	2.409-02	4.152+00	5.09406-01	3.441+00	4.968+00	4.15607-02	4.452+00	5.245-01	0.8843	1.62
4.18459+01	3.471-02	4.117+00	4.73580-01	3.714+00	4.986+00	3.94310-02	4.389+00	4.905-01	0.9833	4.12
3.05452+01	4.977-02	4.310+00	4.41406-01	3.980+00	4.980+00	3.72739-02	4.390+00	4.639-01	1.0000	6.66
2.32731+01	6.482-02	4.276+00	4.12402-01	4.223+00	4.936+00	3.51129-02	4.221+00	4.201-01	0.9222	9.19
1.83195+01	8.426-02	4.375+00	3.86166-01	4.566+00	4.997+00	3.31337-02	4.142+00	3.890-01	0.8846	11.72
1.47943+01	1.057-01	4.432+00	3.62356-01	4.677+00	4.803+00	3.13164-02	3.975+00	3.529-01	0.7229	14.25
1.21967+01	1.249-01	4.319+00	3.40682-01	4.837+00	4.671+00	2.96438-02	3.962+00	3.329-01	0.6223	16.78
1.02277+01	1.549-01	4.491+00	3.20895-01	5.000+00	4.548+00	2.81009-02	3.832+00	3.052-01	0.4595	19.31
8.69968+00	1.824-01	4.499+00	3.02784-01	4.970+00	4.266+00	2.66747-02	3.602+00	2.724-01	0.3739	21.86
7.49016+00	2.081-01	4.418+00	2.86163-01	4.898+00	3.973+00	2.52494-02	3.590+00	2.570-01	0.2756	24.40
6.51641+00	2.417-01	4.464+00	2.70874-01	4.675+00	3.590+00	2.38362-02	3.354+00	2.266-01	0.2100	26.93
5.72090+00	2.828-01	4.586+00	2.56778-01	4.441+00	3.232+00	2.25376-02	3.332+00	2.129-01	0.1506	29.45
5.06264+00	3.116-01	4.471+00	2.40702-01	4.020+00	2.743+00	2.13414-02	3.234+00	1.957-01	0.1104	31.99
4.51178+00	3.534-01	4.520+00	2.23272-01	3.535+00	2.237+00	2.02373-02	2.932+00	1.682-01	0.0830	34.51
4.04618+00	3.946-01	4.525+00	2.07669-01	3.034+00	1.786+00	1.91468-02	2.932+00	1.591-01	0.0598	37.04
3.64910+00	4.336-01	4.485+00	1.93645-01	2.664+00	1.462+00	1.80709-02	2.849+00	1.459-01	0.0422	39.56
3.30772+00	4.909-01	4.603+00	1.80995-01	2.442+00	1.253+00	1.70853-02	2.862+00	1.386-01	0.0311	42.08
3.01211+00	5.360-01	4.576+00	1.69545-01	2.301+00	1.106+00	1.61812-02	2.563+00	1.176-01	0.0197	44.62
2.75442+00	5.846-01	4.564+00	1.59147-01	2.342+00	1.057+00	1.53471-02	2.436+00	1.060-01	0.0140	46.47
2.52844+00	6.241-01	4.473+00	1.49676-01	2.493+00	1.058+00	1.45301-02	2.385+00	9.822-02		
2.32917+00	6.946-01	4.586+00	1.41026-01	2.607+00	1.042+00	1.37336-02	2.066+00	8.041-02		
2.15256+00	7.554-01	4.609+00	1.33104-01	2.668+00	1.006+00	1.30009-02	2.218+00	8.174-02		
1.99530+00	8.171-01	4.621+00	1.25831-01	2.846+00	1.015+00	1.23253-02	2.150+00	7.511-02		
1.85466+00	8.674-01	4.560+00	1.19137-01	3.058+00	1.033+00	1.16681-02	2.129+00	7.042-02		
1.72839+00	9.351-01	4.581+00	1.12963-01	3.178+00	1.017+00	1.10312-02	2.021+00	6.320-02		
1.61459+00	1.005+00	4.600+00	1.06361-01	3.355+00	1.011+00	1.04450-02	1.766+00	5.258-02		
1.51167+00	1.073+00	4.598+00	9.94854-02	3.602+00	1.016+00	9.90430-03	1.843+00	5.175-02		
1.41828+00	1.159+00	4.658+00	9.32547-02	3.727+00	9.853-01	9.38088-03	1.566+00	4.164-02		
1.33329+00	1.210+00	4.573+00	8.75908-02	3.907+00	9.701-01	8.87550-03	1.631+00	4.104-02		
1.25103+00	1.294+00	4.592+00	8.24268-02	3.965+00	9.265-01	8.40990-03	1.774+00	4.229-02		
1.18130+00	1.388+00	4.649+00	7.77056-02	4.083+00	8.993-01	7.97999-03	1.554+00	3.514-02		
1.11723+00	1.470+00	4.657+00	7.33781-02	4.225+00	8.787-01	7.56509-03	1.371+00	2.904-02		
1.05824+00	1.561+00	4.683+00	6.94015-02	4.198+00	8.258-01	7.16549-03	1.198+00	2.432-02		
1.00380+00	1.647+00	4.685+00	6.57390-02	4.345+00	8.096-01	6.79674-03	1.214+00	2.339-02		
9.30131-01	1.796+00	4.735+00	6.23582-02	4.436+00	7.841-01	6.44228-03	1.114+00	2.034-02		
8.43361-01	2.002+00	4.787+00	5.88621-02	4.463+00	7.447-01	6.10209-03	1.160+00	2.006-02		
7.68192-01	2.203+00	4.797+00	5.53051-02	4.469+00	7.006-01	5.78815-03	1.057+00	1.735-02		
7.02644-01	2.449+00	4.878+00	5.20603-02	4.543+00	6.703-01	5.45573-03	9.197-01	1.422-02		
6.45142-01	2.708+00	4.952+00	4.90920-02	4.437+00	6.174-01	5.14041-03	9.439-01	1.375-02		
5.94421-01	2.968+00	5.000+00	4.64697-02	4.505+00	5.921-01	4.87004-03	8.663-01	1.196-02		

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90° ANGULAR NEUTRON SPECTRUM IN D₂O + Cd(NO₃)₂ 12 IN. FROM SOURCE2.4 BARNS /DEUTERIUM ATOM (0.0253 ev)CALCULATION PARAMETERSSCATTERING KERNEL: GAKER (300°K, D(D₂O), P₀ + P₁)

TRANSPORT THEORY CODE: GAPLSN ID 061064

TEMPERATURE: 0.0258 ev

SOURCE: DSZ CODE (GA3542 P.145)

ATOM DENSITIES

$$N_D = 6.5996 \times 10^{22}$$

$$N_H = 1.584 \times 10^{20}$$

$$N_O = 3.347 \times 10^{22}$$

$$N_{Cd} = 6.569 \times 10^{19}$$

$$N_N = 1.314 \times 10^{20}$$

LOCAL BUCKLING

$$B^2_{\text{TRANSVERSE}} = 0.01242$$

NOT TO SCALE

90° ANGULAR NEUTRON SPECTRUM IN D₂O + Cd (NO₃)₂ 12 INCHES FROM SOURCE
4-18-64 T12, T3

E(ev)	φ (E)	E φ (E)	E(ev)	φ (E)	E φ (E)	E(ev)	φ (E)	E φ (E)	Q(x)	x(cm)
9.64523+01	1.155-02	3.185+00	5.95175-01	2.875+00	4.894+00	5.21263-02	4.624+00	6.893-01	0.7143	0.12
6.08868+01	2.057-02	3.581+00	5.50153-01	3.159+00	4.970+00	4.91543-02	4.611+00	6.481-01	0.8843	1.62
4.18990+01	3.030-02	3.630+00	5.10052-01	3.411+00	4.975+00	4.64285-02	4.834+00	6.419-01	0.9833	4.12
3.05840+01	3.848-02	3.365+00	4.74181-01	3.677+00	4.985+00	4.39226-02	4.559+00	5.727-01	1.0000	6.66
2.33026+01	5.451-02	3.632+00	4.41966-01	3.948+00	4.990+00	4.16135-02	4.510+00	5.367-01	0.9222	9.19
1.83428+01	7.063-02	3.705+00	4.12926-01	4.213+00	4.975+00	3.94810-02	4.409+00	4.977-01	0.8846	11.72
1.48131+01	9.084-02	3.848+00	3.86656-01	4.522+00	5.000+00	3.73212-02	4.397+00	4.693-01	0.7229	14.25
1.22122+01	1.118-01	3.903+00	3.62816-01	4.728+00	4.906+00	3.51575-02	4.385+00	4.408-01	0.6223	16.78
1.02407+01	1.346-01	3.941+00	3.41114-01	4.818+00	4.699+00	3.31757-02	4.252+00	4.034-01	0.4595	19.31
8.71072+00	1.548-01	3.857+00	3.21302-01	5.000+00	4.594+00	3.13561-02	4.107+00	3.682-01	0.3739	21.86
7.49967+00	1.864-01	3.998+00	3.03168-01	4.969+00	4.308+00	2.96814-02	3.964+00	3.365-01	0.2756	24.40
6.52468+00	2.181-01	4.070+00	2.86526-01	4.931+00	4.040+00	2.81366-02	3.765+00	3.030-01	0.2100	26.93
5.72816+00	2.482-01	4.066+00	2.71218-01	4.747+00	3.682+00	2.67085-02	3.728+00	2.847-01	0.1506	29.45
5.06906+00	2.729-01	3.955+00	2.57104-01	4.560+00	3.352+00	2.52814-02	3.777+00	2.731-01	0.1104	31.99
4.51751+00	3.224-01	4.165+00	2.41007-01	4.177+00	2.878+00	2.38665-02	3.550+00	2.423-01	0.0830	34.51
4.05131+00	3.506-01	4.062+00	2.23555-01	3.640+00	2.327+00	2.25662-02	3.651+00	2.356-01	0.0598	37.04
3.65373+00	3.970-01	4.148+00	2.07932-01	3.112+00	1.851+00	2.13685-02	3.247+00	1.984-01	0.0422	39.56
3.31192+00	4.293-01	4.066+00	1.93891-01	2.665+00	1.478+00	2.02629-02	3.174+00	1.839-01	0.0311	42.08
3.01593+00	4.978-01	4.293+00	1.81225-01	2.469+00	1.279+00	1.91711-02	2.891+00	1.585-01	0.0197	44.62
2.75791+00	5.363-01	4.229+00	1.69760-01	2.366+00	1.149+00	1.80938-02	3.084+00	1.596-01	0.0140	46.47
2.53164+00	5.913-01	4.281+00	1.59349-01	2.354+00	1.073+00	1.71070-02	2.733+00	1.337-01		
2.33212+00	6.557-01	4.373+00	1.49866-01	2.514+00	1.077+00	1.62018-02	2.730+00	1.265-01		
2.15529+00	7.014-01	4.323+00	1.41205-01	2.595+00	1.048+00	1.53665-02	2.775+00	1.219-01		
1.99783+00	7.610-01	4.348+00	1.33273-01	2.778+00	1.059+00	1.45486-02	2.395+00	9.965-02		
1.85702+00	8.208-01	4.359+00	1.25990-01	3.048+00	1.098+00	1.37511-02	2.164+00	8.510-02		
1.73059+00	8.857-01	4.383+00	1.19288-01	3.083+00	1.052+00	1.30174-02	2.189+00	8.148-02		
1.61664+00	9.437-01	4.363+00	1.13107-01	3.192+00	1.032+00	1.23409-02	2.341+00	8.261-02		
1.51358+00	1.005+00	4.350+00	1.06496-01	3.526+00	1.074+00	1.16829-02	2.191+00	7.321-02		
1.42008+00	1.085+00	4.407+00	9.96117-02	3.652+00	1.040+00	1.10452-02	1.966+00	6.209-02		
1.33498+00	1.139+00	4.347+00	9.33731-02	3.829+00	1.022+00	1.04582-02	1.880+00	5.623-02		
1.25262+00	1.206+00	4.319+00	8.77019-02	3.946+00	9.896-01	9.91687-03	1.951+00	5.533-02		
1.18279+00	1.333+00	4.510+00	8.25314-02	4.075+00	9.617-01	9.39279-03	1.740+00	4.674-02		
1.11865+00	1.417+00	4.531+00	7.78043-02	4.122+00	9.170-01	8.88677-03	1.745+00	4.434-02		
1.05958+00	1.471+00	4.457+00	7.34712-02	4.360+00	9.161-01	8.36076-03	1.602+00	3.829-02		
1.00507+00	1.609+00	4.624+00	6.94896-02	4.280+00	8.505-01	7.80639-03	1.531+00	3.417-02		
9.31311-01	1.725+00	4.594+00	6.58224-02	4.545+00	8.554-01	7.28869-03	1.430+00	2.980-02		
8.44431-01	1.930+00	4.660+00	6.24374-02	4.598+00	8.210-01	6.70604-03	1.290+00	2.474-02		
7.69167-01	2.185+00	4.806+00	5.89368-02	4.687+00	7.900-01	5.77424-03	1.034+00	1.708-02		
7.03535-01	2.426+00	4.880+00	5.53753-02	4.613+00	7.304-01	4.22051-03	8.880-01	1.072-02		
6.45961-01	2.634+00	4.865+00								

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INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED ZrH AT ROOM TEMPERATURE

8 BARNS/HYDROGEN ATOM (0.0253 ev)

CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (ZrH, M360, 23°C)

DIFFUSION THEORY CODE: B-SPECTRUM (ID 90563)

TEMPERATURE: 0.0255 ev

SOURCE: $\text{erf} \sqrt{E/KT_{\text{eff}}}$ ($KT_{\text{eff}} = 0.0687$)

ATOM DENSITIES

$$N_{\text{ZR}} = 2.24 \times 10^{22}$$

$$N_{\text{H}} = 3.91 \times 10^{22}$$

$$N_{\text{B}} = 3.9 \times 10^{20}$$

LOCAL BUCKLING

$$B^2 = 0.0$$

NEUTRON CONSERVATION

$$\left[\frac{\text{TOTAL ABSORPTIONS}}{\text{SLOWING DOWN DENSITY}} \right] = 0.944$$

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED ZrH AT ROOM TEMPERATURE
4-25-63 T1, T2

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$
1.84253+01	1.003-02	1.728+00	3.19996-01	6.137-01	1.837+00	2.47103-02	2.664+00	6.160-01
1.48683+01	1.295-02	1.802+00	3.01878-01	6.678-01	1.886+00	2.33361-02	2.520+00	5.501-01
1.22501+01	1.509-02	1.729+00	2.85253-01	7.440-01	1.986+00	2.20734-02	2.419+00	4.997-01
1.02671+01	1.908-02	1.833+00	2.69960-01	8.408-01	2.124+00	2.09105-02	2.377+00	4.651-01
8.72941+00	2.184-02	1.784+00	2.55861-01	9.318-01	2.231+00	1.98371-02	2.229+00	4.137-01
7.51294+00	2.558-02	1.798+00	2.39782-01	9.680-01	2.172+00	1.87772-02	2.190+00	3.848-01
6.53411+00	2.956-02	1.807+00	2.22349-01	1.016+00	2.114+00	1.77366-02	2.077+00	3.448-01
5.73481+00	3.388-02	1.818+00	2.06744-01	1.052+00	2.035+00	1.67803-02	2.062+00	3.237-01
5.07368+00	3.760-02	1.785+00	1.92719-01	1.115+00	2.011+00	1.58992-02	1.930+00	2.871-01
4.52063+00	4.237-02	1.792+00	1.80067-01	1.198+00	2.019+00	1.50858-02	1.861+00	2.627-01
4.05331+00	4.708-02	1.786+00	1.68616-01	1.362+00	2.148+00	1.42887-02	1.832+00	2.449-01
3.65487+00	5.135-02	1.756+00	1.58218-01	1.607+00	2.379+00	1.35110-02	1.747+00	2.209-01
3.31243+00	5.960-02	1.847+00	1.48747-01	2.072+00	2.883+00	1.27952-02	1.685+00	2.018-01
3.01595+00	6.323-02	1.784+00	1.40097-01	2.762+00	3.620+00	1.21348-02	1.678+00	1.905-01
2.75756+00	6.962-02	1.796+00	1.32175-01	3.563+00	4.406+00	1.14921-02	1.588+00	1.707-01
2.53101+00	7.578-02	1.795+00	1.24902-01	4.154+00	4.855+00	1.08687-02	1.570+00	1.597-01
2.33128+00	7.908-02	1.725+00	1.18208-01	4.521+00	5.000+00	1.02948-02	1.409+00	1.357-01
2.15428+00	8.908-02	1.796+00	1.12035-01	4.756+00	4.986+00	9.76512-03	1.393+00	1.272-01
1.99671+00	9.663-02	1.805+00	1.05483-01	4.939+00	4.874+00	9.25211-03	1.336+00	1.157-01
1.85581+00	1.023-01	1.777+00	9.86554-02	5.000+00	4.615+00	8.75654-03	1.289+00	1.056-01
1.72931+00	1.084-01	1.753+00	9.24280-02	4.995+00	4.319+00	8.29975-03	1.293+00	1.004-01
1.61533+00	1.178-01	1.781+00	8.67721-02	4.948+00	4.017+00	7.87780-03	1.249+00	9.207-02
1.51225+00	1.246-01	1.763+00	8.16199-02	4.918+00	3.755+00	7.47039-03	1.141+00	7.972-02
1.41873+00	1.341-01	1.779+00	7.69134-02	4.803+00	3.457+00	7.07784-03	1.023+00	6.776-02
1.33363+00	1.421-01	1.773+00	7.26026-02	4.743+00	3.222+00	6.71544-03	9.855-01	6.192-02
1.25596+00	1.529-01	1.796+00	6.86443-02	4.630+00	2.974+00	6.36694-03	9.292-01	5.535-02
1.18488+00	1.576-01	1.748+00	6.50011-02	4.574+00	2.782+00	6.03233-03	9.366-01	5.286-02
1.11967+00	1.688-01	1.768+00	6.16405-02	4.503+00	2.597+00	5.72343-03	8.091-01	4.333-02
1.05970+00	1.753-01	1.738+00	5.81674-02	4.373+00	2.380+00	5.42724-03	7.590-01	3.854-02
1.00442+00	1.877-01	1.764+00	5.46365-02	4.250+00	2.173+00	5.14359-03	7.092-01	3.413-02
9.29721-01	2.069-01	1.800+00	5.14175-02	4.145+00	1.994+00	4.88160-03	6.662-01	3.043-02
8.42846-01	2.279-01	1.797+00	4.84749-02	3.966+00	1.799+00	4.63093-03	7.016-01	3.040-02
7.67597-01	2.515-01	1.806+00	4.57779-02	3.787+00	1.622+00	4.39129-03	6.721-01	2.761-02
7.01986-01	2.824-01	1.855+00	4.32999-02	3.729+00	1.511+00	4.16278-03	6.711-01	2.614-02
6.44433-01	3.002-01	1.810+00	4.10177-02	3.604+00	1.383+00	3.94502-03	5.647-01	2.084-02
5.93672-01	3.302-01	1.834+00	3.89114-02	3.550+00	1.292+00	3.74392-03	6.078-01	2.129-02
5.48673-01	3.536-01	1.815+00	3.67791-02	3.408+00	1.173+00	3.55229-03	5.210-01	1.732-02
5.08597-01	3.874-01	1.843+00	3.46442-02	3.270+00	1.060+00	3.36977-03	4.763-01	1.502-02
4.72750-01	4.053-01	1.793+00	3.26900-02	3.166+00	9.682-01	3.17756-03	4.318-01	1.284-02
4.40558-01	4.402-01	1.815+00	3.08966-02	3.031+00	8.762-01	2.99643-03	4.789-01	1.343-02
4.11539-01	4.950-01	1.906+00	2.92468-02	2.978+00	8.149-01	2.79605-03	3.938-01	1.030-02
3.85291-01	5.287-01	1.906+00	2.77258-02	2.897+00	7.514-01	2.50671-03	3.508-01	8.228-03
3.61471-01	5.560-01	1.880+00	2.62097-02	2.786+00	6.833-01	2.13890-03	3.366-01	6.737-03
3.39789-01	5.772-01	1.835+00						

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GA-ZrH-1B

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED ZrH AT 170°C

8 BARNS/HYDROGEN ATOM (0.0253 ev)

CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (ZrH, M360, 170°C)

DIFFUSION THEORY CODE: B-SPECTRUM (ID 90565)

TEMPERATURE: 0.03817ev

SOURCE: erf $\sqrt{E/KT_{\text{eff}}}$ ($KT_{\text{eff}} = 0.0687$)

ATOM DENSITIES

$$N_{\text{ZR}} = 2.24 \times 10^{22}$$

$$N_{\text{H}} = 3.91 \times 10^{22}$$

$$N_{\text{B}} = 3.90 \times 10^{20}$$

LOCAL BUCKLING

$$B^2 = 0.0$$

NEUTRON CONSERVATION

$$\left[\frac{\text{TOTAL ABSORPTIONS}}{\text{SLOWING DOWN DENSITY}} \right] = 0.946$$

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED ZrH AT 170°C
4-25-63 T3, T4

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$
1.84253+01	1.007-02	1.749+00	3.37541-01	6.496-01	2.068+00	2.62022-02	2.769+00	6.842-01
1.48683+01	1.284-02	1.801+00	3.17808-01	6.926-01	2.076+00	2.47035-02	2.684+00	6.253-01
1.22501+01	1.569-02	1.812+00	2.99769-01	7.557-01	2.136+00	2.33298-02	2.600+00	5.721-01
1.02671+01	1.914-02	1.853+00	2.83234-01	8.483-01	2.266+00	2.20676-02	2.495+00	5.192-01
8.72941+00	2.223-02	1.830+00	2.68039-01	9.842-01	2.488+00	2.09051-02	2.342+00	4.617-01
7.51294+00	2.600-02	1.842+00	2.54044-01	1.101+00	2.638+00	1.98322-02	2.290+00	4.284-01
6.53411+00	3.025-02	1.864+00	2.38098-01	1.207+00	2.711+00	1.87726-02	2.157+00	3.819-01
5.73481+00	3.439-02	1.860+00	2.20827-01	1.284+00	2.675+00	1.77325-02	2.102+00	3.516-01
5.07368+00	3.805-02	1.821+00	2.05380-01	1.371+00	2.656+00	1.67765-02	2.059+00	3.257-01
4.52063+00	4.335-02	1.848+00	1.91508-01	1.459+00	2.635+00	1.58957-02	1.944+00	2.915-01
4.05331+00	4.830-02	1.846+00	1.79003-01	1.567+00	2.645+00	1.50825-02	1.853+00	2.636-01
3.65487+00	5.388-02	1.857+00	1.67690-01	1.774+00	2.805+00	1.42857-02	1.800+00	2.425-01
3.31243+00	6.029-02	1.883+00	1.57421-01	2.077+00	3.084+00	1.35083-02	1.721+00	2.193-01
3.01595+00	6.756-02	1.922+00	1.48071-01	2.472+00	3.452+00	1.27926-02	1.642+00	1.981-01
2.75756+00	7.202-02	1.873+00	1.39533-01	3.055+00	4.021+00	1.21324-02	1.700+00	1.945-01
2.53101+00	7.669-02	1.831+00	1.31715-01	3.668+00	4.556+00	1.14899-02	1.607+00	1.742-01
2.33128+00	8.385-02	1.844+00	1.24538-01	4.196+00	4.928+00	1.08667-02	1.500+00	1.537-01
2.15428+00	9.213-02	1.872+00	1.17933-01	4.495+00	5.000+00	1.02929-02	1.420+00	1.378-01
1.99671+00	1.003-01	1.888+00	1.11840-01	4.717+00	4.975+00	9.76342-03	1.428+00	1.315-01
1.85581+00	1.067-01	1.867+00	1.05323-01	4.885+00	4.853+00	9.25055-03	1.403+00	1.224-01
1.72931+00	1.160-01	1.892+00	9.85351-02	5.000+00	4.647+00	8.75510-03	1.229+00	1.015-01
1.61533+00	1.204-01	1.834+00	9.23815-02	4.978+00	4.337+00	8.29842-03	1.179+00	9.231-02
1.51225+00	1.308-01	1.865+00	8.67271-02	4.960+00	4.057+00	7.87657-03	1.106+00	8.216-02
1.41873+00	1.360-01	1.820+00	8.15789-02	4.942+00	3.802+00	7.46925-03	1.032+00	7.272-02
1.33363+00	1.439-01	1.810+00	7.68759-02	4.823+00	3.497+00	7.07679-03	9.894-01	6.603-02
1.25596+00	1.563-01	1.851+00	7.25682-02	4.763+00	3.259+00	6.71447-03	9.336-01	5.912-02
1.18488+00	1.637-01	1.829+00	6.86127-02	4.632+00	2.997+00	6.36605-03	9.287-01	5.576-02
1.11967+00	1.709-01	1.805+00	6.49720-02	4.594+00	2.815+00	6.03151-03	7.837-01	4.458-02
1.05970+00	1.843-01	1.842+00	6.16136-02	4.536+00	2.636+00	5.72267-03	8.351-01	4.507-02
1.00442+00	1.965-01	1.861+00	5.81428-02	4.438+00	2.434+00	5.42654-03	7.694-01	3.938-02
9.29721-01	2.118-01	1.857+00	5.46140-02	4.251+00	2.190+00	5.14294-03	6.768-01	3.283-02
8.41886-01	2.354-01	1.869+00	5.13970-02	4.189+00	2.030+00	4.88100-03	6.445-01	2.967-02
7.65937-01	2.623-01	1.895+00	4.84562-02	4.054+00	1.853+00	4.63037-03	6.091-01	2.660-02
6.99821-01	2.864-01	1.890+00	4.57607-02	3.956+00	1.707+00	4.39077-03	6.108-01	2.530-02
6.41911-01	3.126-01	1.892+00	4.32840-02	3.769+00	1.539+00	4.16231-03	5.741-01	2.254-02
5.90904-01	3.496-01	1.948+00	4.10031-02	3.727+00	1.441+00	3.94459-03	6.114-01	2.274-02
5.45743-01	3.738-01	1.924+00	3.88979-02	3.589+00	1.317+00	3.74351-03	4.951-01	1.748-02
5.05569-01	4.106-01	1.958+00	3.67667-02	3.475+00	1.205+00	3.55192-03	4.087-01	1.369-02
4.69674-01	4.291-01	1.901+00	3.46329-02	3.305+00	1.079+00	3.36943-03	4.778-01	1.518-02
4.37470-01	4.774-01	1.970+00	3.26796-02	3.202+00	9.869-01	3.19594-03	4.217-01	1.271-02
4.08469-01	5.185-01	1.997+00	3.08871-02	3.085+00	8.988-01	3.03105-03	4.980-01	1.424-02
3.83002-01	5.679-01	2.051+00	2.92381-02	2.987+00	8.236-01	2.86261-03	3.906-01	1.055-02
3.59186-01	6.078-01	2.059+00	2.77177-02	2.887+00	7.547-01			

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GA-ZrH-1C

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED ZrH AT 469°C

8 BARNS/HYDROGEN ATOM (0.0253 eV)

CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (ZrH, M 360, 486°C)

DIFFUSION THEORY CODE: B-SPECTRUM (ID 90564)

TEMPERATURE: 0.06385 eV

SOURCE: $\text{erf} \sqrt{E/KT_{\text{eff}}} \quad (KT_{\text{eff}} = 0.0687)$

ATOM DENSITIES

$$N_{\text{Zr}} = 2.24 \times 10^{22}$$

$$N_{\text{H}} = 3.91 \times 10^{22}$$

$$N_{\text{B}} = 3.90 \times 10^{20}$$

LOCAL BUCKLING

$$B^2 = 0$$

NEUTRON CONSERVATION

$$\left[\frac{\text{TOTAL ABSORPTIONS}}{\text{SLOWING DOWN DENSITY}} \right] = 0.951$$

COMMENTS

CALCULATION IS FOR 486°C

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED ZrH AT 469°C
4-25-63 T5, T7

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$
3.01595+00	7.739-02	2.050+00	2.06744-01	2.520+00	4.575+00	2.33361-02	2.411+00	4.941-01
2.75756+00	8.410-02	2.037+00	1.92719-01	2.734+00	4.627+00	2.20734-02	2.300+00	4.459-01
2.53101+00	9.174-02	2.039+00	1.80067-01	2.920+00	4.617+00	2.09105-02	2.157+00	3.960-01
2.33128+00	9.851-02	2.017+00	1.68616-01	3.130+00	4.635+00	1.98371-02	2.061+00	3.590-01
2.15428+00	1.082-01	2.046+00	1.58218-01	3.414+00	4.743+00	1.87772-02	1.962+00	3.235-01
1.99671+00	1.161-01	2.037+00	1.48747-01	3.721+00	4.861+00	1.77366-02	1.853+00	2.886-01
1.85581+00	1.262-01	2.057+00	1.40097-01	4.031+00	4.960+00	1.67803-02	1.851+00	2.728-01
1.72931+00	1.353-01	2.054+00	1.32175-01	4.308+00	5.000+00	1.58992-02	1.739+00	2.428-01
1.61533+00	1.433-01	2.033+00	1.24902-01	4.482+00	4.916+00	1.50858-02	1.665+00	2.205-01
1.51225+00	1.549-01	2.057+00	1.18208-01	4.714+00	4.894+00	1.42887-02	1.548+00	1.943-01
1.41873+00	1.631-01	2.032+00	1.12035-01	4.836+00	4.758+00	1.35110-02	1.513+00	1.795-01
1.33363+00	1.707-01	1.999+00	1.05483-01	4.947+00	4.583+00	1.27952-02	1.482+00	1.665-01
1.25596+00	1.822-01	2.009+00	9.86554-02	5.000+00	4.332+00	1.21348-02	1.475+00	1.572-01
1.18488+00	1.976-01	2.056+00	9.24280-02	4.995+00	4.055+00	1.14921-02	1.415+00	1.428-01
1.11967+00	2.063-01	2.029+00	8.67721-02	4.937+00	3.762+00	1.08687-02	1.287+00	1.228-01
1.05970+00	2.196-01	2.043+00	8.16199-02	4.883+00	3.500+00	1.02948-02	1.260+00	1.139-01
1.00442+00	2.310-01	2.038+00	7.69134-02	4.793+00	3.238+00	9.76512-03	1.199+00	1.028-01
9.29721-01	2.551-01	2.083+00	7.26026-02	4.711+00	3.004+00	9.25211-03	1.176+00	9.551-02
8.42846-01	2.847-01	2.107+00	6.86443-02	4.671+00	2.816+00	8.75654-03	1.130+00	8.688-02
7.67597-01	3.126-01	2.107+00	6.50011-02	4.582+00	2.616+00	8.29975-03	9.783-01	7.131-02
7.01986-01	3.473-01	2.141+00	6.16405-02	4.472+00	2.421+00	7.87780-03	1.001+00	6.922-02
6.44433-01	3.823-01	2.164+00	5.81674-02	4.390+00	2.242+00	7.47039-03	9.284-01	6.091-02
5.93672-01	4.259-01	2.221+00	5.46365-02	4.269+00	2.048+00	7.07784-03	8.271-01	5.141-02
5.48673-01	4.784-01	2.305+00	5.14175-02	4.111+00	1.856+00	6.71544-03	7.837-01	4.622-02
5.08597-01	5.277-01	2.357+00	4.84749-02	3.988+00	1.698+00	6.36694-03	7.908-01	4.422-02
4.72750-01	5.931-01	2.462+00	4.57779-02	3.856+00	1.550+00	6.03233-03	6.740-01	3.571-02
4.40558-01	6.655-01	2.575+00	4.32999-02	3.744+00	1.423+00	5.72343-03	7.026-01	3.532-02
4.11539-01	7.615-01	2.752+00	4.10177-02	3.607+00	1.299+00	5.42724-03	5.978-01	2.849-02
3.85291-01	8.711-01	2.948+00	3.89114-02	3.492+00	1.193+00	5.14359-03	6.050-01	2.733-02
3.61471-01	9.742-01	3.092+00	3.67791-02	3.362+00	1.086+00	4.88160-03	5.954-01	2.552-02
3.39789-01	1.065+00	3.177+00	3.46442-02	3.215+00	9.781-01	4.63093-03	5.687-01	2.313-02
3.19996-01	1.193+00	3.351+00	3.26900-02	3.041+00	8.729-01	4.39129-03	5.466-01	2.108-02
3.01878-01	1.321+00	3.503+00	3.08966-02	2.896+00	7.857-01	4.16278-03	4.474-01	1.635-02
2.85253-01	1.518+00	3.802+00	2.92468-02	2.797+00	7.183-01	3.94502-03	4.884-01	1.692-02
2.69960-01	1.686+00	3.997+00	2.77258-02	2.736+00	6.661-01	3.74392-03	4.263-01	1.402-02
2.55861-01	1.895+00	4.259+00	2.62097-02	2.587+00	5.954-01	3.55229-03	4.143-01	1.293-02
2.39782-01	2.095+00	4.412+00	2.47103-02	2.477+00	5.375-01	3.36977-03	3.990-01	1.181-02
2.22349-01	2.325+00	4.540+00						

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INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED ZrH AT ROOM TEMPERATURE

3.4 BARNS/HYDROGEN ATOM (0.0253 eV)

CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (ZrH, M360, 23°C)

DIFFUSION THEORY CODE: B-SPECTRUM (ID 61303)

TEMPERATURE: 0.0255 eV

SOURCE: $\text{erf} \sqrt{E/KT_{\text{eff}}}$ ($KT_{\text{eff}} = 0.0687$)

ATOM DENSITIES

$$N = 3.799 \times 10^{22}$$

$$N_B = 1.480 \times 10^{20}$$

$$N_{Zr} = 2.176 \times 10^{22}$$

LOCAL BUCKLING

$$B^2 = 0.0$$

NEUTRON CONSERVATION

$$\left[\frac{\text{TOTAL ABSORPTIONS}}{\text{SLOWING DOWN DENSITY}} \right] = 1.067$$

EXPERIMENTAL ARRANGEMENT 2/6/63 T1, T2

PLAN VIEW

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT TECHNIQUES

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED ZrH AT ROOM TEMPERATURE
2-6-63 T1, T2

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$
6.15418+01	6.369-04	4.321-01	3.58493-01	2.200-01	8.696-01	2.40576-02	3.350+00	8.885-01
4.22503+01	1.082-03	5.040-01	3.36876-01	2.374-01	8.814-01	2.27388-02	3.291+00	8.249-01
3.07892+01	1.743-03	5.915-01	3.17158-01	2.458-01	8.595-01	2.15256-02	3.191+00	7.572-01
2.34299+01	2.250-03	5.811-01	2.99121-01	2.672-01	8.811-01	2.03656-02	3.061+00	6.873-01
1.84253+01	2.975-03	6.043-01	2.82581-01	3.129-01	9.748-01	1.92473-02	2.965+00	6.290-01
1.48683+01	3.859-03	6.324-01	2.67603-01	3.530-01	1.041+00	1.81680-02	2.852+00	5.711-01
1.22501+01	4.800-03	6.482-01	2.53811-01	3.980-01	1.114+00	1.71770-02	2.701+00	5.114-01
1.02671+01	5.900-03	6.677-01	2.40861-01	4.405-01	1.170+00	1.62650-02	2.643+00	4.739-01
8.72941+00	6.568-03	6.320-01	2.26065-01	4.730-01	1.179+00	1.54237-02	2.523+00	4.290-01
7.51294+00	7.897-03	6.540-01	2.09994-01	4.997-01	1.157+00	1.46000-02	2.480+00	3.991-01
6.53411+00	9.352-03	6.736-01	1.95577-01	5.453-01	1.176+00	1.37972-02	2.398+00	3.647-01
5.73481+00	1.025-02	6.480-01	1.82596-01	6.025-01	1.213+00	1.30588-02	2.338+00	3.366-01
5.07368+00	1.206-02	6.743-01	1.70865-01	6.861-01	1.292+00	1.23781-02	2.319+00	3.164-01
4.52063+00	1.361-02	6.780-01	1.60230-01	8.090-01	1.429+00	1.17493-02	2.219+00	2.873-01
4.05331+00	1.438-02	6.426-01	1.50558-01	1.069+00	1.774+00	1.11366-02	2.181+00	2.678-01
3.65487+00	1.688-02	6.800-01	1.41736-01	1.532+00	2.394+00	1.05416-02	2.098+00	2.438-01
3.31243+00	1.898-02	6.929-01	1.33667-01	2.191+00	3.228+00	9.99301-03	2.048+00	2.255-01
3.01595+00	2.082-02	6.922-01	1.26268-01	2.885+00	4.015+00	9.48618-03	1.947+00	2.036-01
2.75756+00	2.315-02	7.038-01	1.19467-01	3.406+00	4.485+00	8.99471-03	1.951+00	1.934-01
2.53101+00	2.452-02	6.840-01	1.13201-01	3.846+00	4.799+00	8.51941-03	1.779+00	1.671-01
2.33128+00	2.718-02	6.986-01	1.07415-01	4.203+00	4.976+00	8.08081-03	1.679+00	1.495-01
2.15428+00°	2.991-02	7.102-01	1.01222-01	4.481+00	5.000+00	7.65777-03	1.623+00	1.370-01
1.99671+00	3.325-02	7.318-01	9.47638-02	4.676+00	4.884+00	7.25056-03	1.382+00	1.104-01
1.85581+00	3.442-02	7.042-01	8.89050-02	4.830+00	4.734+00	6.87499-03	1.467+00	1.112-01
1.72931+00	3.781-02	7.207-01	8.35732-02	4.906+00	4.520+00	6.51416-03	1.374+00	9.863-02
1.61533+00	3.950-02	7.033-01	7.87070-02	4.922+00	4.271+00	6.16804-03	1.326+00	9.014-02
1.51225+00	4.289-02	7.149-01	7.42539-02	4.941+00	4.045+00	5.84880-03	1.228+00	7.919-02
1.41873+00	4.323-02	6.760-01	7.01682-02	4.965+00	3.840+00	5.54295-03	1.109+00	6.779-02
1.33363+00	5.071-02	7.455-01	6.64108-02	5.000+00	3.660+00	5.25030-03	9.944-01	5.755-02
1.25596+00	5.014-02	6.942-01	6.29473-02	4.905+00	3.403+00	4.98023-03	9.445-01	5.185-02
1.18488+00	5.472-02	7.148-01	5.97478-02	4.942+00	3.255+00	4.72202-03	9.961-01	5.185-02
1.11967+00	5.950-02	7.343-01	5.64366-02	4.859+00	3.023+00	4.47537-03	9.772-01	4.821-02
1.05970+00	6.197-02	7.239-01	5.30651-02	4.801+00	2.809+00	4.24755-03	9.152-01	4.285-02
1.00442+00	6.892-02	7.631-01	4.99870-02	4.748+00	2.617+00	4.03003-03	9.081-01	4.034-02
9.29721-01	7.162-02	7.340-01	4.71691-02	4.570+00	2.376+00	3.82247-03	7.649-01	3.223-02
8.41886-01	8.089-02	7.507-01	4.45830-02	4.547+00	2.234+00	3.62486-03	7.799-01	3.116-02
7.65937-01	9.024-02	7.619-01	4.22039-02	4.422+00	2.057+00	3.43680-03	6.755-01	2.559-02
6.99821-01	1.007-01	7.766-01	4.00103-02	4.307+00	1.899+00	3.25815-03	7.023-01	2.522-02
6.41911-01	1.063-01	7.520-01	3.77920-02	4.280+00	1.783+00	3.08849-03	7.098-01	2.416-02
5.90904-01	1.188-01	7.736-01	3.55732-02	4.056+00	1.590+00	2.93174-03	6.447-01	2.084-02
5.45743-01	1.330-01	8.003-01	3.35443-02	4.030+00	1.490+00	2.78281-03	5.921-01	1.816-02
5.05569-01	1.381-01	7.699-01	3.16841-02	3.878+00	1.354+00	2.64131-03	5.777-01	1.682-02
4.69674-01	1.575-01	8.153-01	2.99745-02	3.755+00	1.241+00	2.50706-03	5.777-01	1.597-02
4.37470-01	1.671-01	8.059-01	2.83996-02	3.690+00	1.155+00	2.37969-03	5.351-01	1.404-02
4.08469-01	1.874-01	8.436-01	2.69457-02	3.607+00	1.072+00	2.25899-03	4.959-01	1.235-02
3.82259-01	2.074-01	8.740-01	2.54945-02	3.473+00	9.761-01	2.13686-03	4.670-01	1.100-02

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INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED ZrH AT 150°C

3.4 BARNS/HYDROGEN ATOM (0.0253 eV)

CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (ZrH, M360, 150°C)

DIFFUSION THEORY CODE: B-SPECTRUM (ID 80263-1)

