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PRELIMINARY RESULTS OF 17 APATITE FISSION TRACK ANALYSES OF SAMPLES FROM THE OKPILAK BATHOLITH IN THE ARCTIC NATIONAL WILDLIFE REFUGE, ALASKA

by

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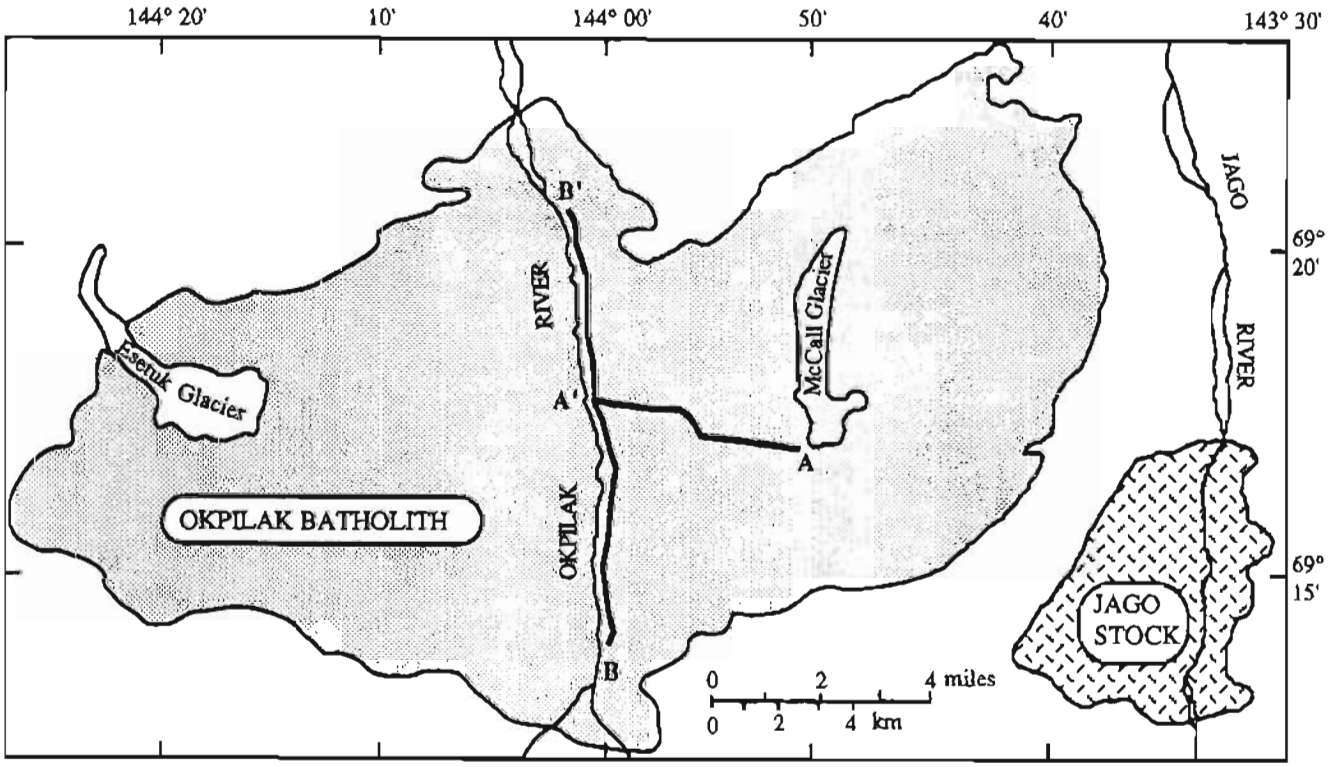

Figure 1: Map showing approximate locations of samples collected for this study. The vertical section (80A - 92A) is shown along line A - A', and the horizontal section (93A - 98A) is along B - B'. Elevations are given in Sample Information.

ACKNOWLEDGEMENTS

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INTRODUCTION

This is a preliminary report of apatite fission track analysis data of samples from the Okpilak Batholith located within the Arctic National Wildlife Refuge of Northeastern Alaska. During 1988, granite samples were collected along both a vertical and a horizontal traverse across the batholith. Apatite grains were separated from the samples and analyzed in Melbourne Australia at the La Trobe University Fission Track Research Laboratory. All separations and analyses were completed by the author as part of an ongoing PhD project at La Trobe.

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-Okpilak	-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).

SAMPLE INFORMATION

Vertical Traverse		Horizontal Traverse	
Sample Number	Elevation (ft)	Sample Number	Elevation (ft)
88 POS 81A	8100	88 POS 93A	3320
88 POS 82A	7840	88 POS 94A	3010
88 POS 84B	7000	88 POS 95A	2540
88 POS 80A	6720	88 POS 96A	2700
88 POS 85A	6310	88 POS 98A	5260
88 POS 86A	5600		
88 POS 87A	4900		
88 POS 88A	3980		
88 POS 89A	3580		
88 POS 90A	3200		
88 POS 91A	2980		
88 POS 92A	2760		

Fission track ages are typically determined on 20 grains of apatite from a single sample and 100 confined tracks are typically measured for each track length distribution. All 17 samples listed yielded apatite in adequate amounts for 20 individual grains to be dated. For each sample it was determined that the grains represented a single population and so the pooled age is used for each sample. Five samples, 82A (N=88), 90A (N=50), 91A (N=13), 92A (N=43), and 95A (N=66) contained less than 90 measurable confined tracks. Three other samples did not contain adequate apatite to analyze and are not listed.

AGE DATA

(In Numerical Order)

88 POS 80A APATITE OKPILAK - 6720'

IRRADIATION LU020
SLIDE NUMBER 1
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	5	54	15	0.093	19.6	3.793E+05	4.096E+06	44.5 ± 20.8
2	5	56	15	0.089	20.4	3.793E+05	4.248E+06	42.9 ± 20.0
3	5	65	21	0.077	16.9	2.709E+05	3.522E+06	37.0 ± 17.2
4	5	55	20	0.091	15.0	2.844E+05	3.129E+06	43.7 ± 20.4
5	5	52	21	0.096	13.5	2.709E+05	2.817E+06	46.2 ± 21.6
6	6	22	9	0.273	13.3	7.585E+05	2.781E+06	130.2 ± 60.0
7	5	53	15	0.094	19.3	3.793E+05	4.020E+06	45.3 ± 21.2
8	6	66	20	0.091	18.0	3.413E+05	3.755E+06	43.7 ± 18.6
9	5	56	15	0.089	20.4	3.793E+05	4.248E+06	42.9 ± 20.0
10	5	53	18	0.094	16.1	3.161E+05	3.350E+06	45.3 ± 21.2
11	2	26	16	0.077	8.9	1.422E+05	1.849E+06	37.0 ± 27.1
12	1	16	21	0.062	4.2	5.418E+04	8.669E+05	30.1 ± 31.0
13	6	75	21	0.080	19.5	3.251E+05	4.064E+06	38.5 ± 16.3
14	4	36	16	0.111	12.3	2.844E+05	2.560E+06	53.3 ± 28.1
15	2	30	18	0.067	9.1	1.264E+05	1.896E+06	32.1 ± 23.4
16	2	17	12	0.118	7.7	1.896E+05	1.612E+06	56.5 ± 42.2
17	2	28	12	0.071	12.7	1.896E+05	2.655E+06	34.3 ± 25.1
18	5	53	15	0.094	19.3	3.793E+05	4.020E+06	45.3 ± 21.2
19	5	57	20	0.088	15.5	2.844E+05	3.243E+06	42.2 ± 19.7
20	2	26	14	0.077	10.1	1.625E+05	2.113E+06	37.0 ± 27.1
	83	896			14.6	2.827E+05	3.052E+06	

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

CHI SQUARED = 7.203 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 99.3 %
CORRELATION COEFFICIENT = 0.804
VARIANCE OF SQR(Ns) = 0.20
VARIANCE OF SQR(Ni) = 2.03

Ns/Ni = 0.093 ± 0.011
MEAN RATIO = 0.097 ± 0.010

Ages calculated using a zeta of 352.7 for SRM612 glass
RHO D = 2.734E+06cm-2; ND = 12015

