Public-data File 89-2a

PRELIMINARY RESULTS OF 24 APATITE FISSION TRACK ANALYSES OF SAMPLES FROM FOUR WELLS IN THE NATIONAL PETROLEUM RESERVE IN ALASKA

HUSKY TUNALIK TEST WELL #1
HUSKY WALAPKA TEST WELLS #1 AND #2
HUSKY INIGOK TEST WELL #1

by

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August 1989

3700 Airport Way
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INTRODUCTION

This is a preliminary report of apatite fission track analysis data of samples from four wells drilled in the National Petroleum Reserve of Alaska. During 1988, sandstone, siltstone, and conglomerate samples were collected from drill-core located at the State of Alaska's Geologic Materials Center in Eagle River. Apatite grains were separated from the samples and analyzed in Melbourne Australia at the LaTrobe University Fission Track Research Laboratory. All separations and analyses were completed by the author as part of an ongoing PhD project funded by the U.S. Minerals Management Service Continental Margins Program.

Each analysis includes two parts: 1) age report; and 2) track length distributions. The age report shows a listing of the individual grain ages, the resulting age and pertinent information used in determining the age. A guide to read the information is as follows:

POS 07A-KEMIK	-Sample number and unit collected
Irradiation:	-In-house number for grouping samples from the same irradiation package
Crystal	-Number of each grain counted
NS	-Number of spontaneous tracks counted
NI	-Number of induced tracks counted
NA	-Number of area units counted in grain
Ratio	-Ratio of (NS/NI) for each grain
U(ppm)	-Uranium concentration of each grain
RHOs	-Density of spontaneous tracks (per cm^2)
RHOi	-Density of induced tracks (per cm^2)
F.T.Age(Ma)	-Individual grain ages
CHI Squared	-Statistical test for determining multiple grain populations
p(chi squared)	-probability of less than 5% indicates multiple grain populations
Variance of SQR	-Statistical comparison of values of NS or NI for all grains
NS/NI	-Pooled ratio of (NS/NI). Uses total number of spontaneous and induced tracks counted for whole sample. Value used in age calculation if sample is of a single population
Mean Ratio	-Average ratio of (NS/NI) for grains
Pooled Age	-Age calculated using NS/NI(single population)
Mean Age	-Age calculated Using "Mean Ratio" (multiple populations)

The track length distributions for each sample are histograms showing the relative numbers of tracks measured at a particular length, the mean length of the tracks measured, the standard deviation of the tracks measured, and the total number of tracks measured for the sample (N).

LIST OF SAMPLES
(by depth)

Tunalik

Sample #	Unit	Depth (ft)	Results (data)
88 POS 100A	Echooka Fm.	16,946	Age only
88 POS 102A	Sag River SS.	15,418	Age and Length
88 POS 99A	Ivishak Fm.	14,852	Age and Length
88 POS 108A	Kingak Shale	11,692	Age and Length
88 POS 101A	Kingak Shale	10,932	Age and Length
88 POS 103A	Torok Fm.	9,501	Not Dateable
88 POS 104A	Torok Fm.	7,880	Not Dateable
88 POS 107A	Nanushuk Gp.	6,506	Age and Length
88 POS 106A	Nanushuk Gp.	5,558	Age and Length
88 POS 105A	Nanushuk Gp.	3,294	Age and Length

Walapka #1 and #2

Sample #	Unit	Depth (ft)	Results (data)
88 POS 112A	Pebble Shale	3,749	Age and Length
88 POS 111A	Pebble Shale	3,707	Combined w/ 112A
88 POS 115A	Argillite Basement	3,659	Age and Length
88 POS 114A	Barrow SS.	3,100	Age and Length
88 POS 110A	Pebble Shale	2,632	Age and Length
88 POS 113A	Pebble Shale	2,087	Age and Length
88 POS 109A	Torok Fm.	262	Age and Length

Inigok #1

Sample #	Unit	Depth (ft)	Results (data)
88 POS 116A	Kekiktuk Cong.	20,092	Not Dateable
88 POS 117A	Kekiktuk Cong.	19,369	Age Only
88 POS 118A	Echooka Fm.	13,832	Not Dateable
88 POS 119A	Fire Creek SS.	12,735	Age and Length
88 POS 120A	Fire Creek SS.	12,501	Age Only
88 POS 121A	Kingak Shale	10,296	Not Dateable
88 POS 122A	Kingak Shale	9,435	Age and Length
88 POS 123A	Torok Fm.	8,849	Age and Length
88 POS 124A	Torok Fm.	8,237	Age and Length
88 POS 125A	Torok Fm.	5,006	Age and Length
88 POS 126A	Nanushuk Gp.	3,078	Age and Length
88 POS 127A	Nanushuk Gp.	2,632	Age and Length

TUNALIK WELL
(in numerical order)

88 POS 99A - IVISHAK FM. - 14,852'

IRRADIATION LU021 SLIDE NUMBER 01
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	0	17	12	0.000	9.0	0.000E+00	1.656E+06	0.0± 0.0
2	0	14	12	0.000	7.4	0.000E+00	1.364E+06	0.0± 0.0
3	0	16	14	0.000	7.3	0.000E+00	1.336E+06	0.0± 0.0
4	0	18	15	0.000	7.6	0.000E+00	1.403E+06	0.0± 0.0
5	2	16	6	0.125	17.0	3.896E+05	3.117E+06	53.0± 39.7
6	0	15	10	0.000	9.5	0.000E+00	1.753E+06	0.0± 0.0
7	1	14	15	0.071	5.9	7.792E+04	1.091E+06	30.3± 31.4
8	0	20	12	0.000	10.6	0.000E+00	1.948E+06	0.0± 0.0
9	0	18	12	0.000	9.5	0.000E+00	1.753E+06	0.0± 0.0
10	1	10	12	0.100	5.3	9.740E+04	9.740E+05	42.4± 44.5
11	0	20	15	0.000	8.5	0.000E+00	1.558E+06	0.0± 0.0
12	0	19	12	0.000	10.1	0.000E+00	1.851E+06	0.0± 0.0
13	2	24	15	0.083	10.2	1.558E+05	1.870E+06	35.4± 26.0
14	0	14	21	0.000	4.2	0.000E+00	7.792E+05	0.0± 0.0
15	0	16	12	0.000	8.5	0.000E+00	1.558E+06	0.0± 0.0
16	0	19	12	0.000	10.1	0.000E+00	1.851E+06	0.0± 0.0
17	1	17	15	0.059	7.2	7.792E+04	1.325E+06	25.0± 25.7
18	0	15	20	0.000	4.8	0.000E+00	8.766E+05	0.0± 0.0
	7	302			7.9	3.381E+04	1.459E+06	

Area of basic unit = 8.789E-07 cm-2

CHI SQUARED = 19.44956 WITH 17 DEGREES OF FREEDOM
P(chi squared) = 30.3 %
CORRELATION COEFFICIENT = 0.097
VARIANCE OF SQR(Ns) = .3007498
VARIANCE OF SQR(Ni) = .1459386

Ns/Ni = 0.023 ± 0.009
MEAN RATIO = 0.024 ± 0.010

POOLED AGE = 9.8 ± 3.8 Ma
MEAN AGE = 10.4 ± 4.2 Ma

Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.408E+06cm-2; ND = 11421

88 POS 100A - ECHOOKA FM. - 16,946'

IRRADIATION LU021 SLIDE NUMBER 02
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	0	16	12	0.000	8.5	0.000E+00	1.558E+06	0.0± 0.0
2	1	15	36	0.067	2.6	3.247E+04	4.870E+05	28.3± 29.2
3	0	10	6	0.000	10.6	0.000E+00	1.948E+06	0.0± 0.0
4	0	18	14	0.000	8.2	0.000E+00	1.503E+06	0.0± 0.0
5	2	33	6	0.061	35.0	3.896E+05	6.428E+06	25.7± 18.8
6	0	50	12	0.000	26.5	0.000E+00	4.870E+06	0.0± 0.0
7	1	9	14	0.111	4.1	8.348E+04	7.514E+05	47.1± 49.7
8	0	23	16	0.000	9.1	0.000E+00	1.680E+06	0.0± 0.0
9	0	19	18	0.000	6.7	0.000E+00	1.234E+06	0.0± 0.0
10	0	31	20	0.000	9.9	0.000E+00	1.812E+06	0.0± 0.0
11	0	17	12	0.000	9.0	0.000E+00	1.656E+06	0.0± 0.0
12	0	8	6	0.000	8.5	0.000E+00	1.558E+06	0.0± 0.0
13	0	20	8	0.000	15.9	0.000E+00	2.922E+06	0.0± 0.0
14	0	31	16	0.000	12.3	0.000E+00	2.264E+06	0.0± 0.0
15	0	16	8	0.000	12.7	0.000E+00	2.338E+06	0.0± 0.0
	4	316			9.8	2.292E+04	1.810E+06	

Area of basic unit = 8.789E-07 cm-2

CHI SQUARED = 18.37251 WITH 14 DEGREES OF FREEDOM
P(chi squared) = 19.0 %
CORRELATION COEFFICIENT = 0.062
VARIANCE OF SQR(Ns) = .2302054
VARIANCE OF SQR(Ni) = 1.317921

Ns/Ni = 0.013 ± 0.006
MEAN RATIO = 0.016 ± 0.009

POOLED AGE = 5.5 ± 2.8 Ma
MEAN AGE = 6.9 ± 3.9 Ma

Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.480E+06cm-2; ND = 11421

88 POS 101A - KINGAK SHALE - 10,932'

IRRADIATION LU021 SLIDE NUMBER 03
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	0	7	6	0.000	7.4	0.000E+00	1.364E+06	0.0± 0.0
2	1	34	15	0.029	14.4	7.792E+04	2.649E+06	12.5± 12.7
3	1	6	6	0.167	6.4	1.948E+05	1.169E+06	70.5± 76.2
4	0	12	12	0.000	6.4	0.000E+00	1.169E+06	0.0± 0.0
5	0	4	6	0.000	4.2	0.000E+00	7.792E+05	0.0± 0.0
6	1	9	9	0.111	6.4	1.299E+05	1.169E+06	47.1± 49.7
7	0	4	4	0.000	6.4	0.000E+00	1.169E+06	0.0± 0.0
8	2	13	12	0.154	6.9	1.948E+05	1.266E+06	65.1± 49.5
9	2	17	9	0.118	12.0	2.597E+05	2.208E+06	49.9± 37.3
10	0	9	6	0.000	9.5	0.000E+00	1.753E+06	0.0± 0.0
11	1	14	18	0.071	4.9	6.493E+04	9.090E+05	30.3± 31.4
12	0	7	8	0.000	5.6	0.000E+00	1.023E+06	0.0± 0.0
13	0	10	12	0.000	5.3	0.000E+00	9.740E+05	0.0± 0.0
14	1	7	8	0.143	5.6	1.461E+05	1.023E+06	60.5± 64.7
15	1	25	18	0.040	8.8	6.493E+04	1.623E+06	17.0± 17.3
16	0	5	6	0.000	5.3	0.000E+00	9.740E+05	0.0± 0.0
17	1	23	12	0.043	12.2	9.740E+04	2.240E+06	18.5± 18.9
18	1	6	8	0.167	4.8	1.461E+05	8.766E+05	70.5± 76.2
19	0	10	8	0.000	7.9	0.000E+00	1.461E+06	0.0± 0.0
20	1	15	10	0.067	9.5	1.169E+05	1.753E+06	28.3± 29.2
	13	237			7.8	7.873E+04	1.435E+06	