TEMPERATURE: 0.03636 eV

SOURCE: $\text{erf} \sqrt{E/KT_{\text{eff}}} \quad (KT_{\text{eff}} = 0.0687)$

ATOM DENSITIES

$$N_H = 3.799 \times 10^{22}$$

$$N_B = 1.480 \times 10^{20}$$

$$N_{Zr} = 2.176 \times 10^{22}$$

LOCAL BUCKLING

$$B^2 = 0.0$$

NEUTRON CONSERVATION

$$\left[\frac{\text{TOTAL ABSORPTIONS}}{\text{SLOWING DOWN DENSITY}} \right] = 1.004$$

EXPERIMENTAL ARRANGEMENT 2/6/63 T3, T4

PLAN VIEW

NOT TO SCALE

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INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED ZrH AT 150°C

2-6-63

T3, T4

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$
9.78387+01	4.807-04	5.106-01	3.58493-01	2.533-01	9.860-01	2.40576-02	3.299+00	8.616-01
6.15418+01	8.296-04	5.544-01	3.36876-01	2.743-01	1.003+00	2.27388-02	3.226+00	7.965-01
4.22503+01	1.254-03	5.753-01	3.17158-01	2.965-01	1.021+00	2.15256-02	3.086+00	7.212-01
3.07892+01	1.879-03	6.282-01	2.99121-01	3.369-01	1.094+00	2.03656-02	2.927+00	6.473-01
2.34299+01	2.602-03	6.618-01	2.82581-01	3.908-01	1.199+00	1.92473-02	2.823+00	5.900-01
1.84253+01	3.377-03	6.757-01	2.67603-01	4.691-01	1.363+00	1.81680-02	2.662+00	5.251-01
1.48683+01	4.329-03	6.988-01	2.53811-01	5.544-01	1.528+00	1.71770-02	2.599+00	4.847-01
1.22501+01	5.210-03	6.929-01	2.40861-01	6.286-01	1.644+00	1.62650-02	2.601+00	4.593-01
1.02671+01	6.314-03	7.039-01	2.26065-01	6.894-01	1.692+00	1.54237-02	2.493+00	4.175-01
8.72941+00	7.591-03	7.195-01	2.09994-01	7.758-01	1.769+00	1.46000-02	2.357+00	3.736-01
7.51294+00	8.925-03	7.280-01	1.95577-01	8.614-01	1.829+00	1.37972-02	2.278+00	3.412-01
6.53411+00	1.026-02	7.279-01	1.82596-01	9.694-01	1.922+00	1.30588-02	2.216+00	3.143-01
5.73481+00	1.212-02	7.545-01	1.70865-01	1.096+00	2.034+00	1.23781-02	2.191+00	2.945-01
5.07368+00	1.356-02	7.471-01	1.60230-01	1.298+00	2.259+00	1.17493-02	2.124+00	2.709-01
4.52063+00	1.512-02	7.422-01	1.50558-01	1.623+00	2.654+00	1.11366-02	2.032+00	2.457-01
4.05331+00	1.707-02	7.514-01	1.41736-01	2.061+00	3.172+00	1.05416-02	1.961+00	2.244-01
3.65487+00	1.949-02	7.735-01	1.33667-01	2.583+00	3.749+00	9.99301-03	1.880+00	2.040-01
3.31243+00	2.122-02	7.631-01	1.26268-01	3.173+00	4.350+00	9.48618-03	1.821+00	1.876-01
3.01595+00	2.413-02	7.900-01	1.19467-01	3.639+00	4.720+00	8.99471-03	1.751+00	1.710-01
2.75756+00	2.607-02	7.807-01	1.13201-01	3.967+00	4.876+00	8.51941-03	1.684+00	1.557-01
2.53101+00	2.683-02	7.372-01	1.07415-01	4.287+00	5.000+00	8.08081-03	1.635+00	1.435-01
2.33128+00	3.171-02	8.026-01	1.01222-01	4.517+00	4.964+00	7.65777-03	1.523+00	1.266-01
2.15428+00	3.271-02	7.650-01	9.47638-02	4.721+00	4.858+00	7.25056-03	1.359+00	1.070-01
1.99671+00	3.560-02	7.718-01	8.89050-02	4.869+00	4.700+00	6.87499-03	1.164+00	8.690-02
1.85581+00	3.850-02	7.757-01	8.35732-02	4.943+00	4.485+00	6.51416-03	1.116+00	7.893-02
1.72931+00	4.107-02	7.712-01	7.87070-02	4.985+00	4.260+00	6.16804-03	9.215-01	6.171-02
1.61533+00	4.320-02	7.577-01	7.42539-02	5.000+00	4.031+00	5.84880-03	1.090+00	6.920-02
1.51225+00	4.831-02	7.932-01	7.01682-02	4.985+00	3.798+00	5.54295-03	8.408-01	5.060-02
1.41873+00	4.929-02	7.593-01	6.64108-02	4.986+00	3.595+00	5.25030-03	8.831-01	5.034-02
1.33363+00	5.677-02	8.221-01	6.29473-02	4.923+00	3.365+00	4.98023-03	9.238-01	4.996-02
1.25596+00	5.722-02	7.803-01	5.97478-02	4.935+00	3.202+00	4.72202-03	9.454-01	4.847-02
1.18488+00	6.314-02	8.124-01	5.64366-02	4.868+00	2.983+00	4.47537-03	8.649-01	4.203-02
1.11967+00	6.530-02	7.939-01	5.30651-02	4.839+00	2.788+00	4.24755-03	8.406-01	3.877-02
1.05970+00	6.926-02	7.970-01	4.99870-02	4.711+00	2.557+00	4.03003-03	7.625-01	3.336-02
1.00442+00	7.343-02	8.008-01	4.71691-02	4.638+00	2.375+00	3.82247-03	8.201-01	3.404-02
9.29721-01	8.277-02	8.356-01	4.45830-02	4.547+00	2.201+00	3.62486-03	6.932-01	2.728-02
8.41886-01	8.971-02	8.200-01	4.22039-02	4.439+00	2.034+00	3.43680-03	6.905-01	2.577-02
7.65937-01	9.920-02	8.250-01	4.00103-02	4.368+00	1.897+00	3.25815-03	6.393-01	2.262-02
6.99821-01	1.107-01	8.413-01	3.77920-02	4.289+00	1.760+00	3.08849-03	5.564-01	1.866-02
6.41911-01	1.214-01	8.458-01	3.55732-02	4.097+00	1.582+00	2.93174-03	5.928-01	1.887-02
5.90904-01	1.308-01	8.389-01	3.35443-02	3.974+00	1.447+00	2.78281-03	5.534-01	1.672-02
5.45743-01	1.461-01	8.656-01	3.16841-02	3.859+00	1.328+00	2.64131-03	5.071-01	1.454-02
5.05569-01	1.598-01	8.770-01	2.99745-02	3.733+00	1.215+00	2.50706-03	4.913-01	1.337-02
4.69674-01	1.727-01	8.807-01	2.83996-02	3.662+00	1.129+00	2.37969-03	4.432-01	1.145-02
4.37470-01	1.885-01	8.952-01	2.69457-02	3.551+00	1.039+00	2.25899-03	4.415-01	1.083-02
4.08469-01	2.115-01	9.382-01	2.54945-02	3.422+00	9.473-01	2.14201-03	4.663-01	1.085-02
3.82259-01	2.328-01	9.663-01						

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GA ZrH-2C

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED ZrH AT 316°C

3.4 BARNS/HYDROGEN ATOM (0.0253 eV)

CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (ZrH, M360, 316°C)

DIFFUSION THEORY CODE: B-SPECTRUM (ID 80263-2)

TEMPERATURE: 0.05075 eV

SOURCE: $\text{erf} \sqrt{E/KT_{\text{eff}}}$ ($KT_{\text{eff}} = 0.0687$)

ATOM DENSITIES

$$N_H = 3.799 \times 10^{22}$$

$$N_B = 1.480 \times 10^{20}$$

$$N_{Zr} = 2.176 \times 10^{22}$$

LOCAL BUCKLING

$$B^2 = 0.0$$

NEUTRON CONSERVATION

$$\left[\frac{\text{TOTAL ABSORPTIONS}}{\text{SLOWING DOWN DENSITY}} \right] = 1.034$$

EXPERIMENTAL ARRANGEMENT 2/6/63 T5, T6

PLAN VIEW

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT TECHNIQUES

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INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED ZrH AT 316°C

2-6-63

T5, T6

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$
9.78387+01	5.103-04	5.191-01	3.82259-01	3.072-01	1.221+00	2.54945-02	3.171+00	8.403-01
6.15418+01	9.255-04	5.921-01	3.58493-01	3.558-01	1.326+00	2.40576-02	3.100+00	7.753-01
4.22503+01	1.387-03	6.092-01	3.36876-01	4.026-01	1.410+00	2.27388-02	2.942+00	6.954-01
3.07892+01	2.041-03	6.534-01	3.17158-01	4.641-01	1.530+00	2.15256-02	2.808+00	6.284-01
2.34299+01	2.788-03	6.790-01	2.99121-01	5.428-01	1.688+00	2.03656-02	2.717+00	5.752-01
1.84253+01	3.653-03	6.997-01	2.82581-01	6.466-01	1.900+00	1.92473-02	2.582+00	5.167-01
1.48683+01	4.643-03	7.177-01	2.67603-01	7.719-01	2.147+00	1.81680-02	2.422+00	4.575-01
1.22501+01	5.771-03	7.349-01	2.53811-01	9.119-01	2.406+00	1.71770-02	2.385+00	4.259-01
1.02671+01	6.852-03	7.314-01	2.40861-01	1.044+00	2.614+00	1.62650-02	2.303+00	3.894-01
8.72941+00	8.062-03	7.317-01	2.26065-01	1.194+00	2.807+00	1.54237-02	2.198+00	3.524-01
7.51294+00	9.488-03	7.411-01	2.09994-01	1.367+00	2.985+00	1.46000-02	2.137+00	3.243-01
6.53411+00	1.090-02	7.401-01	1.95577-01	1.549+00	3.149+00	1.37972-02	2.001+00	2.870-01
5.73481+00	1.298-02	7.737-01	1.82596-01	1.751+00	3.324+00	1.30588-02	1.981+00	2.689-01
5.07368+00	1.456-02	7.681-01	1.70865-01	1.952+00	3.468+00	1.23781-02	1.897+00	2.441-01
4.52063+00	1.619-02	7.610-01	1.60230-01	2.222+00	3.701+00	1.17493-02	1.842+00	2.250-01
4.05331+00	1.818-02	7.658-01	1.50558-01	2.550+00	3.991+00	1.11366-02	1.745+00	2.020-01
3.65487+00	2.015-02	7.655-01	1.41736-01	2.921+00	4.303+00	1.05416-02	1.756+00	1.925-01
3.31243+00	2.228-02	7.672-01	1.33667-01	3.308+00	4.597+00	9.99301-03	1.635+00	1.699-01
3.91595+00	2.501-02	7.842-01	1.26268-01	3.684+00	4.836+00	9.48618-03	1.587+00	1.565-01
2.75756+00	2.758-02	7.906-01	1.19467-01	3.995+00	4.961+00	8.99471-03	1.487+00	1.390-01
2.53101+00	2.982-02	7.847-01	1.13201-01	4.249+00	5.000+00	8.51941-03	1.396+00	1.236-01
2.33128+00	3.237-02	7.844-01	1.07415-01	4.454+00	4.974+00	8.08081-03	1.363+00	1.145-01
2.15428+00	3.503-02	7.846-01	1.01222-01	4.651+00	4.894+00	7.65777-03	1.251+00	9.961-02
1.99671+00	3.891-02	8.076-01	9.47638-02	4.780+00	4.709+00	7.25056-03	1.206+00	9.089-02
1.85581+00	4.161-02	8.027-01	8.89050-02	4.880+00	4.510+00	6.87499-03	1.134+00	8.102-02
1.72931+00	4.422-02	7.949-01	8.35732-02	4.911+00	4.267+00	6.51416-03	1.065+00	7.209-02
1.61533+00	4.684-02	7.865-01	7.87070-02	4.967+00	4.064+00	6.16804-03	9.873-01	6.331-02
1.51225+00	5.084-02	7.993-01	7.42539-02	5.000+00	3.860+00	5.84880-03	9.092-01	5.528-02
1.41873+00	5.376-02	7.929-01	7.01682-02	4.989+00	3.639+00	5.54295-03	8.836-01	5.091-02
1.33363+00	5.796-02	8.036-01	6.64108-02	4.958+00	3.423+00	5.25030-03	8.163-01	4.455-02
1.25596+00	6.182-02	8.071-01	6.29473-02	4.918+00	3.218+00	4.98023-03	7.728-01	4.001-02
1.18488+00	6.362-02	7.837-01	5.97478-02	4.871+00	3.025+00	4.72202-03	7.522-01	3.692-02
1.11967+00	6.861-02	7.986-01	5.64366-02	4.810+00	2.822+00	4.47537-03	7.640-01	3.555-02
1.05970+00	7.326-02	8.071-01	5.30651-02	4.717+00	2.602+00	4.24755-03	6.767-01	2.988-02
1.00442+00	7.847-02	8.194-01	4.99870-02	4.632+00	2.407+00	4.03003-03	6.542-01	2.741-02
9.29721-01	8.712-02	8.420-01	4.71691-02	4.556+00	2.234+00	3.82247-03	5.962-01	2.369-02
8.41886-01	9.626-02	8.424-01	4.45830-02	4.437+00	2.056+00	3.62486-03	5.734-01	2.161-02
7.65937-01	1.072-01	8.540-01	4.22039-02	4.328+00	1.899+00	3.43680-03	5.334-01	1.906-02
6.99821-01	1.192-01	8.673-01	4.00103-02	4.207+00	1.750+00	3.25815-03	5.396-01	1.828-02
5.41911-01	1.326-01	8.850-01	3.77920-02	4.088+00	1.606+00	3.08849-03	4.994-01	1.603-02
5.90904-01	1.468-01	9.016-01	3.55732-02	3.956+00	1.463+00	2.93174-03	4.618-01	1.407-02
5.45743-01	1.613-01	9.149-01	3.35443-02	3.786+00	1.320+00	2.78281-03	4.528-01	1.310-02
5.05569-01	1.826-01	9.598-01	3.16841-02	3.672+00	1.210+00	2.64131-03	4.270-01	1.173-02
4.69674-01	2.004-01	9.786-01	2.99745-02	3.536+00	1.102+00	2.50706-03	3.961-01	1.032-02
4.37470-01	2.296-01	1.044+00	2.83996-02	3.440+00	1.016+00			
4.08469-01	2.695-01	1.144+00	2.69457-02	3.326+00	9.317-01			

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INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED ZrH AT 468°C

3.4 BARNS/HYDROGEN ATOM (0.0253 eV)

CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (ZrH, M360, 468°C)

DIFFUSION THEORY CODE: B-SPECTRUM (ID 80263-3)

TEMPERATURE: 0.06385 eV

SOURCE: erf $\sqrt{E/KT_{eff}}$ ($KT_{eff} = 0.0687$)

ATOM DENSITIES

$$N_H = 3.799 \times 10^{22}$$

$$N_B = 1.480 \times 10^{20}$$

$$N_{Zr} = 2.176 \times 10^{22}$$

LOCAL BUCKLING

$$B^2 = 0.0$$

NEUTRON CONSERVATION

$$\left[\frac{\text{TOTAL ABSORPTIONS}}{\text{SLOWING DOWN DENSITY}} \right] = 1.039$$

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT TECHNIQUES

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INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED ZrH AT 468°C

2-6-63

T7, T8

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$
9.78387+01	5.544-04	5.117-01	4.08469-01	4.016-01	1.548+00	2.99745-02	3.269+00	9.243-01
6.15418+01	1.011-03	5.869-01	3.82259-01	4.885-01	1.762+00	2.83996-02	3.146+00	8.429-01
4.22503+01	1.506-03	6.005-01	3.58493-01	5.795-01	1.960+00	2.69457-02	3.046+00	7.743-01
3.07892+01	2.319-03	6.736-01	3.36876-01	6.776-01	2.153+00	2.54945-02	2.941+00	7.073-01
2.34299+01	3.027-03	6.692-01	3.17158-01	7.837-01	2.345+00	2.40576-02	2.774+00	6.295-01
1.84253+01	3.914-03	6.804-01	2.99121-01	9.261-01	2.613+00	2.27388-02	2.651+00	5.688-01
1.48683+01	5.006-03	7.021-01	2.82581-01	1.077+00	2.872+00	2.15256-02	2.579+00	5.237-01
1.22501+01	6.096-03	7.045-01	2.67603-01	1.262+00	3.186+00	2.03656-02	2.427+00	4.663-01
1.02671+01	7.354-03	7.124-01	2.53811-01	1.437+00	3.441+00	1.92473-02	2.296+00	4.169-01
8.72941+00	9.069-03	7.469-01	2.40861-01	1.632+00	3.708+00	1.81680-02	2.135+00	3.660-01
7.51294+00	1.040-02	7.369-01	2.26065-01	1.837+00	3.919+00	1.71770-02	2.114+00	3.425-01
6.53411+00	1.194-02	7.359-01	2.09994-01	2.089+00	4.139+00	1.62650-02	2.038+00	3.128-01
5.73481+00	1.387-02	7.505-01	1.95577-01	2.334+00	4.307+00	1.54237-02	1.930+00	2.808-01
5.07368+00	1.552-02	7.431-01	1.82596-01	2.570+00	4.427+00	1.46000-02	1.864+00	2.567-01
4.52063+00	1.758-02	7.498-01	1.70865-01	2.827+00	4.556+00	1.37972-02	1.753+00	2.282-01
4.05331+00	2.013-02	7.700-01	1.60230-01	3.101+00	4.688+00	1.30588-02	1.703+00	2.099-01
3.65487+00	2.238-02	7.717-01	1.50558-01	3.378+00	4.799+00	1.23781-02	1.609+00	1.879-01
3.31243+00	2.473-02	7.727-01	1.41736-01	3.665+00	4.901+00	1.17493-02	1.625+00	1.801-01
3.01595+00	2.754-02	7.836-01	1.33667-01	3.928+00	4.954+00	1.11366-02	1.535+00	1.613-01
2.75756+00	2.925-02	7.611-01	1.26268-01	4.197+00	5.000+00	1.05416-02	1.487+00	1.479-01
2.53101+00	3.261-02	7.787-01	1.19467-01	4.393+00	4.951+00	9.99301-03	1.412+00	1.332-01
2.33128+00	3.549-02	7.806-01	1.13201-01	4.599+00	4.912+00	9.48618-03	1.361+00	1.218-01
2.15428+00	3.883-02	7.892-01	1.07415-01	4.695+00	4.758+00	8.99471-03	1.293+00	1.098-01
1.99671+00	4.227-02	7.963-01	1.01222-01	4.837+00	4.619+00	8.51941-03	1.249+00	1.004-01
1.85581+00	4.490-02	7.861-01	9.47638-02	4.893+00	4.374+00	8.08081-03	1.172+00	8.939-02
1.72931+00	4.864-02	7.936-01	8.89050-02	4.978+00	4.175+00	7.65777-03	1.075+00	7.763-02
1.61533+00	5.124-02	7.809-01	8.35732-02	5.000+00	3.942+00	7.25056-03	1.002+00	6.855-02
1.51225+00	5.692-02	8.121-01	7.87070-02	4.986+00	3.702+00	6.87499-03	9.778-01	6.342-02
1.41873+00	6.072-02	8.128-01	7.42539-02	4.953+00	3.470+00	6.51416-03	8.640-01	5.310-02
1.33363+00	6.390-02	8.040-01	7.01682-02	4.919+00	3.257+00	6.16804-03	6.682-01	3.889-02
1.25596+00	6.774-02	8.027-01	6.64102-02	4.902+00	3.071+00	5.84880-03	6.181-01	3.411-02
1.18488+00	7.380-02	8.249-01	6.29473-02	4.802+00	2.853+00	5.54295-03	5.073-01	2.653-02
1.11967+00	7.508-02	7.930-01	5.97478-02	4.769+00	2.688+00	5.25030-03	5.159-01	2.555-02
1.05970+00	8.259-02	8.257-01	5.64366-02	4.672+00	2.488+00	4.98023-03	5.076-01	2.385-02
1.00442+00	8.976-02	8.505-01	5.30651-02	4.631+00	2.318+00	4.72202-03	5.098-01	2.271-02
9.29721-01	9.694-02	8.503-01	4.99870-02	4.477+00	2.112+00	4.47537-03	5.750-01	2.428-02
8.41886-01	1.113-01	8.842-01	4.71691-02	4.384+00	1.951+00	4.24755-03	5.953-01	2.385-02
7.65937-01	1.236-01	8.930-01	4.45830-02	4.205+00	1.768+00	4.03003-03	5.740-01	2.182-02
6.99821-01	1.419-01	9.370-01	4.22039-02	4.164+00	1.658+00	3.82247-03	5.247-01	1.892-02
6.41911-01	1.600-01	9.690-01	4.00103-02	3.979+00	1.502+00	3.82486-03	5.085-01	1.739-02
5.90904-01	1.805-01	1.006+00	3.77920-02	3.829+00	1.365+00	3.43680-03	4.729-01	1.533-02
5.45743-01	2.043-01	1.052+00	3.55732-02	3.657+00	1.227+00	3.25815-03	4.500-01	1.383-02
5.05569-01	2.458-01	1.172+00	3.35443-02	3.538+00	1.120+00	3.08849-03	4.199-01	1.223-02
4.69674-01	2.785-01	1.234+00	3.16841-02	3.364+00	1.006+00	2.93174-03	3.655-01	1.011-02
4.37470-01	3.329-01	1.374+00						

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INFINITE MEDIUM NEUTRON SPECTRUM IN
BORATED C_6H_6

● ● EXPERIMENT (11/18/62; T16, T18)
— CALCULATION (B-SPECTRUM ID 11293)

Ratio of Calculation to Experiment

Neutron Energy (ev)

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BORATED C₆H₆

— CALCULATION (B-SPECTRUM ID 11293)

Ratio of
Calculation
to
Experiment

Neutron Energy (ev)

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INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED C₆H₆

5.9 BARNS/HYDROGEN ATOM (0.0253 eV)

CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (C₆H₆)

DIFFUSION THEORY CODE: B-SPECTRUM (1D 11083-7)

TEMPERATURE: 0.0255 eV

SOURCE: $\text{ERF} \sqrt{E/KT_{\text{eff}}} (KT_{\text{eff}} = 0.0963)$

ATOM DENSITIES

$$N_H = 4.10 \times 10^{22}$$

$$N_C = 4.10 \times 10^{22}$$

$$N_B = 3.007 \times 10^{20}$$

LOCAL BUCKLING

$$B^2 = 0.0$$

NEUTRON CONSERVATION

$$\left[\frac{\text{TOTAL ABSORPTIONS}}{\text{SLOWING DOWN DENSITY}} \right] = 0.96$$

COMMENTS

LEAKAGE CORRECTION NEGLIGIBLE

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED BENZENE (C₆H₆)

11-8-62

T16,

T18

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$
9.70946+01	1.322-03	2.024+00	1.29231-01	2.165+00	4.411+00
6.10738+01	2.292-03	2.207+00	1.15707-01	2.549+00	4.649+00
4.19290+01	2.988-03	1.975+00	1.03338-01	3.030+00	4.936+00
3.05551+01	4.587-03	2.209+00	9.20850-02	3.444+00	5.000+00
2.32517+01	5.758-03	2.111+00	8.25709-02	3.769+00	4.906+00
1.82852+01	7.336-03	2.114+00	7.39366-02	4.127+00	4.810+00
1.47553+01	9.513-03	2.213+00	6.61224-02	4.441+00	4.629+00
1.21569+01	1.110-02	2.127+00	5.91113-02	4.715+00	4.393+00
1.01891+01	1.387-02	2.228+00	5.28256-02	4.882+00	4.066+00
8.66302+00	1.584-02	2.164+00	4.72253-02	5.000+00	3.722+00
7.45581+00	1.856-02	2.182+00	4.22325-02	4.994+00	3.325+00
6.48442+00	2.084-02	2.131+00	3.78011-02	4.934+00	2.940+00
5.69120+00	2.483-02	2.228+00	3.38530-02	4.789+00	2.556+00
5.03510+00	2.773-02	2.201+00	3.03594-02	4.657+00	2.229+00
4.48625+00	3.176-02	2.246+00	2.71416-02	4.501+00	1.926+00
3.82478+00	3.784-02	2.282+00	2.43060-02	4.265+00	1.634+00
3.14012+00	4.578-02	2.266+00	2.18094-02	4.012+00	1.379+00
2.62418+00	5.529-02	2.287+00	1.95333-02	3.815+00	1.175+00
2.22572+00	6.461-02	2.267+00	1.74727-02	3.596+00	9.906-01
1.91161+00	7.375-02	2.222+00	1.56683-02	3.347+00	8.267-01
1.65960+00	8.650-02	2.263+00	1.40865-02	3.148+00	6.990-01
1.45434+00	9.853-02	2.259+00	1.26569-02	2.905+00	5.796-01
1.28494+00	1.136-01	2.301+00	1.13698-02	2.810+00	5.036-01
1.14351+00	1.270-01	2.289+00	1.02147-02	2.658+00	4.280-01
1.02421+00	1.406-01	2.270+00	9.18027-03	2.422+00	3.505-01
9.00332-01	1.651-01	2.343+00	8.25550-03	2.237+00	2.911-01
7.78499-01	1.928-01	2.367+00	7.41323-03	1.980+00	2.313-01
6.79828-01	2.245-01	2.406+00	6.64989-03	1.734+00	1.818-01
5.98798-01	2.587-01	2.442+00	5.97413-03	1.631+00	1.536-01
5.31439-01	2.951-01	2.472+00	5.36529-03	1.406+00	1.190-01
4.74841-01	3.334-01	2.496+00	4.81807-03	1.220+00	9.263-02
4.19753-01	3.964-01	2.623+00	4.32799-03	1.230+00	8.391-02
3.67559-01	4.566-01	2.646+00	3.88953-03	1.012+00	6.204-02
3.24530-01	5.361-01	2.743+00	3.49813-03	8.589-01	4.736-02
2.88639-01	6.143-01	2.795+00	3.14420-03	8.086-01	4.008-02
2.58456-01	7.000-01	2.852+00	2.82542-03	7.193-01	3.203-02
2.30059-01	8.157-01	2.958+00	2.53915-03	6.067-01	2.428-02
2.03582-01	9.749-01	3.129+00	2.28270-03	5.788-01	2.083-02
1.81417-01	1.162+00	3.324+00	2.05332-03	5.070-01	1.641-02
1.62678-01	1.442+00	3.697+00	1.80440-03	4.595-01	1.307-02
1.45265-01	1.757+00	4.023+00	1.56171-03	4.905-01	1.207-02

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INFINITE MEDIUM NEUTRON SPECTRUM IN UF₄ + PARAFFIN

4.6 BARNS/HYDROGEN ATOM (0.0253 ev)

CALCULATION PARAMETERS

SCATTERING KERNEL: GAKER (CH₂ 63-2)

DIFFUSION THEORY CODE: B-SPECTRUM (ID 11293)

TEMPERATURE: 0.0255ev

SOURCE: $\text{erf} \sqrt{E/KT_{\text{eff}}}$ ($KT_{\text{eff}} = .117$)

ATOM DENSITIES

$$N_H = 3.15 \times 10^{22}$$

$$N_C = 1.519 \times 10^{22}$$

$$N_{U^{235}} = 1.611 \times 10^{20}$$

$$N_{U^{238}} = 7.789 \times 10^{21}$$

$$N_F = 3.179 \times 10^{22}$$

LOCAL BUCKLING

$$B^2 = 0.0$$

NEUTRON CONSERVATION

$$\left[\frac{\text{TOTAL ABSORPTIONS}}{\text{SLOWING DOWN DENSITY}} \right] = 0.988$$

COMMENTS

LEAKAGE CORRECTION NEGLIGIBLE

EXPERIMENTAL ARRANGEMENT 11/18/63 T3, T4 PLAN VIEW

NOT TO SCALE

INFINITE MEDIUM NEUTRON SPECTRUM IN UF₄ + PARAFFIN
11-18-63 T3, T4

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$
9.6147314+01	9.6260617+03	9.2551997+05	1.0186051+00	8.1468842+05	8.2984574+05	6.0965005-02	3.7681019+07	2.2972235+06
7.4617730+01	1.2509708+04	9.3344604+05	9.6420941-01	8.6371515+05	8.3280227+05	5.7776259-02	3.8518787+07	2.2254714+06
5.9586090+01	1.5509548+04	9.2415330+05	9.1405765-01	9.2020403+05	8.4111953+05	5.4831315-02	3.9384030+07	2.1594781+06
4.8678135+01	1.8841256+04	9.1715719+05	8.5685986-01	9.8910683+05	8.4752595+05	5.1944570-02	4.0608776+07	2.1094054+06
4.0512673+01	2.2443467+04	9.0924486+05	7.9484585-01	1.0712984+06	8.5151709+05	4.9127456-02	4.1045692+07	2.0164704+06
3.4241852+01	2.7410191+04	9.3857569+05	7.3932887-01	1.1688432+06	8.6415955+05	4.6533463-02	4.1604199+07	1.9359875+06
2.9321826+01	3.1303285+04	9.1786947+05	6.8943203-01	1.2521940+06	8.6330262+05	4.4139634-02	4.2536265+07	1.8775352+06
2.5390755+01	3.3558016+04	8.5206337+05	6.4442153-01	1.3474267+06	8.6831080+05	4.1809400-02	4.2794895+07	1.7892289+06
2.2200316+01	3.7938463+04	8.4224588+05	6.0367951-01	1.4810127+06	8.9405700+05	3.9548825-02	4.3292961+07	1.7121857+06
1.9575502+01	4.3692052+04	8.5529385+05	5.6668277-01	1.6306509+06	9.2406180+05	3.7466765-02	4.3068829+07	1.6136497+06
1.7390101+01	4.9471711+04	8.6031804+05	5.3298594-01	1.6709199+06	8.9057679+05	3.5544902-02	4.2830984+07	1.5224231+06
1.5551237+01	5.6059274+04	8.7179108+05	5.0220789-01	1.8171531+06	9.1258864+05	3.3682987-02	4.2201321+07	1.4214665+06
1.3989337+01	6.2877679+04	8.7961706+05	4.7402099-01	1.9584144+06	9.2832952+05	3.1883946-02	4.2447034+07	1.3533790+06
1.2651449+01	6.7907822+04	8.5913234+05	4.4814232-01	2.0757052+06	9.3021135+05	3.0225290-02	4.1739951+07	1.2616021+06
1.1496696+01	7.5909563+04	8.7270918+05	4.2432656-01	2.2098305+06	9.3768977+05	2.8692781-02	4.1722645+07	1.1971387+06
1.0493118+01	8.1188428+04	8.5191978+05	4.0236011-01	2.3916022+06	9.6228534+05	2.7212779-02	4.1209350+07	1.1214209+06
9.6154339+00	9.2409010+04	8.8855271+05	3.7886996-01	2.5587323+06	9.6942677+05	2.5786472-02	4.0217052+07	1.0370559+06
8.8434341+00	9.6762042+04	8.5570873+05	3.5440741-01	2.7360926+06	9.6969149+05	2.4469437-02	3.8258159+07	9.3615562+05
8.1608081+00	9.8653156+04	8.0508946+05	3.3223998-01	3.0205390+06	1.0035438+06	2.3202643-02	3.8195570+07	8.8623816+05
7.5542742+00	9.2055815+04	6.9541487+05	3.1208926-01	3.2286250+06	1.0076192+06	2.1986131-02	3.7441467+07	8.2319300+05
7.0129295+00	9.3252580+04	6.5397377+05	2.9371782-01	3.4847294+06	1.0235271+06	2.0862848-02	3.6054941+07	7.5220875+05
6.5277562+00	1.0136850+05	6.6170887+05	2.7692216-01	3.7092691+06	1.0271788+06	1.9785593-02	3.4686578+07	6.8629452+05
6.0912433+00	1.0981134+05	6.6888759+05	2.6152710-01	3.9647749+06	1.0368961+06	1.8753751-02	3.3999842+07	6.3762457+05
5.6970946+00	1.2250560+05	6.9792601+05	2.4738111-01	4.3903040+06	1.0860783+06	1.7800575-02	3.2416996+07	5.7704117+05
5.3400005+00	1.3542600+05	7.2317489+05	2.3435262-01	4.8077495+06	1.1267087+06	1.6888371-02	3.2118341+07	5.4242645+05
5.0154577+00	1.4883647+05	7.4648303+05	2.2232696-01	5.1472323+06	1.1443685+06	1.6016188-02	3.1076237+07	4.9772286+05
4.7196268+00	1.5870432+05	7.4902514+05	2.0989114-01	5.6564280+06	1.1872341+06	1.5184389-02	2.9224753+07	4.4376001+05
4.4492183+00	1.7101873+05	7.6089965+05	1.9723960-01	6.3311762+06	1.2487586+06	1.4391600-02	2.9113976+07	4.1899670+05
4.2014004+00	1.8328530+05	7.7005494+05	1.8569847-01	7.1137710+06	1.3210164+06	1.3659320-02	2.8259066+07	3.8599962+05
3.9737252+00	1.9862986+05	7.8930050+05	1.7514151-01	7.9940552+06	1.4000909+06	1.2961445-02	2.7478515+07	3.3616126+05
3.7640674+00	2.1277332+05	8.0089309+05	1.6545991-01	9.0089852+06	1.4906259+06	1.2296656-02	2.6713413+07	3.2848565+05
3.5705749+00	2.1701779+05	7.7487830+05	1.5655950-01	1.0043328+07	1.5723784+06	1.1664577-02	2.5669290+07	2.9942140+05
3.3087154+00	2.3607078+05	7.8109103+05	1.4835843-01	1.1129194+07	1.6511097+06	1.1063741-02	2.5604174+07	2.8327794+05
3.0002545+00	2.6409180+05	7.9234262+05	1.4078531-01	1.2440326+07	1.7514150+06	1.0493524-02	2.4379225+07	2.5582398+05
2.7330060+00	2.8897536+05	7.8977137+05	1.3311503-01	1.3685495+07	1.8217450+06	9.9524010-03	2.3890282+07	2.3776566+05
2.4999415+00	3.1390315+05	7.8473952+05	1.2543167-01	1.5501004+07	1.9443169+06	9.4395940-03	2.2273803+07	2.1025566+05
2.2954696+00	3.4748158+05	7.9763340+05	1.1839487-01	1.6850909+07	1.9950611+06	8.9535810-03	2.1356337+07	1.9121569+05
2.1150972+00	3.7889237+05	8.0139418+05	1.1193406-01	1.8596757+07	2.0816105+06	8.4935023-03	1.9167157+07	1.6279629+05
1.9551803+00	4.1310554+05	8.0769582+05	1.0598806-01	2.0297056+07	2.1512455+06	8.0578852-03	1.9921629+07	1.6052620+05
1.8127386+00	4.4614433+05	8.0874306+05	1.0050358-01	2.2024984+07	2.2135898+06	7.6458397-03	1.8834536+07	1.4400584+05
1.6853155+00	4.8611058+05	8.1924971+05	9.5034596-02	2.3785308+07	2.2604272+06	7.2559720-03	1.7878847+07	1.2972841+05
1.5708714+00	5.3233147+05	8.3622429+05	8.9623947-02	2.5968083+07	2.3273621+06	6.8873991-03	1.6935647+07	1.1664256+05
1.4677015+00	5.6349041+05	8.2703571+05	8.4662577-02	2.7762494+07	2.3504443+06	6.5316374-03	1.5089921+07	9.8561890+04
1.3743720+00	6.0774986+05	8.3527441+05	8.0102086-02	2.9572290+07	2.3688021+06	6.1959285-03	1.5379869+07	9.5292569+04
1.2896702+00	6.2840455+05	8.1043459+05	7.5900418-02	3.1227700+07	2.3701955+06	5.8793152-03	1.4131830+07	8.3085485+04
1.2125643+00	6.8115452+05	8.2594364+05	7.2020893-02	3.2807365+07	2.3628157+06	5.5805393-03	1.3471297+07	7.5177100+04
1.1421725+99	7.0976622+05	8.1067544+05	6.8188648-02	3.4482601+07	2.3513219+06	5.2987218-03	1.2352960+07	6.5454901+04
1.0777373+00	7.7215937+05	8.3218493+05	6.4425229-02	3.6061471+07	2.3232684+06			

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GA-CH₂-2A

ANGULAR NEUTRON SPECTRUM IN CELL OF ONE INCH PURE CH₂ AND ONE INCH BORATED CH₂

6.5 BARNS/HYDROGEN ATOM (0.0253 eV)

CALCULATION PARAMETERS

SCATTERING KERNEL: GAKER (KOPPEL'S $P_0 + P_1$ H(CH₂), 64-4)
(GA 5798, P. 155)

TRANSPORT THEORY CODE: GAPLSN 1/21/65 (GA 4972)

TEMPERATURE: 0.0253 eV

SOURCE: FLAT SPATIAL SOURCE FROM DSZ (GA 3542, P. 145)
ACROSS CELL

ATOM DENSITIES

PURE CH₂
HYDROGEN = 8.0596×10^{22} ATOMS/CC
CARBON = 4.0298×10^{22} ATOMS/CC

BORATED CH₂
HYDROGEN = 8.0596×10^{22} ATOMS/CC
CARBON = 4.0298×10^{22} ATOMS/CC
BORON = 6.666×10^{20} ATOMS/CC

LOCAL BUCKLING

B^2 TOTAL = 0.0306 CM^{-2}

COMMENTS

THE THEORETICAL VALUES WERE NORMALIZED TO THE EXPERIMENTAL RESULTS FROM 0.5 eV TO 0.9 eV FOR CASE GA-CH₂-2D. IN THE OTHER CASES OF THIS SET (GA-CH₂-2A TO F) THE SAME NORMALIZATION CONSTANT FOR THE THEORY WAS USED.

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ANGULAR NEUTRON SPECTRUM IN CELL OF ONE INCH PURE AND ONE INCH BORATED CH₂
12-19-64 T1, T2

E(ev)	$\phi(E)$	E(ev)	$\phi(E)$
9.37320+01	5.931+05	1.63530-01	1.061+09
5.93780+01	1.027+06	1.45970-01	1.458+09
4.09550+01	1.508+06	1.29810-01	1.973+09
2.99450+01	2.270+06	1.16200-01	2.604+09
2.28430+01	2.841+06	1.03760-01	3.461+09
1.79980+01	3.472+06	9.24500-02	4.427+09
1.45460+01	4.380+06	8.28930-02	5.430+09
1.20000+01	5.476+06	7.42240-02	6.503+09
1.00680+01	6.590+06	6.63820-02	7.656+09
8.56720+00	7.793+06	5.93480-02	8.824+09
7.37880+00	9.310+06	5.30430-02	9.890+09
6.42160+00	1.013+07	4.74260-02	1.086+10
5.63930+00	1.103+07	4.24190-02	1.157+10
4.99160+00	1.320+07	3.79740-02	1.213+10
4.44950+00	1.548+07	3.40230-02	1.238+10
3.81060+00	1.797+07	3.05210-02	1.258+10
3.14480+00	2.158+07	2.72930-02	1.273+10
2.63010+00	2.639+07	2.44470-02	1.247+10
2.23220+00	3.047+07	2.19300-02	1.231+10
1.91820+00	3.696+07	1.96340-02	1.186+10
1.66610+00	4.229+07	1.75580-02	1.146+10
1.46070+00	4.773+07	1.57400-02	1.106+10
1.29100+00	5.394+07	1.41470-02	1.051+10
1.14930+00	6.313+07	1.27080-02	1.009+10
1.02970+00	7.042+07	1.14130-02	9.786+09
9.05440-01	7.977+07	1.02510-02	9.429+09
7.83180-01	9.671+07	9.21060-03	8.909+09
6.84120-01	1.113+08	8.28100-03	8.142+09
6.02730-01	1.266+08	7.43470-03	7.466+09
5.35050-01	1.467+08	6.66780-03	6.459+09
4.78170-01	1.642+08	5.98920-03	5.978+09
4.22780-01	1.974+08	5.37790-03	5.272+09
3.70290-01	2.425+08	4.82860-03	4.777+09
3.27000-01	2.855+08	4.33680-03	4.449+09
2.90890-01	3.361+08	3.89680-03	4.239+09
2.60440-01	3.849+08	3.50420-03	3.841+09
2.31660-01	4.593+08	3.14930-03	3.419+09
2.04850-01	5.932+08	2.82960-03	2.985+09
1.82450-01	8.072+08	2.54260-03	2.631+09
		2.28560-03	2.637+09
		2.05570-03	2.394+09
		1.84830-03	2.103+09
		1.66180-03	2.034+09
		1.49440-03	1.823+09

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GA-CH₂-2B

ANGULAR NEUTRON SPECTRUM IN CELL OF ONE INCH PURE AND ONE INCH BORATED CH₂

6.5 BARNS/HYDROGEN ATOM (0.0253 eV)

CALCULATION PARAMETERS

SCATTERING KERNEL: GAKER (KOPPEL'S $P_0 + P_1$ H(CH₂), 64-4)
(GA 5798, P. 155)

TRANSPORT THEORY CODE: GAPLSN 1/21/65 (GA 4972)

TEMPERATURE: 0.0253 eV

SOURCE: FLAT SPATIAL SOURCE FROM DSZ (GA 3542, P. 145)
ACROSS CELL

ATOM DENSITIES

PURE CH₂

HYDROGEN = 8.0596×10^{22} ATOMS/CC

CARBON = 4.0298×10^{22} ATOMS/CC

BORATED CH₂

HYDROGEN = 8.0596×10^{22} ATOMS/CC

CARBON = 4.0298×10^{22} ATOMS/CC

BORON = 6.666×10^{20} ATOMS/CC

LOCAL BUCKLING

B^2 TOTAL = 0.0306 cm^{-2}

COMMENTS

THE THEORETICAL VALUES WERE NORMALIZED TO THE EXPERIMENTAL RESULTS FROM 0.5 eV TO 0.9 eV FOR CASE GA-CH₂-2D. IN THE OTHER CASES OF THIS SET (GA-CH₂-2A TO F) THE SAME NORMALIZATION CONSTANT FOR THE THEORY WAS USED.