POOLED AGE = 40.7 ± 4.8 Ma
MEAN AGE = 40.7 ± 1.4 Ma

88 POS 81A APATITE OKPILAK - 8100'

IRRADIATION LU020
SLIDE NUMBER 2
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	33	436	40	0.076	0.0	9.387E+05	1.240E+07	36.4 ± 6.6
2	12	134	18	0.090	0.0	7.585E+05	8.470E+06	43.0 ± 13.0
3	4	45	12	0.089	0.0	3.793E+05	4.267E+06	42.7 ± 22.3
4	5	60	15	0.083	0.0	3.793E+05	4.551E+06	40.1 ± 18.7
5	10	74	20	0.135	0.0	5.689E+05	4.210E+06	64.8 ± 21.9
6	17	142	20	0.120	0.0	9.671E+05	8.078E+06	57.5 ± 14.8
7	11	133	24	0.083	0.0	5.215E+05	6.305E+06	39.8 ± 12.5
8	2	34	16	0.059	0.0	1.422E+05	2.418E+06	28.3 ± 20.6
9	5	64	40	0.078	0.0	1.422E+05	1.820E+06	37.6 ± 17.4
10	29	465	25	0.062	0.0	1.320E+06	2.116E+07	30.0 ± 5.8
11	5	57	12	0.088	0.0	4.741E+05	5.404E+06	42.2 ± 19.7
12	2	33	20	0.061	0.0	1.138E+05	1.877E+06	29.2 ± 21.2
13	3	20	9	0.150	0.0	3.793E+05	2.528E+06	71.9 ± 44.5
14	27	216	60	0.125	0.0	5.120E+05	4.096E+06	60.0 ± 12.3
15	13	167	40	0.078	0.0	3.698E+05	4.750E+06	37.4 ± 10.8
16	9	105	25	0.086	0.0	4.096E+05	4.779E+06	41.2 ± 14.3
17	7	90	30	0.078	0.0	2.655E+05	3.413E+06	37.4 ± 14.7
18	15	134	35	0.112	0.0	4.876E+05	4.356E+06	53.7 ± 14.7
19	5	55	30	0.091	0.0	1.896E+05	2.086E+06	43.7 ± 20.4
20	34	516	40	0.066	0.0	9.671E+05	1.468E+07	31.7 ± 5.6
	248	2980			0.0	5.314E+05	6.385E+06	

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

CHI SQUARED = 15.260 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 70.6 %
CORRELATION COEFFICIENT = 0.948
VARIANCE OF SQR(Ns) = 1.98
VARIANCE OF SQR(Ni) = 28.10

Ns/Ni = 0.083 ± 0.006
MEAN RATIO = 0.090 ± 0.006

Ages calculated using a zeta of 352.7 for SRM612 glass
RHO D = 2.734E+06cm-2; ND = 12015

POOLED AGE = 40.0 ± 2.7 Ma
MEAN AGE = 43.4 ± 2.8 Ma

88 POS 82A APATITE OKPILAK - 7840'

IRRADIATION LU020
SLIDE NUMBER 3
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	5	44	20	0.114	12.0	2.844E+05	2.503E+06	54.7 ± 25.8
2	3	19	12	0.158	8.6	2.844E+05	1.801E+06	75.9 ± 47.1
3	6	64	40	0.094	8.7	1.707E+05	1.820E+06	45.1 ± 19.3
4	9	129	50	0.070	14.1	2.048E+05	2.935E+06	33.6 ± 11.6
5	4	56	21	0.071	14.5	2.167E+05	3.034E+06	34.4 ± 17.8
6	2	30	15	0.067	10.9	1.517E+05	2.276E+06	32.1 ± 23.5
7	1	14	10	0.071	7.6	1.138E+05	1.593E+06	34.4 ± 35.6
8	3	31	15	0.097	11.3	2.276E+05	2.351E+06	46.6 ± 28.2
9	10	75	18	0.133	22.7	6.321E+05	4.741E+06	64.1 ± 21.6
10	12	119	30	0.101	21.6	4.551E+05	4.513E+06	48.5 ± 14.7
11	1	16	28	0.062	3.1	4.064E+04	6.502E+05	30.1 ± 31.1
12	28	360	30	0.078	65.4	1.062E+06	1.365E+07	37.5 ± 7.4
13	18	170	26	0.106	35.6	7.877E+05	7.439E+06	51.0 ± 12.7
14	5	55	15	0.091	20.0	3.793E+05	4.172E+06	43.8 ± 20.5
15	2	21	18	0.095	6.4	1.264E+05	1.327E+06	45.9 ± 33.9
16	2	46	24	0.043	10.4	9.482E+04	2.181E+06	21.0 ± 15.2
17	5	56	20	0.089	15.3	2.844E+05	3.186E+06	43.0 ± 20.1
18	3	44	25	0.068	9.6	1.365E+05	2.002E+06	32.9 ± 19.6
19	6	81	36	0.074	12.3	1.896E+05	2.560E+06	35.7 ± 15.1
20	22	197	45	0.112	23.9	5.562E+05	4.981E+06	53.7 ± 12.1
	147	1627			17.8	3.359E+05	3.717E+06	

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

CHI SQUARED = 7.109 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 99.4 %
CORRELATION COEFFICIENT = 0.964
VARIANCE OF SQR(Ns) = 1.44
VARIANCE OF SQR(Ni) = 14.74

Ns/Ni = 0.090 ± 0.008
MEAN RATIO = 0.090 ± 0.006

Ages calculated using a zeta of 352.7 for SRM612 glass
RHO D = 2.734E+06cm-2; ND = 12015

POOLED AGE = 41.8 ± 3.6 Ma
MEAN AGE = 41.5 ± 2.8 Ma

88 POS 84B APATITE OKPILAK - 7000'

IRRADIATION LU020
SLIDE NUMBER 5
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	11	120	27	0.092	24.2	4.635E+05	5.057E+06	44.0 ± 13.9
2	28	360	28	0.078	70.1	1.138E+06	1.463E+07	37.4 ± 7.4
3	5	46	40	0.109	6.3	1.422E+05	1.308E+06	52.2 ± 24.6
4	6	68	40	0.088	9.3	1.707E+05	1.934E+06	42.4 ± 18.1
5	19	192	40	0.099	26.2	5.404E+05	5.461E+06	47.5 ± 11.5
6	22	212	40	0.104	28.9	6.258E+05	6.030E+06	49.8 ± 11.2
7	3	44	25	0.068	9.6	1.365E+05	2.002E+06	32.8 ± 19.6
8	2	50	30	0.040	9.1	7.585E+04	1.896E+06	19.3 ± 13.9
9	5	58	28	0.086	11.3	2.032E+05	2.357E+06	41.4 ± 19.3
10	9	121	40	0.074	16.5	2.560E+05	3.442E+06	35.8 ± 12.4
11	33	431	40	0.077	58.7	9.387E+05	1.226E+07	36.8 ± 6.7
12	4	46	16	0.087	15.7	2.844E+05	3.271E+06	41.8 ± 21.8
13	10	104	30	0.096	18.9	3.793E+05	3.944E+06	46.2 ± 15.3
14	11	133	45	0.083	16.1	2.781E+05	3.363E+06	39.8 ± 12.5
15	5	64	40	0.078	8.7	1.422E+05	1.820E+06	37.6 ± 17.4
16	5	57	12	0.088	25.9	4.741E+05	5.404E+06	42.2 ± 19.7
17	3	20	9	0.150	12.1	3.793E+05	2.528E+06	71.9 ± 44.5
18	13	167	40	0.078	22.8	3.698E+05	4.750E+06	37.4 ± 10.8
19	7	90	30	0.078	16.4	2.655E+05	3.413E+06	37.4 ± 14.7
20	5	55	30	0.091	10.0	1.896E+05	2.086E+06	43.7 ± 20.4
	206	2438			21.1	3.720E+05	4.403E+06	

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

CHI SQUARED = 4.742 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 100.0 %
CORRELATION COEFFICIENT = 0.982
VARIANCE OF SQR(Ns) = 1.48
VARIANCE OF SQR(Ni) = 17.92

Ns/Ni = 0.084 ± 0.006
MEAN RATIO = 0.087 ± 0.005

Ages calculated using a zeta of 352.7 for SRM612 glass
RHO D = 2.734E+06cm-2; ND = 12015