Area of basic unit = 8.789E-07 cm-2

CHI SQUARED = 11.1525 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 91.9 %
CORRELATION COEFFICIENT = 0.451
VARIANCE OF SQR(Ns) = .3160219
VARIANCE OF SQR(Ni) = 1.069143

Ns/Ni = 0.055 ± 0.016
MEAN RATIO = 0.055 ± 0.014

POOLED AGE = 24.2 ± 6.9 Ma
MEAN AGE = 24.5 ± 6.3 Ma

Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.507E+06cm-2; ND = 11421

88 POS 102A - SAG RIVER SS. - 15,418'

IRRADIATION LU021 SLIDE NUMBER 4
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	0	16	12	0.000	8.5	0.000E+00	1.558E+06	0.0± 0.0
2	1	15	6	0.067	15.9	1.948E+05	2.922E+06	28.3± 29.2
3	0	9	6	0.000	9.5	0.000E+00	1.753E+06	0.0± 0.0
4	0	19	8	0.000	15.1	0.000E+00	2.776E+06	0.0± 0.0
5	0	24	10	0.000	15.3	0.000E+00	2.805E+06	0.0± 0.0
6	1	10	6	0.100	10.6	1.948E+05	1.948E+06	42.4± 44.5
7	0	18	8	0.000	14.3	0.000E+00	2.630E+06	0.0± 0.0
8	0	19	12	0.000	10.1	0.000E+00	1.851E+06	0.0± 0.0
9	0	17	6	0.000	18.0	0.000E+00	3.312E+06	0.0± 0.0
10	0	14	8	0.000	11.1	0.000E+00	2.045E+06	0.0± 0.0
11	0	16	12	0.000	8.5	0.000E+00	1.558E+06	0.0± 0.0
12	1	15	12	0.067	7.9	9.740E+04	1.461E+06	28.3± 29.2
13	1	23	6	0.043	24.4	1.948E+05	4.480E+06	18.5± 18.9
	4	215			12.2	4.174E+04	2.244E+06	

Area of basic unit = 8.789E-07 cm-2

CHI SQUARED = 10.29022 WITH 12 DEGREES OF FREEDOM
P(chi squared) = 59.1 %
CORRELATION COEFFICIENT = -0.127
VARIANCE OF SQR(Ns) = .2307692
VARIANCE OF SQR(Ni) = .2966563

Ns/Ni = 0.019 ± 0.009
MEAN RATIO = 0.021 ± 0.010

POOLED AGE = 8.3 ± 4.2 Ma
MEAN AGE = 9.5 ± 4.4 Ma

Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.534E+06cm-2; ND = 11421

88 POS 105A - NANUSHUK GROUP - 3,294'

IRRADIATION LU021 SLIDE NUMBER 06
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	11	28	28	0.393	6.4	4.592E+05	1.169E+06	165.1± 58.8
2	7	46	15	0.152	19.5	5.454E+05	3.584E+06	64.4± 26.2
3	1	5	12	0.200	2.6	9.740E+04	4.870E+05	84.6± 92.6
4	5	31	40	0.161	4.9	1.461E+05	9.058E+05	68.3± 32.9
5	25	147	36	0.170	26.0	8.116E+05	4.772E+06	72.0± 15.6
6	1	12	9	0.083	8.5	1.299E+05	1.558E+06	35.4± 36.8
7	5	11	18	0.455	3.9	3.247E+05	7.142E+05	190.6±102.8
8	26	129	18	0.202	45.6	1.688E+06	8.376E+06	85.2± 18.4
9	9	66	15	0.136	28.0	7.013E+05	5.143E+06	57.8± 20.5
10	1	20	10	0.050	12.7	1.169E+05	2.338E+06	21.2± 21.8
11	5	31	20	0.161	9.9	2.922E+05	1.812E+06	68.3± 32.9
12	7	57	12	0.123	30.2	6.818E+05	5.552E+06	52.1± 20.9
13	3	13	12	0.231	6.9	2.922E+05	1.266E+06	97.5± 62.5
14	6	35	30	0.171	7.4	2.338E+05	1.364E+06	72.6± 32.1
15	11	42	24	0.262	11.1	5.357E+05	2.045E+06	110.5± 37.5
16	5	32	24	0.156	8.5	2.435E+05	1.558E+06	66.2± 31.8
17	7	45	30	0.156	9.5	2.727E+05	1.753E+06	65.9± 26.8
18	9	61	12	0.148	32.3	8.766E+05	5.941E+06	62.5± 22.3
19	1	17	12	0.059	9.0	9.740E+04	1.656E+06	25.0± 25.7
20	26	138	15	0.188	58.5	2.026E+06	1.075E+07	79.7± 17.1
	171	966			15.7	5.098E+05	2.880E+06	

Area of basic unit = 8.789E-07 cm-2

CHI SQUARED = 16.1911 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 64.4 %
CORRELATION COEFFICIENT = 0.955
VARIANCE OF SQR(Ns) = 1.637335
VARIANCE OF SQR(Ni) = 7.792015

Ns/Ni = 0.177 ± 0.015
MEAN RATIO = 0.183 ± 0.022

POOLED AGE = 80.3 ± 6.7 Ma
MEAN AGE = 82.9 ± 9.9 Ma

Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.588E+06cm-2; ND = 11421

88 POS 106A - NANUSHUK GROUP - 5,558'

IRRADIATION LU021 SLIDE NUMBER 07
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	3	19	28	0.158	4.3	1.252E+05	7.931E+05	66.9± 41.5
2	3	14	21	0.214	4.2	1.670E+05	7.792E+05	90.6± 57.6
3	4	20	20	0.200	6.4	2.338E+05	1.169E+06	84.6± 46.3
4	3	17	10	0.176	10.8	3.506E+05	1.987E+06	74.7± 46.8
5	6	37	12	0.162	19.6	5.844E+05	3.604E+06	68.7± 30.2
6	1	7	12	0.143	3.7	9.740E+04	6.818E+05	60.5± 64.7
7	5	58	21	0.086	17.6	2.783E+05	3.228E+06	36.6± 17.1
8	3	9	10	0.333	5.7	3.506E+05	1.052E+06	140.3± 93.6
9	1	8	12	0.125	4.2	9.740E+04	7.792E+05	53.0± 56.2
10	1	9	12	0.111	4.8	9.740E+04	8.766E+05	47.1± 49.7
11	5	58	18	0.086	20.5	3.247E+05	3.766E+06	36.6± 17.1
12	0	3	9	0.000	2.1	0.000E+00	3.896E+05	0.0± 0.0
13	1	13	15	0.077	5.5	7.792E+04	1.013E+06	32.7± 33.9
14	2	21	12	0.095	11.1	1.948E+05	2.045E+06	40.4± 29.9
15	2	12	16	0.167	4.8	1.461E+05	8.766E+05	70.5± 53.9
16	3	19	12	0.158	10.1	2.922E+05	1.851E+06	66.9± 41.5
17	4	21	20	0.190	6.7	2.338E+05	1.227E+06	80.6± 44.0
18	1	8	12	0.125	4.2	9.740E+04	7.792E+05	53.0± 56.2
19	5	41	15	0.122	17.4	3.896E+05	3.195E+06	51.7± 24.5
20	2	17	12	0.118	9.0	1.948E+05	1.656E+06	49.9± 37.3
	55	411			8.7	2.150E+05	1.607E+06	

Area of basic unit = 8.789E-07 cm-2

CHI SQUARED = 6.974223 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 99.4 %
CORRELATION COEFFICIENT = 0.829
VARIANCE OF SQR(Ns) = .3558942
VARIANCE OF SQR(Ni) = 2.544674

Ns/Ni = 0.134 ± 0.019
MEAN RATIO = 0.142 ± 0.015

POOLED AGE = 61.4 ± 8.8 Ma
MEAN AGE = 65.3 ± 6.9 Ma

Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.616E+06cm-2; ND = 11421

88 POS 107A - TOROK FM. - 6,506'

IRRADIATION LU021 SLIDE NUMBER 08
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	0	11	30	0.000	2.3	0.000E+00	4.285E+05	0.0± 0.0
2	1	6	24	0.167	1.6	4.870E+04	2.922E+05	70.5± 76.2
3	3	18	12	0.167	9.5	2.922E+05	1.753E+06	70.5± 44.0
4	28	280	28	0.100	63.6	1.169E+06	1.169E+07	42.4± 8.4
5	4	24	8	0.167	19.1	5.844E+05	3.506E+06	70.5± 38.1
6	3	23	15	0.130	9.7	2.338E+05	1.792E+06	55.3± 33.9
7	1	7	12	0.143	3.7	9.740E+04	6.818E+05	60.5± 64.7
8	1	10	10	0.100	6.4	1.169E+05	1.169E+06	42.4± 44.5
9	8	49	24	0.163	13.0	3.896E+05	2.386E+06	69.1± 26.4
10	11	77	18	0.143	27.2	7.142E+05	5.000E+06	60.5± 19.5
11	5	17	10	0.294	10.8	5.844E+05	1.987E+06	124.0± 63.1
12	3	22	8	0.136	17.5	4.383E+05	3.214E+06	57.8± 35.6
13	1	10	28	0.100	2.3	4.174E+04	4.174E+05	42.4± 44.5
14	3	19	12	0.158	10.1	2.922E+05	1.851E+06	66.9± 41.5
15	4	23	10	0.174	14.6	4.675E+05	2.688E+06	73.6± 39.9
16	1	8	10	0.125	5.1	1.169E+05	9.350E+05	53.0± 56.2
17	8	50	24	0.160	13.2	3.896E+05	2.435E+06	67.7± 25.8
18	5	27	12	0.185	14.3	4.870E+05	2.630E+06	78.3± 38.2
19	12	85	15	0.141	36.0	9.350E+05	6.623E+06	59.8± 18.5
20	1	10	10	0.100	6.4	1.169E+05	1.169E+06	42.4± 44.5
	103	776			15.4	3.762E+05	2.834E+06	

Area of basic unit = 8.789E-07 cm-2

CHI SQUARED = 8.110324 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 98.6 %
CORRELATION COEFFICIENT = 0.976
VARIANCE OF SQR(Ns) = 1.391811
VARIANCE OF SQR(Ni) = 10.92243