EXPERIMENTAL ARRANGEMENT 12/19/64 T11, T8

NOT TO SCALE

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ANGULAR NEUTRON SPECTRUM IN CELL OF ONE INCH PURE AND ONE INCH BORATED CH₂
12-19-64 T11, T8

E(ev)	$\phi(E)$	E(ev)	$\phi(E)$
9.37318+01	8.433+05	2.60439-01	3.230+08
5.93777+01	1.236+06	2.31655-01	3.744+08
4.09554+01	1.651+06	2.04853-01	4.656+08
2.99445+01	2.578+06	1.82448-01	5.895+08
2.28434+01	3.027+06	1.63528-01	7.454+08
1.79984+01	3.973+06	1.45967-01	9.695+08
1.45460+01	4.649+06	1.29813-01	1.192+09
1.19995+01	5.930+06	1.16200-01	1.497+09
1.00675+01	7.244+06	1.03760-01	1.852+09
8.56715+00	7.498+06	9.24499-02	2.247+09
7.37881+00	9.355+06	8.28931-02	2.617+09
6.42160+00	1.079+07	7.42241-02	2.993+09
5.63925+00	1.185+07	6.63817-02	3.384+09
4.99163+00	1.367+07	5.93476-02	3.745+09
4.44948+00	1.491+07	5.30426-02	4.054+09
3.81056+00	1.694+07	4.74259-02	4.316+09
3.14476+00	2.104+07	4.24187-02	4.436+09
2.63008+00	2.539+07	3.79743-02	4.558+09
2.23218+00	2.939+07	3.40230-02	4.523+09
1.91822+00	3.350+07	3.05206-02	4.518+09
1.66614+00	4.001+07	2.72934-02	4.472+09
1.46068+00	4.541+07	2.44467-02	4.341+09
1.29102+00	4.908+07	2.19297-02	4.243+09
1.14929+00	5.695+07	1.96344-02	4.060+09
1.02969+00	6.277+07	1.75575-02	3.848+09
9.05440-01	7.287+07	1.57397-02	3.694+09
7.83181-01	8.655+07	1.41467-02	3.494+09
6.84118-01	9.793+07	1.27076-02	3.347+09
6.02731-01	1.126+08	1.14126-02	3.312+09
5.35052-01	1.239+08	1.02507-02	3.008+09
4.78166-01	1.429+08	9.21060-03	2.804+09
4.22781-01	1.677+08	8.28104-03	2.599+09
3.70289-01	2.044+08	7.43466-03	2.371+09
3.27001-01	2.388+08	6.66782-03	2.152+09
2.90885-01	2.773+08	5.98915-03	1.885+09

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GA-CH₂-2C

ANGULAR NEUTRON SPECTRUM IN CELL OF ONE INCH PURE AND ONE INCH BORATED CH₂

6.5 BARNS/HYDROGEN ATOM (0.0253 eV)

CALCULATION PARAMETERS

SCATTERING KERNEL: GAKER (KOPPEL'S $P_0 + P_1$ H(CH₂), 64-4)
(GA 5798, P. 155)

TRANSPORT THEORY CODE: GAPLSN 1/21/65 (GA 4972)

TEMPERATURE: 0.0253 eV

SOURCE: FLAT SPATIAL SOURCE FROM DSZ (GA 3542, P. 145)
ACROSS CELL

ATOM DENSITIES

PURE CH₂

HYDROGEN = 8.0596×10^{22} ATOMS/CC
CARBON = 4.0298×10^{22} ATOMS/CC

BORATED CH₂

HYDROGEN = 8.0596×10^{22} ATOMS/CC
CARBON = 4.0298×10^{22} ATOMS/CC
BORON = 6.666×10^{20} ATOMS/CC

LOCAL BUCKLING

B^2 TOTAL = 0.0306 CM^{-2}

COMMENTS

THE THEORETICAL VALUES WERE NORMALIZED TO THE EXPERIMENTAL RESULTS FROM 0.5 eV TO 0.9 eV FOR CASE GA-CH₂-2D. IN THE OTHER CASES OF THIS SET (GA-CH₂-2A TO F) THE SAME NORMALIZATION CONSTANT FOR THE THEORY WAS USED.

EXPERIMENTAL ARRANGEMENT 12/19/64 T13, T8

ANGULAR NEUTRON SPECTRUM IN CELL OF ONE INCH PURE AND ONE INCH BORATED CH₂
 12-19-64 T13, T8

E(ev)	$\phi(E)$	E(ev)	$\phi(E)$
9.37318+01	8.531+05	1.03760-01	1.564+09
5.93777+01	1.201+06	9.24499-02	1.806+09
4.09554+01	1.517+06	8.28931-02	2.051+09
2.99445+01	2.242+06	7.42241-02	2.300+09
2.28434+01	2.923+06	6.63817-02	2.515+09
1.79984+01	3.606+06	5.93476-02	2.708+09
1.45460+01	3.918+06	5.30426-02	2.886+09
1.19995+01	5.274+06	4.74259-02	2.921+09
1.00675+01	6.925+06	4.24187-02	2.976+09
8.56715+00	7.056+06	3.79743-02	3.001+09
7.37881+00	8.536+06	3.40230-02	2.933+09
6.42160+00	1.014+07	3.05206-02	2.898+09
5.63925+00	1.101+07	2.72934-02	2.811+09
4.99163+00	1.196+07	2.44467-02	2.670+09
4.44948+00	1.433+07	2.19297-02	2.620+09
3.81056+00	1.715+07	1.96344-02	2.468+09
3.14476+00	1.998+07	1.75575-02	2.301+09
2.63008+00	2.459+07	1.57397-02	2.197+09
2.23218+00	2.854+07	1.41467-02	2.035+09
1.91822+00	3.421+07	1.27076-02	1.950+09
1.66614+00	3.835+07	1.14126-02	1.843+09
1.46068+00	4.454+07	1.02507-02	1.713+09
1.29102+00	4.926+07	9.21060-03	1.587+09
1.14929+00	5.535+07	8.28104-03	1.479+09
1.02969+00	6.206+07	7.43466-03	1.311+09
9.05440-01	7.100+07	6.66782-03	1.177+09
7.83181-01	8.546+07	5.98915-03	1.026+09
6.84118-01	9.831+07		
6.02731-01	1.104+08		
5.35052-01	1.268+08		
4.78166-01	1.449+08		
4.22781-01	1.665+08		
3.70289-01	2.022+08		
3.27001-01	2.335+08		
2.90885-01	2.692+08		
2.60439-01	3.147+08		
2.31655-01	3.685+08		
2.04853-01	4.415+08		
1.82448-01	5.608+08		
1.63528-01	6.986+08		
1.45967-01	8.768+08		
1.29813-01	1.074+09		
1.16200-01	1.314+09		

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GA-CH₂-2D

ANGULAR NEUTRON SPECTRUM IN CELL OF ONE INCH PURE AND ONE INCH BORATED CH₂

6.5 BARNS/HYDROGEN ATOM (0.0253 eV)

CALCULATION PARAMETERS

SCATTERING KERNEL: GAKER (KOPPEL'S $P_0 + P_1$ H(CH₂), 64-4)
(GA 5798, P. 155)

TRANSPORT THEORY CODE: GAPLSN 1/21/65 (GA 4972)

TEMPERATURE: 0.0253 eV

SOURCE: FLAT SPATIAL SOURCE FROM DSZ (GA 3542, P. 145)
ACROSS CELL

ATOM DENSITIES

PURE CH₂
HYDROGEN = 8.0596×10^{22} ATOMS/CC
CARBON = 4.0298×10^{22} ATOMS/CC

BORATED CH₂
HYDROGEN = 8.0596×10^{22} ATOMS/CC
CARBON = 4.0298×10^{22} ATOMS/CC
BORON = 6.666×10^{20} ATOMS/CC

LOCAL BUCKLING

B^2 TOTAL = 0.0306 CM^{-2}

COMMENTS

THE THEORETICAL VALUES WERE NORMALIZED TO THE EXPERIMENTAL RESULTS FROM 0.5 eV TO 0.9 eV FOR CASE GA-CH₂-2D. IN THE OTHER CASES OF THIS SET (GA-CH₂-2A TO F) THE SAME NORMALIZATION CONSTANT FOR THE THEORY WAS USED.

ANGULAR NEUTRON SPECTRUM IN CELL OF ONE INCH PURE AND ONE INCH BORATED CH₂
12-19-64 T3, T4

E(ev)	φ(E)	E(ev)	φ(E)
9.37320+01	6.528+05	1.29810-01	1.097+09
5.93780+01	1.042+06	1.16200-01	1.310+09
4.09550+01	1.512+06	1.03760-01	1.587+09
2.99450+01	2.112+06	9.24500-02	1.857+09
2.28430+01	2.782+06	8.28930-02	2.094+09
1.79980+01	3.493+06	7.42240-02	2.293+09
1.45460+01	4.237+06	6.63820-02	2.532+09
1.20000+01	5.066+06	5.93480-02	2.706+09
1.00680+01	6.167+06	5.30430-02	2.872+09
8.56720+00	7.318+06	4.74260-02	2.938+09
7.37880+00	8.206+06	4.24190-02	2.996+09
6.42160+00	9.436+06	3.79740-02	2.970+09
5.63930+00	1.131+07	3.40230-02	2.923+09
4.99160+00	1.292+07	3.05210-02	2.855+09
4.44950+00	1.373+07	2.72930-02	2.744+09
3.81060+00	1.644+07	2.44470-02	2.682+09
3.14480+00	2.007+C7	2.19300-02	2.537+09
2.63010+00	2.419+07	1.96340-02	2.363+09
2.23220+00	2.838+07	1.75580-02	2.226+09
1.91820+00	3.294+07	1.57400-02	2.121+09
1.66610+00	3.734+07	1.41470-02	1.992+09
1.46070+00	4.278+07	1.27080-02	1.860+09
1.29100+00	4.864+07	1.14130-02	1.756+09
1.14930+00	5.403+07	1.02510-02	1.651+09
1.02970+00	6.171+07	9.21060-03	1.499+09
9.05440-01	7.159+07	8.28100-03	1.441+09
7.83180-01	8.194+07	7.43470-03	1.240+09
6.84120-01	9.675+07	6.66780-03	1.071+09
6.02730-01	1.113+08	5.98920-03	9.435+08
5.35050-01	1.246+08		
4.78170-01	1.442+08		
4.22780-01	1.664+08		
3.70290-01	1.996+08		
3.27000-01	2.362+08		
2.90890-01	2.713+08		
2.60440-01	3.130+08		
2.31660-01	3.688+08		
2.04850-01	4.408+08		
1.82450-01	5.495+08		
1.63530-01	6.925+08		
1.45970-01	8.798+08		

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ANGULAR NEUTRON SPECTRUM IN CELL OF ONE INCH PURE AND ONE INCH BORATED CH₂

6.5 BARNS/HYDROGEN ATOM (0.0253 eV)

CALCULATION PARAMETERS

SCATTERING KERNEL: GAKER (KOPPEL'S $P_0 + P_1$ H(CH₂), 64-4)
(GA 5798, P. 155)

TRANSPORT THEORY CODE: GAPLSN 1/21/65 (GA 4972)

TEMPERATURE: 0.0253 eV

SOURCE: FLAT SPATIAL SOURCE FROM DSZ (GA 3542, P. 145)
ACROSS CELL

ATOM DENSITIES

PURE CH₂
HYDROGEN = 8.0596×10^{22} ATOMS/CC
CARBON = 4.0298×10^{22} ATOMS/CC

BORATED CH₂
HYDROGEN = 8.0596×10^{22} ATOMS/CC
CARBON = 4.0298×10^{22} ATOMS/CC
BORON = 6.666×10^{20} ATOMS/CC

LOCAL BUCKLING

B^2 TOTAL = 0.0306 cm^{-2}

COMMENTS

THE THEORETICAL VALUES WERE NORMALIZED TO THE EXPERIMENTAL RESULTS FROM 0.5 eV TO 0.9 eV FOR CASE GA-CH₂-2D. IN THE OTHER CASES OF THIS SET (GA-CH₂-2A TO F) THE SAME NORMALIZATION CONSTANT FOR THE THEORY WAS USED.

NOT TO SCALE

ANGULAR NEUTRON SPECTRUM IN CELL OF ONE INCH PURE AND ONE INCH BORATED CH₂
 12-19-64 T14, T8

E(ev)	$\phi(E)$	E(ev)	$\phi(E)$
9.37318+01	6.012+05	1.03760-01	2.250+09
5.93777+01	9.631+05	9.24499-02	2.677+09
4.09554+01	1.489+06	8.28931-02	3.026+09
2.99445+01	2.335+06	7.42241-02	3.356+09
2.28434+01	2.791+06	6.63817-02	3.701+09
1.79984+01	3.246+06	5.93476-02	3.929+09
1.45460+01	4.200+06	5.30426-02	4.086+09
1.19995+01	5.711+06	4.74259-02	4.140+09
1.00675+01	6.318+06	4.24187-02	4.244+09
8.56715+00	7.540+06	3.79743-02	4.097+09
7.37881+00	7.850+06	3.40230-02	3.997+09
6.42160+00	1.050+07	3.05206-02	3.838+09
5.63925+00	1.156+07	2.72934-02	3.651+09
4.99163+00	1.217+07	2.44467-02	3.459+09
4.44948+00	1.609+07	2.19297-02	3.320+09
3.81056+00	1.701+07	1.96344-02	2.995+09
3.14476+00	2.096+07	1.75575-02	2.767+09
2.63008+00	2.488+07	1.57397-02	2.587+09
2.23218+00	2.802+07	1.41467-02	2.371+09
1.91822+00	3.364+07	1.27076-02	2.256+09
1.66614+00	3.826+07	1.14126-02	2.082+09
1.46068+00	4.583+07	1.02507-02	1.919+09
1.29102+00	5.168+07	9.21060-03	1.797+09
1.14929+00	5.831+07	8.28104-03	1.550+09
1.02969+00	6.698+07	7.43466-03	1.394+09
9.05440-01	7.354+07	6.66782-03	1.235+09
7.83181-01	9.140+07	5.98915-03	1.051+09
6.84118-01	9.908+07		
6.02731-01	1.164+08		
5.35052-01	1.296+08		
4.78166-01	1.563+08		
4.22781-01	1.830+08		
3.70289-01	2.154+08		
3.27001-01	2.615+08		
2.90885-01	3.109+08		
2.60439-01	3.596+08		
2.31655-01	4.305+08		
2.04853-01	5.411+08		
1.82448-01	6.853+08		
1.63528-01	8.890+08		
1.45967-01	1.171+09		
1.29813-01	1.484+09		
1.16200-01	1.857+09		

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GA-CH₂-2F

ANGULAR NEUTRON SPECTRUM IN CELL OF ONE INCH PURE AND ONE INCH BORATED CH₂

6.5 BARNS/HYDROGEN ATOM (0.0253 eV)

CALCULATION PARAMETERS

SCATTERING KERNEL: GAKER (KOPPEL'S $P_0 + P_1$ H(CH₂), 64-4)
(GA 5798, P. 155)

TRANSPORT THEORY CODE: GAPLSN 1/21/65 (GA 4972)

TEMPERATURE: 0.0253 eV

SOURCE: FLAT SPATIAL SOURCE FROM DSZ (GA 3542, P. 145)
ACROSS CELL

ATOM DENSITIES

PURE CH₂

HYDROGEN = 8.0596×10^{22} ATOMS/CC

CARBON = 4.0296×10^{22} ATOMS/CC

BORATED CH₂

HYDROGEN = 8.0598×10^{22} ATOMS/CC

CARBON = 4.0298×10^{22} ATOMS/CC

BORON = 6.666×10^{20} ATOMS/CC

LOCAL BUCKLING

B^2 TOTAL = 0.0306 cm^{-2}

COMMENTS

THE THEORETICAL VALUES WERE NORMALIZED TO THE EXPERIMENTAL RESULTS FROM 0.5 eV TO 0.9 eV FOR CASE GA-CH₂-2D. IN THE OTHER CASES OF THIS SET (GA-CH₂-2A TO F) THE SAME NORMALIZATION CONSTANT FOR THE THEORY WAS USED.

NOT TO SCALE

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT TECHNIQUES

DATE ISSUED: 7/10/65

ANGULAR NEUTRON SPECTRUM IN CELL OF ONE INCH PURE AND ONE INCH BORATED CH₂
 12-19-64 T12, T8

E(ev)	$\phi(E)$	E(ev)	$\phi(E)$
5.93777+01	7.296+05	8.28931-02	4.800+09
4.09554+01	1.169+06	7.42241-02	5.536+09
2.99445+01	1.796+06	6.63817-02	6.346+09
2.28434+01	2.033+06	5.93476-02	6.954+09
1.79984+01	2.723+06	5.30426-02	7.578+09
1.45460+01	3.182+06	4.74259-02	7.977+09
1.19995+01	4.690+06	4.24187-02	8.354+09
1.00675+01	5.611+06	3.79743-02	8.473+09
8.56715+00	5.889+06	3.40230-02	8.450+09
7.37881+00	7.167+06	3.05206-02	8.446+09
6.42160+00	7.947+06	2.72934-02	8.162+09
5.63925+00	9.944+06	2.44467-02	7.947+09
4.99163+00	1.134+07	2.19297-02	7.659+09
4.44948+00	1.305+07	1.96344-02	7.258+09
3.81056+00	1.481+07	1.75575-02	6.820+09
3.14476+00	1.868+07	1.57397-02	6.520+09
2.63008+00	2.297+07	1.41467-02	6.140+09
2.23218+00	2.884+07	1.27076-02	5.854+09
1.91822+00	3.163+07	1.14126-02	5.593+09
1.66614+00	3.670+07	1.02507-02	5.264+09
1.46068+00	4.357+07	9.21060-03	5.017+09
1.29102+00	4.844+07	8.28104-03	4.633+09
1.14929+00	5.516+07	7.43466-03	4.046+09
1.02969+00	6.699+07	6.66782-03	3.562+09
9.05440-01	7.270+07	5.98915-03	3.200+09
7.83181-01	9.035+07		
6.84118-01	1.039+08		
6.02731-01	1.188+08		
5.35052-01	1.307+08		
4.78166-01	1.580+08		
4.22781-01	1.888+08		
3.70289-01	2.235+08		
3.27001-01	2.709+08		
2.90885-01	3.282+08		
2.60439-01	3.780+08		
2.31655-01	4.723+08		
2.04853-01	6.123+08		
1.82448-01	8.096+08		
1.63528-01	1.104+09		
1.45967-01	1.497+09		
1.29813-01	2.013+09		
1.16200-01	2.583+09		
1.03760-01	3.268+09		
9.24499-02	4.077+09		

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INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED CH₂ AT ROOM TEMPERATURE

10.4 BARNS/HYDROGEN ATOM (0.0253 ev)

CALCULATION PARAMETERS

SCATTERING KERNEL: GAKER (CH₂ 64-3)

DIFFUSION THEORY CODE: B-SPECTRUM (ID 12072)

TEMPERATURE: 0.0255 ev

SOURCE: $\text{erf} \sqrt{E/KT_{\text{eff}}} (KT_{\text{eff}} = 0.108)$

ATOM DENSITIES

$$N_H = 7.92 \times 10^{22}$$

$$N_C = 3.96 \times 10^{22}$$

$$N_B = 1.1102 \times 10^{21}$$

LOCAL BUCKLING

$$B^2 = 0.0$$

NEUTRON CONSERVATION

$$\left[\frac{\text{TOTAL ABSORPTIONS}}{\text{SLOWING DOWN DENSITY}} \right] = 0.920$$

COMMENTS

LEAKAGE CORRECTION NEGLIGIBLE

INFINITE MEDIUM NEUTRON SPECTRUM IN BORATED POLYETHYLENE AT
ROOM TEMPERATURE
1-3-63 T1, T2

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$
9.78387+01	3.222-03	2.529+00	2.31821-01	1.505+00	2.798+00
6.15418+01	5.401-03	2.667+00	2.05142-01	1.787+00	2.942+00
4.22503+01	7.410-03	2.512+00	1.82807-01	2.112+00	3.097+00
3.07892+01	9.827-03	2.427+00	1.63924-01	2.397+00	3.152+00
2.34299+01	1.332-02	2.503+00	1.46378-01	2.789+00	3.275+00
1.84253+01	1.777-02	2.626+00	1.30221-01	3.215+00	3.359+00
1.48683+01	2.364-02	2.820+00	1.16593-01	3.468+00	3.244+00
1.22501+01	2.661-02	2.615+00	1.04130-01	3.859+00	3.224+00
1.02671+01	3.321-02	2.735+00	9.27906-02	4.219+00	3.141+00
8.72941+00	3.569-02	2.499+00	8.32036-02	4.432+00	2.959+00
7.51294+00	4.563-02	2.750+00	7.45031-02	4.707+00	2.814+00
6.53411+00	5.204-02	2.728+00	6.66290-02	4.823+00	2.578+00
5.73481+00	5.982-02	2.752+00	5.95643-02	5.000+00	2.389+00
5.07368+00	6.174-02	2.513+00	5.32304-02	4.879+00	2.084+00
4.52063+00	7.144-02	2.591+00	4.75872-02	4.809+00	1.836+00
3.85409+00	9.112-02	2.817+00	4.25561-02	4.865+00	1.661+00
3.16419+00	1.140-01	2.894+00	3.80907-02	4.878+00	1.491+00
2.64429+00	1.206-01	2.558+00	3.41124-02	4.462+00	1.221+00
2.24278+00	1.465-01	2.637+00	3.05920-02	4.285+00	1.052+00
1.92626+00	1.643-01	2.539+00	2.73495-02	4.073+00	8.936-01
1.67232+00	1.888-01	2.533+00	2.44922-02	3.693+00	7.255-01
1.46549+00	2.170-01	2.551+00	2.19766-02	3.717+00	6.554-01
1.29479+00	2.453-01	2.548+00	1.96830-02	3.345+00	5.283-01
1.15227+00	2.793-01	2.582+00	1.76066-02	3.133+00	4.425-01
1.03206+00	3.098-01	2.565+00	1.57884-02	2.859+00	3.622-01
9.07231-01	3.608-01	2.626+00	1.41944-02	2.645+00	3.012-01
7.84465-01	4.196-01	2.641+00	1.27538-02	2.595+00	2.656-01
6.85038-01	4.762-01	2.617+00	1.14570-02	2.601+00	2.391-01
6.03386-01	5.421-01	2.624+00	1.02930-02	2.281+00	1.884-01
5.35511-01	5.814-01	2.498+00	9.25061-03	2.232+00	1.656-01
4.78480-01	7.081-01	2.718+00	8.31876-03	1.718+00	1.147-01
4.22969-01	7.677-01	2.605+00	7.47004-03	1.854+00	1.111-01
3.70376-01	9.468-01	2.813+00	6.67280-03	1.621+00	8.679-02
3.27017-01	1.101+00	2.888+00	5.76497-03	1.432+00	6.623-02
2.90851-01	1.185+00	2.765+00	4.20679-03	1.024+00	3.457-02
2.60437-01	1.364+00	2.851+00			

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CALCULATION PARAMETERS

Scattering kernel: GASKET (300°K, Be) code (1)
Transport theory: GAPLSN code (2)
Temperature: 0.0253 eV.
Source: DSZ code (3)
Self-shielding corrections applied for absorber.

LAPLACIANS AT POINT OF MEASUREMENT

$B^2 = 0.0084 \text{ cm}^{-2}$ (total buckling transverse to the source - assembly axis).
Laplacian deduced from flux plots, using cadmium-covered indium foils.

COMMENTS

90° Angular neutron spectrum in beryllium, poisoned to 0.253 barns/Be atom (0.0253 eV) with 1% borated stainless steel at room temperature.
Method of measurement: Time-of-flight measurements, using a pulsed neutron source.
The absorber cross sections are obtained from Table 1 and BNL 325.
The common normalization factor, which was used for GA-Be-1A to C, was obtained from the best fit of theory to experiment for these three cases in the energy range from 0.8 to 1.3 eV.

CORRECTIONS APPLIED TO DATA

Detector sensitivity	Flight path transmission
Mean emission time	Count loss correction
Background subtraction	

EXPERIMENTAL ARRANGEMENT

ATOM DENSITIES IN THE ASSEMBLY

Moderator:	$1.1605 \times 10^{23} / \text{cm}^3$ (Be)	Absorber:	$3.6003 \times 10^{19} / \text{cm}^3$ (B)
			$9.9001 \times 10^{19} / \text{cm}^3$ (Ni)
			$1.5190 \times 10^{20} / \text{cm}^3$ (Cr)
			$5.1614 \times 10^{20} / \text{cm}^3$ (Fe)
			$6.236 \times 10^{20} / \text{cm}^3$ (Al)

LISTING OF EXPERIMENTAL POINTS $[\phi(E) \text{ v. } E]$

E(eV)	$\phi(E)$	E(eV)	$\phi(E)$	E(eV)	$\phi(E)$
4.1139+02	4.399+05	7.6144-01	3.662+08	2.8814-02	1.161+10
1.7443+02	1.291+06	6.6892-01	4.271+08	2.5864-02	1.104+10
9.5878+01	2.619+06	5.9227-01	4.810+08	2.3142-02	1.043+10
6.0524+01	4.273+06	5.2805-01	5.449+08	2.0742-02	9.838+09
4.1649+01	6.309+06	4.6573-01	6.234+08	1.8631-02	8.939+09
3.0402+01	8.998+06	4.0685-01	7.145+08	1.6712-02	8.336+09
2.3163+01	1.197+07	3.5844-01	8.352+08	1.4978-02	7.982+09
1.8233+01	1.511+07	3.1817-01	9.459+08	1.3418-02	7.363+09
1.4724+01	1.915+07	2.8430-01	1.097+09	1.2019-02	7.052+09
1.2139+01	2.288+07	2.5236-01	1.257+09	1.0769-02	6.561+09
1.0179+01	2.748+07	2.2270-01	1.514+09	9.6542-03	6.274+09
8.6588+00	3.287+07	1.9795-01	1.775+09	8.6610-03	5.735+09
7.4550+00	3.784+07	1.7710-01	2.138+09	7.7772-03	5.062+09
6.4858+00	4.332+07	1.5779-01	2.590+09	6.9911-03	4.556+09
5.6940+00	4.833+07	1.4006-01	3.184+09	6.2791-03	4.217+09
5.0389+00	5.509+07	1.2515-01	3.881+09	5.6366-03	3.817+09
4.4906+00	6.118+07	1.1154-01	4.744+09	5.0595-03	3.340+09
3.8295+00	7.259+07	9.9204-02	5.703+09	4.5422-03	3.013+09
3.1450+00	8.969+07	8.8792-02	6.670+09	4.0797-03	3.007+09
2.6290+00	1.054+08	7.9364-02	7.740+09	3.6666-03	2.563+09
2.2303+00	1.231+08	7.0850-02	8.920+09	3.2983-03	2.348+09
1.9159+00	1.454+08	6.3226-02	1.012+10	2.9657-03	2.137+09
1.6636+00	1.682+08	5.6404-02	1.111+10	2.6664-03	1.893+09
1.4603+00	1.885+08	5.0337-02	1.185+10	2.3977-03	1.757+09
1.2963+00	2.142+08	4.4937-02	1.235+10	2.1571-03	1.684+09
1.1578+00	2.361+08	4.0152-02	1.244+10	1.9396-03	1.598+09
1.0147+00	2.720+08	3.5905-02	1.225+10	1.7438-03	1.524+09
8.7451-01	3.167+08	3.2147-02	1.185+10	1.5680-03	1.437+09

x (cm)	Q (x)
1.52	1.3418
4.06	1.7335
6.60	2.0000
9.14	1.9616
11.68	1.7616
14.22	1.4274
16.76	1.1347
19.30	0.8783
21.84	0.5896
24.38	0.4237
26.92	0.2968
29.46	0.14183
32.00	0.19896
34.54	0.09233
37.08	0.06639
39.62	0.05126
42.16	0.03531
44.70	0.02649
47.24	0.02390
49.78	0.016130
52.32	0.012032

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CALCULATION PARAMETERS

Scattering kernel: GASKET (300°K, Be) code (1)
Transport theory: GAPLSN code (2)
Temperature: 0.0253 eV.
Source: DSZ code (3)
Self-shielding corrections applied for absorber.

LAPLACIANS AT POINT OF MEASUREMENT

$B^2 = 0.0084 \text{ cm}^{-2}$ (total buckling transverse to the source - assembly axis).
Laplacian deduced from flux plots, using cadmium-covered indium foils.

COMMENTS

90° Angular neutron spectrum in beryllium, poisoned to 0.253 barns/Be atom (0.0253 eV) with 1% borated stainless steel at room temperature.
Method of measurement: Time-of-flight measurements, using a pulsed neutron source.
The absorber cross sections are obtained from Table 1 and BNL-325.
The common normalization factor, which was used for GA-Be-1A to C, was obtained from the best fit of theory to experiment for these three cases in the energy range from 0.8 to 1.3 eV.

CORRECTIONS APPLIED TO DATA

Detector sensitivity	Flight path transmission
Mean emission time	Count loss correction
Background subtraction	

EXPERIMENTAL ARRANGEMENT

ATOM DENSITIES IN THE ASSEMBLY

Moderator:	$1.1605 \times 10^{23} / \text{cm}^3$ (Be)	Absorber:	$3.6003 \times 10^{19} / \text{cm}^3$ (B)
			$9.9001 \times 10^{19} / \text{cm}^3$ (Ni)
			$1.5190 \times 10^{20} / \text{cm}^3$ (Cr)
			$5.1614 \times 10^{20} / \text{cm}^3$ (Fe)
			$6.236 \times 10^{20} / \text{cm}^3$ (Al)

LISTING OF EXPERIMENTAL POINTS $[\phi(E) \text{ v. } E]$

E(eV)	$\phi(E)$	E(eV)	$\phi(E)$	E(eV)	$\phi(E)$	x (cm)	Q (x)
4.1291+02	4.282+04	6.7139-01	7.151+07	2.3228-02	2.805+09	1.52	1.3418
1.7508+02	1.418+05	5.9446-01	8.165+07	2.0819-02	2.662+09	4.06	1.7335
9.6232+01	3.075+05	5.3000-01	9.180+07	1.8700-02	2.481+09	6.60	2.0000
6.0747+01	5.155+05	4.6745-01	1.068+08	1.6774-02	2.316+09	9.14	1.9616
4.1803+01	7.947+05	4.0835-01	1.272+08	1.5033-02	2.197+09	11.68	1.7616
3.0514+01	1.129+06	3.5977-01	1.468+08	1.3467-02	2.024+09	14.22	1.4274
2.3249+01	1.489+06	3.1934-01	1.733+08	1.2063-02	1.908+09	16.76	1.1347
1.8300+01	2.007+06	2.8535-01	1.976+08	1.0809-02	1.792+09	19.30	0.8783
1.4779+01	2.606+06	2.5330-01	2.373+08	9.6899-03	1.697+09	21.84	0.5896
1.2184+01	3.132+06	2.2352-01	2.832+08	8.6930-03	1.540+09	24.38	0.4237
1.0217+01	3.704+06	1.9868-01	3.423+08	7.8059-03	1.334+09	26.92	0.2968
8.6908+00	4.535+06	1.7776-01	4.144+08	7.0169-03	1.187+09	29.46	0.14183
7.4825+00	5.390+06	1.5837-01	5.238+08	6.3023-03	1.130+09	32.00	0.19896
6.5097+00	6.125+06	1.4057-01	6.613+08	5.6574-03	1.024+09	34.54	0.09233
5.7150+00	7.141+06	1.2561-01	8.229+08	5.0782-03	8.519+08	37.08	0.06639
5.0575+00	8.094+06	1.1196-01	1.045+09	4.5589-03	7.895+08	39.62	0.05126
4.5072+00	9.075+06	9.9570-02	1.290+09	4.0948-03	7.464+08	42.16	0.03531
3.8437+00	1.087+07	8.9120-02	1.550+09	3.6802-03	6.558+08	44.70	0.02649
3.1567+00	1.350+07	7.9657-02	1.832+09	3.3105-03	6.566+08	47.24	0.02390
2.6387+00	1.612+07	7.1111-02	2.155+09	2.9767-03	5.579+08	49.78	0.016130
2.2385+00	1.907+07	6.3460-02	2.478+09	2.6762-03	5.155+08	52.32	0.012032
1.9230+00	2.284+07	5.6612-02	2.754+09	2.4066-03	4.798+08		
1.6697+00	2.618+07	5.0523-02	3.007+09	2.1650-03	4.740+08		
1.4657+00	3.025+07	4.5103-02	3.166+09	1.9468-03	3.876+08		
1.3011+00	3.428+07	4.0301-02	3.229+09	1.7502-03	3.457+08		
1.1621+00	3.793+07	3.6038-02	3.251+09	1.5738-03	3.354+08		
1.0184+00	4.472+07	3.2266-02	3.191+09				
8.7774-01	5.286+07	2.8921-02	3.088+09				
7.6425-01	6.158+07	2.5959-02	2.959+09				

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GA-Be-1C

<div>CALCULATION PARAMETERS</div> <div>Scattering kernel: GASKET (300°K, Be) code (1)</div> <div>Transport theory: GAPLSN code (2)</div> <div>Temperature: 0.0253 eV.</div> <div>Source: DSZ code (3)</div> <div>Self-shielding corrections applied for absorber.</div>	<div>EXPERIMENTAL ARRANGEMENT</div> <div><p>16-METER FLIGHT PATH</p><p>1.4 CM DIAMETER PRECOLLIMATOR</p><p>0.05 CM CADMIUM</p><p>5 CM LEAD WALL</p><p>FANSTEEL TARGET</p><p>LINAC BEAM</p><p>3.64 CM</p><p>38.3 CM</p><p>44.1 CM</p><p>50.5 CM HIGH</p><p>55.6 CM</p><p>PLAN VIEW</p><p>NOT TO SCALE</p></div>
<div>LAPLACIANS AT POINT OF MEASUREMENT</div> <div>$B^2 = 0.0084 \text{ cm}^{-2}$ (total buckling transverse to the source - assembly axis).</div> <div>Laplacian deduced from flux plots, using cadmium-covered indium foils.</div>	
<div>COMMENTS</div> <div>90° Angular neutron spectrum in beryllium, poisoned to 0.253 barns/Be atom (0.0253 eV) with 1% borated stainless steel at room temperature.</div> <div>Method of measurement: Time-of-flight measurements, using a pulsed neutron source.</div> <div>The absorber cross sections are obtained from Table 1 and BNL 325.</div> <div>The common normalization factor, which was used for GA-Be-1A to C, was obtained from the best fit of theory to experiment for these three cases in the energy range from 0.8 to 1.3 eV.</div>	<div>ATOM DENSITIES IN THE ASSEMBLY</div> <div>Moderator: $1.1605 \times 10^{23} / \text{cm}^3$ (Be)</div> <div>Absorber: $3.6003 \times 10^{19} / \text{cm}^3$ (B)</div> <div>$9.9001 \times 10^{19} / \text{cm}^3$ (Ni)</div> <div>$1.5190 \times 10^{20} / \text{cm}^3$ (Cr)</div> <div>$5.1614 \times 10^{20} / \text{cm}^3$ (Fe)</div> <div>$6.236 \times 10^{20} / \text{cm}^3$ (Al)</div>
<div>CORRECTIONS APPLIED TO DATA</div> <div>Detector sensitivity</div> <div>Flight path transmission</div> <div>Mean emission time</div> <div>Count loss correction</div> <div>Background subtraction</div>	

LISTING OF EXPERIMENTAL POINTS $[\phi(E) \text{ v. } E]$

E(eV)	$\phi(E)$	E(eV)	$\phi(E)$	E(eV)	$\phi(E)$
4.1438+02	1.293+04	7.6697-01	1.262+07	2.9023-02	8.242+08
1.7570+02	2.722+04	6.7378-01	1.501+07	2.6052-02	7.794+08
9.6574+01	6.281+04	5.9657-01	1.664+07	2.3311-02	7.413+08
6.0964+01	1.100+05	5.3189-01	1.937+07	2.0893-02	7.154+08
4.1952+01	1.781+05	4.6911-01	2.228+07	1.8767-02	6.704+08
3.0622+01	2.163+05	4.0980-01	2.632+07	1.6834-02	6.223+08
2.3332+01	2.878+05	3.6105-01	3.079+07	1.5087-02	5.869+08
1.8366+01	3.867+05	3.2048-01	3.608+07	1.3515-02	5.474+08
1.4831+01	5.294+05	2.8637-01	4.170+07	1.2106-02	5.116+08
1.2227+01	6.558+05	2.5420-01	4.969+07	1.0847-02	4.842+08
1.0253+01	7.557+05	2.2431-01	6.021+07	9.7243-03	4.531+08
8.7217+00	8.821+05	1.9939-01	7.338+07	8.7239-03	4.192+08
7.5091+00	1.139+06	1.7839-01	8.944+07	7.8337-03	3.667+08
6.5329+00	1.183+06	1.5893-01	1.150+08	7.0418-03	3.104+08
5.7354+00	1.372+06	1.4107-01	1.475+08	6.3247-03	2.993+08
5.0754+00	1.643+06	1.2605-01	1.899+08	5.6776-03	2.663+08
4.5232+00	1.809+06	1.1235-01	2.438+08	5.0963-03	2.311+08
3.8574+00	2.146+06	9.9924-02	3.105+08	4.5751-03	2.183+08
3.1679+00	2.761+06	8.9437-02	3.766+08	4.1093-03	2.073+08
2.6481+00	3.221+06	7.9941-02	4.515+08	3.6933-03	1.867+08
2.2465+00	3.790+06	7.1364-02	5.406+08	3.3223-03	1.623+08
1.9298+00	4.621+06	6.3685-02	6.295+08	2.9872-03	1.425+08
1.6757+00	5.240+06	5.6814-02	7.117+08	2.6857-03	1.303+08
1.4709+00	6.026+06	5.0703-02	7.866+08	2.4151-03	1.176+08
1.3057+00	6.931+06	4.5264-02	8.344+08	2.1727-03	1.060+08
1.1662+00	7.801+06	4.0444-02	8.536+08	1.9537-03	1.009+08
1.0220+00	9.188+06	3.6166-02	8.634+08	1.7565-03	9.797+07
8.8086-01	1.048+07	3.2381-02	8.424+08	1.5794-03	8.545+07

x (cm)	Q (x)
1.52	1.3418
4.06	1.7335
6.60	2.0000
9.14	1.9616
11.68	1.7616
14.22	1.4274
16.76	1.1347
19.30	0.8783
21.84	0.5896
24.38	0.4237
26.92	0.2968
29.46	0.14183
32.00	0.19896
34.54	0.09233
37.08	0.06639
39.62	0.05126
42.16	0.03531
44.70	0.02649
47.24	0.02390
49.78	0.016130
52.32	0.012032

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GA-BeO-1A

90° ANGULAR NEUTRON SPECTRUM IN BORATED BeO 6 IN. FROM SOURCE1.0 BARN/Be ATOM (0.0253 ev)EXPERIMENTAL ARRANGEMENT 5/21/64 T2, T1PLAN VIEW

CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (293°K BeO, P₀)

TRANSPORT THEORY CODE: GAPLSN (9/11/64)

TEMPERATURE: 0.0253 ev

SOURCE: DSZ CODE (GA 3542, P. 145)