POOLED AGE = 40.6 ± 3.0 Ma
MEAN AGE = 41.9 ± 2.3 Ma

88 POS 85A APATITE OKPILAK - 7310'

IRRADIATION LU020
SLIDE NUMBER 6
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	16	105	24	0.152	23.9	7.585E+05	4.978E+06	73.1 ± 19.6
2	8	70	27	0.114	14.1	3.371E+05	2.950E+06	54.9 ± 20.5
3	9	99	24	0.091	22.5	4.267E+05	4.693E+06	43.7 ± 15.2
4	3	28	20	0.107	7.6	1.707E+05	1.593E+06	51.5 ± 31.3
5	15	166	50	0.090	18.1	3.413E+05	3.777E+06	43.4 ± 11.7
6	4	49	18	0.082	14.8	2.528E+05	3.097E+06	39.2 ± 20.4
7	2	65	21	0.031	16.9	1.084E+05	3.522E+06	14.8 ± 10.6
8	6	34	12	0.176	15.4	5.689E+05	3.224E+06	84.5 ± 37.4
9	3	52	30	0.058	9.4	1.138E+05	1.972E+06	27.8 ± 16.5
10	15	80	24	0.188	18.2	7.111E+05	3.793E+06	89.8 ± 25.3
11	2	40	10	0.050	21.8	2.276E+05	4.551E+06	24.1 ± 17.4
12	12	133	27	0.090	26.9	5.057E+05	5.605E+06	43.4 ± 13.1
13	8	116	27	0.069	23.4	3.371E+05	4.888E+06	33.2 ± 12.1
14	10	250	40	0.040	34.1	2.844E+05	7.111E+06	19.3 ± 6.2
15	2	34	30	0.059	6.2	7.585E+04	1.289E+06	28.3 ± 20.6
16	5	106	30	0.047	19.3	1.896E+05	4.020E+06	22.7 ± 10.4
17	4	51	40	0.078	7.0	1.138E+05	1.451E+06	37.7 ± 19.6
18	13	168	40	0.077	22.9	3.698E+05	4.779E+06	37.2 ± 10.7
19	11	133	40	0.083	18.1	3.129E+05	3.783E+06	39.8 ± 12.5
20	32	430	40	0.074	58.6	9.102E+05	1.223E+07	35.8 ± 6.6
	180	2209			21.0	3.568E+05	4.379E+06	

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

CHI SQUARED = 29.538 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 5.8 %
CORRELATION COEFFICIENT = 0.861
VARIANCE OF SQR(Ns) = 1.22
VARIANCE OF SQR(Ni) = 14.42

Ns/Ni = 0.081 ± 0.006
MEAN RATIO = 0.088 ± 0.009

Ages calculated using a zeta of 352.7 for SRM612 glass
RHO D = 2.734E+06cm-2; ND = 12015

POOLED AGE = 39.2 ± 3.1 Ma
MEAN AGE = 42.2 ± 4.6 Ma

88 POS 86A APATITE OKPILAK - 5600'

IRRADIATION LU020
SLIDE NUMBER 7
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	6	72	30	0.083	13.1	2.276E+05	2.731E+06	40.1 ± 17.0
2	6	73	16	0.082	24.9	4.267E+05	5.191E+06	39.5 ± 16.8
3	1	9	24	0.111	2.0	4.741E+04	4.267E+05	53.3 ± 56.2
4	10	62	24	0.161	14.1	4.741E+05	2.939E+06	77.3 ± 26.4
5	7	189	45	0.037	22.9	1.770E+05	4.779E+06	17.8 ± 6.9
6	2	20	14	0.100	7.8	1.625E+05	1.625E+06	48.0 ± 35.6
7	4	36	24	0.111	8.2	1.896E+05	1.707E+06	53.3 ± 28.1
8	10	120	30	0.083	21.8	3.793E+05	4.551E+06	40.1 ± 13.2
9	8	57	27	0.140	11.5	3.371E+05	2.402E+06	67.3 ± 25.4
10	3	28	18	0.107	8.5	1.896E+05	1.770E+06	51.5 ± 31.3
11	7	161	16	0.043	54.9	4.978E+05	1.145E+07	20.9 ± 8.1
12	10	61	40	0.164	8.3	2.844E+05	1.735E+06	78.6 ± 26.8
13	6	85	50	0.071	9.3	1.365E+05	1.934E+06	33.9 ± 14.3
14	12	149	40	0.081	20.3	3.413E+05	4.238E+06	38.7 ± 11.6
15	2	27	20	0.074	7.4	1.138E+05	1.536E+06	35.6 ± 26.1
16	6	37	14	0.162	14.4	4.876E+05	3.007E+06	77.7 ± 34.2
17	30	417	40	0.072	56.8	8.533E+05	1.186E+07	34.6 ± 6.6
18	13	169	40	0.077	23.0	3.698E+05	4.807E+06	37.0 ± 10.7
19	5	91	30	0.055	16.5	1.896E+05	3.451E+06	26.4 ± 12.1
20	10	201	40	0.050	27.4	2.844E+05	5.717E+06	23.9 ± 7.8
	158	2064			19.3	3.089E+05	4.035E+06	

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

CHI SQUARED = 25.568 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 14.3 %
CORRELATION COEFFICIENT = 0.892
VARIANCE OF SQR(Ns) = 0.95
VARIANCE OF SQR(Ni) = 17.33

Ns/Ni = 0.077 ± 0.006
MEAN RATIO = 0.093 ± 0.009

Ages calculated using a zeta of 352.7 for SRM612 glass
RHO D = 2.734E+06cm-2; ND = 12015

POOLED AGE = 36.8 ± 3.1 Ma
MEAN AGE = 44.8 ± 4.2 Ma

88 POS 87A APATITE OKPILAK - 4900'

IRRADIATION LU020
SLIDE NUMBER 8
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	7	151	30	0.046	27.4	2.655E+05	5.727E+06	22.3 ± 8.6
2	28	415	27	0.067	83.8	1.180E+06	1.749E+07	32.4 ± 6.4
3	5	125	24	0.040	28.4	2.370E+05	5.926E+06	19.3 ± 8.8
4	7	120	24	0.058	27.3	3.319E+05	5.689E+06	28.1 ± 10.9
5	4	89	24	0.045	20.2	1.896E+05	4.219E+06	21.6 ± 11.1
6	10	183	40	0.055	24.9	2.844E+05	5.205E+06	26.3 ± 8.5
7	13	120	21	0.108	31.2	7.043E+05	6.502E+06	52.0 ± 15.2
8	10	115	20	0.087	31.3	5.689E+05	6.542E+06	41.8 ± 13.8
9	7	63	18	0.111	19.1	4.425E+05	3.982E+06	53.3 ± 21.3
10	2	37	12	0.054	16.8	1.896E+05	3.508E+06	26.0 ± 18.9
11	4	39	24	0.103	8.9	1.896E+05	1.849E+06	49.3 ± 25.9
12	4	69	20	0.058	18.8	2.276E+05	3.925E+06	27.9 ± 14.3
13	4	60	18	0.067	18.2	2.528E+05	3.793E+06	32.1 ± 16.6
14	9	124	30	0.073	22.5	3.413E+05	4.703E+06	34.9 ± 12.1
15	10	108	21	0.093	28.0	5.418E+05	5.851E+06	44.5 ± 14.7
16	2	45	20	0.044	12.3	1.138E+05	2.560E+06	21.4 ± 15.5
17	19	182	18	0.104	55.1	1.201E+06	1.150E+07	50.1 ± 12.1
18	6	70	30	0.086	12.7	2.276E+05	2.655E+06	41.2 ± 17.5
19	7	106	40	0.066	14.4	1.991E+05	3.015E+06	31.8 ± 12.4
20	8	69	40	0.116	9.4	2.276E+05	1.963E+06	55.7 ± 20.8
	166	2290			24.9	3.770E+05	5.201E+06	

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

CHI SQUARED = 14.581 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 74.9 %
CORRELATION COEFFICIENT = 0.902
VARIANCE OF SQR(Ns) = 0.87
VARIANCE OF SQR(Ni) = 10.53

Ns/Ni = 0.072 ± 0.006
MEAN RATIO = 0.074 ± 0.006

Ages calculated using a zeta of 352.7 for SRM612 glass
RHO D = 2.734E+06cm-2; ND = 12015