Ns/Ni = 0.133 ± 0.014
MEAN RATIO = 0.143 ± 0.012

POOLED AGE = 61.8 ± 6.5 Ma
MEAN AGE = 66.4 ± 5.7 Ma

Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.653E+06cm-2; ND = 11421

88 POS 108A - KINGAK SHALE - 11,692

IRRADIATION LU021 SLIDE NUMBER 09
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	6	44	40	0.136	7.0	1.753E+05	1.286E+06	57.8± 25.2
2	1	25	12	0.040	13.2	9.740E+04	2.435E+06	17.0± 17.3
3	0	25	15	0.000	10.6	0.000E+00	1.948E+06	0.0± 0.0
4	1	15	12	0.067	7.9	9.740E+04	1.461E+06	28.3± 29.2
5	0	19	15	0.000	8.1	0.000E+00	1.480E+06	0.0± 0.0
6	0	7	6	0.000	7.4	0.000E+00	1.364E+06	0.0± 0.0
7	1	30	15	0.033	12.7	7.792E+04	2.338E+06	14.2± 14.4
8	0	12	8	0.000	9.5	0.000E+00	1.753E+06	0.0± 0.0
9	2	19	12	0.105	10.1	1.948E+05	1.851E+06	44.6± 33.2
10	1	25	15	0.040	10.6	7.792E+04	1.948E+06	17.0± 17.3
11	1	12	10	0.083	7.6	1.169E+05	1.403E+06	35.4± 36.8
12	1	8	12	0.125	4.2	9.740E+04	7.792E+05	53.0± 56.2
13	0	15	10	0.000	9.5	0.000E+00	1.753E+06	0.0± 0.0
	14	256			8.9	8.991E+04	1.644E+06	

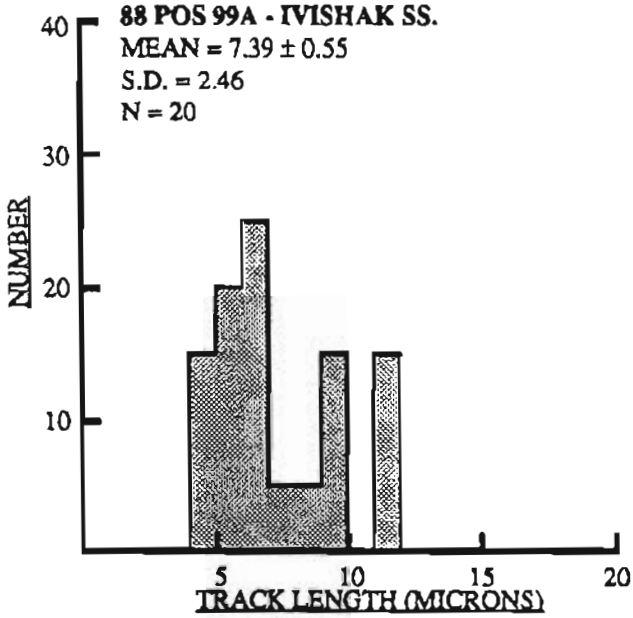
Area of basic unit = 8.789E-07 cm-2

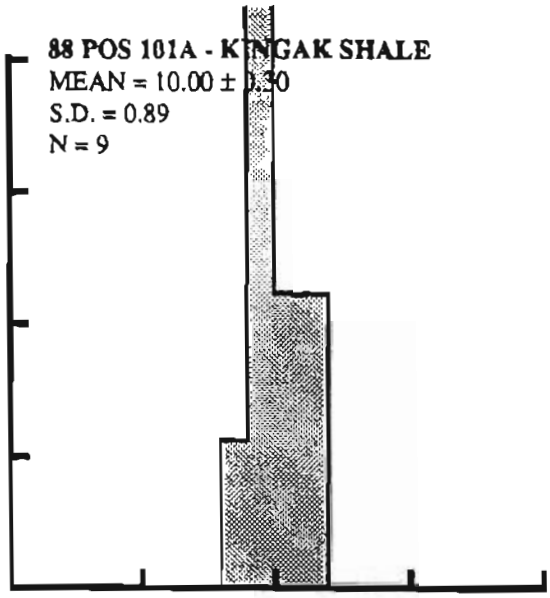
CHI SQUARED = 11.07058 WITH 12 DEGREES OF FREEDOM
P(chi squared) = 52.3 %
CORRELATION COEFFICIENT = 0.721
VARIANCE OF SQR(Ns) = .5429959
VARIANCE OF SQR(Ni) = 1.247556

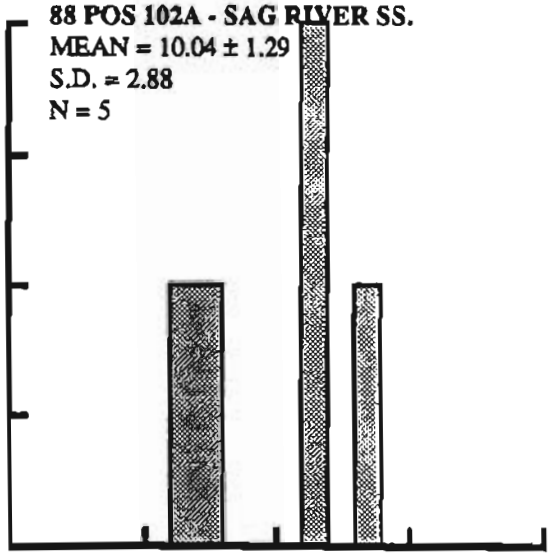
Ns/Ni = 0.055 ± 0.015
MEAN RATIO = 0.048 ± 0.014

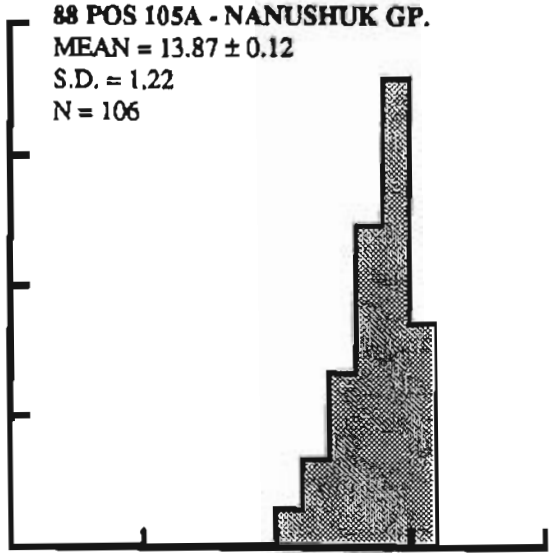
POOLED AGE = 25.8 ± 7.1 Ma
MEAN AGE = 22.9 ± 6.6 Ma

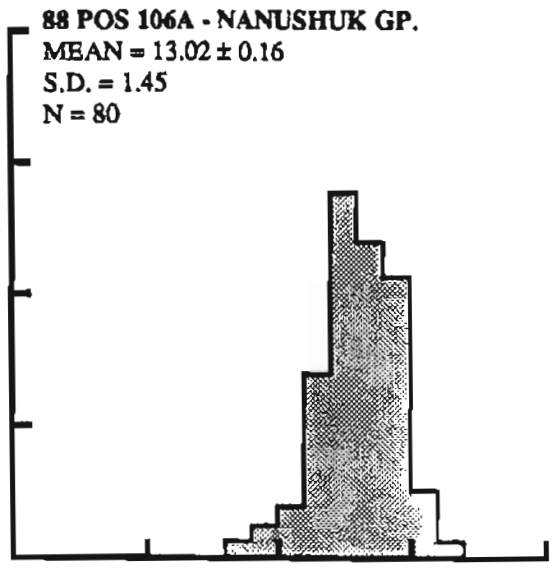
Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.680E+06cm-2; ND = 11421

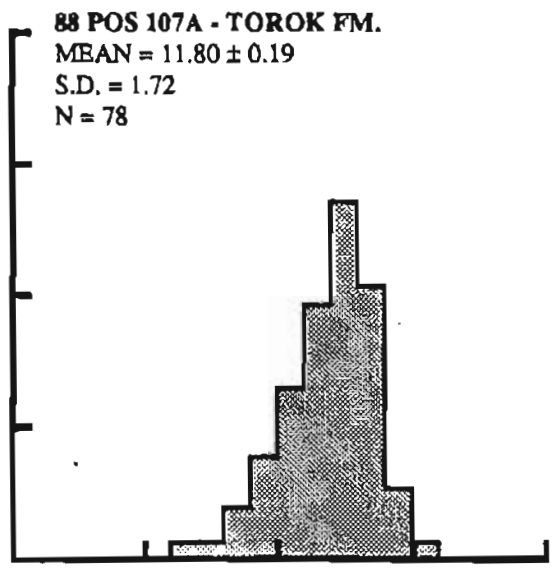

88 POS 99A - IVISHAK SS.
MEAN = 7.39 ± 0.55
S.D. = 2.46
N = 20
NUMBER
40
30
20
10
5
10
15
20
TRACK LENGTH (MICRONS)

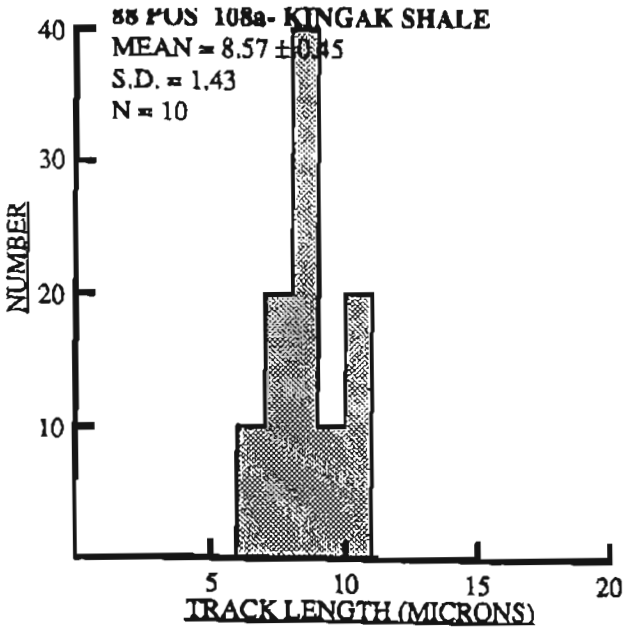

88 POS 101A - KINGAK SHALE
MEAN = 10.00 ± 0.30
S.D. = 0.89
N = 9


88 POS 102A - SAG RIVER SS.
MEAN = 10.04 ± 1.29
S.D. = 2.88
N = 5


88 POS 105A - NANUSHUK GP.
MEAN = 13.87 ± 0.12
S.D. = 1.22
N = 106


88 POS 106A - NANUSHUK GP.
MEAN = 13.02 ± 0.16
S.D. = 1.45
N = 80


88 POS 107A - TOROK FM.
MEAN = 11.80 ± 0.19
S.D. = 1.72
N = 78


88 POS 108a- KINGAK SHALE
MEAN = 8.57 ±0.45
S.D. = 1.43
N = 10
NUMBER
40
30
20
10
5
10
15
20
TRACK LENGTH (MICRONS)

Walapka #1, #2
(in numerical order)