ATOM DENSITIES

$$N_{\text{BeO}} = 6.708 \times 10^{22} \text{ ATOMS/CC}$$

$$N_{\text{B}} = 8.508 \times 10^{19} \text{ ATOMS/CC}$$

$$N_{\text{Cr}} = 3.589 \times 10^{20} \text{ ATOMS/CC}$$

$$N_{\text{Fe}} = 1.2196 \times 10^{21} \text{ ATOMS/CC}$$

$$N_{\text{Ni}} = 2.339 \times 10^{20} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.004838 \text{ CM}^{-2}$$

NOT TO SCALEGENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
TECHNIQUES

DATE ISSUED: 1/30/65

90° ANGULAR NEUTRON SPECTRUM IN BORATED BeO 6 IN. FROM SOURCE
5-21-64 T2, T1

E(ev)	ϕE	$E\phi(E)$	E(ev)	ϕE	$E\phi(E)$	x (cm)	Q (x)
9.45223+01	5.308-03	4.794+00	1.25507-01	3.381+00	4.055+00	2.48	0.84000
5.98786+01	8.660-03	4.955+00	1.11737-01	3.737+00	3.990+00	5.52	1.00000
4.13009+01	1.253-02	4.946+00	9.92716-02	4.101+00	3.890+00	8.57	0.99800
3.01971+01	1.721-02	4.966+00	8.87819-02	4.474+00	3.796+00	11.62	0.89700
2.31267+01	2.262-02	5.000+00	7.93028-02	4.766+00	3.612+00	14.67	0.73900
1.82675+01	2.848-02	4.971+00	7.07578-02	4.991+00	3.375+00	17.72	0.55700
1.47931+01	3.503-02	4.952+00	6.31200-02	5.000+00	3.016+00	20.76	0.40000
1.22233+01	4.121-02	4.814+00	5.62959-02	4.971+00	2.674+00	23.81	0.26800
1.02693+01	4.940-02	4.848+00	5.02354-02	4.822+00	2.315+00	26.86	0.17500
8.74893+00	5.749-02	4.807+00	4.48479-02	4.607+00	1.974+00	29.91	0.11000
7.54282+00	6.590-02	4.750+00	4.00691-02	4.358+00	1.669+00	32.96	0.07800
6.56995+00	7.468-02	4.689+00	3.57946-02	4.081+00	1.396+00	36.00	0.04800
5.77385+00	8.471-02	4.674+00	3.20179-02	3.758+00	1.150+00	39.05	0.02900
5.11415+00	9.420-02	4.604+00	2.86767-02	3.425+00	9.385-01	42.10	0.01870
4.56137+00	1.060-01	4.620+00	2.57263-02	3.186+00	7.831-01	45.15	0.01140
3.89393+00	1.214-01	4.516+00	2.30234-02	2.892+00	6.362-01	48.20	0.00770
3.20172+00	1.468-01	4.490+00	2.06445-02	2.576+00	5.083-01	51.24	0.00563
2.67900+00	1.722-01	4.408+00	1.85511-02	2.355+00	4.174-01	54.29	0.00466
2.27461+00	1.990-01	4.326+00	1.66467-02	2.094+00	3.331-01	57.34	0.00417
1.95535+00	2.303-01	4.303+00	1.49246-02	1.939+00	2.765-01	60.39	0.00397
1.69890+00	2.573-01	4.177+00	1.33745-02	1.692+00	2.162-01		
1.48978+00	2.923-01	4.161+00	1.19844-02	1.610+00	1.844-01		
1.31704+00	3.250-01	4.090+00	1.07413-02	1.549+00	1.590-01		
1.17269+00	3.585-01	4.017+00	9.63196-03	1.389+00	1.279-01		
1.02424+00	4.087-01	4.000+00	8.64345-03	1.214+00	1.003-01		
8.79623-01	4.743-01	3.987+00	7.76343-03	1.171+00	8.689-02		
7.63616-01	5.460-01	3.984+00	6.98040-03	1.037+00	6.917-02		
6.69138-01	6.211-01	3.971+00	6.27099-03	8.881-01	5.322-02		
5.91171-01	6.944-01	3.923+00	5.63059-03	7.831-01	4.213-02		
5.26081-01	7.672-01	3.857+00	5.05519-03	6.561-01	3.170-02		
4.71180-01	8.548-01	3.849+00	4.53916-03	6.568-01	2.849-02		
4.17544-01	9.755-01	3.892+00	4.07779-03	7.033-01	2.740-02		
3.66541-01	1.097+00	3.843+00	3.65987-03	8.637-01	3.021-02		
3.24345-01	1.238+00	3.836+00	3.28795-03	9.506-01	2.987-02		
2.89038-01	1.392+00	3.844+00	2.95731-03	9.094-01	2.570-02		
2.55897-01	1.565+00	3.827+00	2.65962-03	8.432-01	2.143-02		
2.25248-01	1.804+00	3.884+00	2.39232-03	6.624-01	1.514-02		
1.99794-01	2.056+00	3.926+00	2.15023-03	7.091-01	1.457-02		
1.78424-01	2.287+00	3.900+00	1.93181-03	6.144-01	1.134-02		
1.58697-01	2.629+00	3.986+00					
1.40645-01	3.003+00	4.035+00					

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GA-BeO-1B

90° ANGULAR NEUTRON SPECTRUM IN BORATED BeO 12 IN. FROM SOURCE1.0 BARN/Be ATOM (0.0253 ev)EXPERIMENTAL ARRANGEMENT 5/21/64 T4, T3CALCULATION PARAMETERSSCATTERING KERNEL: SUMMIT (293°K BeO, P₀)

TRANSPORT THEORY CODE: GAPLSN (9/11/64)

TEMPERATURE: 0.0253 ev

SOURCE: DSZ CODE (GA 3542, P. 145)

ATOM DENSITIES

$$N_{\text{BeO}} = 6.708 \times 10^{22} \text{ ATOMS/CC}$$

$$N_{\text{B}} = 8.508 \times 10^{19} \text{ ATOMS/CC}$$

$$N_{\text{Cr}} = 3.589 \times 10^{20} \text{ ATOMS/CC}$$

$$N_{\text{Fe}} = 1.2196 \times 10^{21} \text{ ATOMS/CC}$$

$$N_{\text{Ni}} = 2.339 \times 10^{20} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.004838 \text{ CM}^{-2}$$

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
TECHNIQUES

DATE ISSUED: 1/30/65

90° ANGULAR NEUTRON SPECTRUM IN BORATED BeO 12 IN. FROM SOURCE
5-21-64 T4, T3

E(ev)	ϕE	$E\phi(E)$	E(ev)	ϕE	$E\phi(E)$	x (cm)	Q (x)
9.48828+01	2.001-03	2.484+00	1.25985-01	3.016+00	4.971+00	2.48	0.84000
6.01069+01	3.331-03	2.619+00	1.12163-01	3.387+00	4.970+00	5.52	1.00000
4.14584+01	5.132-03	2.784+00	9.96502-02	3.835+00	5.000+00	8.57	0.99800
3.03123+01	7.134-03	2.829+00	8.91204-02	4.258+00	4.964+00	11.62	0.89700
2.32149+01	9.936-03	3.018+00	7.96052-02	4.642+00	4.834+00	14.67	0.73900
1.83371+01	1.329-02	3.189+00	7.10277-02	4.893+00	4.546+00	17.72	0.55700
1.48495+01	1.669-02	3.243+00	6.33607-02	5.000+00	4.145+00	20.76	0.40000
1.22699+01	2.032-02	3.262+00	5.65105-02	4.970+00	3.674+00	23.81	0.26800
1.03084+01	2.506-02	3.380+00	5.04269-02	4.920+00	3.246+00	26.86	0.17500
8.78229+00	2.877-02	3.305+00	4.50189-02	4.698+00	2.767+00	29.91	0.11000
7.57158+00	3.378-02	3.346+00	4.02224-02	4.424+00	2.328+00	32.96	0.07800
6.59501+00	3.955-02	3.413+00	3.59310-02	4.083+00	1.919+00	36.00	0.04800
5.79587+00	4.622-02	3.504+00	3.21399-02	3.831+00	1.611+00	39.05	0.02900
5.13365+00	5.091-02	3.419+00	2.87860-02	3.555+00	1.339+00	42.10	0.01870
4.57876+00	5.765-02	3.453+00	2.58244-02	3.196+00	1.080+00	45.15	0.01140
3.90878+00	7.018-02	3.589+00	2.31112-02	3.001+00	9.072-01	48.20	0.00770
3.21393+00	8.519-02	3.582+00	2.07232-02	2.671+00	7.241-01	51.24	0.00563
2.68921+00	1.026-01	3.610+00	1.86218-02	2.345+00	5.712-01	54.29	0.00466
2.28329+00	1.228-01	3.667+00	1.67102-02	2.110+00	4.613-01	57.34	0.00417
1.96281+00	1.417-01	3.639+00	1.49815-02	1.932+00	3.786-01	60.39	0.00397
1.70537+00	1.622-01	3.620+00	1.34255-02	1.723+00	3.025-01		
1.49547+00	1.862-01	3.642+00	1.20301-02	1.620+00	2.550-01		
1.32206+00	2.117-01	3.661+00	1.07823-02	1.574+00	2.221-01		
1.17716+00	2.394-01	3.686+00	9.66869-03	1.410+00	1.783-01		
1.02814+00	2.769-01	3.725+00	8.67640-03	1.214+00	1.378-01		
8.82977-01	3.246-01	3.750+00	7.79303-03	1.176+00	1.199-01		
7.66528-01	3.799-01	3.809+00	7.00702-03	1.071+00	9.814-02		
6.71689-01	4.329-01	3.804+00	6.29491-03	9.540-01	7.856-02		
5.93425-01	4.953-01	3.845+00	5.65206-03	7.509-01	5.552-02		
5.28087-01	5.607-01	3.874+00	5.07446-03	7.198-01	4.778-02		
4.72976-01	6.288-01	3.891+00	4.55647-03	7.907-01	4.713-02		
4.19136-01	7.232-01	3.966+00	4.09334-03	7.246-01	3.880-02		
3.67938-01	8.345-01	4.017+00	3.67383-03	9.375-01	4.506-02		
3.25582-01	9.681-01	4.124+00	3.30049-03	9.696-01	4.186-02		
2.90141-01	1.093+00	4.150+00	2.96859-03	8.441-01	3.278-02		
2.56873-01	1.260+00	4.235+00	2.66976-03	8.431-01	2.945-02		
2.26107-01	1.455+00	4.303+00	2.40144-03	7.297-01	2.292-02		
2.00556-01	1.721+00	4.515+00	2.15843-03	7.036-01	1.987-02		
1.79104-01	1.941+00	4.549+00	1.93917-03	6.076-01	1.541-02		
1.59302-01	2.259+00	4.707+00	1.74401-03	5.923-01	1.351-02		
1.41181-01	2.650+00	4.895+00	1.56872-03	5.500-01	1.129-02		

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GA-BeO-1C

90° ANGULAR NEUTRON SPECTRUM IN BORATED BeO 18 IN. FROM SOURCE1 BARN/Be ATOM (0.0253 ev)EXPERIMENTAL ARRANGEMENT 5/21/64 T6, T5PLAN VIEWCALCULATION PARAMETERSSCATTERING KERNEL: SUMMIT (293°K BeO, P₀)

TRANSPORT THEORY CODE: GAPLSN (9/11/64)

TEMPERATURE: 0.0253 ev

SOURCE: DSZ CODE (GA 3542, P. 145)

ATOM DENSITIES

$$N_{\text{BeO}} = 6.708 \times 10^{22} \text{ ATOMS/CC}$$

$$N_{\text{B}} = 8.508 \times 10^{19} \text{ ATOMS/CC}$$

$$N_{\text{Cr}} = 3.589 \times 10^{20} \text{ ATOMS/CC}$$

$$N_{\text{Fe}} = 1.2196 \times 10^{21} \text{ ATOMS/CC}$$

$$N_{\text{Ni}} = 2.339 \times 10^{20} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.004838 \text{ CM}^{-2}$$

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
TECHNIQUES

DATE ISSUED: 1/30/65

90° ANGULAR NEUTRON SPECTRUM IN BORATED BeO 18 IN. FROM SOURCE
5-21-64 T6, T5

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x (cm)	Q (x)
6.03357+01	2.022-03	1.692+00	1.41718-01	2.308+00	4.535+00	2.48	0.84000
4.16162+01	2.625-03	1.515+00	1.26465-01	2.680+00	4.699+00	5.52	1.00000
3.04276+01	4.257-03	1.796+00	1.12590-01	3.133+00	4.891+00	8.57	0.99800
2.33033+01	5.098-03	1.647+00	1.00029-01	3.562+00	4.940+00	11.62	0.89700
1.84069+01	8.950-03	2.284+00	8.94596-02	4.031+00	5.000+00	14.67	0.73900
1.49060+01	9.671-03	1.999+00	7.99081-02	4.458+00	4.940+00	17.72	0.55700
1.23166+01	1.086-02	1.855+00	7.12980-02	4.711+00	4.658+00	20.76	0.40000
1.03477+01	1.833-02	2.630+00	6.36019-02	4.915+00	4.334+00	23.81	0.26800
8.81571+00	1.695-02	2.072+00	5.67256-02	4.874+00	3.834+00	26.86	0.17500
7.60040+00	1.783-02	1.879+00	5.06189-02	5.000+00	3.509+00	29.91	0.11000
6.62011+00	3.116-02	2.860+00	4.51903-02	4.712+00	2.952+00	32.96	0.07800
5.81793+00	2.718-02	2.193+00	4.03750-02	4.550+00	2.547+00	36.00	0.04800
5.15319+00	2.849-02	2.036+00	3.60678-02	4.217+00	2.109+00	39.05	0.02900
4.59619+00	3.884-02	2.475+00	3.22623-02	3.909+00	1.749+00	42.10	0.01870
3.92366+00	4.223-02	2.298+00	2.88956-02	3.790+00	1.519+00	45.15	0.01140
3.22616+00	5.770-02	2.581+00	2.59226-02	3.447+00	1.239+00	48.20	0.00770
2.69945+00	7.490-02	2.804+00	2.31991-02	3.101+00	9.974-01	51.24	0.00563
2.29198+00	8.439-02	2.682+00	2.08021-02	2.595+00	7.485-01	54.29	0.00466
1.97028+00	1.015-01	2.773+00	1.86927-02	2.417+00	6.264-01	57.34	0.00417
1.71187+00	1.110-01	2.635+00	1.67738-02	2.372+00	5.516-01	60.39	0.00397
1.50116+00	1.287-01	2.678+00	1.50385-02	2.233+00	4.657-01		
1.32709+00	1.496-01	2.752+00	1.34766-02	1.920+00	3.587-01		
1.18165+00	1.636-01	2.680+00	1.20759-02	1.942+00	3.251-01		
1.03205+00	2.161-01	3.093+00	1.08233-02	1.897+00	2.847-01		
8.86337-01	2.352-01	2.890+00	9.70548-03	1.641+00	2.209-01		
7.69445-01	2.813-01	3.002+00	8.70943-03	1.420+00	1.714-01		
6.74245-01	3.294-01	3.080+00	7.82269-03	1.242+00	1.348-01		
5.95684-01	3.828-01	3.162+00	7.03369-03	1.225+00	1.195-01		
5.30097-01	4.505-01	3.312+00	6.31886-03	1.193+00	1.045-01		
4.74776-01	4.897-01	3.224+00	5.67357-03	1.200+00	9.439-02		
4.20731-01	5.736-01	3.346+00	5.09377-03	1.207+00	8.528-02		
3.69339-01	6.762-01	3.463+00	4.57381-03	1.411+00	8.951-02		
3.26821-01	7.672-01	3.477+00	4.10892-03	1.060+00	6.042-02		
2.91245-01	8.645-01	3.491+00	3.68781-03	1.706+00	8.724-02		
2.57851-01	1.033+00	3.693+00	3.31305-03	1.426+00	6.550-02		
2.26967-01	1.202+00	3.784+00	2.97989-03	1.259+00	5.204-02		
2.01319-01	1.429+00	3.988+00	2.67638-03	7.119-01	2.642-02		
1.79786-01	1.719+00	4.285+00	2.40437-03	7.937-01	2.646-02		
1.59908-01	1.967+00	4.360+00	2.16135-03	7.726-01	2.315-02		

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90° ANGULAR NEUTRON SPECTRUM IN SAMARIUM POISONED GRAPHITE AT 80°K0.15 BARN/CARBON (0.0253 eV)CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (80°K, $P_0 + P_1$) TO 1.00 eV
 + GAS (697.07°K) TO 2.38 eV

TRANSPORT THEORY CODE: GAPLSN (8/19/63)

TEMPERATURE: 80°K

SOURCE: ISOTROPIC SOURCE $Q(X)$ IN
 TOP ENERGY GROUP ONLY

ATOM DENSITIES

$$N_C = 7.75 \times 10^{22} \text{ ATOMS/CC}$$

$$N_{Sm} = 2.08 \times 10^{18} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.004384 \text{ CM}^{-2}$$

EXPERIMENTAL ARRANGEMENT 7/20/63 T6, T7PLAN VIEW NOT TO SCALE

2/3

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
 TECHNIQUES

DATE ISSUED: 1/30/65

90° ANGULAR NEUTRON SPECTRUM IN SAMARIUM POISONED GRAPHITE AT 80°K
7-20-63 T6, T7

E(ev)	φ(E)	Eφ(E)	E(ev)	φ(E)	Eφ(E)	x (cm)	Q (x)
8.87838+01	4.242-03	3.785+00	4.63216-01	8.770-01	4.084+00	3.58	0.079
6.96294+01	5.598-03	3.918+00	4.12737-01	1.037+00	4.301+00	5.62	0.104
5.60658+01	7.117-03	4.011+00	3.66977-01	1.156+00	4.264+00	7.65	0.136
4.61113+01	8.871-03	4.112+00	3.28421-01	1.258+00	4.153+00	9.68	0.157
3.85904+01	1.046-02	4.058+00	2.93540-01	1.464+00	4.321+00	11.71	0.187
3.27700+01	1.210-02	3.987+00	2.62063-01	1.764+00	4.648+00	13.74	0.222
2.81736+01	1.366-02	3.868+00	2.33898-01	1.928+00	4.533+00	15.80	0.261
2.44805+01	1.599-02	3.934+00	2.08709-01	2.193+00	4.600+00	17.81	0.300
2.14687+01	1.894-02	4.088+00	1.86319-01	2.663+00	4.988+00	19.84	0.345
1.89804+01	2.144-02	4.091+00	1.66400-01	2.989+00	5.000+00	21.87	0.395
1.69009+01	2.321-02	3.943+00	1.48754-01	3.267+00	4.885+00	23.90	0.453
1.43975+01	2.836-02	4.105+00	1.33094-01	3.416+00	4.570+00	25.94	0.506
1.18094+01	3.250-02	3.858+00	1.19238-01	3.337+00	4.000+00	27.94	0.528
9.86158+00	4.232-02	4.196+00	1.06949-01	3.463+00	3.723+00	32.02	0.681
8.35889+00	4.750-02	3.991+00	9.60719-02	3.451+00	3.333+00	34.06	0.729
7.17531+00	5.653-02	4.078+00	8.60852-02	3.513+00	3.040+00	36.10	0.820
6.22647+00	5.876-02	3.678+00	7.69959-02	3.849+00	2.979+00	38.13	0.870
5.45416+00	7.459-02	4.089+00	6.90191-02	3.959+00	2.747+00	40.16	0.887
4.81713+00	7.988-02	3.868+00	6.20151-02	4.314+00	2.689+00	42.19	1.000
4.28555+00	8.950-02	3.856+00	5.56670-02	4.505+00	2.521+00	44.20	0.997
3.83735+00	1.024-01	3.948+00	4.99411-02	4.675+00	2.347+00	46.26	0.984
3.37218+00	1.128-01	3.823+00	4.47961-02	4.938+00	2.223+00	48.29	0.978
2.91489+00	1.342-01	3.933+00	4.01865-02	5.000+00	2.020+00	50.32	0.962
2.54471+00	1.539-01	3.937+00	3.60659-02	4.972+00	1.803+00	52.35	0.920
2.24084+00	1.792-01	4.036+00	3.23883-02	4.955+00	1.613+00	54.38	0.832
1.98833+00	1.970-01	3.938+00	2.91096-02	4.796+00	1.403+00	56.42	0.754
1.77622+00	2.249-01	4.016+00	2.61324-02	4.820+00	1.266+00	58.45	0.650
1.56983+00	2.520-01	3.976+00	2.34405-02	4.566+00	1.076+00		
1.37435+00	2.718-01	3.755+00	2.10600-02	4.224+00	8.941-01		
1.21324+00	3.116-01	3.800+00	1.89182-02	3.973+00	7.555-01		
1.06983+00	3.622-01	3.895+00	1.69949-02	3.519+00	6.011-01		
9.38163-01	4.093-01	3.860+00	1.52734-02	3.444+00	5.287-01		
8.26970-01	4.572-01	3.801+00	1.37123-02	3.072+00	4.234-01		
7.34429-01	5.328-01	3.933+00	1.23217-02	2.740+00	3.394-01		
6.56589-01	5.947-01	3.925+00	1.10844-02	2.943+00	3.280-01		
5.84609-01	6.864-01	4.034+00					
5.18629-01	7.764-01	4.048+00					

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GA-C-1B

90° ANGULAR NEUTRON SPECTRUM IN SAMARIUM POISONED GRAPHITE AT 300°K

0.15 BARN/CARBON ATOM (0.0253 ev)

CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (300°K, $P_0 + P_1$) TO 1.00 ev
+ GAS (739.32°K) TO 2.38 ev

TRANSPORT THEORY CODE: GAPLSN (7/16/63)

TEMPERATURE: 300°K

SOURCE: ISOTROPIC SOURCE $Q(X)$ IN
TOP ENERGY GROUP ONLY

ATOM DENSITIES

$$N_C = 7.75 \times 10^{22} \text{ ATOMS/CC}$$

$$N_{Sm} = 2.08 \times 10^{18} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.004384 \text{ CM}^{-2}$$

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90° ANGULAR NEUTRON SPECTRUM IN SAMARIUM POISONED GRAPHITE AT 300°K
6-20-63 T2, T1

E(ev)	φ(E)	Eφ(E)	E(ev)	φ(E)	Eφ(E)	x(cm)	Q(x)
7.88447+01	5.814-03	4.178+00	4.51118-01	9.176-01	3.772+00	3.58	0.079
6.26610+01	7.307-03	4.173+00	4.02557-01	1.062+00	3.897+00	5.62	0.104
5.09931+01	8.885-03	4.129+00	3.58440-01	1.198+00	3.914+00	7.65	0.136
4.23048+01	1.054-02	4.063+00	3.21193-01	1.375+00	4.026+00	9.68	0.157
3.56616+01	1.249-02	4.059+00	2.87432-01	1.601+00	4.193+00	11.71	0.187
3.04687+01	1.472-02	4.087+00	2.56910-01	1.863+00	4.362+00	13.74	0.222
2.63326+01	1.697-02	4.074+00	2.29553-01	2.165+00	4.529+00	15.80	0.261
2.29850+01	1.908-02	3.997+00	2.05048-01	2.533+00	4.734+00	17.81	0.300
2.02374+01	2.190-02	4.038+00	1.83232-01	2.950+00	4.926+00	19.84	0.345
1.79545+01	2.457-02	4.021+00	1.63796-01	3.350+00	5.000+00	21.87	0.395
1.60372+01	2.743-02	4.009+00	1.46554-01	3.594+00	4.801+00	23.90	0.453
1.37162+01	3.139-02	3.923+00	1.31233-01	3.763+00	4.500+00	25.94	0.506
1.13021+01	3.857-02	3.973+00	1.17661-01	3.835+00	4.112+00	27.94	0.528
9.47373+00	4.486-02	3.873+00	1.05162-01	3.839+00	3.679+00	32.02	0.681
8.05578+00	5.187-02	3.808+00	9.41493-02	3.892+00	3.340+00	34.06	0.729
6.93397+00	5.955-02	3.763+00	8.44544-02	4.073+00	3.135+00	36.10	0.820
6.03122+00	6.745-02	3.707+00	7.56165-02	4.333+00	2.986+00	38.13	0.870
5.29398+00	7.608-02	3.671+00	6.76171-02	4.546+00	2.801+00	40.16	0.887
4.68412+00	8.554-02	3.652+00	6.06133-02	4.767+00	2.633+00	42.19	1.000
4.17390+00	9.585-02	3.646+00	5.44745-02	4.881+00	2.423+00	44.20	0.997
3.64851+00	1.086-01	3.609+00	4.89276-02	4.926+00	2.196+00	46.26	0.984
3.13609+00	1.250-01	3.572+00	4.39349-02	5.000+00	2.002+00	48.29	0.978
2.72454+00	1.434-01	3.561+00	3.94548-02	4.946+00	1.779+00	50.32	0.962
2.38901+00	1.631-01	3.552+00	3.54438-02	4.784+00	1.545+00	52.35	0.920
2.11186+00	1.850-01	3.561+00	3.18590-02	4.657+00	1.352+00	54.38	0.832
1.88030+00	2.072-01	3.550+00	2.85948-02	4.402+00	1.147+00	56.42	0.754
1.68484+00	2.267-01	3.482+00	2.56373-02	4.212+00	9.841-01	58.45	0.650
1.49375+00	2.573-01	3.503+00	2.30199-02	4.036+00	8.467-01		
1.31192+00	2.946-01	3.523+00	2.06625-02	3.781+00	7.120-01		
1.16138+00	3.302-01	3.495+00	1.85445-02	3.459+00	5.846-01		
1.02915+00	3.726-01	3.495+00	1.66482-02	3.239+00	4.914-01		
9.03456-01	4.271-01	3.516+00	1.49524-02	2.864+00	3.902-01		
7.98215-01	4.799-01	3.491+00	1.34391-02	2.622+00	3.211-01		
7.10341-01	5.507-01	3.565+00	1.20714-02	2.340+00	2.575-01		
6.36212-01	6.140-01	3.560+00	1.08400-02	2.147+00	2.121-01		
5.67474-01	7.011-01	3.626+00					
5.04304-01	8.004-01	3.678+00					

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GA-C-1C

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90° ANGULAR NEUTRON SPECTRUM IN SAMARIUM POISONED GRAPHITE AT 600°K

0.15 BARN/CARBON ATOM (0.0253 eV)

CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (600°K, $P_0 + P_1$) TO 1.00 eV + GAS (890.98°K) TO 2.38 eV

TRANSPORT THEORY CODE: GAPLSN (8/20/63)

TEMPERATURE: 600°K

SOURCE: ISOTROPIC SOURCE $Q(X)$ IN
TOP ENERGY GROUP ONLY

ATOM DENSITIES

$N_C = 7.75 \times 10^{22}$ ATOMS/CC

$N_{Sm} = 2.08 \times 10^{18}$ ATOMS/CC

LOCAL BUCKLING

B^2 TRANSVERSE = 0.004384 CM^{-2}

EXPERIMENTAL ARRANGEMENT 7/23/63 T9, T8

PLAN VIEW

NOT TO SCALE

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
TECHNIQUES

DATE ISSUED: 1/30/65

90° ANGULAR NEUTRON SPECTRUM IN SAMARIUM POISONED GRAPHITE AT 600°K
7-23-63 T9, T8

E(ev)	φ(E)	Eφ(E)	E(ev)	φ(E)	Eφ(E)	x(cm)	Q(x)
8.87838+01	6.159-03	3.421+00	3.66977-01	1.678+00	3.851+00	3.58	0.079
6.96294+01	7.682-03	3.346+00	3.28421-01	2.014+00	4.138+00	5.62	0.104
5.60658+01	9.443-03	3.312+00	2.93540-01	2.366+00	4.344+00	7.65	0.136
4.61113+01	1.138-02	3.283+00	2.62063-01	2.796+00	4.583+00	9.68	0.157
3.85904+01	1.397-02	3.373+00	2.33898-01	3.288+00	4.810+00	11.71	0.187
3.27700+01	1.620-02	3.321+00	2.08709-01	3.830+00	5.000+00	13.74	0.222
2.81736+01	1.868-02	3.293+00	1.86319-01	4.266+00	4.972+00	15.80	0.261
2.44805+01	2.191-02	3.355+00	1.66400-01	4.615+00	4.804+00	17.81	0.300
2.14687+01	2.451-02	3.291+00	1.48754-01	4.871+00	4.532+00	19.84	0.345
1.89804+01	2.779-02	3.299+00	1.33094-01	4.948+00	4.119+00	21.87	0.395
1.69009+01	3.042-02	3.216+00	1.19238-01	4.988+00	3.720+00	23.90	0.453
1.43975+01	3.566-02	3.212+00	1.06949-01	4.999+00	3.344+00	25.94	0.506
1.18094+01	4.326-02	3.196+00	9.60719-02	4.884+00	2.935+00	27.94	0.528
9.86158+00	5.241-02	3.233+00	8.60852-02	4.922+00	2.650+00	32.02	0.681
8.35889+00	6.031-02	3.154+00	7.69959-02	5.000+00	2.408+00	34.06	0.729
7.17531+00	6.896-02	3.095+00	6.90191-02	4.884+00	2.109+00	36.10	0.820
6.22647+00	7.680-02	2.991+00	6.20151-02	4.827+00	1.872+00	38.13	0.870
5.45416+00	8.944-02	3.051+00	5.56670-02	4.644+00	1.617+00	40.16	0.887
4.81713+00	1.005-01	3.029+00	4.99411-02	4.672+00	1.459+00	42.19	1.000
4.28555+00	1.140-01	3.055+00	4.47961-02	4.416+00	1.237+00	44.20	0.997
3.83735+00	1.288-01	3.091+00	4.01865-02	4.167+00	1.048+00	46.26	0.984
3.37218+00	1.432-01	3.021+00	3.60659-02	3.974+00	8.966-01	48.29	0.978
2.91489+00	1.636-01	2.984+00	3.23883-02	3.773+00	7.644-01	50.32	0.962
2.54471+00	1.883-01	2.998+00	2.91096-02	3.501+00	6.376-01	52.35	0.920
2.24084+00	2.140-01	3.000+00	2.61324-02	3.223+00	5.268-01	54.38	0.832
1.98833+00	2.383-01	2.963+00	2.34405-02	2.978+00	4.366-01	56.42	0.754
1.77622+00	2.756-01	3.062+00	2.10600-02	2.491+00	3.281-01	58.45	0.650
1.56983+00	3.100-01	3.044+00	1.89182-02	2.713+00	3.210-01		
1.37435+00	3.484-01	2.995+00	1.69949-02	2.549+00	2.710-01		
1.21324+00	3.958-01	3.003+00	1.52734-02	2.214+00	2.115-01		
1.06983+00	4.411-01	2.952+00	1.37123-02	2.450+00	2.101-01		
9.38163-01	5.113-01	3.000+00	1.23217-02	2.029+00	1.564-01		
8.26970-01	5.995-01	3.101+00	1.10844-02	1.992+00	1.381-01		
7.34429-01	6.718-01	3.086+00	9.96959-03	1.523+00	9.499-02		
6.56589-01	7.884-01	3.238+00	8.96789-03	1.676+00	9.401-02		
5.84609-01	8.932-01	3.266+00	8.06016-03	1.411+00	7.114-02		
5.18629-01	1.032+00	3.347+00	7.24075-03	1.832+00	8.297-02		
4.63216-01	1.231+00	3.568+00	6.51107-03	1.656+00	6.745-02		
4.12737-01	1.438+00	3.712+00	5.85549-03	1.445+00	5.294-02		

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90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE0.15 BARN/CARBON ATOM (0.0253 ev)EXPERIMENTAL ARRANGEMENT 8/18/63 T14, T15PLAN VIEW

ENTIRE ASSEMBLY CADMIUM COVERED

CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (300°K, $P_0 + P_1$) TO 1.00 ev
 + GAS (739.32°K) TO 2.38 ev

TRANSPORT THEORY CODE: GAPLSN (8/21/63)

TEMPERATURE: 300°K

SOURCE: ISOTROPIC SOURCE $Q(X)$ IN
 TOP ENERGY GROUP ONLY

ATOM DENSITIES

POISONED SIDE

$$N_C = 7.75 \times 10^{22} \text{ ATOMS/CC}$$

$$N_{Sm} = 2.08 \times 10^{18} \text{ ATOMS/CC}$$

UNPOISONED SIDE

$$N_C = 7.75 \times 10^{22} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.004384 \text{ CM}^{-2}$$

NOT TO SCALE

222

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
 TECHNIQUES

DATE ISSUED: 1/30/65

90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE
8-18-63 T14, T15

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x (cm)	Q (x)
8.73792+01	5.219-03	4.270+00	3.73125-01	9.175-01	3.206+00	1.980	0.707
6.85278+01	6.696-03	4.297+00	3.33643-01	1.031+00	3.222+00	4.012	0.828
5.51788+01	7.963-03	4.115+00	2.97964-01	1.192+00	3.325+00	6.044	0.905
4.53818+01	9.575-03	4.069+00	2.65802-01	1.384+00	3.444+00	8.076	0.935
3.79799+01	1.110-02	3.949+00	2.37054-01	1.641+00	3.642+00	10.108	0.988
3.22516+01	1.304-02	3.937+00	2.11370-01	1.929+00	3.818+00	12.140	0.992
2.77279+01	1.524-02	3.957+00	1.88561-01	2.230+00	3.937+00	14.172	1.000
2.40932+01	1.700-02	3.836+00	1.68287-01	2.569+00	4.049+00	16.204	0.962
2.11291+01	1.920-02	3.799+00	1.50342-01	2.788+00	3.926+00	18.236	0.965
1.86801+01	2.163-02	3.784+00	1.34430-01	3.021+00	3.803+00	20.268	0.922
1.66335+01	2.370-02	3.692+00	1.20362-01	3.217+00	3.626+00	22.300	0.886
1.41697+01	2.739-02	3.635+00	1.07893-01	3.316+00	3.351+00	24.332	0.841
1.16226+01	3.323-02	3.617+00	9.68652-02	3.493+00	3.168+00	26.364	0.757
9.70556+00	3.852-02	3.501+00	8.67466-02	3.621+00	2.942+00	28.396	0.719
8.22664+00	4.518-02	3.481+00	7.78283-02	3.931+00	2.865+00	30.428	0.677
7.06179+00	5.187-02	3.430+00	6.99700-02	4.241+00	2.779+00	32.460	0.597
6.12796+00	5.741-02	3.295+00	6.28129-02	4.479+00	2.634+00	34.492	0.531
5.36786+00	6.592-02	3.314+00	5.63334-02	4.684+00	2.471+00	36.524	0.491
4.74092+00	7.288-02	3.236+00	5.04953-02	4.803+00	2.271+00	38.556	0.406
4.21774+00	8.191-02	3.235+00	4.52549-02	4.945+00	2.096+00	40.588	0.383
3.77664+00	8.954-02	3.167+00	4.05648-02	5.000+00	1.899+00	42.620	0.325
3.31882+00	1.032-01	3.206+00	3.63762-02	4.822+00	1.643+00	44.652	0.248
2.86877+00	1.164-01	3.127+00	3.26414-02	4.778+00	1.461+00	46.684	0.197
2.50445+00	1.304-01	3.057+00	2.93146-02	4.535+00	1.245+00	48.716	0.183
2.20539+00	1.463-01	3.022+00	2.63530-02	4.363+00	1.077+00	50.748	0.150
1.95687+00	1.666-01	3.052+00	2.36688-02	4.059+00	8.996-01	52.780	0.122
1.74812+00	1.825-01	2.988+00	2.12449-02	3.923+00	7.805-01	54.812	0.096
1.54500+00	2.072-01	2.998+00	1.91015-02	3.680+00	6.583-01	56.844	0.071
1.19404+00	2.704-01	3.024+00	1.71738-02	3.326+00	5.349-01	58.876	0.047
1.06182+00	3.031-01	3.014+00	1.54175-02	3.062+00	4.421-01		
9.50407-01	3.388-01	3.015+00	1.38487-02	2.753+00	3.570-01		
8.45122-01	3.767-01	2.981+00	1.24500-02	2.381+00	2.776-01		
7.47129-01	4.279-01	2.994+00	1.11869-02	2.145+00	2.247-01		
6.65246-01	4.859-01	3.027+00	1.00504-02	2.030+00	1.911-01		
5.96124-01	5.384-01	3.005+00	9.03062-03	1.819+00	1.539-01		
5.31989-01	6.104-01	3.041+00	8.11753-03	1.598+00	1.215-01		
4.72010-01	6.921-01	3.059+00	7.30122-03	1.439+00	9.837-02		
4.20042-01	7.940-01	3.123+00	6.56503-03	1.107+00	6.804-02		
			5.90284-03	8.415-01	4.652-02		

gm

90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE0.15 BARN/CARBON ATOM (0.0253 ev)EXPERIMENTAL ARRANGEMENT 8/18/63 T12, T13PLAN VIEWCALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (300°K, $P_0 + P_1$) TO 1.00 ev
 + GAS (739.32°K) TO 2.38 ev

TRANSPORT THEORY CODE: GAPLSN (8/21/63)

TEMPERATURE: 300°K

SOURCE: ISOTROPIC SOURCE $Q(X)$ IN
 TOP ENERGY GROUP ONLY

ATOM DENSITIESPOISONED SIDE

$$N_C = 7.75 \times 10^{22} \text{ ATOMS/CC}$$

$$N_{Sm} = 2.08 \times 10^{18} \text{ ATOMS/CC}$$

UNPOISONED SIDE

$$N_C = 7.75 \times 10^{22} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.004384 \text{ CM}^{-2}$$

NOT TO SCALE

225

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
 TECHNIQUES

DATE ISSUED 1/30/65

90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE
8-18-63 T12, T13

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x (cm)	Q (x)
8.74001+01	2.961-01	3.929+00	3.74568-01	6.455-01	3.670+00	1.980	0.707
6.85442+01	3.761-03	3.913+00	3.35067-01	7.362-01	3.745+00	4.012	0.828
5.51920+01	4.638-03	3.886+00	2.99348-01	8.468-01	3.848+00	6.044	0.905
4.53926+01	5.540-03	3.817+00	2.67129-01	9.896-01	4.013+00	8.076	0.935
3.79890+01	6.563-03	3.785+00	2.38314-01	1.169+00	4.230+00	10.108	0.988
3.22593+01	7.918-03	3.878+00	2.12555-01	1.389+00	4.481+00	12.140	0.992
2.77345+01	9.106-03	3.834+00	1.89668-01	1.669+00	4.806+00	14.172	1.000
2.40990+01	1.035-02	3.786+00	1.69316-01	1.916+00	4.924+00	16.204	0.962
2.11341+01	1.213-02	3.891+00	1.51293-01	2.177+00	5.000+00	18.236	0.965
1.86846+01	1.348-02	3.822+00	1.35306-01	2.429+00	4.988+00	20.268	0.922
1.66374+01	1.469-02	3.710+00	1.21166-01	2.654+00	4.881+00	22.300	0.886
1.41731+01	1.745-02	3.754+00	1.08630-01	2.856+00	4.710+00	24.332	0.841
1.16254+01	2.121-02	3.744+00	9.75380-02	3.069+00	4.544+00	26.364	0.757
9.70789+00	2.510-02	3.699+00	8.73582-02	3.326+00	4.411+00	28.396	0.719
8.22861+00	2.826-02	3.530+00	7.80968-02	3.669+00	4.350+00	30.428	0.677
7.06348+00	3.379-02	3.623+00	6.99722-02	4.018+00	4.268+00	32.460	0.597
6.12943+00	3.725-02	3.466+00	6.28412-02	4.366+00	4.165+00	34.492	0.531
5.36915+00	4.353-02	3.548+00	5.63804-02	4.666+00	3.994+00	36.524	0.491
4.74206+00	4.844-02	3.487+00	5.05552-02	4.823+00	3.702+00	38.556	0.406
4.21876+00	5.306-02	3.398+00	4.53229-02	4.876+00	3.355+00	40.588	0.383
3.77754+00	6.044-02	3.466+00	4.06372-02	5.000+00	3.084+00	42.620	0.325
3.31962+00	6.564-02	3.308+00	3.64503-02	4.932+00	2.729+00	44.652	0.248
2.86946+00	7.667-02	3.340+00	3.27150-02	4.790+00	2.379+00	46.684	0.197
2.50505+00	8.788-02	3.342+00	2.93863-02	4.715+00	2.103+00	48.716	0.183
2.20591+00	9.936-02	3.327+00	2.64217-02	4.483+00	1.798+00	50.748	0.150
1.95734+00	1.117-01	3.319+00	2.37337-02	4.344+00	1.565+00	52.780	0.122
1.74853+00	1.260-01	3.344+00	2.13055-02	4.035+00	1.305+00	54.812	0.096
1.54537+00	1.429-01	3.353+00	1.91225-02	3.789+00	1.100+00	56.844	0.071
1.35293+00	1.602-01	3.290+00	1.71639-02	3.462+00	9.021-01	58.876	0.047
1.19433+00	1.797-01	3.258+00	1.54121-02	3.243+00	7.587-01		
1.06207+00	2.067-01	3.332+00	1.38465-02	2.861+00	6.015-01		
9.50634-01	2.295-01	3.312+00	1.24500-02	2.583+00	4.882-01		
8.45325-01	2.568-01	3.296+00	1.11884-02	2.463+00	4.183-01		
7.47308-01	2.909-01	3.300+00	1.00529-02	2.311+00	3.527-01		
6.65405-01	3.331-01	3.365+00	9.03369-03	2.065+00	2.832-01		
5.96267-01	3.861-01	3.495+00	8.12084-03	1.972+00	2.431-01		
5.32116-01	4.324-01	3.493+00	7.30453-03	1.732+00	1.921-01		
4.72675-01	4.904-01	3.519+00	6.56822-03	1.509+00	1.504-01		
4.21474-01	5.508-01	3.524+00	5.90579-03	1.508+00	1.352-01		