POOLED AGE = 34.9 ± 2.8 Ma
MEAN AGE = 35.6 ± 2.7 Ma

88 POS 88A APATITE OKPILAK - 3980'

IRRADIATION LU020
SLIDE NUMBER 9
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	7	72	30	0.097	13.1	2.655E+05	2.731E+06	46.7 ± 18.5
2	1	9	24	0.111	2.0	4.741E+04	4.267E+05	53.3 ± 56.2
3	8	190	35	0.042	29.6	2.601E+05	6.177E+06	20.3 ± 7.3
4	4	40	24	0.100	9.1	1.896E+05	1.896E+06	48.0 ± 25.2
5	6	58	27	0.103	11.7	2.528E+05	2.444E+06	49.7 ± 21.3
6	7	160	16	0.044	54.5	4.978E+05	1.138E+07	21.1 ± 8.1
7	6	85	50	0.071	9.3	1.365E+05	1.934E+06	33.9 ± 14.3
8	2	28	20	0.071	7.6	1.138E+05	1.593E+06	34.3 ± 25.1
9	28	420	40	0.067	57.2	7.964E+05	1.195E+07	32.1 ± 6.3
10	5	90	30	0.056	16.4	1.896E+05	3.413E+06	26.7 ± 12.3
11	6	151	30	0.040	27.4	2.276E+05	5.727E+06	19.1 ± 8.0
12	5	129	24	0.039	29.3	2.370E+05	6.116E+06	18.7 ± 8.5
13	4	90	24	0.044	20.4	1.896E+05	4.267E+06	21.4 ± 10.9
14	12	120	21	0.100	31.2	6.502E+05	6.502E+06	48.0 ± 14.6
15	7	63	18	0.111	19.1	4.425E+05	3.982E+06	53.3 ± 21.3
16	4	39	24	0.103	8.9	1.896E+05	1.849E+06	49.3 ± 25.9
17	5	58	18	0.086	17.6	3.161E+05	3.666E+06	41.4 ± 19.3
18	8	107	21	0.075	27.8	4.334E+05	5.797E+06	35.9 ± 13.2
19	16	181	18	0.088	54.8	1.011E+06	1.144E+07	42.5 ± 11.1
20	7	101	40	0.069	13.8	1.991E+05	2.873E+06	33.3 ± 13.0
	148	2191			22.4	3.153E+05	4.668E+06	

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

CHI SQUARED = 15.118 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 71.5 %
CORRELATION COEFFICIENT = 0.905
VARIANCE OF SQR(Ns) = 0.82
VARIANCE OF SQR(Ni) = 14.13

Ns/Ni = 0.068 ± 0.006
MEAN RATIO = 0.076 ± 0.006

Ages calculated using a zeta of 352.7 for SRM612 glass
RHO D = 2.734E+06cm-2; ND = 12015

POOLED AGE = 32.5 ± 2.8 Ma
MEAN AGE = 36.5 ± 2.8 Ma

88 POS 89A APATITE OKPILAK - 3580'

IRRADIATION LU020
SLIDE NUMBER 10
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	9	79	12	0.114	35.9	8.533E+05	7.490E+06	54.7 ± 19.3
2	2	34	14	0.059	13.2	1.625E+05	2.763E+06	28.3 ± 20.6
3	5	94	12	0.053	42.7	4.741E+05	8.913E+06	25.6 ± 11.8
4	1	21	12	0.048	9.5	9.482E+04	1.991E+06	22.9 ± 23.5
5	2	18	12	0.111	8.2	1.896E+05	1.707E+06	53.3 ± 39.8
6	2	34	12	0.059	15.4	1.896E+05	3.224E+06	28.3 ± 20.6
7	2	31	12	0.065	14.1	1.896E+05	2.939E+06	31.0 ± 22.6
8	4	104	21	0.038	27.0	2.167E+05	5.635E+06	18.5 ± 9.4
9	2	36	12	0.056	16.4	1.896E+05	3.413E+06	26.7 ± 19.4
10	3	46	24	0.065	10.4	1.422E+05	2.181E+06	31.4 ± 18.7
11	5	90	12	0.056	40.9	4.741E+05	8.533E+06	26.7 ± 12.3
12	11	113	26	0.097	23.7	4.814E+05	4.945E+06	46.8 ± 14.8
13	7	128	28	0.055	24.9	2.844E+05	5.201E+06	26.3 ± 10.2
14	6	115	24	0.052	26.1	2.844E+05	5.452E+06	25.1 ± 10.5
15	3	39	24	0.077	8.9	1.422E+05	1.849E+06	37.0 ± 22.2
16	2	31	12	0.065	14.1	1.896E+05	2.939E+06	31.0 ± 22.6
17	2	35	12	0.057	15.9	1.896E+05	3.319E+06	27.5 ± 20.0
18	4	52	24	0.077	11.8	1.896E+05	2.465E+06	37.0 ± 19.2
19	3	46	12	0.065	20.9	2.844E+05	4.362E+06	31.4 ± 18.7
20	1	18	18	0.056	5.5	6.321E+04	1.138E+06	26.7 ± 27.5
	76	1164			18.9	2.581E+05	3.953E+06	

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

CHI SQUARED = 7.056 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 99.4 %
CORRELATION COEFFICIENT = 0.828
VARIANCE OF SQR(Ns) = 0.40
VARIANCE OF SQR(Ni) = 5.37

Ns/Ni = 0.065 ± 0.008
MEAN RATIO = 0.066 ± 0.004

Ages calculated using a zeta of 352.7 for SRM612 glass
RHO D = 2.734E+06cm-2; ND = 12015

POOLED AGE = 31.4 ± 3.7 Ma
MEAN AGE = 31.8 ± 2.2 Ma

88 POS 90A APATITE OKPILAK - 3200'

IRRADIATION LU020
SLIDE NUMBER 11
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	3	68	21	0.044	17.7	1.625E+05	3.684E+06	21.2 ± 12.5
2	4	85	36	0.047	12.9	1.264E+05	2.686E+06	22.6 ± 11.6
3	4	28	21	0.143	7.3	2.167E+05	1.517E+06	68.5 ± 36.6
4	1	31	24	0.032	7.0	4.741E+04	1.470E+06	15.5 ± 15.8
5	1	15	12	0.067	6.8	9.482E+04	1.422E+06	32.1 ± 33.1
6	2	24	18	0.083	7.3	1.264E+05	1.517E+06	40.1 ± 29.5
7	3	17	20	0.176	4.6	1.707E+05	9.671E+05	84.5 ± 52.9
8	8	130	40	0.062	17.7	2.276E+05	3.698E+06	29.6 ± 10.8
9	2	39	18	0.051	11.8	1.264E+05	2.465E+06	24.7 ± 17.9
10	4	37	20	0.108	10.1	2.276E+05	2.105E+06	51.9 ± 27.3
11	3	23	12	0.130	10.4	2.844E+05	2.181E+06	62.6 ± 38.4
12	3	57	18	0.053	17.3	1.896E+05	3.603E+06	25.3 ± 15.0
13	6	142	36	0.042	21.5	1.896E+05	4.488E+06	20.3 ± 8.5
14	7	68	24	0.103	15.4	3.319E+05	3.224E+06	49.4 ± 19.6
15	1	14	12	0.071	6.4	9.482E+04	1.327E+06	34.3 ± 35.6
16	3	43	18	0.070	13.0	1.896E+05	2.718E+06	33.6 ± 20.0
17	3	46	12	0.065	20.9	2.844E+05	4.362E+06	31.4 ± 18.7
18	8	128	40	0.062	17.4	2.276E+05	3.641E+06	30.1 ± 11.0
19	9	131	40	0.069	17.9	2.560E+05	3.726E+06	33.0 ± 11.4
20	2	28	12	0.071	12.7	1.896E+05	2.655E+06	34.3 ± 25.1
	77	1154			13.9	1.930E+05	2.892E+06	

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

CHI SQUARED = 11.264 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 91.5 %
CORRELATION COEFFICIENT = 0.866
VARIANCE OF SQR(Ns) = 0.37
VARIANCE OF SQR(Ni) = 7.23

Ns/Ni = 0.067 ± 0.008
MEAN RATIO = 0.078 ± 0.008

Ages calculated using a zeta of 352.7 for SRM612 glass
RHO D = 2.734E+06cm-2; ND = 12015