88 POS 109A - TOROK FM. - 262' - WALAPKA #1

IRRADIATION LU021 SLIDE NUMBER 10
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	6	14	12	0.429	7.4	5.844E+05	1.364E+06	179.9± 87.8
2	5	10	8	0.500	7.9	7.305E+05	1.461E+06	209.4±114.7
3	6	13	12	0.462	6.9	5.844E+05	1.266E+06	193.5± 95.5
4	5	36	15	0.139	15.3	3.896E+05	2.805E+06	58.8± 28.1
5	4	18	24	0.222	4.8	1.948E+05	8.766E+05	93.9± 51.9
6	12	22	12	0.545	11.7	1.169E+06	2.143E+06	228.1± 81.9
7	6	23	42	0.261	3.5	1.670E+05	6.400E+05	110.1± 50.5
8	16	52	25	0.308	13.2	7.480E+05	2.431E+06	129.6± 37.1
9	10	43	25	0.233	10.9	4.675E+05	2.010E+06	98.2± 34.5
10	8	18	8	0.444	14.3	1.169E+06	2.630E+06	186.4± 79.3
11	5	67	27	0.075	15.8	2.164E+05	2.900E+06	31.7± 14.7
12	4	10	18	0.400	3.5	2.597E+05	6.493E+05	168.0± 99.4
13	6	39	24	0.154	10.3	2.922E+05	1.899E+06	65.1± 28.6
14	10	29	32	0.345	5.8	3.652E+05	1.059E+06	145.1± 53.3
15	35	101	20	0.347	32.1	2.045E+06	5.902E+06	145.8± 28.7
16	4	8	15	0.500	3.4	3.117E+05	6.233E+05	209.4±128.2
17	2	8	16	0.250	3.2	1.461E+05	5.844E+05	105.5± 83.4
18	6	15	14	0.400	6.8	5.009E+05	1.252E+06	168.0± 81.2
19	6	14	12	0.429	7.4	5.844E+05	1.364E+06	179.9± 87.8
20	4	18	20	0.222	5.7	2.338E+05	1.052E+06	93.9± 51.9
	160	558			9.3	4.908E+05	1.712E+06	

Area of basic unit = 8.789E-07 cm-2

CHI SQUARED = 25.81069 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 13.6 %
CORRELATION COEFFICIENT = 0.798
VARIANCE OF SQR(Ns) = .9302874
VARIANCE OF SQR(Ni) = 3.684916

Ns/Ni = 0.287 ± 0.026
MEAN RATIO = 0.333 ± 0.030

POOLED AGE = 135.5 ± 12.2 Ma
MEAN AGE = 157.1 ± 14.2 Ma

Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.707E+06cm-2; ND = 11421

88 POS 110A - - 2,632' - WALAPKA #2

IRRADIATION LU021 SLIDE NUMBER 11
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	3	30	25	0.100	7.6	1.403E+05	1.403E+06	42.4± 25.7
2	7	58	21	0.121	17.6	3.896E+05	3.228E+06	51.2± 20.5
3	8	41	25	0.195	10.4	3.740E+05	1.917E+06	82.5± 31.9
4	8	24	25	0.333	6.1	3.740E+05	1.122E+06	140.3± 57.3
5	1	11	40	0.091	1.7	2.922E+04	3.214E+05	38.6± 40.3
6	13	60	42	0.217	9.1	3.618E+05	1.670E+06	91.6± 28.0
7	8	48	21	0.167	14.5	4.452E+05	2.671E+06	70.5± 27.0
8	35	113	30	0.310	23.9	1.364E+06	4.402E+06	130.5± 25.3
9	18	21	24	0.857	5.6	8.766E+05	1.023E+06	354.9±114.1
10	3	13	30	0.231	2.8	1.169E+05	5.065E+05	97.5± 62.5
11	10	16	16	0.625	6.4	7.305E+05	1.169E+06	260.7±105.1
12	35	176	40	0.199	28.0	1.023E+06	5.143E+06	84.1± 15.6
13	4	24	24	0.167	6.4	1.948E+05	1.169E+06	70.5± 38.1
14	3	30	25	0.100	7.6	1.403E+05	1.403E+06	42.4± 25.7
15	7	45	24	0.156	11.9	3.409E+05	2.191E+06	65.9± 26.8
16	2	9	40	0.222	1.4	5.844E+04	2.630E+05	93.9± 73.4
17	9	50	21	0.180	15.1	5.009E+05	2.783E+06	76.2± 27.6
18	20	25	24	0.800	6.6	9.740E+05	1.217E+06	331.8± 99.7
19	9	15	16	0.600	6.0	6.574E+05	1.096E+06	250.4±105.7
20	4	21	24	0.190	5.6	1.948E+05	1.023E+06	80.6± 44.0
	207	830			9.8	4.505E+05	1.806E+06	

Area of basic unit = 8.789E-07 cm-2

CHI SQUARED = 61.21191 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 0.0 %
CORRELATION COEFFICIENT = 0.809
VARIANCE OF SQR(Ns) = 1.826539
VARIANCE OF SQR(Ni) = 6.367232

Ns/Ni = 0.249 ± 0.019
MEAN RATIO = 0.293 ± 0.052

POOLED AGE = 119.2 ± 9.3 Ma
MEAN AGE = 139.8 ± 24.9 Ma

Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.735E+06cm-2; ND = 11421

88 POS 111A + 112A - - 3,707'+3,749' - WALAPKA #2

IRRADIATION LU021 SLIDE NUMBER 13
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	16	49	21	0.327	14.8	8.905E+05	2.727E+06	137.5± 39.6
2	23	114	25	0.202	29.0	1.075E+06	5.330E+06	85.3± 19.5
3	3	22	15	0.136	9.3	2.338E+05	1.714E+06	57.8± 35.6
4	4	11	20	0.364	3.5	2.338E+05	6.428E+05	152.9± 89.3
5	8	28	10	0.286	17.8	9.350E+05	3.273E+06	120.5± 48.3
6	8	49	48	0.163	6.5	1.948E+05	1.193E+06	69.1± 26.4
7	9	23	40	0.391	3.7	2.630E+05	6.720E+05	164.4± 64.7
8	14	83	30	0.169	17.6	5.454E+05	3.234E+06	71.4± 20.7
9	17	60	24	0.283	15.9	8.279E+05	2.922E+06	119.5± 32.9
10	10	70	14	0.143	31.8	8.348E+05	5.844E+06	60.5± 20.5
11	2	9	12	0.222	4.8	1.948E+05	8.766E+05	93.9± 73.4
12	15	48	20	0.312	15.3	8.766E+05	2.805E+06	131.6± 39.0
13	10	41	30	0.244	8.7	3.896E+05	1.597E+06	103.0± 36.4
14	19	61	25	0.311	15.5	8.883E+05	2.852E+06	131.2± 34.5
15	8	26	18	0.308	9.2	5.195E+05	1.688E+06	129.6± 52.4
16	3	12	6	0.250	12.7	5.844E+05	2.338E+06	105.5± 68.1
17	27	81	40	0.333	12.9	7.889E+05	2.367E+06	140.3± 31.2
18	9	21	30	0.429	4.4	3.506E+05	8.181E+05	179.9± 71.7
19	17	51	20	0.333	16.2	9.935E+05	2.980E+06	140.3± 39.4
20	8	38	12	0.211	20.1	7.792E+05	3.701E+06	89.0± 34.6
	230	897			12.4	5.844E+05	2.279E+06	

Area of basic unit = 8.789E-07 cm-2

CHI SQUARED = 16.77851 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 60.5 %
CORRELATION COEFFICIENT = 0.838
VARIANCE OF SQR(Ns) = 1.079595
VARIANCE OF SQR(Ni) = 4.372144

Ns/Ni = 0.256 ± 0.019
MEAN RATIO = 0.271 ± 0.019

POOLED AGE = 124.6 ± 9.3 Ma
MEAN AGE = 131.5 ± 9.1 Ma

Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.782E+06cm-2; ND = 11421

88 POS 113A - - 2,087' - WALAPKA #1

IRRADIATION LU021 SLIDE NUMBER 14
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	5	15	12	0.333	7.9	4.870E+05	1.461E+06	140.3± 72.5
2	2	7	12	0.286	3.7	1.948E+05	6.818E+05	120.5± 96.6
3	4	10	12	0.400	5.3	3.896E+05	9.740E+05	168.0± 99.4
4	2	8	10	0.250	5.1	2.338E+05	9.350E+05	105.5± 83.4
5	45	180	18	0.250	63.6	2.922E+06	1.169E+07	105.5± 17.7
6	6	19	8	0.316	15.1	8.766E+05	2.776E+06	133.0± 62.3
7	3	6	12	0.500	3.2	2.922E+05	5.844E+05	209.4±148.1
8	1	4	4	0.250	6.4	2.922E+05	1.169E+06	105.5±118.0
9	2	7	12	0.286	3.7	1.948E+05	6.818E+05	120.5± 96.6
10	1	8	15	0.125	3.4	7.792E+04	6.233E+05	53.0± 56.2
11	1	5	9	0.200	3.5	1.299E+05	6.493E+05	84.6± 92.6
12	8	23	12	0.348	12.2	7.792E+05	2.240E+06	146.4± 60.1
13	23	109	16	0.211	43.3	1.680E+06	7.962E+06	89.2± 20.5
14	17	33	12	0.515	17.5	1.656E+06	3.214E+06	215.6± 64.4
15	7	22	24	0.318	5.8	3.409E+05	1.071E+06	134.0± 58.2
16	6	17	24	0.353	4.5	2.922E+05	8.279E+05	148.5± 70.5
17	6	18	24	0.333	4.8	2.922E+05	8.766E+05	140.3± 66.2
18	47	188	28	0.250	42.7	1.962E+06	7.847E+06	105.5± 17.3
19	9	28	20	0.321	8.9	5.259E+05	1.636E+06	135.4± 51.9
20	3	11	16	0.273	4.4	2.191E+05	8.035E+05	115.0± 75.0
	198	718			15.2	7.714E+05	2.797E+06	

Area of basic unit = 8.789E-07 cm-2

CHI SQUARED = 9.675831 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 96.0 %
CORRELATION COEFFICIENT = 0.986
VARIANCE OF SQR(Ns) = 2.959536
VARIANCE OF SQR(Ni) = 12.10107