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90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE0.15 BARN/CARBON ATOM (0.0253 ev)EXPERIMENTAL ARRANGEMENT 8/18/63 T11, T10PLAN VIEWCALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (300°K, $P_0 + P_1$) TO 1.0 ev
 + GAS (739.32°K) TO 2.38 ev

TRANSPORT THEORY CODE: GAPLSN (8/21/63)

TEMPERATURE: 300°K

SOURCE: ISOTROPIC SOURCE $Q(X)$ IN
 TOP ENERGY GROUP ONLY

ATOM DENSITIES

POISONED SIDE

$$N_C = 7.75 \times 10^{22} \text{ ATOMS/CC}$$

$$N_{Sm} = 2.08 \times 10^{18} \text{ ATOMS/CC}$$

UNPOISONED SIDE

$$N_C = 7.75 \times 10^{22} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.004384 \text{ CM}^{-2}$$

ENTIRE ASSEMBLY CADMIUM COVERED

NOT TO SCALE

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
 TECHNIQUES

DATE ISSUED: 1/30/65

90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE
8-18-63 T11, T10

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x (cm)	Q (x)
8.74263+01	1.616-03	2.397+00	3.76131-01	4.180-01	2.667+00	1.980	0.707
6.85648+01	2.095-03	2.437+00	3.36539-01	4.812-01	2.747+00	4.012	0.828
5.52085+01	2.561-03	2.398+00	3.00723-01	5.610-01	2.862+00	6.044	0.905
4.54062+01	3.157-03	2.432+00	2.68406-01	6.501-01	2.960+00	8.076	0.935
3.80004+01	3.843-03	2.477+00	2.39493-01	7.786-01	3.164+00	10.108	0.988
3.22690+01	4.492-03	2.459+00	2.13640-01	9.288-01	3.366+00	12.140	0.992
2.77428+01	5.215-03	2.454+00	1.90662-01	1.151+00	3.722+00	14.172	1.000
2.41062+01	5.916-03	2.419+00	1.70222-01	1.374+00	3.966+00	16.204	0.962
2.11405+01	6.595-03	2.365+00	1.52118-01	1.656+00	4.274+00	18.236	0.965
1.86902+01	7.754-03	2.459+00	1.36055-01	1.913+00	4.416+00	20.268	0.922
1.66424+01	8.565-03	2.418+00	1.21845-01	2.258+00	4.667+00	22.300	0.886
1.41773+01	1.016-02	2.443+00	1.09245-01	2.560+00	4.745+00	24.332	0.841
1.16289+01	1.231-02	2.429+00	9.80944-02	2.924+00	4.867+00	26.364	0.757
9.71079+00	1.472-02	2.425+00	8.78592-02	3.322+00	4.951+00	28.396	0.719
8.23107+00	1.726-02	2.411+00	7.85460-02	3.752+00	5.000+00	30.428	0.677
7.06559+00	2.003-02	2.401+00	7.03749-02	4.072+00	4.861+00	32.460	0.597
6.13127+00	2.308-02	2.400+00	6.32023-02	4.402+00	4.720+00	34.492	0.531
5.37076+00	2.589-02	2.359+00	5.67033-02	4.660+00	4.483+00	36.524	0.491
4.74348+00	2.972-02	2.392+00	5.08431-02	4.814+00	4.153+00	38.556	0.406
4.22002+00	3.256-02	2.331+00	4.55791-02	4.876+00	3.771+00	40.588	0.383
3.77867+00	3.667-02	2.351+00	4.08647-02	5.000+00	3.466+00	42.620	0.325
3.32061+00	4.063-02	2.289+00	3.66520-02	4.897+00	3.045+00	44.652	0.248
2.87032+00	4.709-02	2.293+00	3.28936-02	4.853+00	2.708+00	46.684	0.197
2.50580+00	5.404-02	2.297+00	2.95442-02	4.750+00	2.381+00	48.716	0.183
2.20657+00	6.231-02	2.332+00	2.65612-02	4.474+00	2.016+00	50.748	0.150
1.95792+00	6.840-02	2.272+00	2.38565-02	4.312+00	1.745+00	52.780	0.122
1.74906+00	7.852-02	2.330+00	2.14134-02	4.083+00	1.483+00	54.812	0.096
1.54583+00	8.892-02	2.332+00	1.92523-02	3.826+00	1.250+00	56.844	0.071
1.35333+00	9.698-02	2.227+00	1.73082-02	3.730+00	1.095+00	58.876	0.047
1.19469+00	1.128-01	2.285+00	1.55367-02	3.355+00	8.844-01		
1.06239+00	1.300-01	2.343+00	1.39539-02	3.008+00	7.122-01		
9.50919-01	1.420-01	2.290+00	1.25427-02	2.593+00	5.517-01		
8.45578-01	1.657-01	2.377+00	1.12682-02	2.479+00	4.739-01		
7.47532-01	1.874-01	2.376+00	1.01214-02	2.337+00	4.014-01		
6.65604-01	2.137-01	2.413+00	9.09248-03	2.229+00	3.439-01		
5.96445-01	2.392-01	2.420+00	8.17121-03	2.090+00	2.897-01		
5.32275-01	2.778-01	2.509+00	7.34767-03	1.828+00	2.279-01		
4.73491-01	3.142-01	2.524+00	6.60507-03	1.625+00	1.821-01		
4.23125-01	3.653-01	2.622+00	5.93724-03	1.592+00	1.604-01		

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GA-C-3A

90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE0.3 BARN/CARBON ATOM (0.0253 ev)EXPERIMENTAL ARRANGEMENT 9/23/63 T17, T16PLAN VIEW

ENTIRE ASSEMBLY CADMIUM COVERED

CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (300°K, $P_0 + P_1$) TO 1.0 ev
 + GAS (739.32°K) TO 2.38 ev

TRANSPORT THEORY CODE: GAPLSN (11/12/63)

TEMPERATURE: 300°K

SOURCE: ISOTROPIC SOURCE $Q(X)$ IN
 TOP ENERGY GROUP ONLY

ATOM DENSITIES

UNPOISONED SIDE

 $N_C = 7.75 \times 10^{22}$ ATOMS/CC

CARBON FELT

 $N_C = 1.00 \times 10^{20}$ ATOM/CC

POISONED SIDE

 $N_C = 7.75 \times 10^{22}$ ATOMS/CC $N_{Al} = 2.19 \times 10^{21}$ ATOMS/CC $N_{Sm} = 4.015 \times 10^{18}$ ATOMS/CCLOCAL BUCKLING B^2 TRANSVERSE = 0.004384 cm^{-2} NOT TO SCALE

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
 TECHNIQUES

DATE ISSUED: 1/30/65

90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE
9-23-63 T17, T16

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x(cm)	Q(x)
8.74175+01	1.836-03	2.784+00	3.74215-01	4.275-01	2.774+00	1.980	0.707
6.85579+01	2.339-03	2.780+00	3.34930-01	4.908-01	2.851+00	4.012	0.828
5.52030+01	2.947-03	2.821+00	2.99375-01	5.697-01	2.958+00	6.044	0.905
4.54017+01	3.554-03	2.798+00	2.67279-01	6.694-01	3.103+00	8.076	0.935
3.79966+01	4.253-03	2.803+00	2.38552-01	7.966-01	3.296+00	10.108	0.988
3.22657+01	5.018-03	2.808+00	2.12854-01	9.473-01	3.497+00	12.140	0.992
2.77400+01	5.839-03	2.809+00	1.90006-01	1.156+00	3.809+00	14.172	1.000
2.41038+01	6.748-03	2.821+00	1.69675-01	1.373+00	4.040+00	16.204	0.962
2.11384+01	7.329-03	2.687+00	1.51661-01	1.634+00	4.299+00	18.236	0.965
1.86883+01	8.663-03	2.808+00	1.35673-01	1.873+00	4.408+00	20.268	0.922
1.66408+01	9.612-03	2.774+00	1.21525-01	2.206+00	4.649+00	22.300	0.886
1.41759+01	1.120-02	2.754+00	1.08976-01	2.556+00	4.830+00	24.332	0.841
1.16277+01	1.348-02	2.718+00	9.78686-02	2.929+00	4.971+00	26.364	0.757
9.70983+00	1.628-02	2.742+00	8.76702-02	3.241+00	4.928+00	28.396	0.719
8.23025+00	1.827-02	2.607+00	7.83885-02	3.678+00	5.000+00	30.428	0.677
7.06489+00	2.178-02	2.669+00	7.02432-02	3.998+00	4.870+00	32.460	0.597
6.13065+00	2.474-02	2.631+00	6.30918-02	4.367+00	4.778+00	34.492	0.531
5.37022+00	2.756-02	2.567+00	5.66108-02	4.622+00	4.537+00	36.524	0.491
4.74300+00	3.115-02	2.562+00	5.07658-02	4.792+00	4.218+00	38.556	0.406
4.21960+00	3.469-02	2.539+00	4.55145-02	4.975+00	3.927+00	40.588	0.383
3.77830+00	3.867-02	2.534+00	4.08107-02	4.988+00	3.530+00	42.620	0.325
3.32028+00	4.490-02	2.585+00	3.66069-02	5.000+00	3.174+00	44.652	0.248
2.87003+00	4.952-02	2.465+00	3.28559-02	4.926+00	2.807+00	46.684	0.197
2.50555+00	5.908-02	2.567+00	2.95126-02	4.832+00	2.473+00	48.716	0.183
2.20635+00	6.609-02	2.529+00	2.65347-02	4.528+00	2.084+00	50.748	0.150
1.95773+00	7.291-02	2.475+00	2.38344-02	4.476+00	1.850+00	52.780	0.122
1.74888+00	8.246-02	2.501+00	2.13948-02	4.229+00	1.569+00	54.812	0.096
1.54567+00	9.354-02	2.507+00	1.92367-02	3.954+00	1.319+00	56.844	0.071
1.35320+00	1.047-01	2.458+00	1.72952-02	3.769+00	1.130+00	58.876	0.047
1.19457+00	1.177-01	2.438+00	1.55257-02	3.465+00	9.330-01		
1.06229+00	1.359-01	2.503+00	1.39448-02	3.082+00	7.454-01		
9.50824-01	1.533-01	2.528+00	1.25350-02	2.786+00	6.056-01		
8.45493-01	1.733-01	2.541+00	1.12617-02	2.623+00	5.123-01		
7.47457-01	1.939-01	2.514+00	1.01159-02	2.480+00	4.350-01		
6.65538-01	2.182-01	2.518+00	9.08784-03	2.427+00	3.825-01		
5.96386-01	2.515-01	2.601+00	8.16729-03	2.176+00	3.082-01		
5.32222-01	2.824-01	2.607+00	7.34433-03	1.949+00	2.482-01		
4.72332-01	3.209-01	2.628+00	6.60223-03	1.790+00	2.050-01		
4.20822-01	3.722-01	2.717+00	5.93481-03	1.718+00	1.768-01		

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90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE0.3 BARN/CARBON ATOM (0.0253 eV)CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (300°K, $P_0 + P_1$) TO 1.00 eV
 + GAS (739.32°K) TO 2.38 eV

TRANSPORT THEORY CODE: GAPLSN (11/12/63)

TEMPERATURE: 300°K

SOURCE: ISOTROPIC SOURCE $Q(X)$ IN
 TOP ENERGY GROUP ONLY

ATOM DENSITIESUNPOISONED SIDE

$N_C = 7.75 \times 10^{22}$ ATOMS/CC

CARBON FELT

$N_C = 1.00 \times 10^{20}$ ATOMS/CC

POISONED SIDE

$N_C = 7.75 \times 10^{22}$ ATOMS/CC

$N_{Al} = 2.19 \times 10^{21}$ ATOMS/CC

$N_{Sm} = 4.015 \times 10^{18}$ ATOMS/CC

LOCAL BUCKLING

B^2 TRANSVERSE = 0.00434 CM^{-2}

EXPERIMENTAL ARRANGEMENT 9/23/63 T19, T18PLAN VIEW

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
 TECHNIQUES

DATE ISSUED: 1/30/65

90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE
9-23-63 T19, T18

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x (cm)	Q(x)
8.74175+01	2.292-03	3.063+00	3.73212-01	6.785-01	3.871+00	1.980	0.707
6.85579+01	3.061-03	3.209+00	3.34039-01	7.551-01	3.856+00	4.012	0.828
5.52030+01	3.809-03	3.215+00	2.98586-01	8.870-01	4.049+00	6.044	0.905
4.54017+01	4.699-03	3.262+00	2.66581-01	1.038+00	4.230+00	8.076	0.935
3.79966+01	5.613-03	3.260+00	2.37936-01	1.216+00	4.422+00	10.108	0.988
3.22657+01	6.855-03	3.381+00	2.12310-01	1.419+00	4.606+00	12.140	0.992
2.77400+01	7.778-03	3.299+00	1.89527-01	1.666+00	4.828+00	14.172	1.000
2.41038+01	9.228-03	3.401+00	1.69252-01	1.932+00	5.000+00	16.204	0.962
2.11384+01	1.082-02	3.498+00	1.51288-01	2.137+00	4.942+00	18.236	0.965
1.86883+01	1.135-02	3.244+00	1.35345-01	2.296+00	4.750+00	20.268	0.922
1.66408+01	1.309-02	3.329+00	1.21235-01	2.424+00	4.492+00	22.300	0.886
1.41759+01	1.560-02	3.381+00	1.08721-01	2.529+00	4.203+00	24.332	0.841
1.16277+01	1.902-02	3.381+00	9.76432-02	2.675+00	3.993+00	26.364	0.757
9.70983+00	2.304-02	3.420+00	8.74721-02	2.845+00	3.805+00	28.396	0.719
8.23025+00	2.645-02	3.328+00	7.82150-02	3.257+00	3.895+00	30.428	0.677
7.06489+00	3.107-02	3.356+00	7.00910-02	3.585+00	3.841+00	32.460	0.597
6.13065+00	3.469-02	3.251+00	6.29581-02	4.037+00	3.885+00	34.492	0.531
5.37022+00	3.954-02	3.246+00	5.64937-02	4.309+00	3.721+00	36.524	0.491
4.74300+00	4.554-02	3.302+00	5.06634-02	4.568+00	3.538+00	38.556	0.406
4.21960+00	4.988-02	3.218+00	4.54253-02	4.849+00	3.367+00	40.588	0.383
3.77830+00	5.637-02	3.256+00	4.07331-02	4.925+00	3.067+00	42.620	0.325
3.32028+00	6.307-02	3.201+00	3.65394-02	5.000+00	2.793+00	44.652	0.248
2.87003+00	7.453-02	3.270+00	3.27973-02	4.920+00	2.467+00	46.684	0.197
2.50555+00	8.480-02	3.248+00	2.94618-02	4.884+00	2.200+00	48.716	0.183
2.20635+00	9.584-02	3.233+00	2.64907-02	4.615+00	1.869+00	50.748	0.150
1.95773+00	1.086-01	3.251+00	2.37964-02	4.547+00	1.654+00	52.780	0.122
1.74888+00	1.254-01	3.352+00	2.13622-02	4.235+00	1.383+00	54.812	0.096
1.54567+00	1.403-01	3.314+00	1.91735-02	3.999+00	1.172+00	56.844	0.071
1.35320+00	1.561-01	3.229+00	1.72095-02	3.718+00	9.782-01	58.876	0.047
1.19457+00	1.789-01	3.268+00	1.54528-02	3.435+00	8.116-01		
1.06229+00	2.072-01	3.365+00	1.38827-02	3.358+00	7.126-01		
9.50824-01	2.269-01	3.299+00	1.24820-02	3.170+00	6.048-01		
8.45493-01	2.563-01	3.313+00	1.12167-02	2.940+00	5.041-01		
7.47457-01	2.903-01	3.317+00	1.00778-02	2.823+00	4.349-01		
6.65538-01	3.330-01	3.388+00	9.05544-03	2.546+00	3.524-01		
5.96386-01	3.826-01	3.488+00	8.13981-03	2.263+00	2.816-01		
5.32222-01	4.348-01	3.538+00	7.32103-03	2.282+00	2.554-01		
4.71797-01	5.003-01	3.609+00	6.58249-03	2.097+00	2.110-01		
4.19684-01	5.680-01	3.644+00	5.91810-03	2.018+00	1.826-01		

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90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE0.3 BARN/CARBON ATOM (0.0253 ev)CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (300°K, $P_0 + P_1$) TO 1.00 ev
 + GAS (739.32°K) TO 2.38 ev

TRANSPORT THEORY CODE: GAPLSN (11/12/63)

TEMPERATURE: 300°K

SOURCE: ISOTROPIC SOURCE $Q(X)$ IN
 TOP ENERGY GROUP ONLY

ATOM DENSITIES

UNPOISONED SIDE

$N_C = 7.75 \times 10^{22}$ ATOMS/CC

CARBON FELT

$N_C = 1.00 \times 10^{20}$ ATOMS/CC

POISONED SIDE

$N_C = 7.75 \times 10^{22}$ ATOMS/CC

$N_{Al} = 2.19 \times 10^{21}$ ATOMS/CC

$N_{Sm} = 4.015 \times 10^{18}$ ATOMS/CC

LOCAL BUCKLING

B^2 TRANSVERSE = 0.004384 cm^{-2}

EXPERIMENTAL ARRANGEMENT 9/23/63 T21, T20PLAN VIEW NOT TO SCALE

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
 TECHNIQUES

DATE ISSUED: 1/30/65

90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE
9-23-63 T21, T20

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x (cm)	Q (x)
8.74175+01	3.237-03	2.853+00	3.71282-01	1.065+00	3.988+00	1.980	0.707
6.85579+01	4.395-03	3.037+00	3.32256-01	1.216+00	4.073+00	4.012	0.828
5.52030+01	5.315-03	2.958+00	2.96946-01	1.419+00	4.247+00	6.044	0.905
4.54017+01	6.628-03	3.034+00	2.65080-01	1.647+00	4.400+00	8.076	0.935
3.79966+01	8.093-03	3.100+00	2.36566-01	1.930+00	4.602+00	10.108	0.988
3.22657+01	9.952-03	3.237+00	2.11065-01	2.300+00	4.893+00	12.140	0.992
2.77400+01	1.102-02	3.081+00	1.88397-01	2.632+00	5.000+00	14.172	1.000
2.41038+01	1.302-02	3.163+00	1.68230-01	2.924+00	4.959+00	16.204	0.962
2.11384+01	1.414-02	3.014+00	1.50365-01	3.211+00	4.867+00	18.236	0.965
1.86883+01	1.644-02	3.098+00	1.34511-01	3.277+00	4.445+00	20.268	0.922
1.66408+01	1.909-02	3.202+00	1.20484-01	3.138+00	3.811+00	22.300	0.886
1.41759+01	2.282-02	3.261+00	1.08045-01	3.023+00	3.293+00	24.332	0.841
1.16277+01	2.776-02	3.254+00	9.70343-02	3.074+00	3.007+00	26.364	0.757
9.70983+00	3.367-02	3.296+00	8.69263-02	3.181+00	2.788+00	28.396	0.719
8.23025+00	3.847-02	3.192+00	7.77275-02	3.387+00	2.654+00	30.428	0.677
7.06489+00	4.458-02	3.175+00	6.96556-02	3.657+00	2.568+00	32.460	0.597
6.13065+00	5.044-02	3.117+00	6.25688-02	4.034+00	2.545+00	34.492	0.531
5.37022+00	5.685-02	3.078+00	5.61466-02	4.188+00	2.371+00	36.524	0.491
4.74300+00	6.662-02	3.185+00	5.03547-02	4.661+00	2.366+00	38.556	0.406
4.21960+00	7.219-02	3.071+00	4.51512-02	4.724+00	2.150+00	40.588	0.383
3.77830+00	8.221-02	3.132+00	4.04902-02	4.963+00	2.026+00	42.620	0.325
3.32028+00	9.196-02	3.078+00	3.63244-02	5.000+00	1.831+00	44.652	0.248
2.87003+00	1.070-01	3.096+00	3.26072-02	4.883+00	1.605+00	46.684	0.197
2.50555+00	1.227-01	3.098+00	2.92940-02	4.901+00	1.447+00	48.716	0.183
2.20635+00	1.422-01	3.162+00	2.63426-02	4.618+00	1.226+00	50.748	0.150
1.95773+00	1.633-01	3.224+00	2.36661-02	4.577+00	1.092+00	52.780	0.122
1.74888+00	1.799-01	3.172+00	2.12478-02	4.123+00	8.831-01	54.812	0.096
1.54567+00	2.110-01	3.288+00	1.90733-02	3.739+00	7.191-01	56.844	0.071
1.35320+00	2.360-01	3.219+00	1.71220-02	3.679+00	6.351-01	58.876	0.047
1.19457+00	2.743-01	3.304+00	1.53764-02	3.502+00	5.429-01		
1.06229+00	3.157-01	3.381+00	1.38161-02	3.192+00	4.446-01		
9.50824-01	3.408-01	3.267+00	1.24242-02	3.019+00	3.781-01		
8.45493-01	3.948-01	3.365+00	1.11665-02	2.822+00	3.177-01		
7.47457-01	4.569-01	3.443+00	1.00343-02	2.630+00	2.660-01		
6.65538-01	5.201-01	3.489+00	9.01787-03	2.297+00	2.088-01		
5.96386-01	5.879-01	3.535+00	8.10739-03	2.100+00	1.717-01		
5.32222-01	6.768-01	3.632+00	7.29308-03	1.945+00	1.430-01		
4.70851-01	7.662-01	3.637+00	6.55845-03	2.328+00	1.540-01		
4.17597-01	9.222-01	3.883+00	5.89745-03	1.844+00	1.097-01		

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90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE0.15 BARN/CARBON ATOM (0.0253 eV)CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (274°K, $P_0 + P_1$); SUMMIT (600°K, $P_0 + P_1$)
 TO 1.0 eV + GAS (890.98°K) TO 2.38 eV

TRANSPORT THEORY CODE: GAPLSN (1/9/64)

TEMPERATURE: 274°K; 600°K

SOURCE: ISOTROPIC SOURCE $Q(X)$ IN
 TOP ENERGY GROUP ONLY

ATOM DENSITIES

UNPOISONED 274°K SIDE

$$N_C = 7.90 \times 10^{22} \text{ ATOMS/CC}$$

CARBON FELT

$$N_C = 3.90 \times 10^{21} \text{ ATOMS/CC}$$

$$N_C = 7.75 \times 10^{22} \text{ ATOMS/CC}$$

$$N_{Sm} = 2.08 \times 10^{18} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.004384 \text{ CM}^{-2}$$

EXPERIMENTAL ARRANGEMENT 11/7/63 T28, T27PLAN VIEW NOT TO SCALE

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
 TECHNIQUES

DATE ISSUED: 1/30/65

90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE
11-7-63 T28, T27

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x (cm)	Q (x)
8.74175+01	9.716-04	1.538+00	3.76093-01	2.685-01	1.829+00	2.032	1.0000
6.85579+01	1.246-03	1.547+00	3.36505-01	3.117-01	1.900+00	4.064	0.9200
5.52030+01	1.542-03	1.542+00	3.00693-01	3.706-01	2.018+00	6.096	0.8100
4.54017+01	1.940-03	1.596+00	2.68379-01	4.493-01	2.184+00	8.128	0.7300
3.79966+01	2.237-03	1.539+00	2.39470-01	5.353-01	2.322+00	10.160	0.6700
3.22657+01	2.701-03	1.579+00	2.13618-01	6.538-01	2.530+00	12.192	0.6200
2.77400+01	3.036-03	1.526+00	1.90643-01	8.159-01	2.818+00	14.224	0.5700
2.41038+01	3.689-03	1.611+00	1.70205-01	9.962-01	3.071+00	16.256	0.5200
2.11384+01	4.125-03	1.579+00	1.52103-01	1.229+00	3.387+00	18.288	0.4600
1.86883+01	4.637-03	1.570+00	1.36042-01	1.483+00	3.653+00	20.320	0.4200
1.66408+01	4.973-03	1.499+00	1.21833-01	1.787+00	3.943+00	22.352	0.3700
1.41759+01	6.020-03	1.546+00	1.09234-01	2.185+00	4.324+00	24.384	0.3300
1.16277+01	7.231-03	1.523+00	9.80847-02	2.576+00	4.578+00	26.416	0.2900
9.70983+00	8.875-03	1.561+00	8.78504-02	3.041+00	4.839+00	28.448	0.2500
8.23025+00	1.046-02	1.559+00	7.85382-02	3.515+00	5.000+00	30.480	0.2300
7.06489+00	1.179-02	1.509+00	7.03679-02	3.889+00	4.957+00	32.385	0.1790
6.13065+00	1.399-02	1.554+00	6.31960-02	4.309+00	4.932+00	34.417	0.1550
5.37022+00	1.543-02	1.501+00	5.66976-02	4.585+00	4.709+00	36.398	0.1370
4.74300+00	1.761-02	1.513+00	5.08380-02	4.772+00	4.395+00	38.480	0.1240
4.21960+00	1.950-02	1.490+00	4.55745-02	5.000+00	4.128+00	40.510	0.1060
3.77830+00	2.295-02	1.571+00	4.08606-02	4.978+00	3.685+00	42.545	0.0930
3.32028+00	2.549-02	1.533+00	3.66483-02	4.959+00	3.292+00	44.577	0.0800
2.87003+00	2.880-02	1.497+00	3.28903-02	4.949+00	2.948+00	46.609	0.0690
2.50555+00	3.276-02	1.487+00	2.95412-02	4.882+00	2.612+00	48.641	0.0600
2.20635+00	3.712-02	1.484+00	2.65585-02	4.628+00	2.227+00	50.673	0.0495
1.95773+00	4.322-02	1.533+00	2.38542-02	4.540+00	1.962+00	52.705	0.0412
1.74888+00	4.763-02	1.509+00	2.14112-02	4.420+00	1.714+00	54.737	0.0310
1.54567+00	5.710-02	1.599+00	1.92503-02	4.022+00	1.403+00	56.769	0.0275
1.35320+00	6.468-02	1.585+00	1.73065-02	3.860+00	1.210+00	58.801	0.0200
1.19457+00	7.118-02	1.540+00	1.55351-02	3.618+00	1.018+00	60.833	0.0150
1.06229+00	8.201-02	1.578+00	1.39526-02	3.140+00	7.935-01		
9.50824-01	9.044-02	1.558+00	1.25414-02	2.750+00	6.248-01		
8.45493-01	1.044-01	1.599+00	1.12671-02	2.610+00	5.326-01		
7.47457-01	1.204-01	1.630+00	1.01204-02	2.502+00	4.587-01		
6.65538-01	1.397-01	1.684+00	9.09157-03	2.428+00	3.998-01		
5.96386-01	1.560-01	1.685+00	8.17040-03	2.271+00	3.361-01		
5.32222-01	1.782-01	1.718+00	7.34693-03	2.133+00	2.838-01		
4.73443-01	2.049-01	1.757+00	6.60441-03	1.764+00	2.110-01		
4.23083-01	2.366-01	1.813+00	5.93664-03	1.771+00	1.905-01		

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90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE

0.15 BARN/CARBON ATOM (0.0253 ev)

CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (274°K, $P_0 + P_1$); SUMMIT (600°K, $P_0 + P_1$)
TO 1.0 ev + GAS (890.98°K) TO 2.38 ev

TRANSPORT THEORY CODE: GAPLSN (1/9/64)

TEMPERATURE: 274°K; 600°K

SOURCE: ISOTROPIC SOURCE $Q(x)$ IN
TOP ENERGY GROUP ONLY

ATOM DENSITIES

UNPOISONED 274°K SIDE

$N_C = 7.90 \times 10^{22}$ ATOMS/CC

CARBON FELT

$N_C = 3.90 \times 10^{21}$ ATOMS/CC

POISONED 600°K SIDE

$N_C = 7.75 \times 10^{22}$ ATOMS/CC

$N_{Sm} = 2.08 \times 10^{18}$ ATOMS/CC

LOCAL BUCKLING

B^2 TRANSVERSE = 0.004384 cm^{-2}

EXPERIMENTAL ARRANGEMENT 11/7/63 T30, T29

PLAN VIEW

NOT TO SCALE

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
TECHNIQUES

DATE ISSUED: 1/30/65

90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE
11-7-63 T30, T29

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x (cm)	Q (x)
8.74175+01	9.213-04	1.448+00	3.76093-01	2.725-01	1.843+00	2.032	1.0000
6.85579+01	1.163-03	1.435+00	3.36505-01	3.142-01	1.902+00	4.064	0.9200
5.52030+01	1.473-03	1.462+00	3.00693-01	3.642-01	1.970+00	6.096	0.8100
4.54017+01	1.790-03	1.461+00	2.68379-01	4.432-01	2.139+00	8.128	0.7300
3.79966+01	2.176-03	1.487+00	2.39470-01	5.390-01	2.321+00	10.160	0.6700
3.22657+01	2.509-03	1.456+00	2.13618-01	6.609-01	2.539+00	12.192	0.6200
2.77400+01	2.956-03	1.475+00	1.90643-01	8.215-01	2.817+00	14.224	0.5700
2.41038+01	3.448-03	1.495+00	1.70205-01	1.029+00	3.150+00	16.256	0.5200
2.11384+01	3.800-03	1.445+00	1.52103-01	1.265+00	3.459+00	18.288	0.4600
1.86883+01	4.469-03	1.502+00	1.36042-01	1.511+00	3.697+00	20.320	0.4200
1.66408+01	4.931-03	1.476+00	1.21833-01	1.871+00	4.099+00	22.352	0.3700
1.41759+01	5.687-03	1.450+00	1.09234-01	2.238+00	4.397+00	24.384	0.3300
1.16277+01	6.905-03	1.444+00	9.80847-02	2.646+00	4.668+00	26.416	0.2900
9.70983+00	8.439-03	1.474+00	8.78504-02	3.086+00	4.876+00	28.448	0.2500
8.23025+00	9.851-03	1.458+00	7.85382-02	3.518+00	4.969+00	30.480	0.2300
7.06489+00	1.131-02	1.437+00	7.03679-02	3.951+00	5.000+00	32.385	0.1790
6.13065+00	1.287-02	1.419+00	6.31960-02	4.288+00	4.874+00	34.417	0.1550
5.37022+00	1.510-02	1.459+00	5.66976-02	4.585+00	4.676+00	36.398	0.1370
4.74300+00	1.685-02	1.437+00	5.08380-02	4.744+00	4.338+00	38.480	0.1240
4.21960+00	1.881-02	1.427+00	4.55745-02	4.882+00	4.002+00	40.510	0.1060
3.77830+00	2.121-02	1.441+00	4.08606-02	4.983+00	3.662+00	42.545	0.0930
3.32028+00	2.431-02	1.452+00	3.66483-02	5.000+00	3.296+00	44.577	0.0800
2.87003+00	2.856-02	1.474+00	3.28903-02	4.880+00	2.887+00	46.609	0.0690
2.50555+00	3.237-02	1.458+00	2.95412-02	4.738+00	2.517+00	48.641	0.0600
2.20635+00	3.687-02	1.463+00	2.65585-02	4.660+00	2.226+00	50.673	0.0495
1.95773+00	4.100-02	1.444+00	2.38542-02	4.517+00	1.938+00	52.705	0.0412
1.74888+00	4.661-02	1.466+00	2.14112-02	4.283+00	1.649+00	54.737	0.0310
1.54567+00	5.217-02	1.450+00	1.92503-02	4.079+00	1.412+00	56.769	0.0275
1.35320+00	5.970-02	1.453+00	1.73065-02	3.844+00	1.196+00	58.801	0.0200
1.19457+00	6.974-02	1.498+00	1.55351-02	3.573+00	9.983-01	60.833	0.0150
1.06229+00	7.932-02	1.515+00	1.39526-02	3.207+00	8.047-01		
9.50824-01	8.802-02	1.505+00	1.25414-02	2.737+00	6.173-01		
8.45493-01	1.039-01	1.580+00	1.12671-02	2.635+00	5.340-01		
7.47457-01	1.153-01	1.549+00	1.01204-02	2.475+00	4.504-01		
6.65538-01	1.313-01	1.571+00	9.09157-03	2.473+00	4.044-01		
5.96386-01	1.506-01	1.615+00	8.17040-03	2.237+00	3.287-01		
5.32222-01	1.747-01	1.672+00	7.34693-03	2.026+00	2.677-01		
4.73443-01	1.948-01	1.658+00	6.60441-03	1.813+00	2.154-01		
4.23083-01	2.311-01	1.758+00	5.93664-03	1.803+00	1.925-01		

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90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE0.15 BARN/CARBON ATOM (0.0253 ev)EXPERIMENTAL ARRANGEMENT 11/7/63 T26, T25PLAN VIEWCALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (274°K, $P_0 + P_1$); SUMMIT (600°K, $P_0 + P_1$)
 TO 1.0 ev + GAS (890.98°K) TO 2.38 ev

TRANSPORT THEORY CODE: GAPLSN (1/9/64)

TEMPERATURE: 274°K; 600°K

SOURCE: ISOTROPIC SOURCE $Q(X)$ IN
 TOP ENERGY GROUP ONLY

ATOM DENSITIES

UNPOISONED 274°K SIDE

$N_C = 7.90 \times 10^{22}$ ATOMS/CC

CARBON FELT

$N_C = 3.90 \times 10^{21}$ ATOMS/CC

POISONED 600°K SIDE

$N_C = 7.75 \times 10^{22}$ ATOMS/CC

$N_{Sm} = 2.08 \times 10^{18}$ ATOMS/CC

LOCAL BUCKLING

B^2 TRANSVERSE = 0.004384 cm^{-2}

NOT TO SCALE

246

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
 TECHNIQUES

DATE ISSUED: 1/30/65

90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE
11-7-63 T26, T25

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x (cm)	Q (x)
8.74175+01	9.506-04	1.482+00	3.76093-01	2.808-01	1.884+00	2.032	1.0000
6.85579+01	1.254-03	1.533+00	3.36505-01	3.295-01	1.978+00	4.064	0.9200
5.52030+01	1.527-03	1.504+00	3.00693-01	4.074-01	2.185+00	6.096	0.8100
4.54017+01	1.881-03	1.524+00	2.68379-01	4.803-01	2.299+00	8.128	0.7300
3.79966+01	2.247-03	1.523+00	2.39470-01	5.834-01	2.492+00	10.160	0.6700
3.22657+01	2.579-03	1.484+00	2.13618-01	7.418-01	2.827+00	12.192	0.6200
2.77400+01	3.143-03	1.555+00	1.90643-01	9.117-01	3.101+00	14.224	0.5700
2.41038+01	3.510-03	1.509+00	1.70205-01	1.125+00	3.414+00	16.256	0.5200
2.11384+01	4.060-03	1.531+00	1.52103-01	1.383+00	3.752+00	18.288	0.4600
1.86883+01	4.507-03	1.503+00	1.36042-01	1.681+00	4.079+00	20.320	0.4200
1.66408+01	4.835-03	1.435+00	1.21833-01	2.000+00	4.348+00	22.352	0.3700
1.41759+01	6.132-03	1.551+00	1.09234-01	2.357+00	4.592+00	24.384	0.3300
1.16277+01	7.289-03	1.512+00	9.80847-02	2.778+00	4.860+00	26.416	0.2900
9.70983+00	8.807-03	1.525+00	8.78504-02	3.178+00	4.980+00	28.448	0.2500
8.23025+00	9.853-03	1.447+00	7.85382-02	3.560+00	4.988+00	30.480	0.2300
7.06489+00	1.208-02	1.523+00	7.03679-02	3.983+00	5.000+00	32.385	0.1790
6.13065+00	1.305-02	1.428+00	6.31960-02	4.344+00	4.897+00	34.417	0.1550
5.37022+00	1.597-02	1.530+00	5.66976-02	4.626+00	4.679+00	36.398	0.1370
4.74300+00	1.768-02	1.496+00	5.08380-02	4.793+00	4.347+00	38.480	0.1240
4.21960+00	1.994-02	1.501+00	4.55745-02	4.960+00	4.033+00	40.510	0.1060
3.77830+00	2.246-02	1.514+00	4.08606-02	5.000+00	3.645+00	42.545	0.0930
3.32028+00	2.575-02	1.525+00	3.66483-02	4.977+00	3.254+00	44.577	0.0800
2.87003+00	2.918-02	1.494+00	3.28903-02	4.885+00	2.866+00	46.609	0.0690
2.50555+00	3.379-02	1.510+00	2.95412-02	4.794+00	2.527+00	48.641	0.0600
2.20635+00	3.799-02	1.495+00	2.65585-02	4.626+00	2.192+00	50.673	0.0495
1.95773+00	4.409-02	1.540+00	2.38542-02	4.479+00	1.906+00	52.705	0.0412
1.74888+00	4.922-02	1.536+00	2.14112-02	4.245+00	1.621+00	54.737	0.0310
1.54567+00	5.575-02	1.537+00	1.92503-02	3.984+00	1.368+00	56.769	0.0275
1.35320+00	6.501-02	1.569+00	1.73065-02	3.736+00	1.153+00	58.801	0.0200
1.19457+00	7.176-02	1.529+00	1.55351-02	3.515+00	9.741-01	60.833	0.0150
1.06229+00	8.187-02	1.551+00	1.39526-02	3.141+00	7.817-01		
9.50824-01	9.128-02	1.548+00	1.25414-02	2.754+00	6.162-01		
8.45493-01	1.069-01	1.613+00	1.12671-02	2.690+00	5.407-01		
7.47457-01	1.214-01	1.619+00	1.01204-02	2.539+00	4.583-01		
6.65538-01	1.399-01	1.662+00	9.09157-03	2.386+00	3.869-01		
5.96386-01	1.567-01	1.667+00	8.17040-03	2.253+00	3.283-01		
5.32222-01	1.818-01	1.726+00	7.34693-03	2.052+00	2.689-01		
4.73443-01	2.093-01	1.768+00	6.60441-03	1.969+00	2.320-01		
4.23083-01	2.447-01	1.847+00	5.93664-03	1.705+00	1.806-01		

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90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE

0.15 BARN/CARBON ATOM (0.0253 eV)

CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (274°K, $P_0 + P_1$); SUMMIT (600°K, $P_0 + P_1$)
TO 1.0 eV + GAS (890.98°K) TO 2.38 eV

TRANSPORT THEORY CODE: GAPLSN (1/9/64)

TEMPERATURE: 274°K; 600°K

SOURCE: ISOTROPIC SOURCE $Q(X)$ IN
TOP ENERGY GROUP ONLY

ATOM DENSITIES

UNPOISONED 274°K SIDE

$$N_C = 7.90 \times 10^{22} \text{ ATOMS/CC}$$

CARBON FELT

$$N_C = 3.90 \times 10^{21} \text{ ATOMS/CC}$$

POISONED 600°K SIDE

$$N_C = 7.75 \times 10^{22} \text{ ATOMS/CC}$$

$$N_{Sm} = 2.08 \times 10^{18} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.004384 \text{ CM}^{-2}$$