POOLED AGE = 32.1 ± 3.8 Ma
MEAN AGE = 37.3 ± 4.0 Ma

88 POS 91A APATITE OKPILAK - 2980'

IRRADIATION LU020
SLIDE NUMBER 12
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	7	72	30	0.097	13.1	2.655E+05	2.731E+06	46.7 ± 18.5
2	9	187	40	0.048	25.5	2.560E+05	5.319E+06	23.2 ± 7.9
3	6	85	40	0.071	11.6	1.707E+05	2.418E+06	33.9 ± 14.3
4	3	42	30	0.071	7.6	1.138E+05	1.593E+06	34.3 ± 20.5
5	6	90	30	0.067	16.4	2.276E+05	3.413E+06	32.1 ± 13.5
6	7	107	20	0.065	29.2	3.982E+05	6.087E+06	31.5 ± 12.3
7	3	38	24	0.079	8.6	1.422E+05	1.801E+06	38.0 ± 22.8
8	2	18	12	0.111	8.2	1.896E+05	1.707E+06	53.3 ± 39.8
9	4	60	20	0.067	16.4	2.276E+05	3.413E+06	32.1 ± 16.6
10	3	44	30	0.068	8.0	1.138E+05	1.669E+06	32.8 ± 19.6
11	2	30	30	0.067	5.5	7.585E+04	1.138E+06	32.1 ± 23.4
12	7	115	24	0.061	26.1	3.319E+05	5.452E+06	29.3 ± 11.4
13	8	130	40	0.062	17.7	2.276E+05	3.698E+06	29.6 ± 10.8
14	7	110	30	0.064	20.0	2.655E+05	4.172E+06	30.6 ± 11.9
15	8	131	40	0.061	17.9	2.276E+05	3.726E+06	29.4 ± 10.7
16	2	28	12	0.071	12.7	1.896E+05	2.655E+06	34.3 ± 25.1
17	7	69	21	0.101	17.9	3.793E+05	3.738E+06	48.7 ± 19.3
18	8	142	40	0.056	19.4	2.276E+05	4.039E+06	27.1 ± 9.9
19	4	61	30	0.066	11.1	1.517E+05	2.313E+06	31.5 ± 16.3
20	9	130	40	0.069	17.7	2.560E+05	3.698E+06	33.3 ± 11.5
	112	1689			15.8	2.186E+05	3.296E+06	

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

CHI SQUARED = 3.999 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 100.0 %
CORRELATION COEFFICIENT = 0.928
VARIANCE OF SQR(Ns) = 0.31
VARIANCE OF SQR(Ni) = 6.69

Ns/Ni = 0.066 ± 0.006
MEAN RATIO = 0.071 ± 0.003

Ages calculated using a zeta of 352.7 for SRM612 glass
RHO D = 2.734E+06cm-2; ND = 12015

POOLED AGE = 31.9 ± 3.1 Ma
MEAN AGE = 34.2 ± 1.7 Ma

88 POS 92A APATITE OKPILAK - 2760'

IRRADIATION LU020
SLIDE NUMBER 13
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	2	25	15	0.080	9.1	1.517E+05	1.896E+06	38.5 ± 28.3
2	3	34	16	0.088	11.6	2.133E+05	2.418E+06	42.4 ± 25.5
3	2	34	12	0.059	15.4	1.896E+05	3.224E+06	28.3 ± 20.6
4	3	36	14	0.083	14.0	2.438E+05	2.926E+06	40.1 ± 24.1
5	2	28	18	0.071	8.5	1.264E+05	1.770E+06	34.3 ± 25.1
6	3	61	18	0.049	18.5	1.896E+05	3.856E+06	23.7 ± 14.0
7	5	56	28	0.089	10.9	2.032E+05	2.276E+06	42.9 ± 20.0
8	1	26	24	0.038	5.9	4.741E+04	1.233E+06	18.5 ± 18.9
9	2	31	12	0.065	14.1	1.896E+05	2.939E+06	31.0 ± 22.6
10	2	19	12	0.105	8.6	1.896E+05	1.801E+06	50.6 ± 37.6
11	2	25	20	0.080	6.8	1.138E+05	1.422E+06	38.5 ± 28.3
12	3	36	20	0.083	9.8	1.707E+05	2.048E+06	40.1 ± 24.1
13	1	23	12	0.043	10.4	9.482E+04	2.181E+06	20.9 ± 21.4
14	5	67	30	0.075	12.2	1.896E+05	2.541E+06	35.9 ± 16.6
15	7	103	40	0.068	14.0	1.991E+05	2.930E+06	32.7 ± 12.8
16	2	32	18	0.062	9.7	1.264E+05	2.023E+06	30.1 ± 21.9
17	2	33	20	0.061	9.0	1.138E+05	1.877E+06	29.2 ± 21.2
18	4	56	30	0.071	10.2	1.517E+05	2.124E+06	34.3 ± 17.8
19	6	92	40	0.065	12.5	1.707E+05	2.617E+06	31.4 ± 13.2
20	2	33	12	0.061	15.0	1.896E+05	3.129E+06	29.2 ± 21.2
	59	850			11.3	1.633E+05	2.353E+06	

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

CHI SQUARED = 2.139 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 100.0 %
CORRELATION COEFFICIENT = 0.940
VARIANCE OF SQR(Ns) = 0.20
VARIANCE OF SQR(Ni) = 2.54

Ns/Ni = 0.069 ± 0.009
MEAN RATIO = 0.070 ± 0.004

Ages calculated using a zeta of 352.7 for SRM612 glass
RHO D = 2.734E+06cm-2; ND = 12015

POOLED AGE = 33.4 ± 4.5 Ma
MEAN AGE = 33.6 ± 1.8 Ma

88 POS 93A APATITE OKPILAK - 3320'

IRRADIATION LU020
SLIDE NUMBER 15
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	3	65	20	0.046	17.7	1.707E+05	3.698E+06	22.2 ± 13.1
2	4	28	21	0.143	7.3	2.167E+05	1.517E+06	68.5 ± 36.6
3	1	15	12	0.067	6.8	9.482E+04	1.422E+06	32.1 ± 33.1
4	3	27	18	0.111	8.2	1.896E+05	1.707E+06	53.3 ± 32.5
5	2	39	12	0.051	17.7	1.896E+05	3.698E+06	24.7 ± 17.9
6	3	23	12	0.130	10.4	2.844E+05	2.181E+06	62.6 ± 38.4
7	6	142	30	0.042	25.8	2.276E+05	5.386E+06	20.3 ± 8.5
8	7	68	40	0.103	9.3	1.991E+05	1.934E+06	49.4 ± 19.6
9	3	43	18	0.070	13.0	1.896E+05	2.718E+06	33.6 ± 20.0
10	8	148	12	0.054	67.2	7.585E+05	1.403E+07	26.0 ± 9.4
11	7	76	30	0.092	13.8	2.655E+05	2.882E+06	44.3 ± 17.5
12	6	85	40	0.071	11.6	1.707E+05	2.418E+06	33.9 ± 14.3
13	6	90	30	0.067	16.4	2.276E+05	3.413E+06	32.1 ± 13.5
14	3	38	24	0.079	8.6	1.422E+05	1.801E+06	38.0 ± 22.8
15	4	60	20	0.067	16.4	2.276E+05	3.413E+06	32.1 ± 16.6
16	2	30	30	0.067	5.5	7.585E+04	1.138E+06	32.1 ± 23.4
17	9	131	40	0.069	17.9	2.560E+05	3.726E+06	33.0 ± 11.4
18	7	71	40	0.099	9.7	1.991E+05	2.020E+06	47.4 ± 18.8
19	8	141	40	0.057	19.2	2.276E+05	4.011E+06	27.3 ± 9.9
20	8	130	40	0.062	17.7	2.276E+05	3.698E+06	29.6 ± 10.8
	100	1450			14.9	2.151E+05	3.119E+06	

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

CHI SQUARED = 9.030 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 97.3 %
CORRELATION COEFFICIENT = 0.862
VARIANCE OF SQR(Ns) = 0.34
VARIANCE OF SQR(Ni) = 6.99

Ns/Ni = 0.069 ± 0.007
MEAN RATIO = 0.077 ± 0.006

Ages calculated using a zeta of 352.7 for SRM612 glass
RHO D = 2.734E+06cm-2; ND = 12015