Ns/Ni = 0.276 ± 0.022
MEAN RATIO = 0.306 ± 0.021

POOLED AGE = 134.3 ± 10.9 Ma
MEAN AGE = 148.8 ± 10.2 Ma

Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.790E+06cm-2; ND = 11421

88 POS 114A - - 3,100' - WALAPKA #1

IRRADIATION LU023 SLIDE NUMBER 01
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	8	51	12	0.157	24.4	7.792E+05	4.967E+06	73.6± 28.0
2	16	51	21	0.314	13.9	8.905E+05	2.838E+06	146.3± 42.0
3	5	18	12	0.278	8.6	4.870E+05	1.753E+06	129.7± 65.6
4	8	28	15	0.286	10.7	6.233E+05	2.182E+06	133.4± 53.5
5	9	25	40	0.360	3.6	2.630E+05	7.305E+05	167.6± 65.2
6	17	59	24	0.288	14.1	8.279E+05	2.873E+06	134.5± 37.1
7	5	9	8	0.556	6.5	7.305E+05	1.315E+06	256.9±143.3
8	10	40	12	0.250	19.1	9.740E+05	3.896E+06	116.9± 41.4
9	8	22	20	0.364	6.3	4.675E+05	1.286E+06	169.3± 69.9
10	27	86	40	0.314	12.3	7.889E+05	2.513E+06	146.4± 32.4
11	17	62	30	0.274	11.9	6.623E+05	2.415E+06	128.1± 35.1
12	26	101	24	0.257	24.1	1.266E+06	4.919E+06	120.3± 26.5
13	5	11	20	0.455	3.2	2.922E+05	6.428E+05	210.9±113.8
14	8	50	40	0.160	7.2	2.338E+05	1.461E+06	75.0± 28.6
15	19	75	30	0.253	14.3	7.402E+05	2.922E+06	118.4± 30.5
16	17	50	40	0.340	7.2	4.967E+05	1.461E+06	158.4± 44.5
17	8	24	12	0.333	11.5	7.792E+05	2.338E+06	155.4± 63.5
	213	762			10.9	6.224E+05	2.226E+06	

Area of basic unit = 8.789E-07 cm-2

CHI SQUARED = 9.33778 WITH 16 DEGREES OF FREEDOM
P(chi squared) = 89.9 %
CORRELATION COEFFICIENT = 0.926
VARIANCE OF SQR(Ns) = .9294977
VARIANCE OF SQR(Ni) = 4.162098

Ns/Ni = 0.280 ± 0.022
MEAN RATIO = 0.308 ± 0.023

POOLED AGE = 121.8 ± 9.4 Ma
MEAN AGE = 133.2 ± 10.1 Ma

Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.477E+06cm-2; ND = 11864

88 POS 115A - ARGILLITE BASEMENT - 3,659' - WALAPKA #1

IRRADIATION LU023 SLIDE NUMBER 02
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	8	30	9	0.267	19.1	1.039E+06	3.896E+06	124.6± 49.6
2	5	14	18	0.357	4.5	3.247E+05	9.090E+05	166.3± 86.7
3	5	8	8	0.625	5.7	7.305E+05	1.169E+06	288.3±164.4
4	4	10	10	0.400	5.7	4.675E+05	1.169E+06	186.0±110.1
5	8	14	9	0.571	8.9	1.039E+06	1.818E+06	264.1±117.1
6	7	27	9	0.259	17.2	9.090E+05	3.506E+06	121.2± 51.4
7	9	24	8	0.375	17.2	1.315E+06	3.506E+06	174.5± 68.3
8	8	21	12	0.381	10.0	7.792E+05	2.045E+06	177.3± 73.7
9	10	52	16	0.192	18.6	7.305E+05	3.798E+06	90.1± 31.1
10	5	12	14	0.417	4.9	4.174E+05	1.002E+06	193.6±103.1
11	8	20	10	0.400	11.5	9.350E+05	2.338E+06	186.0± 77.8
12	17	45	20	0.378	12.9	9.935E+05	2.630E+06	175.8± 50.1
	94	277			11.1	7.683E+05	2.264E+06	

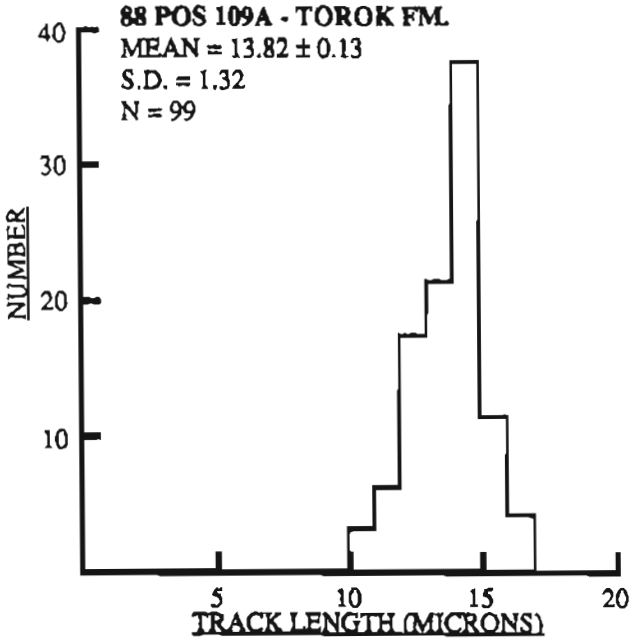
Area of basic unit = 8.789E-07 cm-2

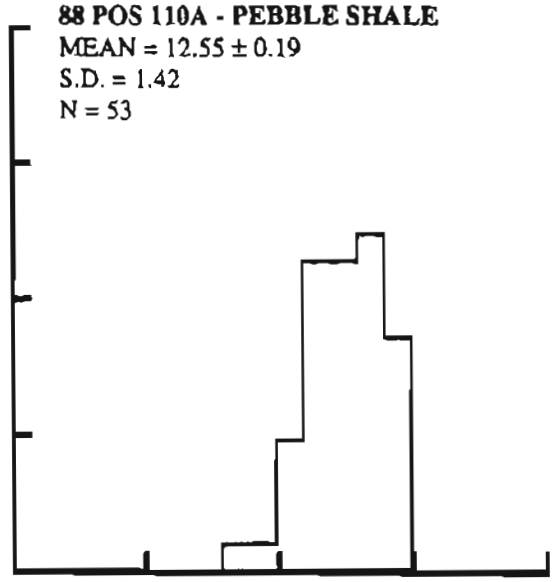
CHI SQUARED = 6.826693 WITH 11 DEGREES OF FREEDOM
P(chi squared) = 81.3 %
CORRELATION COEFFICIENT = 0.790
VARIANCE OF SQR(Ns) = .3189163
VARIANCE OF SQR(Ni) = 1.859627

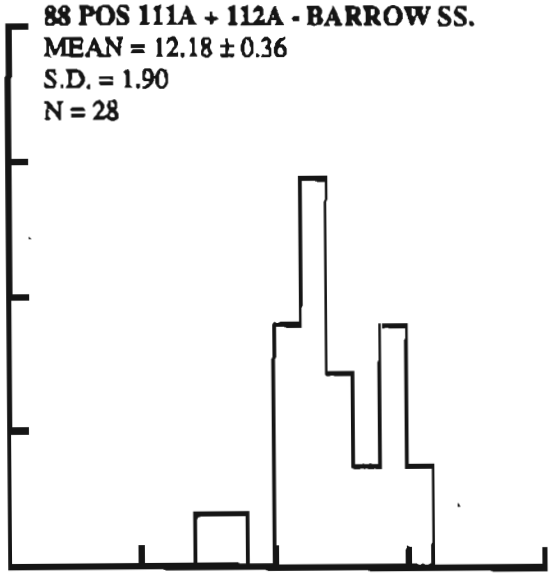
Ns/Ni = 0.339 ± 0.040
MEAN RATIO = 0.385 ± 0.035

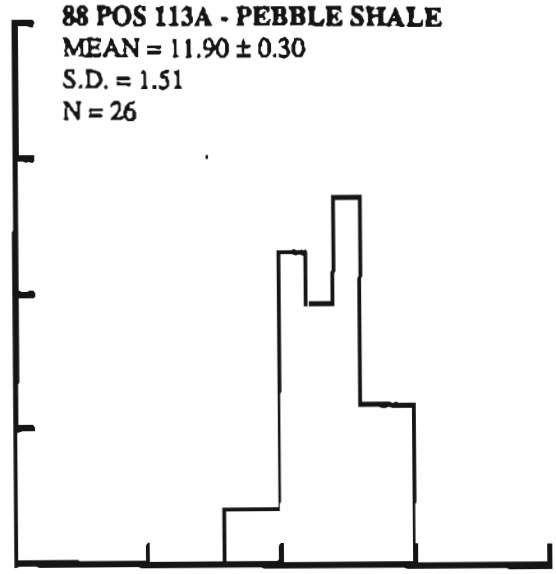
POOLED AGE = 148.4 ± 17.8 Ma
MEAN AGE = 168.2 ± 15.4 Ma

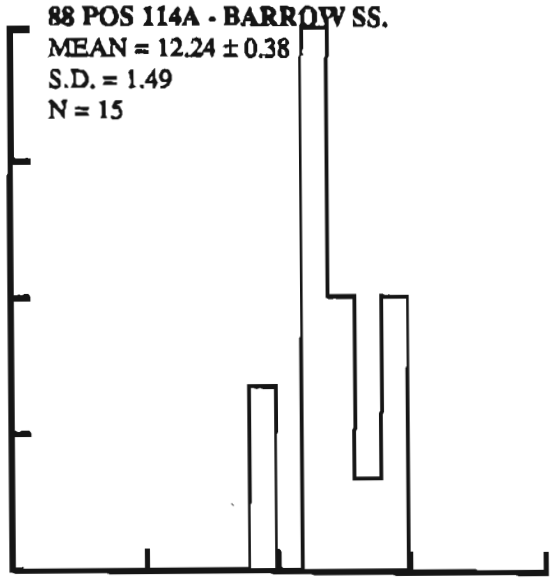
Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.509E+06cm-2; ND = 11864