EXPERIMENTAL ARRANGEMENT 11/7/63 T32, T31

PLAN VIEW

NOT TO SCALE

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
TECHNIQUES

DATE ISSUED: 1/30/65

90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE
11-7-63 T32, T31

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x (cm)	Q (x)
8.74175+01	1.334-03	1.637+00	3.76093-01	4.899-01	2.587+00	2.032	1.0000
6.85579+01	1.648-03	1.587+00	3.36505-01	5.801-01	2.741+00	4.064	0.9200
5.52030+01	2.093-03	1.622+00	3.00693-01	7.137-01	3.013+00	6.096	0.8100
4.54017+01	2.508-03	1.598+00	2.68379-01	8.683-01	3.272+00	8.128	0.7300
3.79966+01	3.239-03	1.728+00	2.39470-01	1.128+00	3.793+00	10.160	0.6700
3.22657+01	3.599-03	1.630+00	2.13618-01	1.385+00	4.153+00	12.192	0.6200
2.77400+01	4.315-03	1.680+00	1.90643-01	1.656+00	4.431+00	14.224	0.5700
2.41038+01	4.933-03	1.669+00	1.70205-01	1.990+00	4.755+00	16.256	0.5200
2.11384+01	5.682-03	1.686+00	1.52103-01	2.271+00	4.849+00	18.288	0.4600
1.86883+01	6.413-03	1.683+00	1.36042-01	2.618+00	5.000+00	20.320	0.4200
1.66408+01	6.968-03	1.628+00	1.21833-01	2.886+00	4.937+00	22.352	0.3700
1.41759+01	8.737-03	1.739+00	1.09234-01	3.196+00	4.901+00	24.384	0.3300
1.16277+01	1.055-02	1.722+00	9.80847-02	3.415+00	4.703+00	26.416	0.2900
9.70983+00	1.191-02	1.624+00	8.78504-02	3.709+00	4.575+00	28.448	0.2500
8.23025+00	1.466-02	1.694+00	7.85382-02	4.114+00	4.536+00	30.480	0.2300
7.06489+00	1.703-02	1.689+00	7.03679-02	4.320+00	4.268+00	32.385	0.1790
6.13065+00	1.956-02	1.683+00	6.31960-02	4.591+00	4.073+00	34.417	0.1550
5.37022+00	2.268-02	1.710+00	5.66976-02	4.827+00	3.842+00	36.398	0.1370
4.74300+00	2.551-02	1.698+00	5.08380-02	4.950+00	3.533+00	38.480	0.1240
4.21960+00	2.913-02	1.726+00	4.55745-02	4.941+00	3.162+00	40.510	0.1060
3.77830+00	3.104-02	1.647+00	4.08606-02	5.000+00	2.868+00	42.545	0.0930
3.32028+00	3.689-02	1.720+00	3.66483-02	4.988+00	2.566+00	44.577	0.0800
2.87003+00	4.217-02	1.699+00	3.28903-02	4.733+00	2.185+00	46.609	0.0690
2.50555+00	4.849-02	1.706+00	2.95412-02	4.597+00	1.906+00	48.641	0.0600
2.20635+00	5.282-02	1.636+00	2.65585-02	4.355+00	1.624+00	50.673	0.0495
1.95773+00	6.485-02	1.782+00	2.38542-02	4.118+00	1.379+00	52.705	0.0412
1.74888+00	7.210-02	1.770+00	2.14112-02	3.870+00	1.163+00	54.737	0.0310
1.54567+00	8.131-02	1.764+00	1.92503-02	3.636+00	9.827-01	56.769	0.0275
1.35320+00	9.551-02	1.814+00	1.73065-02	3.376+00	8.202-01	58.801	0.0200
1.19457+00	1.081-01	1.813+00	1.55351-02	3.202+00	6.982-01	60.833	0.0150
1.06229+00	1.219-01	1.818+00	1.39526-02	2.871+00	5.623-01		
9.50824-01	1.436-01	1.917+00	1.25414-02	2.725+00	4.797-01		
8.45493-01	1.596-01	1.894+00	1.12671-02	2.539+00	4.016-01		
7.47457-01	1.853-01	1.944+00	1.01204-02	2.381+00	3.383-01		
6.65538-01	2.137-01	1.997+00	9.09157-03	2.111+00	2.695-01		
5.96386-01	2.422-01	2.028+00	8.17040-03	2.097+00	2.405-01		
5.32222-01	2.848-01	2.128+00	7.34693-03	1.818+00	1.875-01		
4.73443-01	3.450-01	2.293+00	6.60441-03	1.704+00	1.580-01		
4.23083-01	3.941-01	2.341+00	5.93664-03	1.535+00	1.279-01		

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90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE0.15 BARN/CARBON ATOM (0.0253 eV)CALCULATIONS PARAMETERS

SCATTERING KERNEL: SUMMIT (274°K, $P_0 + P_1$); SUMMIT (600°K, $P_0 + P_1$)
TO 1.0 eV + GAS (890.98°K) TO 2.38 eV

TRANSPORT THEORY CODE: GAPLSN (1/9/64)

TEMPERATURE: 274°K; 600°K

SOURCE: ISOTROPIC SOURCE $Q(X)$ IN
TOP ENERGY GROUP ONLY

ATOM DENSITIES

UNPOISONED 274°K SIDE

$$N_C = 7.90 \times 10^{22} \text{ ATOMS/CC}$$

CARBON FELT

$$N_C = 3.90 \times 10^{21} \text{ ATOMS/CC}$$

POISONED 600°K SIDE

$$N_C = 7.75 \times 10^{22} \text{ ATOMS/CC}$$

$$N_{Sm} = 2.08 \times 10^{18} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.004384 \text{ CM}^{-2}$$

EXPERIMENTAL ARRANGEMENT 11/7/63 T36, T35 NOT TO SCALE

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
TECHNIQUES

DATE ISSUED: 1/30/65

90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE
11-7-63 T36, T35

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x (cm)	Q (x)
8.74175+01	1.499-03	1.555+00	3.36505-01	7.187-01	2.871+00	2.032	1.0000
6.85579+01	1.914-03	1.558+00	3.00693-01	8.889-01	3.173+00	4.064	0.9200
5.52030+01	2.439-03	1.599+00	2.68379-01	1.134+00	3.613+00	6.096	0.8100
4.54017+01	3.052-03	1.645+00	2.39470-01	1.369+00	3.892+00	8.128	0.7300
3.79966+01	3.479-03	1.569+00	2.13618-01	1.702+00	4.317+00	10.160	0.6700
3.22657+01	4.090-03	1.567+00	1.90643-01	2.068+00	4.680+00	12.192	0.6200
2.77400+01	5.007-03	1.649+00	1.70205-01	2.397+00	4.844+00	14.224	0.5700
2.41038+01	5.904-03	1.689+00	1.52103-01	2.757+00	4.979+00	16.256	0.5200
2.11384+01	6.785-03	1.703+00	1.36042-01	3.096+00	5.000+00	18.288	0.4600
1.86883+01	7.357-03	1.632+00	1.21833-01	3.315+00	4.795+00	20.320	0.4200
1.66408+01	8.296-03	1.639+00	1.09234-01	3.561+00	4.618+00	22.352	0.3700
1.41759+01	9.791-03	1.648+00	9.80847-02	3.694+00	4.301+00	24.384	0.3300
1.16277+01	1.219-02	1.683+00	8.78504-02	4.001+00	4.173+00	26.416	0.2900
9.70983+00	1.453-02	1.675+00	7.85382-02	4.342+00	4.049+00	28.448	0.2500
8.23025+00	1.705-02	1.666+00	7.03679-02	4.427+00	3.698+00	30.480	0.2300
7.06489+00	1.936-02	1.624+00	6.31960-02	4.724+00	3.544+00	32.385	0.1790
6.13065+00	2.240-02	1.631+00	5.66976-02	4.938+00	3.324+00	34.417	0.1550
5.37022+00	2.689-02	1.714+00	5.08380-02	4.935+00	2.978+00	36.398	0.1370
4.74300+00	3.067-02	1.727+00	4.55745-02	5.000+00	2.705+00	38.480	0.1240
4.21960+00	3.276-02	1.641+00	4.08606-02	4.895+00	2.374+00	40.510	0.1060
3.77830+00	3.897-02	1.748+00	3.66483-02	4.883+00	2.125+00	42.545	0.0930
3.32028+00	4.245-02	1.673+00	3.28903-02	4.695+00	1.833+00	44.577	0.0800
2.87003+00	5.042-02	1.718+00	2.95412-02	4.522+00	1.586+00	46.609	0.0690
2.50555+00	5.972-02	1.776+00	2.65585-02	4.298+00	1.355+00	48.641	0.0600
2.20635+00	6.327-02	1.657+00	2.38542-02	4.198+00	1.189+00	50.673	0.0495
1.95773+00	7.588-02	1.764+00	2.14112-02	3.736+00	9.497-01	52.705	0.0412
1.74888+00	8.590-02	1.783+00	1.92503-02	3.493+00	7.984-01	54.737	0.0310
1.54567+00	9.725-02	1.785+00	1.73065-02	3.334+00	6.849-01	56.769	0.0275
1.35320+00	1.106-01	1.776+00	1.55351-02	2.914+00	5.375-01	58.801	0.0200
1.19457+00	1.271-01	1.802+00	1.39526-02	2.729+00	4.521-01	60.833	0.0150
1.06229+00	1.451-01	1.829+00	1.25414-02	2.733+00	4.069-01		
9.50824-01	1.706-01	1.926+00	1.12671-02	2.515+00	3.364-01		
8.45493-01	1.901-01	1.908+00	1.01204-02	2.213+00	2.658-01		
7.47457-01	2.207-01	1.959+00	9.09157-03	2.232+00	2.409-01		
6.65538-01	2.584-01	2.041+00	8.17040-03	1.877+00	1.820-01		
5.96386-01	2.904-01	2.056+00	7.34693-03	1.652+00	1.441-01		
5.32222-01	3.425-01	2.164+00	6.60441-03	1.720+00	1.349-01		
4.73443-01	4.065-01	2.285+00	5.93664-03	1.561+00	1.100-01		
4.23083-01	4.779-01	2.400+00					
3.76093-01	5.993-01	2.676+00					

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90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE0.15 BARN/CARBON ATOM (0.0253 ev)CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (274°K, $P_0 + P_1$); SUMMIT (600°K, $P_0 + P_1$)
TO 1.0 ev + GAS (890.98°K) TO 2.38 ev

TRANSPORT THEORY CODE: GAPLSN (1/9/64)

TEMPERATURE: 274°K; 600°K

SOURCE: ISOTROPIC SOURCE Q(X) IN
TOP ENERGY GROUP ONLY

ATOM DENSITIES

UNPOISONED 274°K SIDE

$$N_C = 7.90 \times 10^{22} \text{ ATOMS/CC}$$

CARBON FELT

$$N_C = 3.90 \times 10^{21} \text{ ATOMS/CC}$$

POISONED 600°K SIDE

$$N_C = 7.75 \times 10^{22} \text{ ATOMS/CC}$$

$$N_{Sm} = 2.08 \times 10^{18} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.004384 \text{ CM}^{-2}$$

EXPERIMENTAL ARRANGEMENT 11/7/63 T34, T33

PLAN VIEW

NOT TO SCALE

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
TECHNIQUES

DATE ISSUED: 1/30/65

90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE
11-7-63 T34, T33

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x (cm)	Q (x)
8.74175+01	1.640-03	1.444+00	3.76093-01	7.404-01	2.804+00	2.032	1.0000
6.85579+01	2.268-03	1.566+00	3.36505-01	8.698-01	2.947+00	4.064	0.9200
5.52030+01	2.962-03	1.647+00	3.00693-01	1.085+00	3.285+00	6.096	0.8100
4.54017+01	3.370-03	1.541+00	2.68379-01	1.379+00	3.727+00	8.128	0.7300
3.79966+01	4.208-03	1.610+00	2.39470-01	1.699+00	4.097+00	10.160	0.6700
3.22657+01	5.128-03	1.666+00	2.13618-01	2.068+00	4.449+00	12.192	0.6200
2.77400+01	5.464-03	1.526+00	1.90643-01	2.530+00	4.858+00	14.224	0.5700
2.41038+01	6.376-03	1.548+00	1.70205-01	2.903+00	4.976+00	16.256	0.5200
2.11384+01	7.820-03	1.665+00	1.52103-01	3.264+00	5.000+00	18.288	0.4600
1.86883+01	8.356-03	1.573+00	1.36042-01	3.569+00	4.890+00	20.320	0.4200
1.66408+01	9.868-03	1.654+00	1.21833-01	3.790+00	4.650+00	22.352	0.3700
1.41759+01	1.124-02	1.605+00	1.09234-01	0.054+00	4.460+00	24.384	0.3300
1.16277+01	1.432-02	1.677+00	9.80847-02	4.173+00	4.122+00	26.416	0.2900
9.70983+00	1.660-02	1.623+00	8.78504-02	4.331+00	3.832+00	28.448	0.2500
8.23025+00	2.033-02	1.685+00	7.85382-02	4.567+00	3.612+00	30.480	0.2300
7.06489+00	2.362-02	1.681+00	7.03679-02	4.673+00	3.312+00	32.385	0.1790
6.13065+00	2.829-02	1.746+00	6.31960-02	4.837+00	3.078+00	34.417	0.1550
5.37022+00	3.015-02	1.630+00	5.66976-02	5.000+00	2.855+00	36.398	0.1370
4.74300+00	3.622-02	1.730+00	5.08380-02	4.941+00	2.530+00	38.480	0.1240
4.21960+00	4.002-02	1.701+00	4.55745-02	4.973+00	2.283+00	40.510	0.1060
3.77830+00	4.378-02	1.666+00	4.08606-02	4.933+00	2.030+00	42.545	0.0930
3.32028+00	4.994-02	1.670+00	3.66483-02	4.902+00	1.809+00	44.577	0.0800
2.87003+00	6.071-02	1.755+00	3.28903-02	4.711+00	1.560+00	46.609	0.0690
2.50555+00	6.926-02	1.748+00	2.95412-02	4.342+00	1.292+00	48.641	0.0600
2.20635+00	7.892-02	1.753+00	2.65585-02	4.167+00	1.115+00	50.673	0.0495
1.95773+00	8.636-02	1.703+00	2.38542-02	3.913+00	9.401-01	52.705	0.0412
1.74888+00	1.015-01	1.788+00	2.14112-02	3.499+00	7.545-01	54.737	0.0310
1.54567+00	1.113-01	1.733+00	1.92503-02	3.319+00	6.434-01	56.769	0.0275
1.35320+00	1.369-01	1.866+00	1.73065-02	2.978+00	5.189-01	58.801	0.0200
1.19457+00	1.574-01	1.894+00	1.55351-02	2.791+00	4.366-01	60.833	0.0150
1.06229+00	1.802-01	1.927+00	1.39526-02	2.626+00	3.689-01		
9.50824-01	1.984-01	1.900+00	1.25414-02	2.594+00	3.276-01		
8.45493-01	2.289-01	1.949+00	1.12671-02	2.610+00	2.961-01		
7.47457-01	2.623-01	1.974+00	1.01204-02	2.236+00	2.278-01		
6.65538-01	3.025-01	2.027+00	9.09157-03	1.855+00	1.698-01		
5.96386-01	3.469-01	2.083+00	8.17040-03	1.952+00	1.606-01		
5.32222-01	4.162-01	2.230+00	7.34693-03	1.726+00	1.277-01		
4.73443-01	4.916-01	2.344+00	6.60441-03	1.526+00	1.015-01		
4.23083-01	6.010-01	2.560+00	5.93664-03	1.599+00	9.562-02		

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90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE

0.78 BARN/CARBON ATOM (0.0253 eV)

CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (274°K, $P_0 + P_1$); SUMMIT (600°K, $P_0 + P_1$)

TO 1.0 eV + GAS (890.98°K) TO 2.38 eV

TRANSPORT THEORY CODE: GAPLSN (5/7/64)

TEMPERATURE: 274°K; 600°K

SOURCE: DSZ (GA-3542, P.145)

ATOM DENSITIES

UNPOISONED 274°K SIDE

$$N_C = 7.90 \times 10^{22} \text{ ATOMS/CC}$$

CARBON FELT

$$N_C = 3.90 \times 10^{21} \text{ ATOMS/CC}$$

POISONED 600°K SIDE

$$N_C = 7.587 \times 10^{22} \text{ ATOMS/CC}$$

$$N_B = 7.260 \times 10^{19} \text{ ATOMS/CC}$$

$$N_{Cr} = 3.063 \times 10^{20} \text{ ATOMS/CC}$$

$$N_{Fe} = 1.0408 \times 10^{21} \text{ ATOMS/CC}$$

$$N_{Ni} = 1.996 \times 10^{20} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.004575 \text{ CM}^{-2}$$

EXPERIMENTAL ARRANGEMENT 12/19/63 T39, T38

PLAN VIEW

NOT TO SCALE

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
TECHNIQUES

DATE ISSUED: 1/30/65

90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE
12-19-63 T39, T38

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x (cm)	Q (x)
8.65210+01	2.108-03	3.305+00	3.75848-01	3.311-01	2.255+00	0.00	0.450
6.79347+01	2.612-03	3.215+00	3.36297-01	3.706-01	2.258+00	2.00	0.609
5.47524+01	3.127-03	3.102+00	3.00518-01	4.269-01	2.324+00	4.00	0.748
4.50654+01	3.651-03	2.981+00	2.68231-01	4.893-01	2.378+00	6.00	0.858
3.77390+01	4.283-03	2.928+00	2.39345-01	5.844-01	2.534+00	8.00	0.929
3.20641+01	4.835-03	2.808+00	2.13513-01	6.940-01	2.684+00	10.00	0.974
2.75792+01	5.556-03	2.776+00	1.90554-01	8.550-01	2.951+00	12.00	1.000
2.39735+01	6.290-03	2.732+00	1.70130-01	1.034+00	3.186+00	14.00	1.000
2.10313+01	7.138-03	2.719+00	1.52040-01	1.248+00	3.438+00	16.00	0.999
1.85993+01	7.769-03	2.617+00	1.35988-01	1.535+00	3.782+00	17.50	0.981
1.65660+01	8.765-03	2.630+00	1.21788-01	1.827+00	4.031+00	18.90	0.951
1.41170+01	1.009-02	2.581+00	1.09195-01	2.192+00	4.336+00	20.32	0.876
1.15839+01	1.215-02	2.550+00	9.80517-02	2.575+00	4.754+00	22.86	0.800
9.67644+00	1.422-02	2.493+00	8.78225-02	3.005+00	4.782+00	24.13	0.708
8.20420+00	1.663-02	2.472+00	7.85145-02	3.469+00	4.934+00	26.67	0.564
7.04417+00	1.904-02	2.430+00	7.03478-02	3.924+00	5.000+00	29.21	0.506
6.11390+00	2.128-02	2.356+00	6.31789-02	4.264+00	4.880+00	30.48	0.485
5.35649+00	2.425-02	2.353+00	5.66831-02	4.607+00	4.731+00	31.75	0.473
4.73160+00	2.672-02	2.290+00	5.08256-02	4.726+00	4.351+00	33.02	0.442
4.21003+00	2.964-02	2.261+00	4.55640-02	4.834+00	3.990+00	35.56	0.375
3.77019+00	3.244-02	2.215+00	4.08517-02	5.000+00	3.700+00	38.10	0.325
3.31360+00	3.719-02	2.233+00	3.66407-02	4.964+00	3.295+00	39.37	0.275
2.86466+00	4.188-02	2.174+00	3.28838+02	4.902+00	3.920+00	41.91	0.231
2.50117+00	4.840-02	2.193+00	2.95357+02	4.761+00	2.547+00	43.40	0.203
2.20273+00	5.379-02	2.146+00	2.65539-02	4.589+00	2.207+00	45.00	0.175
1.95470+00	6.024-02	2.133+00	2.38502-02	4.522+00	1.954+00	47.00	0.147
1.74633+00	6.623-02	2.095+00	2.14078-02	4.323+00	1.677+00	49.00	0.123
1.54355+00	7.438-02	2.080+00	1.92474-02	4.114+00	1.434+00	51.00	0.102
1.35146+00	8.537-02	2.090+00	1.73040-02	3.776+00	1.184+00	53.00	0.084
1.19313+00	9.560-02	2.066+00	1.55330-02	3.559+00	1.001+00	55.00	0.069
1.06108+00	1.075-01	2.067+00	1.39508-02	3.106+00	7.849-01	57.00	0.053
9.49800-01	1.206-01	2.075+00	1.25399-02	2.698+00	6.129-01	59.00	0.041
8.44634-01	1.354-01	2.072+00	1.12658-02	2.589+00	5.284-01	60.60	0.030
7.46743-01	1.556-01	2.104+00	1.01193-02	2.364+00	4.334-01		
6.64938-01	1.750-01	2.108+00	9.09062-03	2.347+00	3.865-01		
5.95877-01	1.948-01	2.103+00	8.16959-03	2.272+00	3.363-01		
5.31793-01	2.213-01	2.132+00	7.34624-03	2.057+00	2.738-01		
4.73089-01	2.475-01	2.121+00	6.60382-03	1.928+00	2.307-01		
4.22790-01	2.861-01	2.191+00	5.93614-03	1.753+00	1.885-01		

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90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE0.78 BARN/CARBON ATOM (0.0253 ev)CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (274°K, $P_0 + P_1$); SUMMIT (600°K, $P_0 + P_1$)
TO 1.0 ev + GAS (890.98°K) TO 2.38 ev

TRANSPORT THEORY CODE: GAPLSN (5/7/64)

TEMPERATURE: 274°K; 600°K

SOURCE: DSZ (GA 3542, P. 145)

ATOM DENSITIES

UNPOISONED 274°K SIDE

$$N_C = 7.90 \times 10^{22} \text{ ATOMS/CC}$$

CARBON FELT

$$N_C = 3.90 \times 10^{21} \text{ ATOMS/CC}$$

POISONED 600°K SIDE

$$N_C = 7.587 \times 10^{22} \text{ ATOMS/CC}$$

$$N_B = 7.260 \times 10^{19} \text{ ATOMS/CC}$$

$$N_{Cr} = 3.063 \times 10^{20} \text{ ATOMS/CC}$$

$$N_{Fe} = 1.0408 \times 10^{21} \text{ ATOMS/CC}$$

$$N_{Ni} = 1.996 \times 10^{20} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.004575 \text{ CM}^{-2}$$

EXPERIMENTAL ARRANGEMENT 12/20/63 T44, T42

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
TECHNIQUES

DATE ISSUED: 1/30/65

90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE
12-20-63 T44, T42

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x (cm)	Q (x)
8.74175+01	1.598-03	2.481+00	3.76093-01	3.587-01	2.396+00	0.00	0.450
6.85579+01	2.021-03	2.461+00	3.36505-01	4.096-01	2.448+00	2.00	0.609
5.52030+01	2.587-03	2.537+00	3.00693-01	4.634-01	2.475+00	4.00	0.748
4.54017+01	3.167-03	2.554+00	2.68379-01	5.465-01	2.605+00	6.00	0.858
3.79966+01	3.592-03	2.424+00	2.39470-01	6.452-01	2.744+00	8.00	0.929
3.22657-01	4.233-03	2.425+00	2.13618-01	7.749-01	2.940+00	10.00	0.974
2.77400+01	4.909-03	2.419+00	1.90643-01	9.365-01	3.171+00	12.00	1.000
2.41038+01	5.767-03	2.469+00	1.70205-01	1.119+00	3.383+00	14.00	1.000
2.11384+01	6.455-03	2.423+00	1.52103-01	1.368+00	3.695+00	16.00	0.999
1.86883+01	7.261-03	2.410+00	1.36042-01	1.627+00	3.931+00	17.50	0.981
1.66408+01	8.319-03	2.459+00	1.21833-01	1.943+00	4.204+00	18.90	0.951
1.41759+01	9.509-03	2.394+00	1.09234-01	2.308+00	4.477+00	20.32	0.876
1.16277+01	1.156-02	2.388+00	9.80847-02	2.704+00	4.710+00	22.86	0.800
9.70983+00	1.352-02	2.332+00	8.78504-02	3.172+00	4.950+00	24.13	0.708
8.23025+00	1.599-02	2.337+00	7.85382-02	3.585+00	5.000+00	26.67	0.564
7.06489+00	1.881-02	2.360+00	7.03679-02	3.982+00	4.976+00	29.21	0.506
6.13065+00	2.141-02	2.331+00	6.31960-02	4.393+00	4.930+00	30.48	0.485
5.37022+00	2.370-02	2.261+00	5.66976-02	4.591+00	4.623+00	31.75	0.473
4.74300+00	2.723-02	2.294+00	5.08380-02	4.815+00	4.348+00	33.02	0.442
4.21960+00	3.095-02	2.319+00	4.55745-02	4.929+00	3.990+00	35.56	0.375
3.77830+00	3.317-02	2.226+00	4.08606-02	5.000+00	3.628+00	38.10	0.325
3.32028+00	3.833-02	2.260+00	3.66483-02	4.925+00	3.206+00	39.37	0.275
2.87003+00	4.340-02	2.212+00	3.28903-02	4.888+00	2.855+00	41.91	0.231
2.50555+00	4.774-02	2.125+00	2.95412-02	4.839+00	2.539+00	43.40	0.203
2.20635+00	5.628-02	2.205+00	2.65585-02	4.616+00	2.177+00	45.00	0.175
1.95773+00	6.271-02	2.180+00	2.38542-02	4.478+00	1.897+00	47.00	0.147
1.74888+00	6.982-02	2.169+00	2.14112-02	4.311+00	1.639+00	49.00	0.123
1.54567+00	7.926-02	2.176+00	1.92503-02	4.009+00	1.371+00	51.00	0.102
1.35320+00	8.983-02	2.159+00	1.73065-02	3.870+00	1.190+00	53.00	0.084
1.19457+00	1.029-01	2.183+00	1.55351-02	3.583+00	9.885-01	55.00	0.069
1.06229+00	1.150-01	2.169+00	1.39526-02	3.114+00	7.716-01	57.00	0.053
9.50824-01	1.284-01	2.168+00	1.25414-02	2.655+00	5.914-01	59.00	0.041
8.45493-01	1.425-01	2.140+00	1.12671-02	2.432+00	4.867-01	60.60	0.030
7.47457-01	1.651-01	2.191+00	1.01204-02	2.385+00	4.286-01		
6.65538-01	1.862-01	2.201+00	9.09157-03	2.488+00	4.017-01		
5.96386-01	2.073-01	2.196+00	8.17040-03	2.200+00	3.193-01		
5.32222-01	2.390-01	2.259+00	7.34693-03	1.867+00	2.437-01		
4.73443-01	2.694-01	2.265+00	6.60441-03	1.669+00	1.957-01		
4.23083-01	3.072-01	2.308+00	5.93664-03	1.594+00	1.680-01		

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90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE0.78 BARN/CARBON ATOM (0.0253 eV)EXPERIMENTAL ARRANGEMENT 12/19/63 T41, T40PLAN VIEWCALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (274°K, $P_0 + P_1$); SUMMIT (600°K, $P_0 + P_1$)
TO 1.0 eV + GAS (890.98°K) TO 2.38 eV

TRANSPORT THEORY CODE: GAPLSN (5/7/64)

TEMPERATURE: 274°K; 600°K

SOURCE: DSZ (GA 3542, P. 145)

ATOM DENSITIES

UNPOISONED 274°K SIDE

$$N_C = 7.90 \times 10^{22} \text{ ATOMS/CC}$$

CARBON FELT

$$N_C = 3.90 \times 10^{21} \text{ ATOMS/CC}$$

POISONED 600°K SIDE

$$N_C = 7.587 \times 10^{22} \text{ ATOMS/CC}$$

$$N_B = 7.260 \times 10^{19} \text{ ATOMS/CC}$$

$$N_{Cr} = 3.063 \times 10^{20} \text{ ATOMS/CC}$$

$$N_{Fe} = 1.0408 \times 10^{21} \text{ ATOMS/CC}$$

$$N_{Ni} = 1.996 \times 10^{20} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.004575 \text{ CM}^{-2}$$

NOT TO SCALE

90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE
12-19-63 T41, T40

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x (cm)	Q (x)
8.65210+01	2.183-03	3.200+00	3.75848-01	3.889-01	2.476+00	0.00	0.450
6.79347+01	2.757-03	3.173+00	3.36297-01	4.573-01	2.605+00	2.00	0.609
5.47524+01	3.330-03	3.089+00	3.00518-01	5.175-01	2.634+00	4.00	0.748
4.50654+01	3.903-03	2.980+00	2.68231-01	6.068-01	2.757+00	6.00	0.858
3.77390+01	4.597-03	2.939+00	2.39345-01	7.130-01	2.891+00	8.00	0.929
3.20641+01	5.435-03	2.952+00	2.13513-01	8.423-01	3.046+00	10.00	0.974
2.75792+01	5.961-03	2.785+00	1.90554-01	1.041+00	3.361+00	12.00	1.000
2.39735+01	7.050-03	2.863+00	1.70130-01	1.270+00	3.661+00	14.00	1.000
2.10313+01	8.140-03	2.900+00	1.52040-01	1.500+00	3.864+00	16.00	0.999
1.85993+01	8.848-03	2.788+00	1.35988-01	1.774+00	4.086+00	17.50	0.981
1.65660+01	9.471-03	2.658+00	1.21788-01	2.112+00	4.358+00	18.90	0.951
1.41170+01	1.140-02	2.727+00	1.09195-01	2.463+00	4.555+00	20.32	0.876
1.15839+01	1.389-02	2.725+00	9.80517-02	2.900+00	4.816+00	22.86	0.800
9.67644+00	1.622-02	2.659+00	8.78225-02	3.314+00	4.930+00	24.13	0.708
8.20420+00	1.964-02	2.730+00	7.85145-02	3.759+00	5.000+00	26.67	0.564
7.04417+00	2.163-02	2.581+00	7.03478-02	4.128+00	4.919+00	29.21	0.506
6.11390+00	2.489-02	2.577+00	6.31789-02	4.488+00	4.803+00	30.48	0.485
5.35649+00	2.779-02	2.522+00	5.66831-02	4.754+00	4.565+00	31.75	0.473
4.73160+00	3.175-02	2.545+00	5.08256-02	4.853+00	4.179+00	33.02	0.442
4.21003+00	3.474-02	2.478+00	4.55640-02	4.905+00	3.786+00	35.56	0.375
3.77019+00	3.895-02	2.487+00	4.08517-02	5.000+00	3.460+00	38.10	0.325
3.31360+00	4.289-02	2.407+00	3.66407-02	4.913+00	3.049+00	39.37	0.275
2.86466+00	5.153-02	2.501+00	3.28838-02	4.590+00	2.557+00	41.91	0.231
2.50117+00	5.664-02	2.400+00	2.95357-02	4.715+00	2.359+00	43.40	0.203
2.20273+00	6.300-02	2.351+00	2.65539-02	4.556+00	2.050+00	45.00	0.175
1.95470+00	7.194-02	2.382+00	2.38502-02	4.022+00	1.625+00	47.00	0.147
1.74633+00	8.143-02	2.409+00	2.14078-02	3.922+00	1.422+00	49.00	0.123
1.54355+00	9.018-02	2.358+00	1.92474-02	3.339+00	1.089+00	51.00	0.102
1.35146+00	1.009-01	2.311+00	1.73040-02	3.195+00	9.365-01	53.00	0.084
1.19313+00	1.146-01	2.317+00	1.55330-02	3.297+00	8.676-01	55.00	0.069
1.06108+00	1.314-01	2.363+00	1.39508-02	3.142+00	7.425-01	57.00	0.053
9.49800-01	1.445-01	2.325+00	1.25399-02	2.822+00	5.994-01	59.00	0.041
8.44634-01	1.615-01	2.310+00	1.12658-02	2.592+00	4.946-01	60.60	0.030
7.46743-01	1.838-01	2.325+00	1.01193-02	2.537+00	4.348-01		
6.64938-01	2.072-01	2.334+00	9.09062-03	2.451+00	3.774-01		
5.95877-01	2.276-01	2.297+00	8.16959-03	2.265+00	3.135-01		
5.31793-01	2.641-01	2.379+00	7.34624-03	1.996+00	2.484-01		
4.73089-01	3.003-01	2.406+00	6.60382-03	1.883+00	2.107-01		
4.22790-01	3.402-01	2.437+00	5.93614-03	1.629+00	1.638-01		

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90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE0.78 BARN/CARBON ATOM (0.0253 ev)CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (274°K, $P_0 + P_1$); SUMMIT (600°K, $P_0 + P_1$)
 TO 1.0 ev + GAS (890.98°K) TO 2.38 ev

TRANSPORT THEORY CODE: GAPLSN (5/7/64)

TEMPERATURE: 274°K; 600°K

SOURCE: DSZ (GA-3542, P. 145)

ATOM DENSITIES

UNPOISONED 274°K SIDE

$$N_C = 7.90 \times 10^{22} \text{ ATOMS/CC}$$

CARBON FELT

$$N_C = 3.90 \times 10^{21} \text{ ATOMS/CC}$$

POISONED 600°K SIDE

$$N_C = 7.587 \times 10^{22} \text{ ATOMS/CC}$$

$$N_B = 7.260 \times 10^{19} \text{ ATOMS/CC}$$

$$N_{Cr} = 3.063 \times 10^{20} \text{ ATOMS/CC}$$

$$N_{Fe} = 1.0408 \times 10^{21} \text{ ATOMS/CC}$$

$$N_{Ni} = 1.996 \times 10^{20} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.004575 \text{ CM}^{-2}$$

EXPERIMENTAL ARRANGEMENT 12/20/63 T46, T45 NOT TO SCALE

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
 TECHNIQUES

DATE ISSUED: 1/30/65

90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE
12-20-63 T46, T45

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x (cm)	Q (x)
8.74175+01	3.547-03	3.707+00	3.76093-01	8.450-01	3.800+00	0.00	0.450
6.85579+01	4.519-03	3.705+00	3.36505-01	9.422-01	3.791+00	2.00	0.609
5.52030+01	5.865-03	3.871+00	3.00693-01	1.081+00	3.886+00	4.00	0.748
4.54017+01	7.019-03	3.811+00	2.68379-01	1.319+00	4.234+00	6.00	0.858
3.79966+01	8.682-03	3.945+00	2.39470-01	1.530+00	4.382+00	8.00	0.929
3.22657+01	9.856-03	3.803+00	2.13618-01	1.789+00	4.570+00	10.00	0.974
2.77400+01	1.214-02	4.028+00	1.90643-01	2.096+00	4.778+00	12.00	1.000
2.41038+01	1.407-02	4.055+00	1.70205-01	2.376+00	4.835+00	14.00	1.000
2.11384-01	1.612-02	4.076+00	1.52103-01	2.742+00	4.987+00	16.00	0.999
1.86883+01	1.803-02	4.030+00	1.36042-01	3.062+00	4.982+00	17.50	0.981
1.66408+01	2.034-02	4.047+00	1.21833-01	3.432+00	5.000+00	18.90	0.951
1.41759+01	2.345-02	3.976+00	1.09234-01	3.726+00	4.867+00	20.32	0.876
1.16277+01	2.849-02	3.962+00	9.80847-02	4.158+00	4.877+00	22.86	0.800
9.70983+00	3.448-02	4.004+00	8.78504-02	4.416+00	4.639+00	24.13	0.708
8.23025+00	4.032-02	3.968+00	7.85382-02	4.684+00	4.399+00	26.67	0.564
7.06489+00	4.637-02	3.917+00	7.03679-02	4.847+00	4.079+00	29.21	0.506
6.13065+00	5.189-02	3.804+00	6.31960-02	4.967+00	3.754+00	30.48	0.485
5.37022+00	6.050-02	3.885+00	5.66976-02	5.000+00	3.390+00	31.75	0.473
4.74300+00	6.915-02	3.922+00	5.03830-02	4.953+00	3.011+00	33.02	0.442
4.21960+00	7.637-02	3.853+00	4.55745-02	4.764+00	2.597+00	35.56	0.375
3.77830+00	8.227-02	3.717+00	4.08606-02	4.576+00	2.236+00	38.10	0.325
3.32028+00	9.462-02	3.757+00	3.66483-02	4.437+00	1.944+00	39.37	0.275
2.87003+00	1.098-01	3.768+00	3.28903-02	4.119+00	1.620+00	41.91	0.231
2.50555+00	1.252-01	3.752+00	2.95412-02	3.869+00	1.367+00	43.40	0.203
2.20635+00	1.399-01	3.691+00	2.65585-02	3.718+00	1.181+00	45.00	0.175
1.95773+00	1.577-01	3.691+00	2.38542-02	3.340+00	9.528-01	47.00	0.147
1.74888+00	1.762-01	3.685+00	2.14112-02	3.028+00	7.754+01	49.00	0.123
1.54567+00	1.994-01	3.686+00	1.92503-02	2.850+00	6.561-01	51.00	0.102
1.35320+00	2.327-01	3.766+00	1.73065-02	2.463+00	5.097-01	53.00	0.084
1.19457+00	2.439-01	3.484+00	1.55351-02	2.178+00	4.047-01	55.00	0.069
1.06229+00	2.870-01	3.646+00	1.39526-02	2.180+00	3.638-01	57.00	0.053
9.50824-01	3.228-01	3.670+00	1.25414-02	1.903+00	2.854-01	59.00	0.041
8.45493-01	3.601-01	3.641+00	1.12671-02	2.059+00	2.774-01	60.60	0.030
7.47457-01	4.078-01	3.645+00	1.01204-02	1.959+00	2.371-01		
6.65538-01	4.511-01	3.590+00	9.09157-03	1.516+00	1.648-01		
5.96386-01	5.077-01	3.621+00	8.17040-03	1.351+00	1.320-01		
5.32222-01	5.820-01	3.704+00	7.34693-03	1.244+00	1.093-01		
4.73443-01	6.527-01	3.695+00	6.60441-03	1.433+00	1.131-01		
4.23083-01	7.417-01	3.752+00	5.93664-03	1.210+00	8.590-02		

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90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE0.78 BARN/CARBON ATOM (0.0253 eV)CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (274°K, $P_0 + P_1$); SUMMIT (600°K, $P_0 + P_1$)
 TO 1.0 eV + GAS (890.98°K) TO 2.38 eV

TRANSPORT THEORY CODE: GAPLSN (5/7/64)

TEMPERATURE: 274°K; 600°K

SOURCE: DSZ (GA-3542, P. 145)

ATOM DENSITIES

UNPOISONED 274°K SIDE

$$N_C = 7.90 \times 10^{22} \text{ ATOMS/CC}$$

CARBON FELT

$$N_C = 3.90 \times 10^{21} \text{ ATOMS/CC}$$

POISONED 600°K SIDE

$$N_C = 7.587 \times 10^{22} \text{ ATOMS/CC}$$

$$N_B = 7.260 \times 10^{19} \text{ ATOMS/CC}$$

$$N_{Cr} = 3.063 \times 10^{20} \text{ ATOMS/CC}$$

$$N_{Fe} = 1.0408 \times 10^{21} \text{ ATOMS/CC}$$

$$N_{Ni} = 1.996 \times 10^{20} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.004575 \text{ CM}^{-2}$$

EXPERIMENTAL ARRANGEMENT 12/20/63 T50, T49 NOT TO SCALE

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
 TECHNIQUES

DATE ISSUED: 1/30/65

90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE
12-20-63 T50, T49

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x (cm)	Q (x)
8.74175+01	5.003-03	4.420+00	5.32222-01	7.487-01	4.027+00	0.00	0.450
6.85579+01	6.417-03	4.447+00	4.73443-01	8.329-01	3.986+00	2.00	0.609
5.52030+01	8.168-03	4.558+00	4.23083-01	9.497-01	4.061+00	4.00	0.748
4.54017+01	9.724-03	4.462+00	3.76093-01	1.068+00	4.061+00	6.00	0.858
3.79966+01	1.158-02	4.449+00	3.36505-01	1.224+00	4.163+00	8.00	0.929
3.22657+01	1.367-02	4.459+00	3.00693-01	1.391+00	4.228+00	10.00	0.974
2.77400+01	1.617-02	4.534+00	2.68379-01	1.628+00	4.417+00	12.00	1.000
2.41038+01	1.887-02	4.598+00	2.39470-01	1.857+00	4.496+00	14.00	1.000
2.11384+01	2.142-02	4.576+00	2.13618-01	2.223+00	4.800+00	16.00	0.999
1.86883+01	2.488-02	4.699+00	1.90643-01	2.518+00	4.852+00	17.50	0.981
1.66408+01	2.608-02	4.387+00	1.70205-01	2.862+00	4.923+00	18.90	0.951
1.41759+01	3.076-02	4.407+00	1.52103-01	3.252+00	5.000+00	20.32	0.876
1.16277+01	3.723-02	4.375+00	1.36042-01	3.600+00	4.950+00	22.86	0.800
9.70983+00	4.626-02	4.540+00	1.21833-01	3.896+00	4.797+00	24.13	0.708
8.23025+00	5.563-02	4.628+00	1.09234-01	4.110+00	4.537+00	26.67	0.564
7.06489+00	6.234-02	4.451+00	9.80847-02	4.297+00	4.260+00	29.21	0.506
6.13065+00	6.928-02	4.293+00	8.78504-02	4.742+00	4.211+00	30.48	0.485
5.37022+00	8.084-02	4.388+00	7.85382-02	4.848+00	3.848+00	31.75	0.473
4.74300+00	9.384-02	4.499+00	7.03679-02	4.931+00	3.507+00	33.02	0.442
4.21960+00	9.888-02	4.217+00	6.31960-02	5.000+00	3.194+00	35.56	0.375
3.77830+00	1.093-01	4.174+00	5.66976-02	4.894+00	2.804+00	38.10	0.325
3.32028+00	1.293-01	4.339+00	5.08380-02	4.666+00	2.398+00	39.37	0.275
2.87003+00	1.397-01	4.053+00	4.55745-02	4.635+00	2.135+00	41.91	0.231
2.50555+00	1.662-01	4.208+00	4.08606-02	4.562+00	1.884+00	43.40	0.203
2.20635+00	1.905-01	4.248+00	3.66483-02	3.898+00	1.444+00	45.00	0.175
1.95773+00	2.061-01	4.078+00	3.28903-02	3.742+00	1.244+00	47.00	0.147
1.74888+00	2.338-01	4.133+00	2.95412-02	3.586+00	1.071+00	49.00	0.123
1.54567+00	2.583-01	4.035+00	2.65585-02	3.117+00	8.366-01	51.00	0.102
1.35320+00	2.882-01	3.942+00	2.38542-02	3.070+00	7.401-01	53.00	0.084
1.19457+00	3.206-01	3.871+00	2.14112-02	2.598+00	5.622-01	55.00	0.069
1.06229+00	3.685-01	3.957+00	1.92503-02	2.233+00	4.345-01	57.00	0.053
9.50824-01	3.898-01	3.746+00	1.73065-02	2.072+00	3.624-01	59.00	0.041
8.45493-01	4.574-01	3.909+00	1.55351-02	1.942+00	3.050-01	60.60	0.030
7.47457-01	5.164-01	3.901+00	1.39526-02	2.041+00	2.878-01		
6.65538-01	5.755-01	3.871+00	1.25414-02	2.201+00	2.790-01		
5.96386-01	6.687-01	4.031+00	1.05375-02	1.274+00	1.357-01		