POOLED AGE = 33.2 ± 3.5 Ma
MEAN AGE = 37.1 ± 3.0 Ma

88 POS 94A APATITE OKPILAK - 3010'

IRRADIATION LU022
SLIDE NUMBER 1
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	12	201	24	0.060	50.8	5.689E+05	9.529E+06	25.8 ± 7.7
2	11	146	50	0.075	17.7	2.503E+05	3.322E+06	32.5 ± 10.2
3	3	97	27	0.031	21.8	1.264E+05	4.088E+06	13.4 ± 7.8
4	10	139	40	0.072	21.1	2.844E+05	3.954E+06	31.1 ± 10.2
5	7	135	50	0.052	16.4	1.593E+05	3.072E+06	22.4 ± 8.7
6	12	148	50	0.081	18.0	2.731E+05	3.368E+06	35.0 ± 10.5
7	8	125	16	0.064	47.4	5.689E+05	8.889E+06	27.6 ± 10.1
8	4	52	50	0.077	6.3	9.102E+04	1.183E+06	33.2 ± 17.2
9	18	200	36	0.090	33.7	5.689E+05	6.321E+06	38.8 ± 9.6
10	11	122	25	0.090	29.6	5.006E+05	5.552E+06	38.9 ± 12.3
11	2	62	40	0.032	9.4	5.689E+04	1.764E+06	14.0 ± 10.0
12	5	46	16	0.109	17.5	3.556E+05	3.271E+06	46.9 ± 22.1
13	21	280	49	0.075	34.7	4.876E+05	6.502E+06	32.4 ± 7.3
14	8	99	20	0.081	30.1	4.551E+05	5.632E+06	34.9 ± 12.8
15	4	48	16	0.083	18.2	2.844E+05	3.413E+06	36.0 ± 18.7
16	3	45	30	0.067	9.1	1.138E+05	1.707E+06	28.8 ± 17.2
17	4	57	35	0.070	9.9	1.300E+05	1.853E+06	30.3 ± 15.7
18	7	102	25	0.069	24.8	3.186E+05	4.642E+06	29.6 ± 11.6
19	7	93	35	0.075	16.1	2.276E+05	3.023E+06	32.5 ± 12.7
20	3	41	20	0.073	12.4	1.707E+05	2.332E+06	31.6 ± 18.9
	160	2238			20.8	2.784E+05	3.894E+06	

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

CHI SQUARED = 7.353 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 99.2 %
CORRELATION COEFFICIENT = 0.937
VARIANCE OF SQR(Ns) = 0.75
VARIANCE OF SQR(Ni) = 8.34

Ns/Ni = 0.071 ± 0.006
MEAN RATIO = 0.071 ± 0.004

Ages calculated using a zeta of 352.7 for SRM612 glass
RHO D = 2.455E+06cm-2; ND = 10796

POOLED AGE = 30.9 ± 2.6 Ma
MEAN AGE = 30.8 ± 1.8 Ma

88 POS 95A APATITE OKPILAK - 2540'

IRRADIATION LU022
SLIDE NUMBER 2
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	11	142	45	0.077	19.2	2.781E+05	3.590E+06	33.4 ± 10.5
2	10	139	50	0.072	16.9	2.276E+05	3.163E+06	31.1 ± 10.2
3	12	149	50	0.081	18.1	2.731E+05	3.391E+06	34.8 ± 10.4
4	4	55	40	0.073	8.3	1.138E+05	1.564E+06	31.4 ± 16.3
5	11	131	40	0.084	19.9	3.129E+05	3.726E+06	36.3 ± 11.4
6	5	41	35	0.122	7.1	1.625E+05	1.333E+06	52.6 ± 24.9
7	8	96	40	0.083	14.6	2.276E+05	2.731E+06	36.0 ± 13.2
8	3	45	30	0.067	9.1	1.138E+05	1.707E+06	28.8 ± 17.2
9	7	106	40	0.066	16.1	1.991E+05	3.015E+06	28.5 ± 11.1
10	3	46	20	0.065	14.0	1.707E+05	2.617E+06	28.2 ± 16.8
11	3	55	20	0.055	16.7	1.707E+05	3.129E+06	23.6 ± 14.0
12	1	15	21	0.067	4.3	5.418E+04	8.127E+05	28.8 ± 29.7
13	21	280	50	0.075	34.0	4.779E+05	6.372E+06	32.4 ± 7.3
14	6	131	50	0.046	15.9	1.365E+05	2.981E+06	19.8 ± 8.3
15	3	42	20	0.071	12.7	1.707E+05	2.389E+06	30.8 ± 18.4
16	7	79	40	0.089	12.0	1.991E+05	2.247E+06	38.2 ± 15.1
17	6	90	40	0.067	13.7	1.707E+05	2.560E+06	28.8 ± 12.1
18	4	60	20	0.067	18.2	2.276E+05	3.413E+06	28.8 ± 14.9
19	9	131	40	0.069	19.9	2.560E+05	3.726E+06	29.7 ± 10.2
20	8	140	40	0.057	21.2	2.276E+05	3.982E+06	24.7 ± 9.0
	142	1973			16.4	2.210E+05	3.071E+06	

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

CHI SQUARED = 4.165 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 100.0 %
CORRELATION COEFFICIENT = 0.960
VARIANCE OF SQR(Ns) = 0.67
VARIANCE OF SQR(Ni) = 8.73

Ns/Ni = 0.072 ± 0.006
MEAN RATIO = 0.073 ± 0.003

Ages calculated using a zeta of 352.7 for SRM612 glass
RHO D = 2.455E+06cm-2; ND = 10796

POOLED AGE = 31.1 ± 2.7 Ma
MEAN AGE = 31.3 ± 1.6 Ma

88 POS 96A APATITE OKPILAK - 2700'

IRRADIATION LU022
SLIDE NUMBER 3
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	6	30	16	0.200	11.4	4.267E+05	2.133E+06	86.0 ± 38.5
2	13	141	40	0.092	21.4	3.698E+05	4.011E+06	39.8 ± 11.5
3	10	161	40	0.062	24.4	2.844E+05	4.580E+06	26.8 ± 8.8
4	7	97	20	0.072	29.4	3.982E+05	5.518E+06	31.2 ± 12.2
5	14	185	40	0.076	28.1	3.982E+05	5.262E+06	32.7 ± 9.1
6	9	127	24	0.071	32.1	4.267E+05	6.021E+06	30.6 ± 10.6
7	6	75	16	0.080	28.5	4.267E+05	5.333E+06	34.5 ± 14.7
8	11	145	40	0.076	22.0	3.129E+05	4.124E+06	32.8 ± 10.3
9	12	151	50	0.079	18.3	2.731E+05	3.436E+06	34.3 ± 10.3
10	11	130	40	0.085	19.7	3.129E+05	3.698E+06	36.5 ± 11.5
11	8	99	40	0.081	15.0	2.276E+05	2.816E+06	34.9 ± 12.8
12	7	105	40	0.067	15.9	1.991E+05	2.987E+06	28.8 ± 11.2
13	3	56	30	0.054	11.3	1.138E+05	2.124E+06	23.2 ± 13.7
14	20	270	50	0.074	32.8	4.551E+05	6.144E+06	32.0 ± 7.4
15	3	42	20	0.071	12.7	1.707E+05	2.389E+06	30.8 ± 18.4
16	6	91	40	0.066	13.8	1.707E+05	2.588E+06	28.5 ± 12.0
17	8	109	30	0.073	22.1	3.034E+05	4.134E+06	31.7 ± 11.6
18	9	133	50	0.068	16.1	2.048E+05	3.027E+06	29.2 ± 10.1
19	7	93	40	0.075	14.1	1.991E+05	2.645E+06	32.5 ± 12.7
20	11	141	50	0.078	17.1	2.503E+05	3.209E+06	33.7 ± 10.6
	181	2381			20.2	2.876E+05	3.784E+06	

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

CHI SQUARED = 6.859 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 99.5 %
CORRELATION COEFFICIENT = 0.949
VARIANCE OF SQR(Ns) = 0.43
VARIANCE OF SQR(Ni) = 6.18

Ns/Ni = 0.076 ± 0.006
MEAN RATIO = 0.080 ± 0.007

Ages calculated using a zeta of 352.7 for SRM612 glass
RHO D = 2.455E+06cm-2; ND = 10796