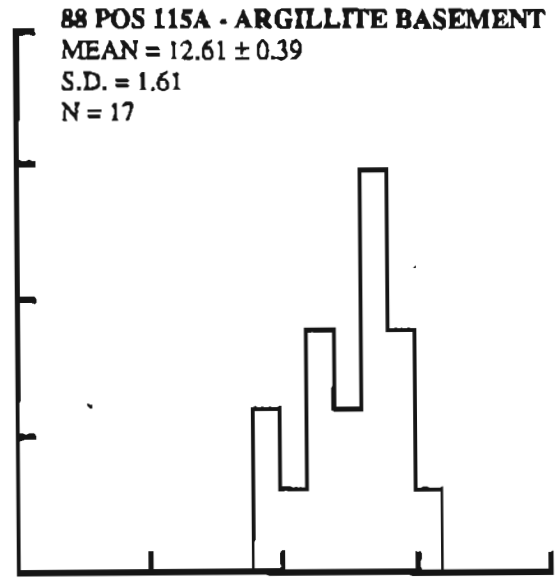

88 POS 109A - TOROK FM.
MEAN = 13.82 ± 0.13
S.D. = 1.32
N = 99
NUMBER
40
30
20
10
5
10
15
20
TRACK LENGTH (MICRONS)


88 POS 110A - PEBBLE SHALE
MEAN = 12.55 ± 0.19
S.D. = 1.42
N = 53


88 POS 111A + 112A - BARROW SS.
MEAN = 12.18 ± 0.36
S.D. = 1.90
N = 28


88 POS 113A - PEBBLE SHALE
MEAN = 11.90 ± 0.30
S.D. = 1.51
N = 26


88 POS 114A - BARROW SS.
MEAN = 12.24 ± 0.38
S.D. = 1.49
N = 15


88 POS 115A - ARGILLITE BASEMENT
MEAN = 12.61 ± 0.39
S.D. = 1.61
N = 17

INIGOK #1 WELL
(in numerical order)

88 POS 117A - KEKIKTUK CONG. - 19,369'

IRRADIATION LU023 SLIDE NUMBER 04
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	0	16	12	0.000	7.6	0.000E+00	1.558E+06	0.0± 0.0
2	0	15	30	0.000	2.9	0.000E+00	5.844E+05	0.0± 0.0
3	0	10	6	0.000	9.6	0.000E+00	1.948E+06	0.0± 0.0
4	0	18	14	0.000	7.4	0.000E+00	1.503E+06	0.0± 0.0
5	0	33	12	0.000	15.8	0.000E+00	3.214E+06	0.0± 0.0
6	1	50	12	0.020	23.9	9.740E+04	4.870E+06	9.4± 9.5
	1	142			9.5	1.359E+04	1.930E+06	

Area of basic unit = 8.789E-07 cm-2

CHI SQUARED = 1.816625 WITH 5 DEGREES OF FREEDOM
P(chi squared) = 87.4 %
CORRELATION COEFFICIENT = 0.857
VARIANCE OF SQR(Ns) = .1666667
VARIANCE OF SQR(Ni) = 2.091782

Ns/Ni = 0.007 ± 0.007
MEAN RATIO = 0.003 ± 0.003

POOLED AGE = 3.2 ± 3.2 Ma
MEAN AGE = 1.5 ± 1.5 Ma

Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.573E+06cm-2; ND = 11864

88 POS 119A - FIRE CREEK SS. - 12,735'

IRRADIATION LU023 SLIDE NUMBER 05
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	0	16	20	0.000	4.6	0.000E+00	9.350E+05	0.0± 0.0
2	1	10	9	0.100	6.4	1.299E+05	1.299E+06	47.0± 49.3
3	0	5	9	0.000	3.2	0.000E+00	6.493E+05	0.0± 0.0
4	0	10	12	0.000	4.8	0.000E+00	9.740E+05	0.0± 0.0
5	0	35	20	0.000	10.0	0.000E+00	2.045E+06	0.0± 0.0
6	2	31	12	0.065	14.8	1.948E+05	3.019E+06	30.4± 22.2
7	0	8	8	0.000	5.7	0.000E+00	1.169E+06	0.0± 0.0
8	1	20	12	0.050	9.6	9.740E+04	1.948E+06	23.5± 24.1
9	2	20	16	0.100	7.2	1.461E+05	1.461E+06	47.0± 34.9
10	0	16	12	0.000	7.6	0.000E+00	1.558E+06	0.0± 0.0
11	0	9	9	0.000	5.7	0.000E+00	1.169E+06	0.0± 0.0
12	0	15	16	0.000	5.4	0.000E+00	1.096E+06	0.0± 0.0
13	1	19	16	0.053	6.8	7.305E+04	1.388E+06	24.8± 25.4
14	1	36	20	0.028	10.3	5.844E+04	2.104E+06	13.1± 13.3
15	0	14	18	0.000	4.5	0.000E+00	9.090E+05	0.0± 0.0
16	0	9	12	0.000	4.3	0.000E+00	8.766E+05	0.0± 0.0
17	0	10	12	0.000	4.8	0.000E+00	9.740E+05	0.0± 0.0
18	0	5	9	0.000	3.2	0.000E+00	6.493E+05	0.0± 0.0
19	1	17	12	0.059	8.1	9.740E+04	1.656E+06	27.7± 28.5
20	0	8	9	0.000	5.1	0.000E+00	1.039E+06	0.0± 0.0
	9	313			6.8	4.000E+04	1.391E+06	

Area of basic unit = 8.789E-07 cm-2

CHI SQUARED = 11.87335 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 89.1 %
CORRELATION COEFFICIENT = 0.527
VARIANCE OF SQR(Ns) = .3124098
VARIANCE OF SQR(Ni) = 1.217401

Ns/Ni = 0.029 ± 0.010
MEAN RATIO = 0.023 ± 0.008

POOLED AGE = 13.2 ± 4.5 Ma
MEAN AGE = 10.4 ± 3.6 Ma

Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.605E+06cm-2; ND = 11864

88 POS 120A - FIRE CREEK SS. - 12,501'

IRRADIATION LU023 SLIDE NUMBER 06
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	1	35	20	0.029	10.0	5.844E+04	2.045E+06	13.5± 13.7
2	1	20	16	0.050	7.2	7.305E+04	1.461E+06	23.5± 24.1
3	0	14	16	0.000	5.0	0.000E+00	1.023E+06	0.0± 0.0
4	0	10	9	0.000	6.4	0.000E+00	1.299E+06	0.0± 0.0
5	0	15	12	0.000	7.2	0.000E+00	1.461E+06	0.0± 0.0
6	1	21	16	0.048	7.5	7.305E+04	1.534E+06	22.4± 23.0
7	2	19	12	0.105	9.1	1.948E+05	1.851E+06	49.5± 36.8
8	0	9	8	0.000	6.5	0.000E+00	1.315E+06	0.0± 0.0
9	0	30	12	0.000	14.3	0.000E+00	2.922E+06	0.0± 0.0
10	0	36	20	0.000	10.3	0.000E+00	2.104E+06	0.0± 0.0
11	0	9	12	0.000	4.3	0.000E+00	8.766E+05	0.0± 0.0
12	0	6	9	0.000	3.8	0.000E+00	7.792E+05	0.0± 0.0
13	1	9	9	0.111	5.7	1.299E+05	1.169E+06	52.2± 55.0
14	0	17	20	0.000	4.9	0.000E+00	9.935E+05	0.0± 0.0
15	1	17	12	0.059	8.1	9.740E+04	1.656E+06	27.7± 28.5
16	0	12	9	0.000	7.6	0.000E+00	1.558E+06	0.0± 0.0
	7	279			7.5	3.859E+04	1.538E+06	

Area of basic unit = 8.789E-07 cm-2

CHI SQUARED = 12.37848 WITH 15 DEGREES OF FREEDOM
P(chi squared) = 65.0 %
CORRELATION COEFFICIENT = 0.206
VARIANCE OF SQR(Ns) = .2952411
VARIANCE OF SQR(Ni) = 1.134424

Ns/Ni = 0.025 ± 0.010
MEAN RATIO = 0.025 ± 0.010

POOLED AGE = 11.7 ± 4.5 Ma
MEAN AGE = 11.7 ± 4.5 Ma

Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.637E+06cm-2; ND = 11864

88 POS 122A - KINGAK SHALE - 9,435'

IRRADIATION LU023 SLIDE NUMBER 08
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	0	13	8	0.000	9.3	0.000E+00	1.899E+06	0.0± 0.0
2	1	12	12	0.083	5.7	9.740E+04	1.169E+06	39.2± 40.8
3	3	7	6	0.429	6.7	5.844E+05	1.364E+06	199.1±137.4
4	2	31	6	0.065	29.6	3.896E+05	6.039E+06	30.4± 22.2
5	14	91	10	0.154	52.2	1.636E+06	1.064E+07	72.2± 20.7
6	3	24	12	0.125	11.5	2.922E+05	2.338E+06	58.7± 36.0
7	15	95	12	0.158	45.4	1.461E+06	9.253E+06	74.1± 20.6
8	0	14	8	0.000	10.0	0.000E+00	2.045E+06	0.0± 0.0
9	1	25	6	0.040	23.9	1.948E+05	4.870E+06	18.8± 19.2
10	13	83	15	0.157	31.7	1.013E+06	6.467E+06	73.5± 21.9
11	0	14	16	0.000	5.0	0.000E+00	1.023E+06	0.0± 0.0
12	0	4	6	0.000	3.8	0.000E+00	7.792E+05	0.0± 0.0
13	0	6	10	0.000	3.4	0.000E+00	7.013E+05	0.0± 0.0
14	1	16	9	0.062	10.2	1.299E+05	2.078E+06	29.4± 30.3
15	1	11	6	0.091	10.5	1.948E+05	2.143E+06	42.7± 44.6
16	10	86	6	0.116	82.2	1.948E+06	1.675E+07	54.6± 18.3
17	7	95	30	0.074	18.2	2.727E+05	3.701E+06	34.7± 13.6
18	0	15	9	0.000	9.6	0.000E+00	1.948E+06	0.0± 0.0
19	5	74	12	0.068	35.4	4.870E+05	7.207E+06	31.8± 14.7
20	5	59	12	0.085	28.2	4.870E+05	5.746E+06	39.9± 18.6
	81	775			21.1	4.487E+05	4.293E+06	

Area of basic unit = 8.789E-07 cm-2

CHI SQUARED = 21.58282 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 30.6 %
CORRELATION COEFFICIENT = 0.909
VARIANCE OF SQR(Ns) = 1.834569
VARIANCE OF SQR(Ni) = 7.775956