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90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE0.78 BARN/CARBON ATOM (0.0253 ev)CALCULATION PARAMETERS

SCATTERING KERNEL: SUMMIT (274°K, $P_0 + P_1$); SUMMIT (600°K, $P_0 + P_1$)
 TO 1.0 ev + GAS (890.98°K) TO 2.38 ev

TRANSPORT THEORY CODE: GAPLSN (5/7/64)

TEMPERATURE: 274°K, 600°K

SOURCE: DSZ (GA-3542, P. 145)

ATOM DENSITIES

UNPOISONED 274°K SIDE

$$N_C = 7.90 \times 10^{22} \text{ ATOMS/CC}$$

CARBON FELT

$$N_C = 3.90 \times 10^{21} \text{ ATOMS/CC}$$

POISONED 600°K SIDE

$$N_C = 7.587 \times 10^{22} \text{ ATOMS/CC}$$

$$N_B = 7.260 \times 10^{19} \text{ ATOMS/CC}$$

$$N_{Cr} = 3.063 \times 10^{20} \text{ ATOMS/CC}$$

$$N_{Fe} = 1.0408 \times 10^{21} \text{ ATOMS/CC}$$

$$N_{Ni} = 1.996 \times 10^{20} \text{ ATOMS/CC}$$

LOCAL BUCKLING

$$B^2 \text{ TRANSVERSE} = 0.004575 \text{ CM}^{-2}$$

EXPERIMENTAL ARRANGEMENT 12/20/63 T48, T47PLAN VIEW NOT TO SCALE

GENERAL ATOMIC LINAC-PULSED TIME-OF-FLIGHT
 TECHNIQUES

DATE ISSUED: 1/30/65

90° ANGULAR NEUTRON SPECTRUM NEAR GRAPHITE INTERFACE
12-20-63 T48, T47

E(ev)	$\phi(E)$	$E\phi(E)$	E(ev)	$\phi(E)$	$E\phi(E)$	x (cm)	Q (x)
8.74175+01	6.579-03	4.603+00	5.96386-01	9.387-01	4.480+00	0.00	0.450
6.85579+01	8.578-03	4.707+00	5.32222-01	1.046+00	4.457+00	2.00	0.609
5.52030+01	1.023-02	4.519+00	4.73443-01	1.163+00	4.407+00	4.00	0.748
4.54017+01	1.335-02	4.851+00	4.23083-01	1.280+00	4.333+00	6.00	0.858
3.79966+01	1.606-02	4.885+00	3.76093-01	1.464+00	4.407+00	8.00	0.929
3.22657+01	1.860-02	4.804+00	3.36505-01	1.649+00	4.441+00	10.00	0.974
2.77400+01	2.167-02	4.810+00	3.00693-01	1.980+00	4.764+00	12.00	1.000
2.41038+01	2.592-02	5.000+00	2.68379-01	2.195+00	4.715+00	14.00	1.000
2.11384+01	2.862-02	4.842+00	2.39470-01	2.481+00	4.755+00	16.00	0.999
1.86883+01	3.210-02	4.800+00	2.13618-01	2.782+00	4.756+00	17.50	0.981
1.66408+01	3.668-02	4.885+00	1.90643-01	3.193+00	4.872+00	18.90	0.951
1.41759+01	4.168-02	4.729+00	1.70205-01	3.604+00	4.909+00	20.32	0.876
1.16277+01	5.023-02	4.675+00	1.52103-01	3.844+00	4.679+00	22.86	0.800
9.70983+00	6.242-02	4.850+00	1.36042-01	4.078+00	4.440+00	24.13	0.708
8.23025+00	7.293-02	4.804+00	1.21833-01	4.476+00	4.364+00	26.67	0.564
7.06489+00	8.773-02	4.960+00	1.09234-01	4.599+00	4.021+00	29.21	0.506
6.13065+00	9.855-02	4.835+00	9.80847-02	4.967+00	3.899+00	30.48	0.485
5.37022+00	1.127-01	4.843+00	8.78504-02	5.000+00	3.515+00	31.75	0.473
4.74300+00	1.210-01	4.594+00	7.85382-02	4.837+00	3.040+00	33.02	0.442
4.21960+00	1.425-01	4.813+00	7.03679-02	4.810+00	2.709+00	35.56	0.375
3.77830+00	1.511-01	4.567+00	6.31960-02	4.612+00	2.333+00	38.10	0.325
3.32028+00	1.731-01	4.600+00	5.66976-02	4.302+00	1.952+00	39.37	0.275
2.87003+00	2.048-01	4.704+00	5.08380-02	4.256+00	1.732+00	41.91	0.231
2.50555+00	2.270-01	4.551+00	4.55745-02	3.833+00	1.398+00	43.40	0.203
2.20635+00	2.593-01	4.579+00	4.08606-02	3.734+00	1.221+00	45.00	0.175
1.95773+00	2.936-01	4.600+00	3.66483-02	3.339+00	9.793-01	47.00	0.147
1.74888+00	3.292-01	4.607+00	3.28903-02	3.090+00	8.132-01	49.00	0.123
1.54567+00	3.496-01	4.324+00	2.95412-02	2.727+00	6.447-01	51.00	0.102
1.35320+00	3.963-01	4.292+00	2.65585-02	2.509+00	5.334-01	53.00	0.084
1.19457+00	4.501-01	4.303+00	2.38542-02	2.306+00	4.402-01	55.00	0.069
1.06229+00	5.214-01	4.433+00	2.14112-02	2.042+00	3.498-01	57.00	0.053
9.50824-01	5.966-01	4.540+00	1.92503-02	1.725+00	2.658-01	59.00	0.041
8.45493-01	6.751-01	4.568+00	1.70685-02	1.426+00	1.948-01	60.60	0.030
7.47457-01	7.304-01	4.369+00	1.51215-02	1.697+00	2.054-01		
6.65538-01	8.340-01	4.442+00	1.33109-02	1.622+00	1.727-01		

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Table 6
ERBIUM NEUTRON CROSS SECTIONS^(4, 7)

E(eV)	σ_a	σ_s	E(eV)	σ_a	σ_s	E(eV)	σ_a	σ_s
0.0010	0.7600+3	0.7800+1	0.1600	0.1250+3	0.7950+1	1.2750	0.1260+2	0.7900+1
0.0013	0.6600+3	0.7800+1	0.1700	0.1290+3	0.7960+1	1.3500	0.1160+2	0.7900+1
0.0017	0.5700+3	0.7800+1	0.1800	0.1320+3	0.7970+1	1.4250	0.1055+2	0.7950+1
0.0022	0.5000+3	0.7800+1	0.1900	0.1370+3	0.8000+1	1.5000	0.9550+1	0.7950+0
0.0029	0.4300+3	0.7800+1	0.2000	0.1410+3	0.8020+1	1.6000	0.8750+1	0.7950+1
0.0038	0.3750+3	0.7800+1	0.2150	0.1510+3	0.8040+1	1.7000	0.7950+1	0.7950+1
0.0049	0.3300+3	0.7800+1	0.2300	0.1650+3	0.8090+1	1.8000	0.7250+1	0.7950+1
0.0064	0.2900+3	0.7800+1	0.2450	0.1810+3	0.8110+1	1.9000	0.7000+1	0.7950+1
0.0083	0.2570+3	0.7800+1	0.2600	0.2000+3	0.8180+1	2.0500	0.6500+1	0.8000+1
0.0108	0.2300+3	0.7800+1	0.2800	0.2300+3	0.8300+1	2.2000	0.6300+1	0.8000+1
0.0140	0.2050+3	0.7800+1	0.3000	0.2700+3	0.8430+1	2.3500	0.6200+1	0.8000+1
0.0180	0.1850+3	0.7800+1	0.3200	0.3200+3	0.8620+1	2.5000	0.6000+1	0.8000+1
0.0220	0.1700+3	0.7800+1	0.3400	0.4000+3	0.8870+1	2.7000	0.6200+1	0.8000+1
0.0260	0.1590+3	0.7800+1	0.3600	0.5300+3	0.9210+1	2.9000	0.6300+1	0.8000+1
0.0300	0.1500+3	0.7800+1	0.3900	0.8200+3	0.1038+2	3.1000	0.6600+1	0.8000+1
0.0350	0.1420+3	0.7800+1	0.4200	0.1550+4	0.1245+2	3.3000	0.7200+1	0.8000+1
0.0400	0.1360+3	0.7800+1	0.4500	0.2500+4	0.1577+2	3.6000	0.8700+1	0.8000+1
0.0450	0.1310+3	0.7800+1	0.4900	0.2100+4	0.1440+2	3.9000	0.1210+2	0.8000+1
0.0500	0.1280+3	0.7830+1	0.5300	0.1300+4	0.1116+2	4.2000	0.9200+2	0.8000+1
0.0550	0.1250+3	0.7830+1	0.5700	0.1580+4	0.1190+2	4.5000	0.1850+2	0.8000+1
0.0600	0.1210+3	0.7840+1	0.6100	0.1300+4	0.1107+2	4.9000	0.3390+2	0.8100+1
0.0670	0.1190+3	0.7840+1	0.6500	0.5000+3	0.9350+1	5.3000	0.1669+3	0.8100+1
0.0740	0.1170+3	0.7840+1	0.7000	0.2500+3	0.8430+1	5.7000	0.6418+3	0.8200+1
0.0810	0.1160+3	0.7840+1	0.7500	0.1400+3	0.8200+1	6.1000	0.2011+3	0.8200+1
0.0880	0.1130+3	0.7860+1	0.8000	0.8000+2	0.8070+1	6.5000	0.5180+2	0.8200+1
0.0950	0.1150+3	0.7870+1	0.8500	0.5600+2	0.7970+1	7.0000	0.1680+2	0.8200+1
0.1020	0.1120+3	0.7880+1	0.9000	0.4100+2	0.7930+1	7.5000	0.4180+2	0.8200+1
0.1090	0.1130+3	0.7890+1	0.9500	0.3150+2	0.7910+1	8.0000	0.1275+2	0.8250+1
0.1160	0.1140+3	0.7910+1	1.0000	0.2615+2	0.7850+1	8.5000	0.4170+2	0.8300+1
0.1230	0.1150+3	0.7910+1	1.0500	0.2115+2	0.7850+1	9.0000	0.3667+3	0.8300+1
0.1300	0.1170+3	0.7920+1	1.1000	0.1810+2	0.7900+1	9.5000	0.6165+2	0.8350+1
0.1400	0.1190+3	0.7930+1	1.1500	0.1610+2	0.7900+1	10.0000	0.1260+2	0.8400+1
0.1500	0.1210+3	0.7930+0	1.2000	0.1420+2	0.7900+1			

Table 5
GADOLINIUM NEUTRON CROSS SECTIONS^(4, 7)

E(eV)	σ_a	σ_s	E(eV)	σ_a	σ_s	E(eV)	σ_a	σ_s
0.0010	0.1998+6	0.1850+3	0.1600	0.2853+4	0.4700+2	1.2750	0.2315+2	0.4350+1
0.0013	0.1778+6	0.1830+3	0.1700	0.2457+4	0.4300+2	1.3500	0.2220+2	0.4300+1
0.0017	0.1578+6	0.1800+3	0.1800	0.2110+4	0.4000+2	1.4250	0.2140+2	0.4200+1
0.0022	0.1288+6	0.1820+3	0.1900	0.1815+4	0.3650+2	1.5000	0.2135+2	0.4150+1
0.0029	0.1248+6	0.1820+3	0.2000	0.1606+4	0.3350+2	1.6000	0.2180+2	0.4100+1
0.0038	0.1098+6	0.1850+3	0.2150	0.1319+4	0.3050+2	1.7000	0.2250+2	0.4000+1
0.0049	0.9881+5	0.1890+3	0.2300	0.1123+4	0.2650+2	1.8000	0.2400+2	0.4000+1
0.0064	0.8781+5	0.1900+3	0.2450	0.9760+3	0.2400+2	1.9000	0.2640+2	0.4100+1
0.0083	0.7780+5	0.1930+3	0.2600	0.8390+3	0.2100+2	2.0500	0.1958+3	0.4200+1
0.0108	0.6930+5	0.1970+3	0.2800	0.6960+3	0.1900+2	2.2000	0.5520+2	0.4800+1
0.0140	0.6179+5	0.2050+3	0.3000	0.5835+3	0.1650+2	2.3500	0.2800+2	0.7000+1
0.0180	0.5628+5	0.2120+3	0.3200	0.4950+3	0.1500+2	2.5000	0.9030+2	0.9500+1
0.0220	0.5178+5	0.2200+3	0.3400	0.4215+3	0.1350+2	2.7000	0.8475+3	0.1250+2
0.0260	0.4827+5	0.2250+3	0.3600	0.3680+3	0.1200+2	2.9000	0.1390+3	0.1100+2
0.0300	0.4477+5	0.2250+3	0.3900	0.3000+3	0.1000+2	3.1000	0.4800+2	0.7000+1
0.0350	0.4127+5	0.2220+3	0.4200	0.2460+3	0.9000+1	3.3000	0.1900+2	0.5000+1
0.0400	0.3778+5	0.2190+3	0.4500	0.2067+3	0.8300+1	3.6000	0.1180+2	0.4200+1
0.0450	0.3479+5	0.2100+3	0.4900	0.1624+3	0.7600+1	3.9000	0.1500+2	0.4000+1
0.0500	0.3130+5	0.2000+3	0.5300	0.1330+3	0.7000+1	4.2000	0.8650+1	0.3850+1
0.0550	0.2741+5	0.1900+3	0.5700	0.1114+3	0.6600+1	4.5000	0.7600+1	0.3900+1
0.0600	0.2432+5	0.1780+3	0.6100	0.9270+2	0.6300+1	4.9000	0.6800+1	0.4000+1
0.0670	0.2064+5	0.1570+3	0.6500	0.7900+2	0.6000+1	5.3000	0.6700+1	0.4200+1
0.0740	0.1735+5	0.1420+3	0.7000	0.6430+2	0.5700+1	5.7000	0.8100+1	0.4400+1
0.0810	0.1427+5	0.1260+3	0.7500	0.5460+2	0.5400+1	6.1000	0.1430+2	0.4700+1
0.0880	0.1228+5	0.1130+3	0.8000	0.4780+2	0.5200+1	6.5000	0.2700+3	0.5000+1
0.0950	0.1039+5	0.1010+3	0.8500	0.4190+2	0.5100+1	7.0000	0.1950+2	0.5500+1
0.1020	0.8909+4	0.9100+2	0.9000	0.4710+2	0.4900+1	7.5000	0.7200+1	0.5800+1
0.1090	0.7617+4	0.8300+2	0.9500	0.3320+2	0.4800+1	8.0000	0.9260+2	0.5400+1
0.1160	0.6326+4	0.7400+2	1.0000	0.3030+2	0.4700+1	8.5000	0.7700+1	0.4800+1
0.1230	0.5431+4	0.6900+2	1.0500	0.2840+2	0.4600+1	9.0000	0.4800+1	0.4300+1
0.1300	0.4737+4	0.6300+2	1.1000	0.2695+2	0.4550+1	9.5000	0.4900+1	0.3900+1
0.1400	0.3943+4	0.5700+2	1.1500	0.2550+2	0.4500+1	10.0000	0.6400+1	0.3600+1
0.1500	0.3349+4	0.5100+2	1.2000	0.2455+2	0.4450+1			

Table 4
SAMARIUM NEUTRON CROSS SECTIONS^(4, 7, 9)

E(eV)	σ_a	σ_s	E(eV)	σ_a	σ_s	E(eV)	σ_a	σ_s
0.0010	0.1770+5	0.2998+2	0.1600	0.2933+4	0.4620+2	1.2750	0.3173+2	0.1451+2
0.0013	0.1584+5	0.2963+2	0.1700	0.2197+4	0.3888+2	1.3500	0.2695+2	0.1461+2
0.0017	0.1391+5	0.2937+2	0.1800	0.1754+4	0.3363+2	1.4250	0.2393+2	0.1475+2
0.0022	0.1220+5	0.2930+2	0.1900	0.1401+4	0.2964+2	1.5000	0.2183+2	0.1491+2
0.0029	0.1080+5	0.2937+2	0.2000	0.1140+4	0.2660+2	1.6000	0.1977+2	0.1516+2
0.0038	0.9608+4	0.2946+2	0.2150	0.8634+3	0.2345+2	1.7000	0.1852+2	0.1542+2
0.0049	0.8612+4	0.2970+2	0.2300	0.6737+3	0.2125+2	1.8000	0.1762+2	0.1569+2
0.0064	0.7757+4	0.3009+2	0.2450	0.5395+3	0.1961+2	1.9000	0.1701+2	0.1599+2
0.0083	0.7067+4	0.3077+2	0.2600	0.4417+3	0.1840+2	2.0500	0.1637+2	0.1647+2
0.0108	0.6522+4	0.3168+2	0.2800	0.3497+3	0.1722+2	2.2000	0.1582+2	0.1701+2
0.0140	0.6104+4	0.3296+2	0.3000	0.2831+3	0.1634+2	2.3500	0.1582+2	0.1757+2
0.0180	0.5858+4	0.3480+2	0.3200	0.2341+3	0.1572+2	2.5000	0.1579+2	0.1820+2
0.0220	0.5781+4	0.3701+2	0.3400	0.1989+3	0.1524+2	2.7000	0.1647+2	0.1912+2
0.0260	0.5811+4	0.3937+2	0.3600	0.1716+3	0.1490+2	2.9000	0.1833+2	0.2018+2
0.0300	0.5933+4	0.4214+2	0.3900	0.1418+3	0.1450+2	3.1000	0.2441+2	0.2140+2
0.0350	0.6212+4	0.4616+2	0.4200	0.1211+3	0.1436+2	3.3000	0.1128+3	0.2390+2
0.0400	0.6567+4	0.5102+2	0.4500	0.1056+3	0.1405+2	3.6000	0.3687+2	0.2519+2
0.0450	0.7136+4	0.5655+2	0.4900	0.9398+2	0.1389+2	3.9000	0.2252+2	0.2780+2
0.0500	0.7757+4	0.6348+2	0.5300	0.8696+2	0.1387+2	4.2000	0.2390+2	0.3132+2
0.0550	0.8610+4	0.7165+2	0.5700	0.8728+2	0.1384+2	4.5000	0.3024+2	0.3588+2
0.0600	0.9598+4	0.8149+2	0.6100	0.9164+2	0.1393+2	4.9000	0.3172+3	0.5336+2
0.0670	0.1136+5	0.9824+2	0.6500	0.1017+3	0.1412+2	5.3000	0.4853+2	0.5597+2
0.0740	0.1314+5	0.1180+3	0.7000	0.1331+3	0.1460+2	5.7000	0.4834+2	0.7393+2
0.0810	0.1504+5	0.1392+3	0.7500	0.2171+3	0.1579+2	6.1000	0.6667+2	0.1047+3
0.0880	0.1651+5	0.1570+3	0.8000	0.5166+3	0.1989+2	6.5000	0.2703+3	0.1648+3
0.0950	0.1693+5	0.1665+3	0.8500	0.1817+4	0.3783+2	7.0000	0.2042+3	0.3498+3
0.1020	0.1609+5	0.1638+3	0.9000	0.1618+4	0.3567+2	7.5000	0.7243+3	0.1283+4
0.1090	0.1422+5	0.1503+3	0.9500	0.4312+3	0.1947+2	8.0000	0.1573+5	0.2875+5
0.1160	0.1186+5	0.1309+3	1.0000	0.1735+3	0.1596+2	8.5000	0.9137+3	0.1702+4
0.1230	0.9553+4	0.1106+3	1.0500	0.9850+2	0.1500+2	9.0000	0.1354+4	0.5692+3
0.1300	0.7567+4	0.9197+2	1.1000	0.6534+2	0.1461+2	9.5000	0.9874+2	0.1799+3
0.1400	0.5414+4	0.7135+2	1.1500	0.4925+2	0.1450+2	10.0000	0.4362+2	0.1050+3
0.1500	0.3936+4	0.5657+2	1.2000	0.4025+2	0.1446+2			

Table 2
CHLORINE NEUTRON CROSS SECTIONS⁽⁴⁾

E(eV)	σ_a	σ_s	E(eV)	σ_a	σ_s	E(eV)	σ_a	σ_s
0.0010	0.1690+3	0.1600+2	0.1600	0.1336+2	0.1600+2	1.2750	0.4733+1	0.1600+2
0.0013	0.1482+3	0.1600+2	0.1700	0.1296+2	0.1600+2	1.3500	0.4599+1	0.1600+2
0.0017	0.1296+3	0.1600+2	0.1800	0.1259+2	0.1600+2	1.4250	0.4477+1	0.1600+2
0.0022	0.1139+3	0.1600+2	0.1900	0.1226+2	0.1600+2	1.5000	0.4363+1	0.1600+2
0.0029	0.9924+2	0.1600+2	0.2000	0.1195+2	0.1600+2	1.6000	0.4225+1	0.1600+2
0.0038	0.8669+2	0.1600+2	0.2150	0.1152+2	0.1600+2	1.7000	0.4099+1	0.1600+2
0.0049	0.7634+2	0.1600+2	0.2300	0.1114+2	0.1600+2	1.8000	0.3983+1	0.1600+2
0.0064	0.6680+2	0.1600+2	0.2450	0.1079+2	0.1600+2	1.9000	0.3877+1	0.1600+2
0.0083	0.5866+2	0.1600+2	0.2600	0.1048+2	0.1600+2	2.0500	0.3732+1	0.1600+2
0.0108	0.5142+2	0.1600+2	0.2800	0.1010+2	0.1600+2	2.2000	0.3603+1	0.1600+2
0.0140	0.4516+2	0.1600+2	0.3000	0.9757+1	0.1600+2	2.3500	0.3486+1	0.1600+2
0.0180	0.3983+2	0.1600+2	0.3200	0.9447+1	0.1600+2	2.5000	0.3380+1	0.1600+2
0.0220	0.3603+2	0.1600+2	0.3400	0.9165+1	0.1600+2	2.7000	0.3252+1	0.1600+2
0.0260	0.3314+2	0.1600+2	0.3600	0.8907+1	0.1600+2	2.9000	0.3138+1	0.1600+2
0.0300	0.3085+2	0.1600+2	0.3900	0.8557+1	0.1600+2	3.1000	0.3035+1	0.1600+2
0.0350	0.2856+2	0.1600+2	0.4200	0.8246+1	0.1600+2	3.3000	0.2942+1	0.1600+2
0.0400	0.2672+2	0.1600+2	0.4500	0.7967+1	0.1600+2	3.6000	0.2816+1	0.1600+2
0.0450	0.2519+2	0.1600+2	0.4900	0.7634+1	0.1600+2	3.9000	0.2706+1	0.1600+2
0.0500	0.2390+2	0.1600+2	0.5300	0.7341+1	0.1600+2	4.2000	0.2607+1	0.1600+2
0.0550	0.2278+2	0.1600+2	0.5700	0.7078+1	0.1600+2	4.5000	0.2519+1	0.1600+2
0.0600	0.2181+2	0.1600+2	0.6100	0.6842+1	0.1600+2	4.9000	0.2414+1	0.1600+2
0.0670	0.2064+2	0.1600+2	0.6500	0.6628+1	0.1600+2	5.3000	0.2321+1	0.1600+2
0.0740	0.1964+2	0.1600+2	0.7000	0.6387+1	0.1600+2	5.7000	0.2238+1	0.1600+2
0.0810	0.1877+2	0.1600+2	0.7500	0.6171+1	0.1600+2	6.1000	0.2163+1	0.1600+2
0.0880	0.1801+2	0.1600+2	0.8000	0.5975+1	0.1600+2	6.5000	0.2096+1	0.1600+2
0.0950	0.1734+2	0.1600+2	0.8500	0.5796+1	0.1600+2	7.0000	0.2020+1	0.1600+2
0.1020	0.1673+2	0.1600+2	0.9000	0.5633+1	0.1600+2	7.5000	0.1951+1	0.1600+2
0.1090	0.1618+2	0.1600+2	0.9500	0.5483+1	0.1600+2	8.0000	0.1889+1	0.1600+2
0.1160	0.1569+2	0.1600+2	1.0000	0.5344+1	0.1600+2	8.5000	0.1833+1	0.1600+2
0.1230	0.1523+2	0.1600+2	1.0500	0.5215+1	0.1600+2	9.0000	0.1781+1	0.1600+2
0.1300	0.1482+2	0.1600+2	1.1000	0.5095+1	0.1600+2	9.5000	0.1734+1	0.1600+2
0.1400	0.1428+2	0.1600+2	1.1500	0.4983+1	0.1600+2	10.0000	0.1690+1	0.1600+2
0.1500	0.1379+2	0.1600+2	1.2000	0.4878+1	0.1600+2			

Table 3
CADMIUM NEUTRON CROSS SECTIONS⁽⁸⁾

E(eV)	σ_a	σ_s	E(eV)	σ_a	σ_s	E(eV)	σ_a	σ_s
0.0010	0.9743+4	0.1069+2	0.1600	0.7385+4	0.4637+2	1.2750	0.7855+1	0.6121+1
0.0013	0.8695+4	0.1061+2	0.1700	0.7656+4	0.4909+2	1.3500	0.6710+1	0.6120+1
0.0017	0.7612+4	0.1054+2	0.1800	0.7539+4	0.4961+2	1.4250	0.5794+1	0.6098+1
0.0022	0.6650+4	0.1049+2	0.1900	0.7043+4	0.4781+2	1.5000	0.5040+1	0.6085+1
0.0029	0.5856+4	0.1046+2	0.2000	0.6278+4	0.4419+2	1.6000	0.4203+1	0.6073+1
0.0038	0.5168+4	0.1046+2	0.2150	0.4954+4	0.3722+2	1.7000	0.3567+1	0.6064+1
0.0049	0.4590+4	0.1048+2	0.2300	0.3749+4	0.3043+2	1.8000	0.3060+1	0.6057+1
0.0064	0.4082+4	0.1053+2	0.2450	0.2807+4	0.2488+2	1.9000	0.2649+1	0.6050+1
0.0083	0.3658+4	0.1061+2	0.2600	0.2117+4	0.2067+2	2.0500	0.2169+1	0.6043+1
0.0108	0.3301+4	0.1072+2	0.2800	0.1502+4	0.1678+2	2.2000	0.1803+1	0.6037+1
0.0140	0.2998+4	0.1088+2	0.3000	0.1090+4	0.1410+2	2.3500	0.1519+1	0.6032+1
0.0180	0.2765+4	0.1109+2	0.3200	0.8095+3	0.1223+2	2.5000	0.1296+1	0.6029+1
0.0220	0.2616+4	0.1132+2	0.3400	0.6257+3	0.1096+2	2.7000	0.1064+1	0.6024+1
0.0260	0.2515+4	0.1156+2	0.3600	0.4922+3	0.1002+2	2.9000	0.8880+0	0.6021+1
0.0300	0.2450+4	0.1183+2	0.3900	0.3560+3	0.9026+1	3.1000	0.7530+0	0.6019+1
0.0350	0.2408+4	0.1218+2	0.4200	0.2670+3	0.8356+1	3.3000	0.6440+0	0.6017+1
0.0400	0.2396+4	0.1257+2	0.4500	0.2062+3	0.7886+1	3.6000	0.5220+0	0.6014+1
0.0450	0.2406+4	0.1300+2	0.4900	0.1515+3	0.7446+1	3.9000	0.4310+0	0.6012+1
0.0500	0.2436+4	0.1347+2	0.5300	0.1150+3	0.7140+1	4.2000	0.3610+0	0.6010+1
0.0550	0.2483+4	0.1398+2	0.5700	0.8995+2	0.6933+1	4.500	0.3080+0	0.6010+1
0.0600	0.2545+4	0.1455+2	0.6100	0.7190+2	0.6770+1	4.9000	0.2540+0	0.6008+1
0.0670	0.2660+4	0.1543+2	0.6500	0.5839+2	0.6650+1	5.3000	0.2130+0	0.6007+1
0.0740	0.2804+4	0.1645+2	0.7000	0.4616+2	0.6530+1	5.7000	0.1830+0	0.6007+1
0.0810	0.2982+4	0.1763+2	0.7500	0.3721+2	0.6446+1	6.1000	0.1590+0	0.6006+1
0.0880	0.3195+4	0.1897+2	0.8000	0.3051+2	0.6380+1	6.5000	0.1400+0	0.6005+1
0.0950	0.3446+4	0.2055+2	0.8500	0.2540+2	0.6330+1	7.0000	0.1200+0	0.6005+1
0.1020	0.3740+4	0.2237+2	0.9000	0.2141+2	0.6283+1	7.5000	0.1070+0	0.6005+1
0.1090	0.4080+4	0.2445+2	0.9500	0.1824+2	0.6240+1	8.0000	0.9600-1	0.6004+1
0.1160	0.4468+4	0.2685+2	1.0000	0.1570+2	0.6216+1	8.5000	0.8700-1	0.6004+1
0.1230	0.4904+4	0.2956+2	1.0500	0.1365+2	0.6193+1	9.0000	0.7900-1	0.6004+1
0.1300	0.5384+4	0.3259+2	1.1000	0.1193+2	0.6170+1	9.5000	0.7400-1	0.6003+1
0.1400	0.6113+4	0.3732+2	1.1500	0.1051+2	0.6150+1	10.0000	0.6800-1	0.6003+1
0.1500	0.6823+4	0.4215+2	1.2000	0.9335+1	0.6141+1			

Table 1
BORON NEUTRON CROSS SECTIONS⁽⁴⁾

E(eV)	σ_a	σ_s	E(eV)	σ_a	σ_s	E(eV)	σ_a	σ_s
0.0010	0.3797+4	0.4000+1	0.1600	0.3002+3	0.4000+1	1.2750	0.1063+3	0.4000+1
0.0013	0.3330+4	0.4000+1	0.1700	0.2912+3	0.4000+1	1.3500	0.1033+3	0.4000+1
0.0017	0.2912+4	0.4000+1	0.1800	0.2830+3	0.4000+1	1.4250	0.1006+3	0.4000+1
0.0022	0.2560+4	0.4000+1	0.1900	0.2744+3	0.4000+1	1.5000	0.9805+2	0.4000+1
0.0029	0.2230+4	0.4000+1	0.2000	0.2685+3	0.4000+1	1.6000	0.9494+2	0.4000+1
0.0038	0.1948+4	0.4000+1	0.2150	0.2589+3	0.4000+1	1.7000	0.9210+2	0.4000+1
0.0049	0.1715+4	0.4000+1	0.2300	0.2504+3	0.4000+1	1.8000	0.8951+2	0.4000+1
0.0064	0.1501+4	0.4000+1	0.2450	0.2426+3	0.4000+1	1.9000	0.8712+2	0.4000+1
0.0083	0.1318+4	0.4000+1	0.2600	0.2355+3	0.4000+1	2.0500	0.8387+2	0.4000+1
0.0108	0.1155+4	0.4000+1	0.2800	0.2269+3	0.4000+1	2.2000	0.8096+2	0.4000+1
0.0140	0.1014+4	0.4000+1	0.3000	0.2192+3	0.4000+1	2.3500	0.7833+2	0.4000+1
0.0180	0.8951+3	0.4000+1	0.3200	0.2122+3	0.4000+1	2.5000	0.7595+2	0.4000+1
0.0220	0.8096+3	0.4000+1	0.3400	0.2059+3	0.4000+1	2.7000	0.7308+2	0.4000+1
0.0260	0.7447+3	0.4000+1	0.3600	0.2001+3	0.4000+1	2.9000	0.7051+2	0.4000+1
0.0300	0.6933+3	0.4000+1	0.3900	0.1923+3	0.4000+1	3.1000	0.6820+2	0.4000+1
0.0350	0.6419+3	0.4000+1	0.4200	0.1853+3	0.4000+1	3.3000	0.6610+2	0.4000+1
0.0400	0.6004+3	0.4000+1	0.4500	0.1790+3	0.4000+1	3.6000	0.6329+2	0.4000+1
0.0450	0.5661+3	0.4000+1	0.4900	0.1715+3	0.4000+1	3.9000	0.6081+2	0.4000+1
0.0500	0.5370+3	0.4000+1	0.5300	0.1649+3	0.4000+1	4.2000	0.5859+2	0.4000+1
0.0550	0.5120+3	0.4000+1	0.5700	0.1590+3	0.4000+1	4.5000	0.5661+2	0.4000+1
0.0600	0.4902+3	0.4000+1	0.6100	0.1537+3	0.4000+1	4.9000	0.5425+2	0.4000+1
0.0670	0.4639+3	0.4000+1	0.6500	0.1489+3	0.4000+1	5.3000	0.5216+2	0.4000+1
0.0740	0.4414+3	0.4000+1	0.7000	0.1435+3	0.4000+1	5.7000	0.5030+2	0.4000+1
0.0810	0.4219+3	0.4000+1	0.7500	0.1386+3	0.4000+1	6.1000	0.4862+2	0.4000+1
0.0880	0.4048+3	0.4000+1	0.8000	0.1342+3	0.4000+1	6.5000	0.4710+2	0.4000+1
0.0950	0.3896+3	0.4000+1	0.8500	0.1302+3	0.4000+1	7.0000	0.4539+2	0.4000+1
0.1020	0.3760+3	0.4000+1	0.9000	0.1265+3	0.4000+1	7.5000	0.4385+2	0.4000+1
0.1090	0.3637+3	0.4000+1	0.9500	0.1232+3	0.4000+1	8.0000	0.4245+2	0.4000+1
0.1160	0.3526+3	0.4000+1	1.0000	0.1200+3	0.4000+1	8.5000	0.4119+2	0.4000+1
0.1230	0.3424+3	0.4000+1	1.0500	0.1172+3	0.4000+1	9.0000	0.4003+2	0.4000+1
0.1300	0.3330+3	0.4000+1	1.1000	0.1145+3	0.4000+1	9.5000	0.3896+2	0.4000+1
0.1400	0.3209+3	0.4000+1	1.1500	0.1119+3	0.4000+1	10.0000	0.3797+2	0.4000+1
0.1500	0.3100+3	0.4000+1	1.2000	0.1096+3	0.4000+1

CALCULATION PARAMETERS

Scattering kernel: GASKET (77.4°K, Be) code (1, 5)
Transport theory: IDF code (10)
Temperature: 0.00667 eV
Source: DSZ code (3)
Self-shielding corrections applied for absorber.

LAPLACIANS AT POINT OF MEASUREMENT

$B^2 = 0.00333 \text{ cm}^{-2}$ (total buckling transverse to the precollimator - assembly axis).
Laplacian deduced from flux plots, using cadmium-covered indium foils.

COMMENTS

90° Angular neutron spectrum in 77.4°K beryllium, poisoned to 0.2536 barns/Be atom at 0.0253 eV with 0.907 wt % borated stainless steel, 0.0128 cms thick at 1.328 cms spacing.
Method of measurement: Time-of-flight measurements, using a pulsed neutron source.
The absorber cross sections are obtained from Table 1 and BNL 325.
A common normalization factor was used in calculating the ratios of theory to experiment. This normalization factor was obtained from the best fit of theory to experiment in the energy range 0.54 eV to 0.9 eV for case 2A. The theoretical and measured spectra were normalized by a best fit in that energy range for each position.

CORRECTIONS APPLIED TO DATA

Detector sensitivity	Flight path transmission
Mean emission time	Count loss correction
Background subtraction	

EXPERIMENTAL ARRANGEMENT

ATOM DENSITIES IN THE ASSEMBLY

Moderator: $1.1605 \times 10^{23} / \text{cm}^3$ (Be)	Absorber: $3.6003 \times 10^{19} / \text{cm}^3$ (B)
(All number densities are homogenized)	$9.9001 \times 10^{19} / \text{cm}^3$ (Ni)
	$1.5190 \times 10^{20} / \text{cm}^3$ (Cr)
	$5.1614 \times 10^{20} / \text{cm}^3$ (Fe)
	$6.236 \times 10^{20} / \text{cm}^3$ (Al)

LISTING OF EXPERIMENTAL POINTS $[\phi(E) \text{ v. } E]$

ENERGY (EV)	RELATIVE FLUX	ENERGY (EV)	RELATIVE FLUX	ENERGY (EV)	RELATIVE FLUX	F(X) (SMOOTHED)	X (CM)
9.8242+01	6.8092-02	4.5188-01	2.0064+01	2.0160-02	4.8236+02	9.6300=01	0.0000
6.1756+01	1.1613-01	4.0764-01	2.2150+01	1.8673-02	4.5768+02	9.6000=01	2.0000+00
4.2379+01	1.8096-01	3.6959-01	2.4655+01	1.7284-02	4.3032+02	9.4300=01	4.0000+00
3.0874+01	2.5269-01	3.3663-01	2.7264+01	1.6043-02	4.0863+02	9.1700=01	6.0000+00
2.3489+01	3.4807-01	3.0791-01	3.0069+01	1.4883-02	3.9597+02	8.7400=01	8.0000+00
1.8477+01	4.4349-01	2.8272-01	3.3526+01	1.3802-02	3.6427+02	8.1100=01	1.0000+01
1.4933+01	5.7740-01	2.6050-01	3.6504+01	1.2797-02	3.3604+02	7.3000=01	1.2000+01
1.2320+01	6.5299-01	2.4080-01	3.9913+01	1.1863-02	3.2910+02	6.4000=01	1.4000+01
1.0337+01	7.8423-01	2.2325-01	4.3126+01	1.0998-02	3.1811+02	5.4000=01	1.6000+01
8.7957+00	9.2078-01	2.0515-01	4.8420+01	1.0196-02	2.9463+02	4.3000=01	1.8000+01
7.5739+00	1.0946+00	1.8701-01	5.3736+01	9.4539-03	2.8110+02	3.1300=01	2.0000+01
6.5893+00	1.2750+00	1.7118-01	6.0398+01	8.7676-03	2.5770+02	1.9200=01	2.2000+01
5.7843+00	1.4391+00	1.5728-01	6.7012+01	8.1342-03	2.3693+02		
5.1178+00	1.5861+00	1.4500-01	7.4124+01	7.5493-03	2.1735+02		
4.5637+00	1.8527+00	1.3411-01	8.2015+01	7.0100-03	2.0434+02		
4.0955+00	2.0821+00	1.2441-01	9.0376+01	6.4986-03	2.0438+02		
3.6955+00	2.2586+00	1.1473-01	1.0123+02	6.0286-03	1.9919+02		
3.3512+00	2.5511+00	1.0524-01	1.1577+02	5.5970-03	1.7954+02		
3.0526+00	2.7762+00	9.6891-02	1.2956+02	5.1902-03	1.6841+02		
2.7920+00	3.0950+00	8.9521-02	1.4707+02	4.8174-03	1.5943+02		
2.5632+00	3.3309+00	8.2967-02	1.6681+02	4.4757-03	1.4900+02		
2.3613+00	3.7217+00	7.6578-02	1.9542+02	4.1550-03	1.3611+02		
2.1823+00	3.9777+00	7.0418-02	2.3350+02	3.8549-03	1.3203+02		
2.0227+00	4.1530+00	6.4998-02	2.7671+02	3.5748-03	1.3571+02		
1.8173+00	4.7679+00	6.0200-02	3.2011+02	3.3191-03	1.2068+02		
1.5868+00	5.4226+00	5.5615-02	3.6578+02	3.0854-03	1.2066+02		
1.3973+00	6.2265+00	5.1249-02	4.1572+02	2.8674-03	1.2010+02		
1.2396+00	6.9262+00	4.7372-02	4.6497+02	2.6645-03	1.1272+02		
1.1070+00	7.9254+00	4.3909-02	4.9775+02	2.4758-03	1.0577+02		
9.9452-01	8.8402+00	4.0599-02	5.2528+02	2.3007-03	1.0542+02		
8.9814-01	9.6816+00	3.7439-02	5.4878+02	2.1383-03	9.8514+01		
8.1506-01	1.0868+01	3.4617-02	5.6184+02	1.9878-03	9.1528+01		
7.4303-01	1.1878+01	3.2094-02	5.6479+02	1.8464-03	9.2809+01		
6.8016-01	1.2944+01	2.9699-02	5.5988+02	1.7139-03	8.3681+01		
6.2493-01	1.4314+01	2.7439-02	5.5107+02	1.5919-03	8.5076+01		
5.7616-01	1.5391+01	2.5423-02	5.4089+02	1.4794-03	6.3475+01		
5.3288-01	1.6615+01	2.3527-02	5.1385+02				
4.9429-01	1.8314+01	2.1747-02	5.0667+02

CALCULATION PARAMETERS

Scattering kernel: GASKET (77.4° K, Be) code (1, 5)
Transport theory: 1DF code (10)
Temperature: 0.00667 eV
Source: DSZ code (3)
Self-shielding corrections applied for absorber.