POOLED AGE = 32.8 ± 2.6 Ma
MEAN AGE = 34.5 ± 2.9 Ma

88 POS 98A APATITE OKPILAK - 5260'

IRRADIATION LU022
SLIDE NUMBER 5
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	25	335	40	0.075	50.8	7.111E+05	9.529E+06	32.2 ± 6.7
2	4	60	21	0.067	17.3	2.167E+05	3.251E+06	28.8 ± 14.9
3	5	81	30	0.062	16.4	1.896E+05	3.072E+06	26.7 ± 12.3
4	11	151	27	0.073	34.0	4.635E+05	6.363E+06	31.5 ± 9.8
5	2	39	18	0.051	13.2	1.264E+05	2.465E+06	22.2 ± 16.1
6	3	73	18	0.041	24.6	1.896E+05	4.614E+06	17.8 ± 10.5
7	13	108	24	0.120	27.3	6.163E+05	5.120E+06	51.9 ± 15.3
8	11	117	21	0.094	33.8	5.960E+05	6.339E+06	40.6 ± 12.8
9	3	80	24	0.038	20.2	1.422E+05	3.793E+06	16.2 ± 9.5
10	5	59	16	0.085	22.4	3.556E+05	4.196E+06	36.6 ± 17.0
11	5	77	15	0.065	31.2	3.793E+05	5.841E+06	28.1 ± 13.0
12	5	46	15	0.109	18.6	3.793E+05	3.489E+06	46.9 ± 22.1
13	12	146	40	0.082	22.2	3.413E+05	4.153E+06	35.5 ± 10.7
14	9	102	10	0.088	61.9	1.024E+06	1.161E+07	38.1 ± 13.3
15	12	104	16	0.115	39.5	8.533E+05	7.396E+06	49.8 ± 15.2
16	4	71	18	0.056	23.9	2.528E+05	4.488E+06	24.3 ± 12.5
17	3	30	15	0.100	12.1	2.276E+05	2.276E+06	43.1 ± 26.1
18	2	38	15	0.053	15.4	1.517E+05	2.882E+06	22.7 ± 16.5
19	8	50	15	0.160	20.2	6.068E+05	3.793E+06	68.9 ± 26.3
20	19	256	40	0.074	38.9	5.404E+05	7.282E+06	32.1 ± 7.6
	161	2023			28.0	4.182E+05	5.255E+06	

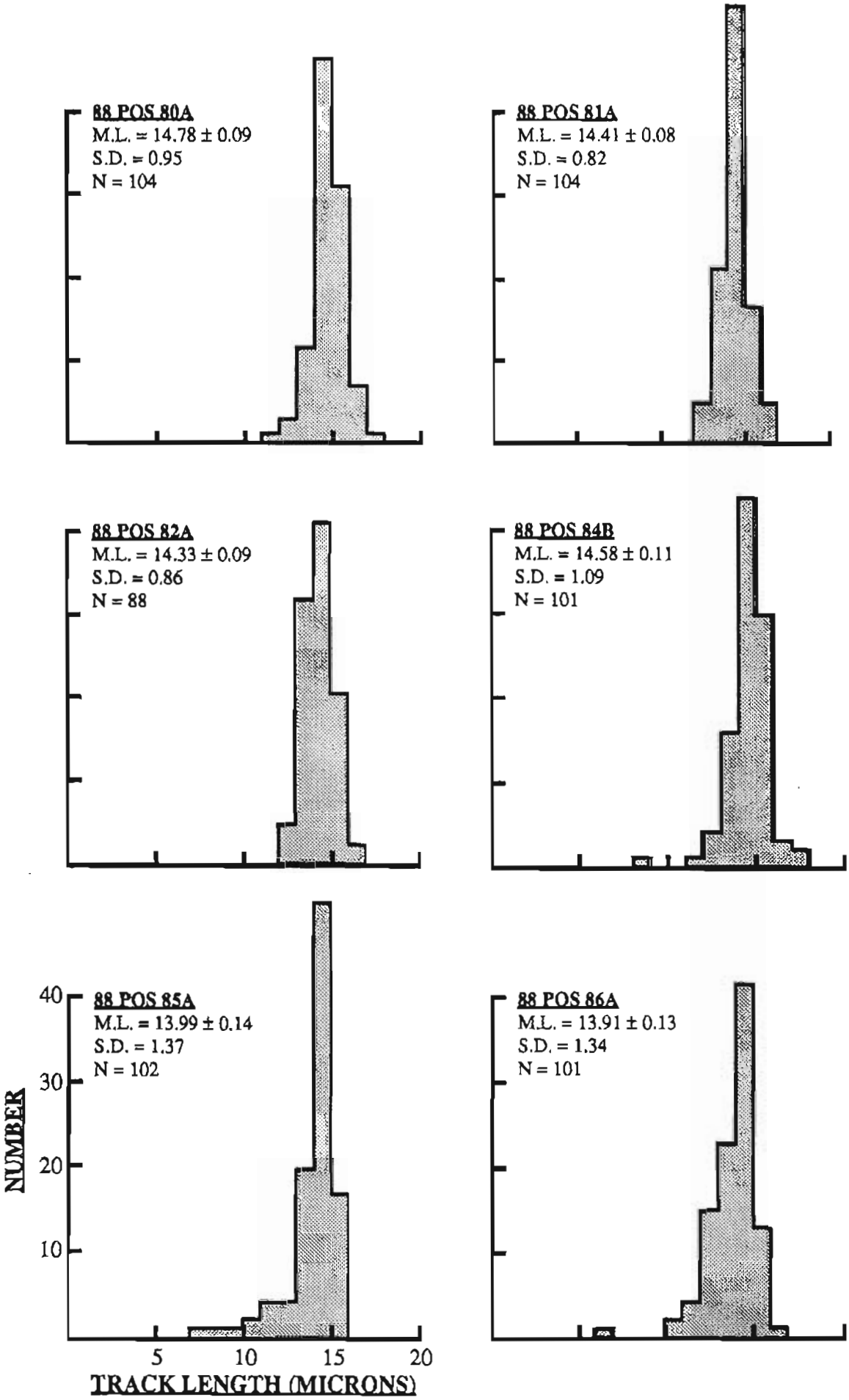
Area of basic unit = 8.789E-07 cm-2

CHI SQUARED = 13.063 WITH 19 DEGREES OF FREEDOM
P(chi squared) = 83.5 %
CORRELATION COEFFICIENT = 0.936
VARIANCE OF SQR(Ns) = 0.99
VARIANCE OF SQR(Ni) = 10.43

Ns/Ni = 0.080 ± 0.007
MEAN RATIO = 0.080 ± 0.007

Ages calculated using a zeta of 352.7 for SRM612 glass
RHO D = 2.455E+06cm-2; ND = 10796