Ns/Ni = 0.105 ± 0.012
MEAN RATIO = 0.085 ± 0.022

POOLED AGE = 49.6 ± 5.8 Ma
MEAN AGE = 40.5 ± 10.4 Ma

Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.701E+06cm-2; ND = 11864

88 POS 123A - TOROK FM. - 8,849'

IRRADIATION LU023 SLIDE NUMBER 09
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	0	23	24	0.000	5.5	0.000E+00	1.120E+06	0.0± 0.0
2	1	32	16	0.031	11.5	7.305E+04	2.338E+06	14.7± 15.0
3	3	72	20	0.042	20.7	1.753E+05	4.208E+06	19.6± 11.6
4	1	10	12	0.100	4.8	9.740E+04	9.740E+05	47.0± 49.3
5	0	4	12	0.000	1.9	0.000E+00	3.896E+05	0.0± 0.0
6	1	8	16	0.125	2.9	7.305E+04	5.844E+05	58.7± 62.3
7	3	31	15	0.097	11.9	2.338E+05	2.415E+06	45.5± 27.5
8	2	20	20	0.100	5.7	1.169E+05	1.169E+06	47.0± 34.9
9	6	61	40	0.098	8.7	1.753E+05	1.782E+06	46.2± 19.8
10	3	21	30	0.143	4.0	1.169E+05	8.181E+05	67.0± 41.4
11	2	22	16	0.091	7.9	1.461E+05	1.607E+06	42.7± 31.6
12	0	11	20	0.000	3.2	0.000E+00	6.428E+05	0.0± 0.0
13	5	34	40	0.147	4.9	1.461E+05	9.935E+05	69.0± 33.1
14	6	62	30	0.097	11.9	2.338E+05	2.415E+06	45.5± 19.5
15	2	25	16	0.080	9.0	1.461E+05	1.826E+06	37.6± 27.7
16	1	8	20	0.125	2.3	5.844E+04	4.675E+05	58.7± 62.3
17	1	8	12	0.125	3.8	9.740E+04	7.792E+05	58.7± 62.3
18	3	32	40	0.094	4.6	8.766E+04	9.350E+05	44.1± 26.6
19	2	21	18	0.095	6.7	1.299E+05	1.364E+06	44.8± 33.1
20	0	15	20	0.000	4.3	0.000E+00	8.766E+05	0.0± 0.0
	42	520			6.8	1.123E+05	1.391E+06	

Area of basic unit = 8.789E-07 cm-2

CHI SQUARED = 10.28085 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 94.6 %
CORRELATION COEFFICIENT = 0.777
VARIANCE OF SQR(Ns) = .602412
VARIANCE OF SQR(Ni) = 3.195221

Ns/Ni = 0.081 ± 0.013
MEAN RATIO = 0.079 ± 0.011

POOLED AGE = 38.8 ± 6.2 Ma
MEAN AGE = 38.2 ± 5.3 Ma

Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.733E+06cm-2; ND = 11864

88 POS 124A - TOROK FM. - 8,237'

IRRADIATION LU023 SLIDE NUMBER 10
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	3	27	12	0.111	12.9	2.922E+05	2.630E+06	52.2± 31.8
2	0	20	15	0.000	7.6	0.000E+00	1.558E+06	0.0± 0.0
3	7	102	16	0.069	36.6	5.113E+05	7.451E+06	32.3± 12.6
4	2	9	21	0.222	2.5	1.113E+05	5.009E+05	104.0± 81.3
5	5	53	12	0.094	25.3	4.870E+05	5.162E+06	44.4± 20.8
6	0	15	27	0.000	3.2	0.000E+00	6.493E+05	0.0± 0.0
7	9	58	20	0.155	16.6	5.259E+05	3.389E+06	72.8± 26.1
8	2	14	50	0.143	1.6	4.675E+04	3.273E+05	67.0± 50.7
9	6	128	15	0.047	49.0	4.675E+05	9.974E+06	22.1± 9.2
10	3	15	9	0.200	9.6	3.896E+05	1.948E+06	93.7± 59.3
11	0	16	24	0.000	3.8	0.000E+00	7.792E+05	0.0± 0.0
12	6	130	30	0.046	24.9	2.338E+05	5.065E+06	21.7± 9.1
13	2	13	40	0.154	1.9	5.844E+04	3.798E+05	72.2± 54.8
14	9	68	20	0.132	19.5	5.259E+05	3.974E+06	62.1± 22.1
15	0	12	25	0.000	2.8	0.000E+00	5.610E+05	0.0± 0.0
16	5	61	14	0.082	25.0	4.174E+05	5.092E+06	38.6± 17.9
17	2	15	20	0.133	4.3	1.169E+05	8.766E+05	62.6± 47.1
18	7	90	15	0.078	34.4	5.454E+05	7.013E+06	36.6± 14.4
19	0	12	18	0.000	3.8	0.000E+00	7.792E+05	0.0± 0.0
20	3	26	12	0.115	12.4	2.922E+05	2.532E+06	54.2± 33.1
	71	884			12.2	2.000E+05	2.490E+06	

Area of basic unit = 8.789E-07 cm-2

CHI SQUARED = 21.8865 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 29.0 %
CORRELATION COEFFICIENT = 0.765
VARIANCE OF SQR(Ns) = 1.123067
VARIANCE OF SQR(Ni) = 8.050961

Ns/Ni = 0.080 ± 0.010
MEAN RATIO = 0.089 ± 0.015

POOLED AGE = 39.4 ± 4.9 Ma
MEAN AGE = 43.7 ± 7.6 Ma

Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.789E+06cm-2; ND = 11864

88 POS 125A - TOROK FM. - 5,006'

IRRADIATION LU023 SLIDE NUMBER 11
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	6	21	40	0.286	3.0	1.753E+05	6.136E+05	133.4± 61.8
2	5	22	50	0.227	2.5	1.169E+05	5.143E+05	106.3± 52.7
3	15	78	40	0.192	11.2	4.383E+05	2.279E+06	90.1± 25.4
4	4	19	24	0.211	4.5	1.948E+05	9.253E+05	98.6± 54.2
5	4	15	24	0.267	3.6	1.948E+05	7.305E+05	124.6± 70.1
6	5	21	40	0.238	3.0	1.461E+05	6.136E+05	111.4± 55.4
7	29	152	25	0.191	34.9	1.356E+06	7.106E+06	89.4± 18.2
8	2	15	12	0.133	7.2	1.948E+05	1.461E+06	62.6± 47.1
9	5	22	21	0.227	6.0	2.783E+05	1.224E+06	106.3± 52.7
10	6	60	40	0.100	8.6	1.753E+05	1.753E+06	47.0± 20.1
11	5	18	42	0.278	2.5	1.391E+05	5.009E+05	129.7± 65.6
12	4	20	40	0.200	2.9	1.169E+05	5.844E+05	93.7± 51.3
13	5	22	40	0.227	3.2	1.461E+05	6.428E+05	106.3± 52.7
14	6	23	30	0.261	4.4	2.338E+05	8.961E+05	121.9± 55.9
15	6	20	30	0.300	3.8	2.338E+05	7.792E+05	140.0± 65.2
16	2	13	40	0.154	1.9	5.844E+04	3.798E+05	72.2± 54.8
17	4	15	50	0.267	1.7	9.350E+04	3.506E+05	124.6± 70.1
18	4	16	40	0.250	2.3	1.169E+05	4.675E+05	116.9± 65.4
19	8	29	30	0.276	5.5	3.117E+05	1.130E+06	128.8± 51.5
20	5	21	30	0.238	4.0	1.948E+05	8.181E+05	111.4± 55.4
	130	622			5.2	2.208E+05	1.057E+06	

Area of basic unit = 8.789E-07 cm-2

CHI SQUARED = 6.736065 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 99.5 %
CORRELATION COEFFICIENT = 0.964
VARIANCE OF SQR(Ns) = .746221
VARIANCE OF SQR(Ni) = 4.450305

Ns/Ni = 0.209 ± 0.020
MEAN RATIO = 0.226 ± 0.012

POOLED AGE = 102.3 ± 9.9 Ma
MEAN AGE = 110.6 ± 5.8 Ma

Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.797E+06cm-2; ND = 11864

88 POS 126A - NANUSHUK GROUP - 3,078'

IRRADIATION LU023 SLIDE NUMBER 12
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	12	40	40	0.300	5.7	3.506E+05	1.169E+06	140.0± 46.1
2	5	22	50	0.227	2.5	1.169E+05	5.143E+05	106.3± 52.7
3	7	21	12	0.333	10.0	6.818E+05	2.045E+06	155.4± 67.8
4	4	20	24	0.200	4.8	1.948E+05	9.740E+05	93.7± 51.3
5	2	15	18	0.133	4.8	1.299E+05	9.740E+05	62.6± 47.1
6	5	22	15	0.227	8.4	3.896E+05	1.714E+06	106.3± 52.7
7	6	27	15	0.222	10.3	4.675E+05	2.104E+06	104.0± 47.0
8	2	12	12	0.167	5.7	1.948E+05	1.169E+06	78.1± 59.7
9	9	45	18	0.200	14.3	5.844E+05	2.922E+06	93.7± 34.2
10	6	45	40	0.133	6.5	1.753E+05	1.315E+06	62.6± 27.2
11	8	54	30	0.148	10.3	3.117E+05	2.104E+06	69.5± 26.4
12	4	20	36	0.200	3.2	1.299E+05	6.493E+05	93.7± 51.3
13	4	35	36	0.114	5.6	1.299E+05	1.136E+06	53.7± 28.3
14	6	24	30	0.250	4.6	2.338E+05	9.350E+05	116.9± 53.4
15	2	10	28	0.200	2.0	8.348E+04	4.174E+05	93.7± 72.6
16	2	10	40	0.200	1.4	5.844E+04	2.922E+05	93.7± 72.6
17	6	41	16	0.146	14.7	4.383E+05	2.995E+06	68.7± 30.0
18	4	16	40	0.250	2.3	1.169E+05	4.675E+05	116.9± 65.4
19	3	20	12	0.150	9.6	2.922E+05	1.948E+06	70.4± 43.6
20	5	19	30	0.263	3.6	1.948E+05	7.402E+05	123.0± 61.8
	102	518			5.5	2.200E+05	1.117E+06	

Area of basic unit = 8.789E-07 cm-2

CHI SQUARED = 7.63678 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 99.0 %
CORRELATION COEFFICIENT = 0.757
VARIANCE OF SQR(Ns) = .3122036
VARIANCE OF SQR(Ni) = 1.520991

Ns/Ni = 0.197 ± 0.021
MEAN RATIO = 0.203 ± 0.013

POOLED AGE = 97.5 ± 10.6 Ma
MEAN AGE = 100.6 ± 6.5 Ma

Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.829E+06cm-2; ND = 11864

88 POS 127A - NANUSHUK GROUP - 2,632'

IRRADIATION LU023 SLIDE NUMBER 13
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U(ppm)	RHOs	RHOi	F.T.AGE(Ma)
1	4	14	24	0.286	3.3	1.948E+05	6.818E+05	133.4± 75.7
2	12	41	40	0.293	5.9	3.506E+05	1.198E+06	136.6± 44.9
3	5	29	16	0.172	10.4	3.652E+05	2.118E+06	80.8± 39.2
4	7	21	12	0.333	10.0	6.818E+05	2.045E+06	155.4± 67.8
5	9	24	36	0.375	3.8	2.922E+05	7.792E+05	174.5± 68.3
6	2	16	18	0.125	5.1	1.299E+05	1.039E+06	58.7± 44.0
7	16	77	21	0.208	21.0	8.905E+05	4.285E+06	97.3± 26.8
8	6	28	15	0.214	10.7	4.675E+05	2.182E+06	100.3± 45.1
9	4	43	21	0.093	11.7	2.226E+05	2.393E+06	43.7± 22.9
10	9	41	18	0.220	13.1	5.844E+05	2.662E+06	102.7± 37.8
11	10	41	36	0.244	6.5	3.247E+05	1.331E+06	114.0± 40.3
12	8	71	30	0.113	13.6	3.117E+05	2.766E+06	52.9± 19.8
13	2	14	8	0.143	10.0	2.922E+05	2.045E+06	67.0± 50.7
14	4	38	36	0.105	6.1	1.299E+05	1.234E+06	49.5± 26.0
15	9	40	20	0.225	11.5	5.259E+05	2.338E+06	105.3± 38.9
16	2	15	28	0.133	3.1	8.348E+04	6.261E+05	62.6± 47.1
17	6	25	10	0.240	14.3	7.013E+05	2.922E+06	112.2± 51.0
18	6	42	15	0.143	16.1	4.675E+05	3.273E+06	67.0± 29.3
19	4	18	30	0.222	3.4	1.558E+05	7.013E+05	104.0± 57.5
20	3	19	12	0.158	9.1	2.922E+05	1.851E+06	74.1± 46.0
	128	657			8.4	3.354E+05	1.722E+06	