LAPLACIANS AT POINT OF MEASUREMENT

$B^2 = 0.00333 \text{ cm}^{-2}$ (total buckling transverse to the
precollimator - assembly axis).
Laplacian deduced from flux plots, using cadmium-
covered indium foils.

COMMENTS

90° Angular neutron spectrum in 77.4° K beryllium, poisoned to 0.2536 barns/Be
atom at 0.0253 eV with 0.907 wt % borated stainless steel, 0.0128 cms thick
at 1.328 cms spacing.
Method of measurement: Time-of-flight measurements, using a pulsed neutron
source.
The absorber cross sections are obtained from Table 1 and BNL 325.
A common normalization factor was used in calculating the ratios of theory to
experiment. This normalization factor was obtained from the best fit of
theory to experiment in the energy range 0.54 eV to 0.9 eV for case 2A.
The theoretical and measured spectra were normalized by a best fit in that
energy range for each position.

CORRECTIONS APPLIED TO DATA

Detector sensitivity	Flight path transmission
Mean emission time	Count loss correction
Background subtraction	

EXPERIMENTAL ARRANGEMENT

ATOM DENSITIES IN THE ASSEMBLY

Moderator: $1.1605 \times 10^{23} / \text{cm}^3$ (Be)	Absorber: $3.6003 \times 10^{19} / \text{cm}^3$ (B)
(All number densities are homogenized)	$9.9001 \times 10^{19} / \text{cm}^3$ (Ni)
	$1.5190 \times 10^{20} / \text{cm}^3$ (Cr)
	$5.1614 \times 10^{20} / \text{cm}^3$ (Fe)
	$6.236 \times 10^{20} / \text{cm}^3$ (Al)

LISTING OF EXPERIMENTAL POINTS $[\phi(E) \text{ v. } E]$

ENERGY (EV)	RELATIVE FLUX	ENERGY (EV)	RELATIVE FLUX	ENERGY (EV)	RELATIVE FLUX	F(X) (SMOOTHED)	X (CM)
9.7333+01	7.1841-02	4.4772-01	1.9420+01	1.9974-02	4.4401+02	9.6300=01	0.0000
6.1184+01	1.2055-01	4.0389-01	2.1688+01	1.8501-02	4.2860+02	9.6000=01	2.0000+00
4.1987+01	1.8548-01	3.6619-01	2.3739+01	1.7124-02	4.0409+02	9.4300=01	4.0000+00
3.0588+01	2.5368-01	3.3354-01	2.6313+01	1.5895-02	3.8415+02	9.1700=01	6.0000+00
2.3272+01	3.4630-01	3.0508-01	2.8809+01	1.4746-02	3.7613+02	8.7400=01	8.0000+00
1.8308+01	4.4916-01	2.8012-01	3.2474+01	1.3675-02	3.3951+02	8.1100=01	1.0000+01
1.4796+01	5.6069-01	2.5810-01	3.5042+01	1.2679-02	3.1833+02	7.3000=01	1.2000+01
1.2207+01	6.5283-01	2.3858-01	3.7749+01	1.1754-02	3.0269+02	6.4000=01	1.4000+01
1.0242+01	8.0224-01	2.2120-01	4.1602+01	1.0896-02	2.9376+02	5.4000=01	1.6000+01
8.7149+00	9.3597-01	2.0327-01	4.6493+01	1.0102-02	2.7333+02	4.3000=01	1.8000+01
7.5043+00	1.1012+00	1.8529-01	5.1217+01	9.3666-03	2.5692+02	3.1300=01	2.0000+01
6.5287+00	1.2470+00	1.6961-01	5.7381+01	8.6866-03	2.3857+02	1.9200=01	2.2000+01
5.7310+00	1.4247+00	1.5584-01	6.4714+01	8.0590-03	2.1854+02		
5.0707+00	1.6086+00	1.4367-01	7.1437+01	7.4795-03	1.9462+02		
4.5220+00	1.7958+00	1.3288-01	7.7919+01	6.9451-03	1.8312+02		
4.0580+00	2.0561+00	1.2327-01	8.2561+01	6.4385-03	2.0016+02		
3.6617+00	2.2154+00	1.1368-01	9.7238+01	5.9729-03	1.9901+02		
3.3205+00	2.4801+00	1.0428-01	1.0980+02	5.5452-03	1.8174+02		
3.0246+00	2.7349+00	9.6009-02	1.2521+02	5.1422-03	1.9316+02		
2.7664+00	2.9992+00	8.8707-02	1.4082+02	4.7729-03	1.9711+02		
2.5397+00	3.2768+00	8.2213-02	1.6094+02	4.4343-03	1.9681+02		
2.3396+00	3.5905+00	7.5885-02	1.8640+02	4.1166-03	1.8933+02		
2.1622+00	3.9188+00	6.9782-02	2.2266+02	3.8192-03	1.8574+02		
2.0041+00	4.1916+00	6.4415-02	2.6369+02	3.5418-03	1.7755+02		
1.8007+00	4.5958+00	5.9662-02	3.0536+02	3.2884-03	1.6273+02		
1.5723+00	5.3499+00	5.5121-02	3.4655+02	3.0569-03	1.6317+02		
1.3845+00	5.9901+00	5.0795-02	3.9574+02	2.8409-03	1.5233+02		
1.2282+00	6.6997+00	4.6950-02	4.4059+02	2.6398-03	1.4307+02		
1.0969+00	7.7416+00	4.3517-02	4.6730+02	2.4529-03	1.4133+02		
9.8538-01	8.6213+00	4.0236-02	4.9059+02	2.2794-03	1.3444+02		
8.8988-01	9.4869+00	3.7100-02	5.1270+02	2.1185-03	1.3777+02		
8.0756-01	1.0354+01	3.4303-02	5.2812+02	1.9694-03	1.2838+02		
7.3619-01	1.1586+01	3.1801-02	5.3008+02	1.8293-03	1.2246+02		
6.7390-01	1.2482+01	2.9428-02	5.2613+02	1.6981-03	1.1649+02		
6.1918-01	1.3794+01	2.7188-02	5.1451+02	1.5771-03	1.1017+02		
5.7086-01	1.5044+01	2.5190-02	4.9680+02	1.4657-03	1.0520+02		
5.2797-01	1.6132+01	2.3311-02	4.7106+02				
4.8974-01	1.7367+01	2.1547-02	4.6850+02

EXPERIMENTAL ARRANGEMENT

16M FLIGHT PATH

1.43 CM PRECOLLIMATOR

2.54 CM IRON

0.0025 CM ALUMI

2.54 CM IRON

0.0025 CM ALUMINUM FOIL

BOUNDARIES OF
0.05 CM CADMIUM
AND 0.32 CM
BORATED POLY

DOUBLE WALLED
ALUMINUM TANK49.9 CM
HIGH

7.3 CM

[illegible]

A right triangle is shown with a horizontal leg of 55.3 cm and a vertical leg of 43.8 cm. The legs are perpendicular to each other, forming a right angle at the bottom-left vertex.

 LN_2

STYROFOAM

0.0025 CM ALUMINUM FOIL

ATOM DENSITIES IN THE ASSEMBLY

Moderator: $1.1605 \times 10^{23}/\text{cm}^3$ (Be) Absorber: $3.6003 \times 10^{19}/\text{cm}^3$ (B)

(All number densities are homogenized) $9.9001 \times 10^{19}/\text{cm}^3$ (Ni)

$$1.5190 \times 10^{20} / \text{cm}^3 \text{ (Cr)}$$
$$5.1614 \times 10^{20} / \text{cm}^3 \text{ (Fe)}$$
$$6.236 \times 10^{20} / \text{cm}^3 \text{ (A1)}$$

LISTING OF EXPERIMENTAL POINTS $[\phi(E) \text{ v. } E]$

ENERGY (EV)	RELATIVE FLUX	ENERGY (EV)	RELATIVE FLUX	ENERGY (EV)	RELATIVE FLUX	F(X) (SMOOTHED)	X (CM)
9.6427+01	5.9094-02	4.4358-01	1.4825+01	1.9789-02	3.3838+02	9.6300=01	0.0000
6.0615+01	9.7530-02	4.0015-01	1.6655+01	1.8330-02	3.3018+02	9.6000=01	2.0000+00
4.1596+01	1.5173-01	3.6280-01	1.8331+01	1.6966-02	3.1163+02	9.4300=01	4.0000+00
3.0303+01	2.1136-01	3.3045-01	2.0346+01	1.5747-02	2.9548+02	9.1700=01	6.0000+00
2.3055+01	2.7321-01	3.0226-01	2.2674+01	1.4610-02	2.8731+02	8.7400=01	8.0000+00
1.8138+01	3.5591-01	2.7753-01	2.4425+01	1.3548-02	2.6411+02	8.1100=01	1.0000+01
1.4659+01	4.4254-01	2.5571-01	2.7486+01	1.2562-02	2.4974+02	7.3000=01	1.2000+01
1.2095+01	5.1201-01	2.3638-01	2.9567+01	1.1645-02	2.3379+02	6.4000=01	1.4000+01
1.0148+01	6.1456-01	2.1915-01	3.2615+01	1.0795-02	2.2607+02	5.4000=01	1.6000+01
8.6344+00	7.2194-01	2.0139-01	3.5774+01	1.0008-02	2.1076+02	4.3000=01	1.8000+01
7.4349+00	8.4033-01	1.8358-01	3.9210+01	9.2795-03	1.9415+02	3.1300=01	2.0000+01
6.4682+00	9.6989-01	1.6805-01	4.3499+01	8.6058-03	1.7805+02	1.9200=01	2.2000+01
5.6779+00	1.1018+00	1.5440-01	4.9593+01	7.9841-03	1.6069+02		
5.0237+00	1.2624+00	1.4235-01	5.4113+01	7.4099-03	1.4770+02		
4.4804+00	1.3961+00	1.3166-01	6.1431+01	6.8805-03	1.3810+02		
4.0207+00	1.5872+00	1.2213-01	6.6894+01	6.3786-03	1.6751+02		
3.6280+00	1.7715+00	1.1264-01	7.5086+01	5.9173-03	1.7574+02		
3.2899+00	1.9251+00	1.0332-01	8.4758+01	5.4936-03	1.6453+02		
2.9967+00	2.1425+00	9.5130-02	9.6378+01	5.0943-03	2.1173+02		
2.7409+00	2.3201+00	8.7896-02	1.0922+02	4.7285-03	2.3628+02		
2.5162+00	2.5141+00	8.1462-02	1.2290+02	4.3931-03	2.3625+02		
2.3180+00	2.7229+00	7.5193-02	1.4277+02	4.0783-03	2.3060+02		
2.1422+00	2.9951+00	6.9148-02	1.7145+02	3.7837-03	2.1669+02		
1.9857+00	3.2523+00	6.3833-02	2.0331+02	3.5088-03	2.1083+02		
1.7842+00	3.5790+00	5.9126-02	2.3499+02	3.2578-03	2.0196+02		
1.5578+00	4.1420+00	5.4629-02	2.6390+02	3.0284-03	1.9866+02		
1.3717+00	4.7213+00	5.0341-02	2.9965+02	2.8145-03	1.8701+02		
1.2169+00	5.3823+00	4.6529-02	3.2959+02	2.6153-03	1.7861+02		
1.0867+00	5.8636+00	4.3126-02	3.4846+02	2.4301-03	1.7513+02		
9.7627-01	6.5539+00	3.9872-02	3.6744+02	2.2582-03	1.6339+02		
8.8163-01	7.4036+00	3.6762-02	3.8895+02	2.0988-03	1.6021+02		
8.0008-01	8.0663+00	3.3989-02	4.0423+02	1.9511-03	1.5424+02		
7.2938-01	8.9353+00	3.1510-02	3.9776+02	1.8123-03	1.4959+02		
6.6766-01	9.6493+00	2.9158-02	3.9319+02	1.6823-03	1.3911+02		
6.1345-01	1.0562+01	2.6938-02	3.8240+02	1.5625-03	1.4216+02		
5.6557-01	1.1491+01	2.4958-02	3.6631+02	1.4520-03	1.2981+02		
5.2308-01	1.2474+01	2.3096-02	3.4497+02				
4.8521-01	1.3192+01	2.1348-02	3.4969+02

CALCULATION PARAMETERS

Scattering kernel: GASKET (77.4°K, Be) code (1, 5)
Transport theory: 1DF code (10)
Temperature: 0.00667 eV
Source: DSZ code (3)
Self-shielding corrections applied for absorber.

LAPLACIANS AT POINT OF MEASUREMENT

$B^2 = 0.00333 \text{ cm}^{-2}$ (total buckling transverse to the
precollimator - assembly axis).
Laplacian deduced from flux plots, using cadmium-
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COMMENTS

90° Angular neutron spectrum in 77.4°K beryllium, poisoned to 0.2536 barns/Be
atom at 0.0253 eV with 0.907 wt % borated stainless steel, 0.0128 cms thick
at 1.328 cms spacing.
Method of measurement: Time-of-flight measurements, using a pulsed neutron
source.
The absorber cross sections are obtained from Table 1 and BNL 325.
A common normalization factor was used in calculating the ratios of theory to
experiment. This normalization factor was obtained from the best fit of
theory to experiment in the energy range 0.54 eV to 0.9 eV for case 2A.
The theoretical and measured spectra were normalized by a best fit in that
energy range for each position.

CORRECTIONS APPLIED TO DATA

Detector sensitivity	Flight path transmission
Mean emission time	Count loss correction
Background subtraction	

EXPERIMENTAL ARRANGEMENT

ATOM DENSITIES IN THE ASSEMBLY

Moderator: $1.1605 \times 10^{23} / \text{cm}^3$ (Be) Absorber: $3.6003 \times 10^{19} / \text{cm}^3$ (B)
(All number densities are homogenized) $9.9001 \times 10^{19} / \text{cm}^3$ (Ni)
 $1.5190 \times 10^{20} / \text{cm}^3$ (Cr)
 $5.1614 \times 10^{20} / \text{cm}^3$ (Fe)
 $6.236 \times 10^{20} / \text{cm}^3$ (Al)

LISTING OF EXPERIMENTAL POINTS $[\phi(E) \text{ v. } E]$

ENERGY (EV)	RELATIVE FLUX	ENERGY (EV)	RELATIVE FLUX	ENERGY (EV)	RELATIVE FLUX	F(X) (SMOOTHED)	X (CM)
9.7333+01	4.5163-02	4.4772-01	1.0927+01	1.9974-02	2.3370+02	9.6300=01	0.0000
6.1184+01	7.7722-02	4.0389-01	1.2131+01	1.8501-02	2.3525+02	9.6000=01	2.0000+00
4.1987+01	1.1466-01	3.6619-01	1.3433+01	1.7124-02	2.1776+02	9.4300=01	4.0000+00
3.0588+01	1.5999-01	3.3354-01	1.4949+01	1.5895-02	2.0573+02	9.1700=01	6.0000+00
2.3272+01	2.1709-01	3.0508-01	1.6240+01	1.4746-02	2.0627+02	8.7400=01	8.0000+00
1.8308+01	2.6629-01	2.8012-01	1.7787+01	1.3675-02	1.9078+02	8.1100=01	1.0000+01
1.4796+01	3.4987-01	2.5810-01	1.9669+01	1.2679-02	1.6915+02	7.3000=01	1.2000+01
1.2207+01	4.0451-01	2.3858-01	2.1386+01	1.1754-02	1.6259+02	6.4000=01	1.4000+01
1.0242+01	4.6125-01	2.2120-01	2.3603+01	1.0896-02	1.5525+02	5.4000=01	1.6000+01
8.7149+00	5.5893-01	2.0327-01	2.5952+01	1.0102-02	1.4541+02	4.3000=01	1.8000+01
7.5043+00	6.4786-01	1.8529-01	2.7998+01	9.3666-03	1.3400+02	3.1300=01	2.0000+01
6.5287+00	7.6971-01	1.6961-01	3.1943+01	8.6866-03	1.1720+02	1.9200=01	2.2000+01
5.7310+00	8.5054-01	1.5584-01	3.5384+01	8.0590-03	1.0522+02		
5.0707+00	9.4320-01	1.4367-01	3.8955+01	7.4795-03	9.1073+01		
4.5220+00	1.0680+00	1.3288-01	4.2860+01	6.9451-03	9.7057+01		
4.0580+00	1.2018+00	1.2327-01	4.7587+01	6.4385-03	1.3917+02		
3.6617+00	1.3404+00	1.1368-01	5.3390+01	5.9729-03	1.4918+02		
3.3205+00	1.4490+00	1.0428-01	5.9994+01	5.5452-03	1.3854+02		
3.0246+00	1.6365+00	9.6009-02	6.8466+01	5.1422-03	2.1102+02		
2.7664+00	1.7749+00	8.8707-02	7.6291+01	4.7729-03	2.6277+02		
2.5397+00	1.9251+00	8.2213-02	8.6169+01	4.4343-03	2.5664+02		
2.3396+00	2.0791+00	7.5885-02	9.9406+01	4.1166-03	2.4766+02		
2.1622+00	2.2656+00	6.9782-02	1.2210+02	3.8192-03	2.3965+02		
2.0041+00	2.4820+00	6.4415-02	1.4500+02	3.5418-03	2.3086+02		
1.8007+00	2.7058+00	5.9662-02	1.6610+02	3.2884-03	2.2216+02		
1.5723+00	3.0907+00	5.5121-02	1.8451+02	3.0569-03	2.1544+02		
1.3845+00	3.4997+00	5.0795-02	2.0703+02	2.8409-03	2.1323+02		
1.2282+00	3.9702+00	4.6950-02	2.2552+02	2.6398-03	1.9691+02		
1.0969+00	4.4885+00	4.3517-02	2.3665+02	2.4529-03	1.8457+02		
9.8538-01	4.8806+00	4.0236-02	2.5269+02	2.2794-03	1.7990+02		
8.8988-01	5.4266+00	3.7100-02	2.7082+02	2.1185-03	1.8218+02		
8.0756-01	6.0060+00	3.4303-02	2.8158+02	1.9694-03	1.6989+02		
7.3619-01	6.6362+00	3.1801-02	2.7729+02	1.8293-03	1.5594+02		
6.7390-01	7.2190+00	2.9428-02	2.6916+02	1.6981-03	1.5599+02		
6.1918-01	7.7970+00	2.7188-02	2.5662+02	1.5771-03	1.4051+02		
5.7086-01	8.2968+00	2.5190-02	2.4476+02	1.4657-03	1.3938+02		
5.2797-01	9.0838+00	2.3311-02	2.2832+02				
4.8974-01	9.8434+00	2.1547-02	2.3665+02

<p><u>CALCULATION PARAMETERS</u></p> <p>Scattering kernel: GASKET (77.4°K, Be) code (1, 5)</p> <p>Transport theory: 1DF code (10)</p> <p>Temperature: 0.00667 eV</p> <p>Source: DSZ code (3)</p> <p>Self-shielding corrections applied for absorber.</p>	<p><u>EXPERIMENTAL ARRANGEMENT</u></p>
<p><u>COMMENTS</u></p> <p>90° Angular neutron spectrum in 77.4°K beryllium, poisoned to 0.2536 barns/Be atom at 0.0253 eV with 0.907 wt % borated stainless steel, 0.0128 cms thick at 1.328 cms spacing.</p> <p>Method of measurement: Time-of-flight measurements, using a pulsed neutron source.</p> <p>The absorber cross sections are obtained from Table 1 and BNL 325.</p> <p>A common normalization factor was used in calculating the ratios of theory to experiment. This normalization factor was obtained from the best fit of theory to experiment in the energy range 0.54 eV to 0.9 eV for case 2A. The theoretical and measured spectra were normalized by a best fit in the energy range of 0.3 eV to 0.6 eV.</p>	<p><u>ATOM DENSITIES IN THE ASSEMBLY</u></p> <table><tr><td>Moderator: $1.1605 \times 10^{23}/\text{cm}^3$ (Be)</td><td>Absorber: $3.6003 \times 10^{19}/\text{cm}^3$ (B)</td></tr><tr><td>(All number densities are homogenized)</td><td>$9.9001 \times 10^{19}/\text{cm}^3$ (Ni)</td></tr><tr><td></td><td>$1.5190 \times 10^{20}/\text{cm}^3$ (Cr)</td></tr><tr><td></td><td>$5.1614 \times 10^{20}/\text{cm}^3$ (Fe)</td></tr><tr><td></td><td>$6.236 \times 10^{20}/\text{cm}^3$ (Al)</td></tr></table>	Moderator: $1.1605 \times 10^{23}/\text{cm}^3$ (Be)	Absorber: $3.6003 \times 10^{19}/\text{cm}^3$ (B)	(All number densities are homogenized)	$9.9001 \times 10^{19}/\text{cm}^3$ (Ni)		$1.5190 \times 10^{20}/\text{cm}^3$ (Cr)		$5.1614 \times 10^{20}/\text{cm}^3$ (Fe)		$6.236 \times 10^{20}/\text{cm}^3$ (Al)
Moderator: $1.1605 \times 10^{23}/\text{cm}^3$ (Be)	Absorber: $3.6003 \times 10^{19}/\text{cm}^3$ (B)										
(All number densities are homogenized)	$9.9001 \times 10^{19}/\text{cm}^3$ (Ni)										
	$1.5190 \times 10^{20}/\text{cm}^3$ (Cr)										
	$5.1614 \times 10^{20}/\text{cm}^3$ (Fe)										
	$6.236 \times 10^{20}/\text{cm}^3$ (Al)										
<p><u>CORRECTIONS APPLIED TO DATA</u></p> <table><tr><td>Detector sensitivity</td><td>Flight path transmission</td></tr><tr><td>Mean emission time</td><td>Count loss correction</td></tr><tr><td>Background subtraction</td><td></td></tr></table>	Detector sensitivity	Flight path transmission	Mean emission time	Count loss correction	Background subtraction						
Detector sensitivity	Flight path transmission										
Mean emission time	Count loss correction										
Background subtraction											

LISTING OF EXPERIMENTAL POINTS $[\phi(E) \text{ v. } E]$

ENERGY (EV)	RELATIVE FLUX	ENERGY (EV)	RELATIVE FLUX	ENERGY (EV)	RELATIVE FLUX	F(X) (SMOOTHED)	X (CM)
9.5527+01	4.1412-02	4.3946-01	7.5259+00	1.9606-02	1.5383+02	9.6300-01	0.0000
6.0048+01	6.4575-02	3.9644-01	8.4828+00	1.8160-02	1.6031+02	9.6000-01	2.0000+00
4.1208+01	9.1809-02	3.5943-01	9.3628+00	1.6808-02	1.4600+02	9.4300-01	4.0000+00
3.0020+01	1.2880-01	3.2738-01	1.0229+01	1.5601-02	1.3952+02	9.1700-01	6.0000+00
2.2840+01	1.6565-01	2.9946-01	1.1178+01	1.4474-02	1.3745+02	8.7400-01	8.0000+00
1.7970+01	2.1110-01	2.7496-01	1.2355+01	1.3422-02	1.2363+02	8.1100-01	1.0000+01
1.4524+01	2.5326-01	2.5334-01	1.3416+01	1.2445-02	1.1092+02	7.3000-01	1.2000+01
1.1983+01	2.9846-01	2.3418-01	1.4700+01	1.1536-02	1.0464+02	6.4000-01	1.4000+01
1.0054+01	3.4581-01	2.1712-01	1.6148+01	1.0695-02	1.0466+02	5.4000-01	1.6000+01
8.5543+00	4.1705-01	1.9952-01	1.7746+01	9.9147-03	9.3752+01	4.3000-01	1.8000+01
7.3659+00	4.8460-01	1.8188-01	1.9261+01	9.1930-03	8.2464+01	3.1300-01	2.0000+01
6.4081+00	5.7488-01	1.6649-01	2.1355+01	8.5255-03	7.4183+01	1.9200-01	2.2000+01
5.6251+00	6.3549-01	1.5297-01	2.4478+01	7.9096-03	6.5743+01		
4.9771+00	7.0133-01	1.4103-01	2.6588+01	7.3407-03	5.9317+01		
4.4391+00	7.7217-01	1.3044-01	2.9385+01	6.8163-03	6.4260+01		
3.9836+00	9.0111-01	1.2101-01	3.1975+01	6.3190-03	9.8778+01		
3.5945+00	9.9010-01	1.1160-01	3.5455+01	5.8620-03	1.1149+02		
3.2595+00	1.0825+00	1.0237-01	3.9958+01	5.4422-03	1.0728+02		
2.9690+00	1.1784+00	9.4256-02	4.4945+01	5.0468-03	1.7661+02		
2.7155+00	1.2588+00	8.7089-02	5.0105+01	4.6843-03	2.2719+02		
2.4929+00	1.3631+00	8.0716-02	5.6496+01	4.3521-03	2.1382+02		
2.2965+00	1.5425+00	7.4506-02	6.4961+01	4.0402-03	2.1270+02		
2.1223+00	1.6301+00	6.8519-02	7.9590+01	3.7484-03	2.0108+02		
1.9674+00	1.7313+00	6.3254-02	9.2229+01	3.4761-03	1.9180+02		
1.7678+00	1.9827+00	5.8594-02	1.0478+02	3.2274-03	1.8755+02		
1.5435+00	2.2400+00	5.4139-02	1.1443+02	3.0001-03	1.7537+02		
1.3591+00	2.5858+00	4.9890-02	1.2796+02	2.7882-03	1.6680+02		
1.2057+00	2.7863+00	4.6111-02	1.3845+02	2.5909-03	1.5914+02		
1.0767+00	3.1434+00	4.2738-02	1.4841+02	2.4074-03	1.5219+02		
9.6720-01	3.5181+00	3.9511-02	1.5683+02	2.2371-03	1.5294+02		
8.7344-01	3.8382+00	3.6427-02	1.7066+02	2.0792-03	1.3677+02		
7.9264-01	4.2116+00	3.3677-02	1.7962+02	1.9329-03	1.4027+02		
7.2260-01	4.6460+00	3.1220-02	1.7354+02	1.7954-03	1.2173+02		
6.6146-01	4.9595+00	2.8889-02	1.6767+02	1.6666-03	1.2610+02		
6.0775-01	5.5424+00	2.6689-02	1.5798+02	1.5479-03	1.2514+02		
5.6032-01	5.8818+00	2.4727-02	1.5016+02	1.4385-03	1.1933+02		
5.1822-01	6.4726+00	2.2882-02	1.3980+02				
4.8070-01	6.8740+00	2.1150-02	1.5158+02

ERRATA FOR GA-5319

CALCULATION PARAMETERS

Scattering kernel: GASKET (77.4°K, Be) code (1, 5)
Transport theory: IDF code (10)
Temperature: 0.00667 eV
Source: DSZ code (3)
Self-shielding corrections applied for absorber.

LAPLACIANS AT POINT OF MEASUREMENT

$B^2 = 0.00333 \text{ cm}^{-2}$ (total buckling transverse to the precollimator - assembly axis).
Laplacian deduced from flux plots, using cadmium-covered indium foils.

COMMENTS

90° Angular neutron spectrum in 77.4°K beryllium, poisoned to 0.2536 barns/Be atom at 0.0253 eV with 0.907 wt % borated stainless steel, 0.0128 cms thick at 1.328 cms spacing.
Method of measurement: Time-of-flight measurements, using a pulsed neutron source.
The absorber cross sections are obtained from Table 1 and BNL 325.
A common normalization factor was used in calculating the ratios of theory to experiment. This normalization factor was obtained from the best fit of theory to experiment in the energy range 0.54 eV to 0.9 eV for case 2A. The theoretical and measured spectra were normalized by a best fit in that energy range for each position.

CORRECTIONS APPLIED TO DATA

Detector sensitivity	Flight path transmission
Mean emission time	Count loss correction
Background subtraction	

EXPERIMENTAL ARRANGEMENT

ATOM DENSITIES IN THE ASSEMBLY

Moderator: $1.1605 \times 10^{23} / \text{cm}^3$ (Be)	Absorber: $3.6003 \times 10^{19} / \text{cm}^3$ (B)
(All number densities are homogenized)	$9.9001 \times 10^{19} / \text{cm}^3$ (Ni)
	$1.5190 \times 10^{20} / \text{cm}^3$ (Cr)
	$5.1614 \times 10^{20} / \text{cm}^3$ (Fe)
	$6.236 \times 10^{20} / \text{cm}^3$ (Al)

ERRATA FOR GA-5319

LISTING OF EXPERIMENTAL POINTS $[\phi(E) \text{ v. } E]$

ENERGY (EV)	RELATIVE FLUX	ENERGY (EV)	RELATIVE FLUX	ENERGY (EV)	RELATIVE FLUX	F(X) (SMOOTHED)	X (CM)
6.3196+01	3.6644-02	4.6236-01	7.4245+00	2.2250-02	1.5331+02	9.6300-01	0.0000
4.3367+01	6.2930-02	4.1709-01	8.3886+00	2.0627-02	1.3545+02	9.6000-01	2.0000+00
3.1594+01	8.7600-02	3.7816-01	9.0333+00	1.9106-02	1.2103+02	9.4300-01	4.0000+00
2.4037+01	1.2207-01	3.4443-01	1.0152+01	1.7685-02	1.0969+02	9.1700-01	6.0000+00
1.8905+01	1.5610-01	3.1505-01	1.1141+01	1.6415-02	1.0691+02	8.7400-01	8.0000+00
1.5278+01	2.0135-01	2.8927-01	1.2256+01	1.5229-02	9.9456+01	8.1100-01	1.0000+01
1.2605+01	2.3285-01	2.6653-01	1.3140+01	1.4123-02	9.1766+01	7.3000-01	1.2000+01
1.0576+01	2.9707-01	2.4637-01	1.4466+01	1.3094-02	8.7789+01	6.4000-01	1.4000+01
8.9993+00	3.4424-01	2.2842-01	1.5407+01	1.2139-02	8.9370+01	5.4000-01	1.6000+01
7.7494+00	3.9658-01	2.0990-01	1.7131+01	1.1253-02	8.5890+01	4.3000-01	1.8000+01
6.7421+00	4.8570-01	1.9133-01	1.9076+01	1.0433-02	7.5588+01	3.1300-01	2.0000+01
5.9185+00	5.7221-01	1.7514-01	2.1060+01	9.6741-03	7.3115+01	1.9200-01	2.2000+01
5.2367+00	6.1302-01	1.6092-01	2.3448+01	8.9719-03	6.7757+01		
4.6688+00	6.9240-01	1.4836-01	2.5550+01	8.3238-03	6.5103+01		
4.1898+00	7.7819-01	1.3721-01	2.7570+01	7.7252-03	5.9225+01		
3.7807+00	8.7108-01	1.2729-01	3.0612+01	7.1734-03	5.7613+01		
3.4285+00	9.5698-01	1.1738-01	3.4582+01	6.6501-03	4.8088+01		
3.1231+00	1.0904+00	1.0766-01	3.8497+01	6.1692-03	3.3133+01		
2.8565+00	1.1558+00	9.9117-02	4.2134+01	5.7275-03	2.6902+01		
2.6225+00	1.2142+00	9.1573-02	4.8334+01	5.3113-03	2.4916+01		
2.4160+00	1.4069+00	8.4867-02	5.5323+01	4.9297-03	1.4909+01		
2.2328+00	1.5226+00	7.8327-02	6.1580+01	4.5800-03	1.2381+01		
2.0696+00	1.6358+00	7.2022-02	7.3302+01	4.2518-03	1.0921+01		
1.8591+00	1.8082+00	6.6471-02	8.2414+01	3.9447-03	1.1308+01		
1.6233+00	2.0894+00	6.1558-02	9.5389+01	3.6581-03	8.9206+00		
1.4295+00	2.3399+00	5.6860-02	1.0790+02	3.3964-03	1.1516+01		
1.2682+00	2.6502+00	5.2394-02	1.2400+02	3.1573-03	1.0491+01		
1.1326+00	3.0431+00	4.8434-02	1.3616+02	2.9343-03	8.0470+00		
1.0175+00	3.3924+00	4.4895-02	1.4758+02	2.7266-03	8.4481+00		
9.1898-01	3.7363+00	4.1515-02	1.5703+02	2.5336-03	9.5380+00		
8.3398-01	4.0395+00	3.8291-02	1.5890+02	2.3544-03	4.5020+00		
7.6026-01	4.5274+00	3.5408-02	1.5923+02	2.1882-03	8.6653+00		
6.9593-01	5.0379+00	3.2830-02	1.5529+02	2.0342-03	7.6569+00		
6.3943-01	5.3104+00	3.0382-02	1.5556+02	1.8895-03	7.0178+00		
5.8953-01	5.8286+00	2.8071-02	1.5874+02	1.7539-03	2.5145+00		
5.4524-01	6.2796+00	2.6010-02	1.6017+02	1.6290-03	7.4999+00		
5.0576-01	6.6645+00	2.4071-02	1.5727+02	1.5139-03	7.0255+00

CALCULATION PARAMETERS

Scattering kernel: GASKET (77.4°K, Be) code (1, 5)
Transport theory: 1DF code (10)
Temperature: 0.00667 eV
Source: DSZ code (3)
Self-shielding corrections applied for absorber.

LAPLACIANS AT POINT OF MEASUREMENT

$B^2 = 0.00333 \text{ cm}^{-2}$ (total buckling transverse to the precollimator - assembly axis).
Laplacian deduced from flux plots, using cadmium-covered indium foils.

COMMENTS

90° Angular neutron spectrum in 77.4°K beryllium, poisoned to 0.2536 barns/Be atom at 0.0253 eV with 0.907 wt % borated stainless steel, 0.0128 cms thick at 1.328 cms spacing.
Method of measurement: Time-of-flight measurements, using a pulsed neutron source.
The absorber cross sections are obtained from Table 1 and BNL 325.
A common normalization factor was used in calculating the ratios of theory to experiment. This normalization factor was obtained from the best fit of theory to experiment in the energy range 0.54 eV to 0.9 eV for case 2A. The theoretical and measured spectra were normalized by a best fit in that energy range for each position.

CORRECTIONS APPLIED TO DATA

Detector sensitivity	Flight path transmission
Mean emission time	Count loss correction
Background subtraction	

EXPERIMENTAL ARRANGEMENT

ATOM DENSITIES IN THE ASSEMBLY

Moderator: $1.1605 \times 10^{23} / \text{cm}^3$ (Be)	Absorber: $3.6003 \times 10^{19} / \text{cm}^3$ (B)
(All number densities are homogenized)	$9.9001 \times 10^{19} / \text{cm}^3$ (Ni)
	$1.5190 \times 10^{20} / \text{cm}^3$ (Cr)
	$5.1614 \times 10^{20} / \text{cm}^3$ (Fe)
	$6.236 \times 10^{20} / \text{cm}^3$ (Al)

LISTING OF EXPERIMENTAL POINTS $[\phi(E) \text{ v. } E]$

ENERGY (EV)	RELATIVE FLUX	ENERGY (EV)	RELATIVE FLUX	ENERGY (EV)	RELATIVE FLUX	F(X) (SMOOTHED)	X (CM)
6.2906+01	7.2229-02	4.6025-01	1.3287+01	2.2149-02	3.5760+02	9.6300=01	0.0000
4.3169+01	1.1048-01	4.1519-01	1.5099+01	2.0533-02	3.3051+02	9.6000=01	2.0000+00
3.1449+01	1.6047-01	3.7644-01	1.6651+01	1.9019-02	3.0144+02	9.4300=01	4.0000+00
2.3927+01	2.1678-01	3.4287-01	1.8310+01	1.7604-02	2.7880+02	9.1700=01	6.0000+00
1.8819+01	2.7250-01	3.1361-01	2.0215+01	1.6340-02	2.6954+02	8.7400=01	8.0000+00
1.5209+01	3.4892-01	2.8795-01	2.2425+01	1.5160-02	2.5674+02	8.1100=01	1.0000+01
1.2548+01	4.1366-01	2.6532-01	2.4580+01	1.4058-02	2.4185+02	7.3000=01	1.2000+01
1.0528+01	4.9688-01	2.4525-01	2.6630+01	1.3035-02	2.2679+02	6.4000=01	1.4000+01
8.9584+00	6.0312-01	2.2738-01	2.9620+01	1.2083-02	2.2576+02	5.4000=01	1.6000+01
7.7142+00	6.9987-01	2.0895-01	3.2484+01	1.1202-02	2.1560+02	4.3000=01	1.8000+01
6.7114+00	8.1294-01	1.9046-01	3.6132+01	1.0385-02	2.0369+02	3.1300=01	2.0000+01
5.8916+00	9.2035-01	1.7434-01	4.0601+01	9.6298-03	1.9275+02	1.9200=01	2.2000+01
5.2128+00	1.0518+00	1.6019-01	4.5135+01	8.9308-03	1.8158+02		
4.6477+00	1.1974+00	1.4768-01	4.9991+01	8.2857-03	1.7138+02		
4.1709+00	1.3134+00	1.3659-01	5.5214+01	7.6899-03	1.5907+02		
3.7636+00	1.4970+00	1.2671-01	6.0906+01	7.1405-03	1.4620+02		
3.4130+00	1.6943+00	1.1685-01	6.8938+01	6.6197-03	1.3252+02		
3.1089+00	1.8125+00	1.0718-01	7.7587+01	6.1410-03	1.0120+02		
2.8436+00	2.0191+00	9.8670-02	8.6433+01	5.7012-03	8.4960+01		
2.6106+00	2.1938+00	9.1161-02	9.7388+01	5.2870-03	7.6576+01		
2.4050+00	2.4361+00	8.4486-02	1.1169+02	4.9071-03	4.4943+01		
2.2226+00	2.5597+00	7.7976-02	1.2950+02	4.5591-03	4.1475+01		
2.0602+00	2.7993+00	7.1700-02	1.5353+02	4.2323-03	3.6206+01		
1.8507+00	3.1493+00	6.6175-02	1.8038+02	3.9266-03	3.6803+01		
1.6160+00	3.5992+00	6.1285-02	2.1014+02	3.6414-03	3.3294+01		
1.4230+00	4.1263+00	5.6610-02	2.4018+02	3.3809-03	3.2775+01		
1.2625+00	4.6225+00	5.2164-02	2.7956+02	3.1429-03	3.5464+01		
1.1275+00	5.2789+00	4.8221-02	3.0969+02	2.9208-03	3.3549+01		
1.0129+00	5.8238+00	4.4697-02	3.3774+02	2.7141-03	3.1714+01		
9.1479-01	6.5627+00	4.1331-02	3.5679+02	2.5220-03	2.5620+01		
8.3018-01	7.1062+00	3.8120-02	3.6609+02	2.3436-03	3.1212+01		
7.5680-01	7.9233+00	3.5250-02	3.7523+02	2.1781-03	2.9191+01		
6.9276-01	8.6660+00	3.2682-02	3.7249+02	2.0249-03	2.8227+01		
6.3652-01	9.4726+00	3.0245-02	3.7842+02	1.8808-03	2.5020+01		
5.8684-01	1.0265+01	2.7944-02	3.8068+02	1.7459-03	2.2323+01		
5.4276-01	1.1339+01	2.5892-02	3.7780+02	1.6215-03	2.5462+01		
5.0345-01	1.2374+01	2.3961-02	3.6784+02	1.5069-03	2.3917+01		