POOLED AGE = 34.4 ± 2.9 Ma
MEAN AGE = 34.7 ± 2.9 Ma


88 POS 80A
M.L. = 14.78 ± 0.09
S.D. = 0.95
N = 104
88 POS 81A
M.L. = 14.41 ± 0.08
S.D. = 0.82
N = 104
88 POS 82A
M.L. = 14.33 ± 0.09
S.D. = 0.86
N = 88
88 POS 84B
M.L. = 14.58 ± 0.11
S.D. = 1.09
N = 101
88 POS 85A
M.L. = 13.99 ± 0.14
S.D. = 1.37
N = 102
88 POS 86A
M.L. = 13.91 ± 0.13
S.D. = 1.34
N = 101
NUMBER
40
30
20
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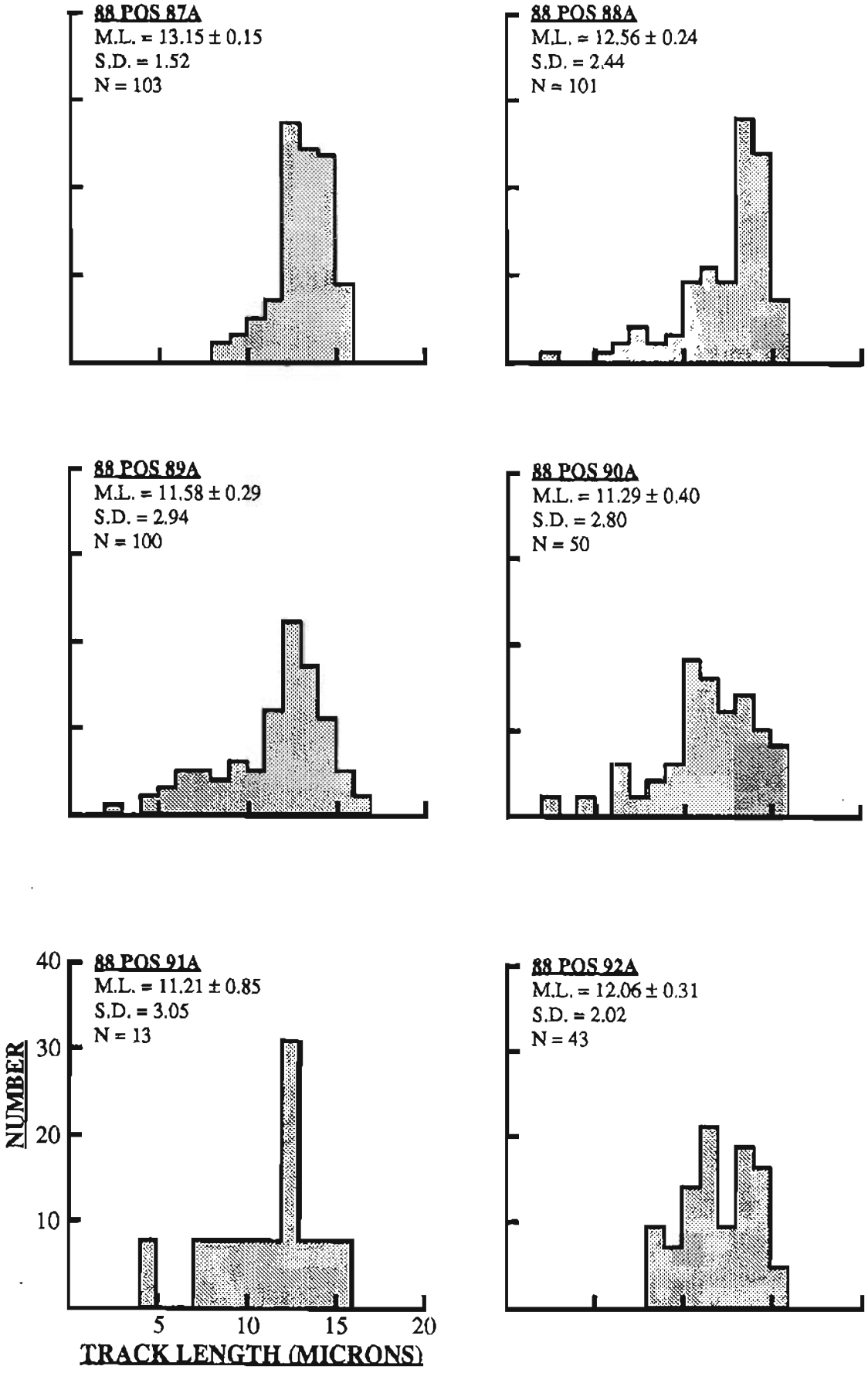
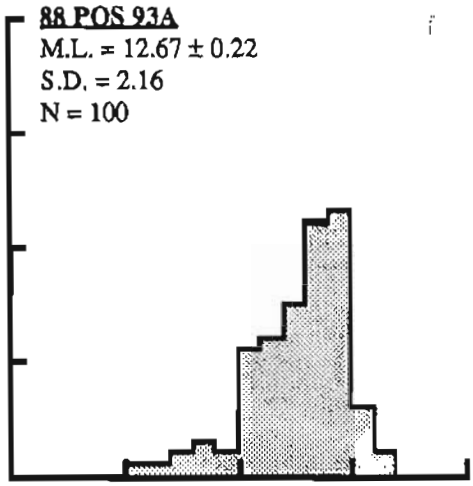
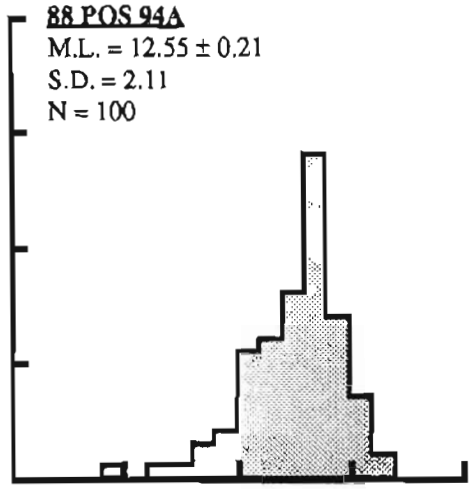
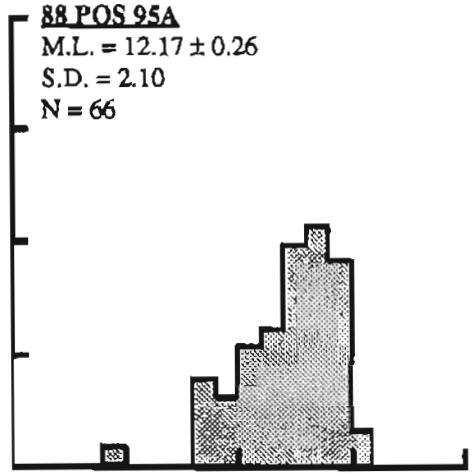
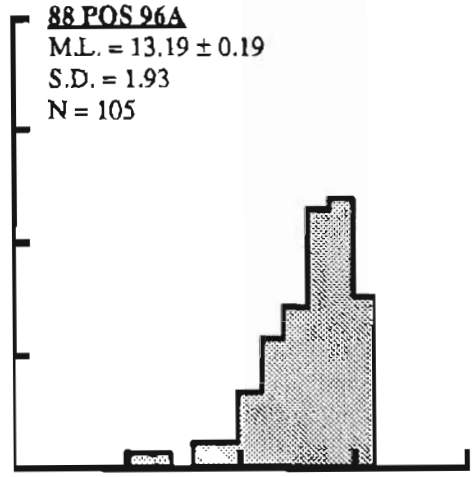
5
10
15
20
TRACK LENGTH (MICRONS)

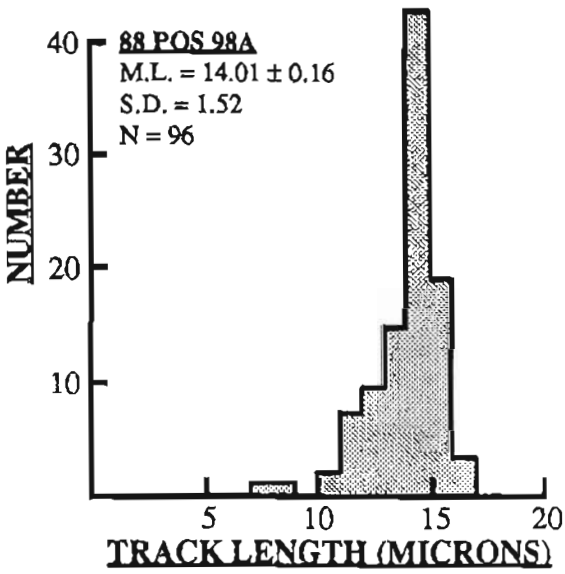

88 POS 87A
M.L. = 13.15 ± 0.15
S.D. = 1.52
N = 103
88 POS 88A
M.L. = 12.56 ± 0.24
S.D. = 2.44
N = 101
88 POS 89A
M.L. = 11.58 ± 0.29
S.D. = 2.94
N = 100
88 POS 90A
M.L. = 11.29 ± 0.40
S.D. = 2.80
N = 50
88 POS 91A
M.L. = 11.21 ± 0.85
S.D. = 3.05
N = 13
88 POS 92A
M.L. = 12.06 ± 0.31
S.D. = 2.02
N = 43
NUMBER
40
30
20
10
5
10
15
20
TRACK LENGTH (MICRONS)


88 POS 93A
M.L. = 12.67 ± 0.22
S.D. = 2.16
N = 100


88 POS 94A
M.L. = 12.55 ± 0.21
S.D. = 2.11
N = 100


88 POS 95A
M.L. = 12.17 ± 0.26
S.D. = 2.10
N = 66


88 POS 96A
M.L. = 13.19 ± 0.19
S.D. = 1.93
N = 105


88 POS 98A
M.L. = 14.01 ± 0.16
S.D. = 1.52
N = 96
NUMBER
40
30
20
10
5
10
15
20
TRACK LENGTH (MICRONS)