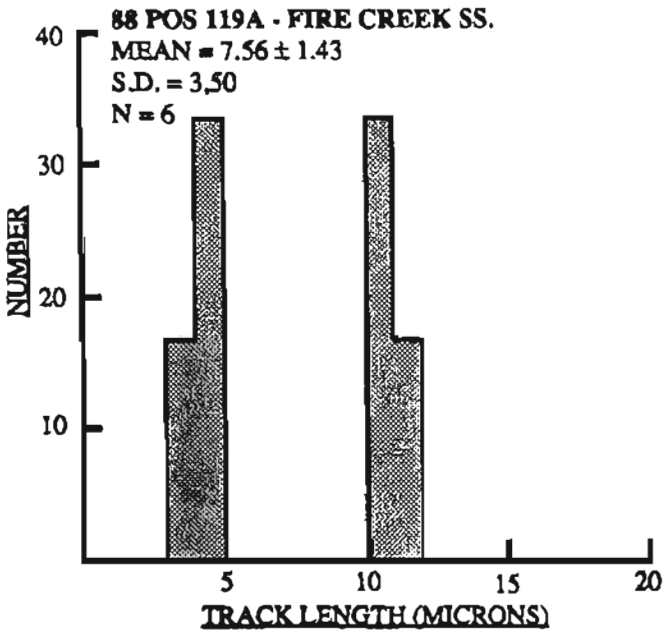
Area of basic unit = 8.789E-07 cm-2

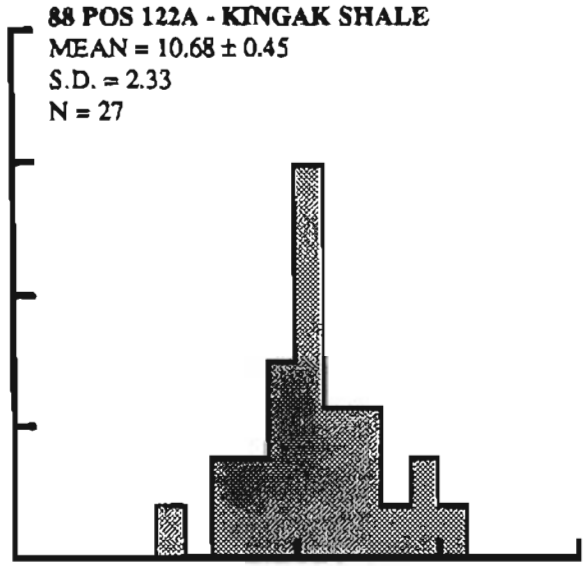
CHI SQUARED = 14.7022 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 74.1 %
CORRELATION COEFFICIENT = 0.736
VARIANCE OF SQR(Ns) = .5058557
VARIANCE OF SQR(Ni) = 2.123895

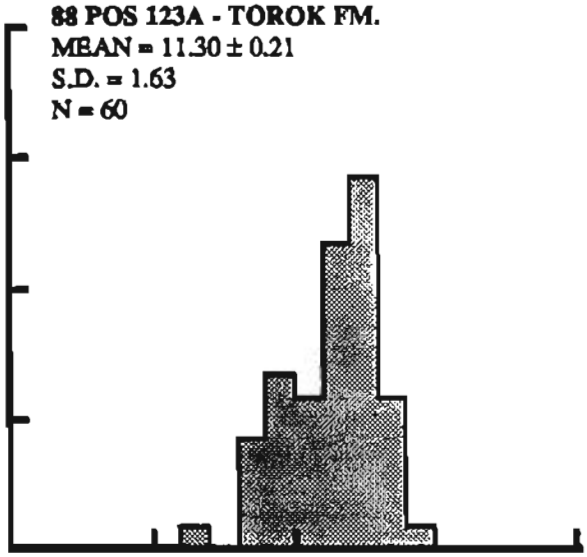
Ns/Ni = 0.195 ± 0.019
MEAN RATIO = 0.202 ± 0.018

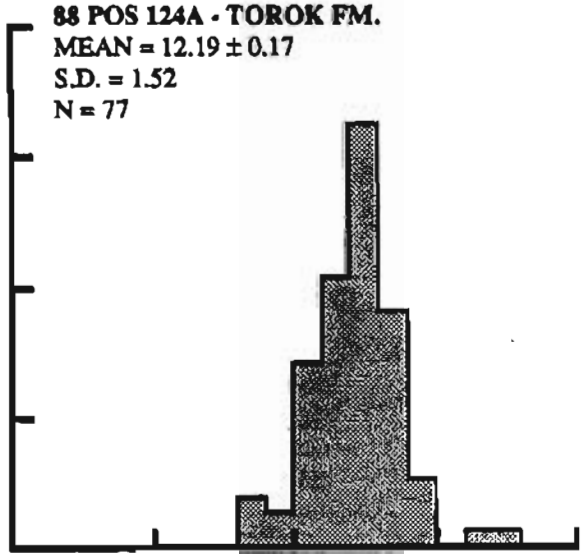
POOLED AGE = 97.6 ± 9.5 Ma
MEAN AGE = 101.2 ± 8.8 Ma

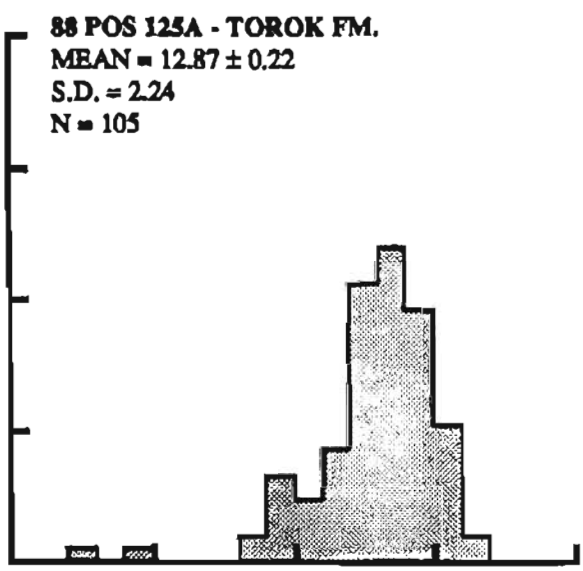
Ages calculated using a zeta of 352.7 ± 3.9 for SRM612 glass
RHO D = 2.861E+06cm-2; ND = 11864

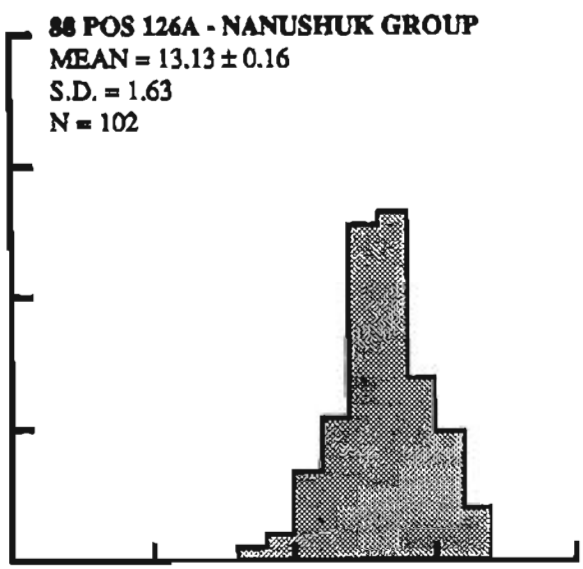

88 POS 119A - FIRE CREEK SS.
MEAN = 7.56 ± 1.43
S.D. = 3.50
N = 6
NUMBER
40
30
20
10
5
10
15
20
TRACK LENGTH (MICRONS)

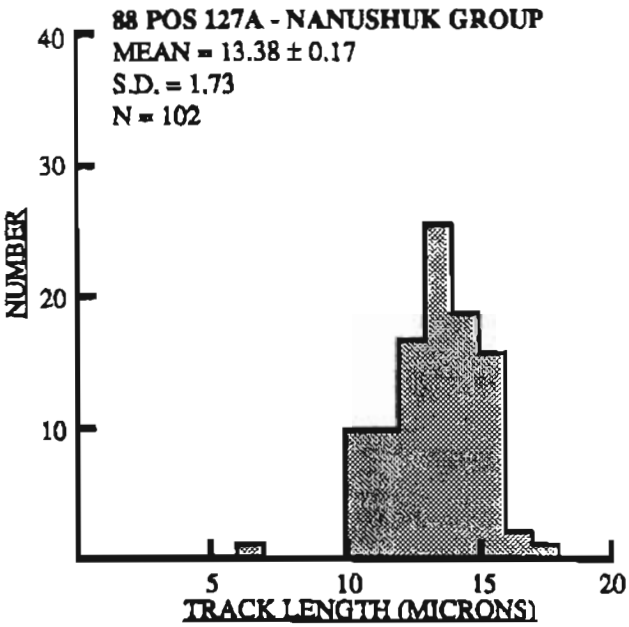

88 POS 122A - KINGAK SHALE
MEAN = 10.68 ± 0.45
S.D. = 2.33
N = 27


88 POS 123A - TOROK FM.
MEAN = 11.30 ± 0.21
S.D. = 1.63
N = 60


88 POS 124A - TOROK FM.
MEAN = 12.19 ± 0.17
S.D. = 1.52
N = 77


88 POS 125A - TOROK FM.
MEAN = 12.87 ± 0.22
S.D. = 2.24
N = 105


88 POS 126A - NANUSHUK GROUP
MEAN = 13.13 ± 0.16
S.D. = 1.63
N = 102


88 POS 127A - NANUSHUK GROUP
MEAN = 13.38 ± 0.17
S.D. = 1.73
N = 102
NUMBER
40
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10
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20
TRACK LENGTH (MICRONS)