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RESULTS OF NINE APATITE FISSION TRACK ANALYSES OF SAMPLES FROM OUTCROP LOCALITIES IN IGNEK VALLEY AND ALONG THE SADLEROCHIT RIVER, ARCTIC NATIONAL WILDLIFE REFUGE, ALASKA

by

Paul B. O'Sullivan
Department of Geology
La Trobe University
Bundoora, Victoria 3083
Australia

Alaska Division of
Geological and Geophysical Surveys

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794 University Avenue, Suite 200
Fairbanks, Alaska 99709-3645

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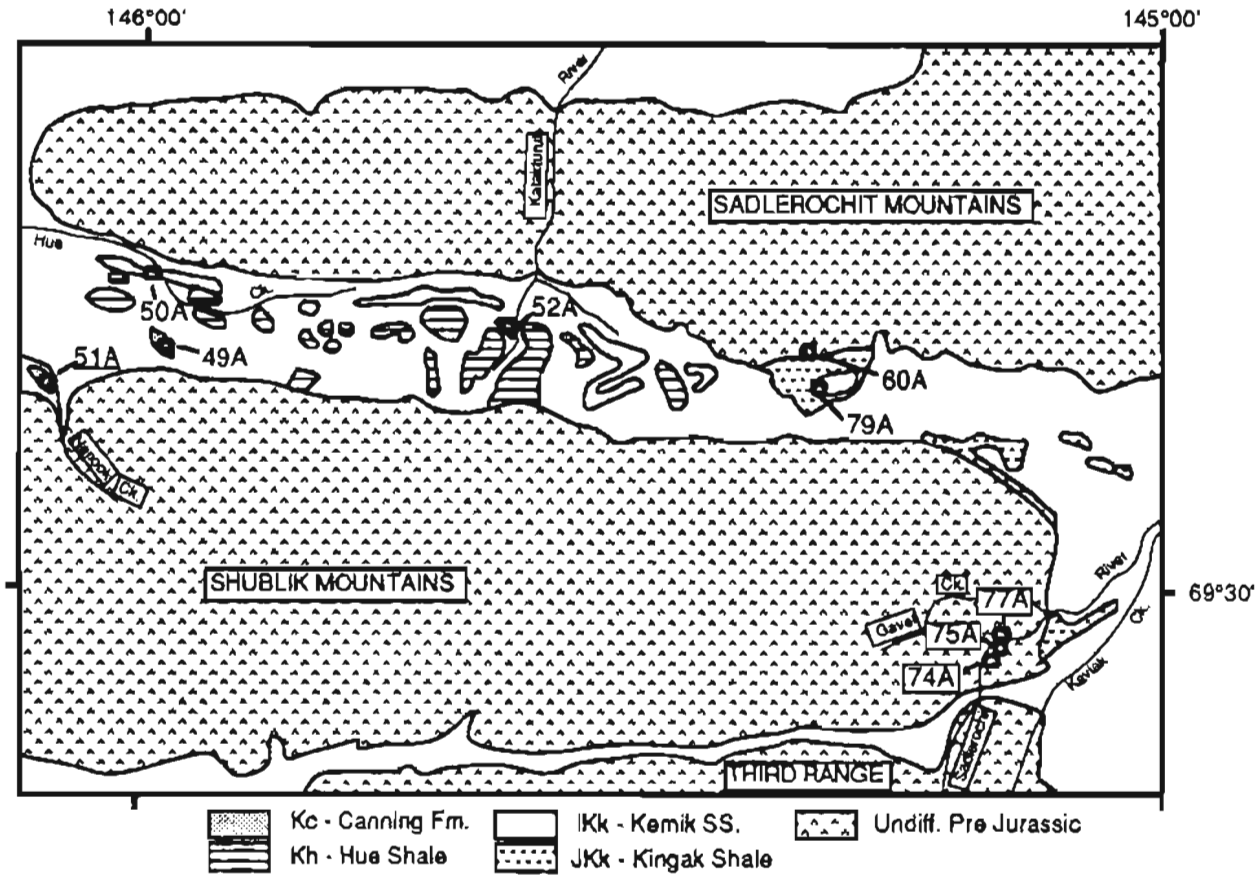


Sample Location Map

INTRODUCTION

This is a preliminary report of apatite fission track analysis data of samples from Cretaceous sediments exposed in Ignek Valley and from Triassic sediments exposed along the Sadlerochit River east of the Shublik Mountains. Apatite grains were separated from 9 samples and analyzed in Melbourne Australia at the La Trobe University Fission Track Research Laboratory. Separations, grain-mounts, and all analyses were completed by the author.

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 22A-Tucktu Fm.	-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

For the purpose of this report, fission track ages were determined using a minimum of 20 individual grain ages from each sample and as many confined track length measurements up to ~100. Though typical yields for the samples were poor, in all cases 20 dateable grains were found on each mount. Due to relatively young ages and low uranium content, only 2 mounts contained 100 or more confined tracks and an additional 3 mounts contained between 50 and 100 tracks. Only one mount had less than 20 confined tracks. All samples yielded grains representing single populations so the pooled age is presented.

Sample No.	Unit	Lengths (#)	Mean Len. (μm)	Std.Dev.	Age (Ma ± 1σ)
Ignek Valley					
87 POS 49A	Canning Fm.	75	13.88	1.09	49.9 ± 4.3
87 POS 50A	Kemik Fm.	48	12.95	1.50	33.4 ± 3.7
87 POS 51A	Canning Fm.	27	13.35	1.13	43.9 ± 4.1
87 POS 52A	Canning Fm.	5	13.89	1.02	41.9 ± 4.3
88 POS 60A	Ivishak Fm.	101	14.01	1.58	34.8 ± 2.5
88 POS 79A	Kemik Fm.	54	13.98	1.55	31.2 ± 2.9
Sadlerochit River Section					
88 POS 74A	Ivishak Fm.	101	13.77	1.52	36.5 ± 3.4
88 POS 75A	Ivishak Fm.	21	13.99	1.58	44.7 ± 6.7
88 POS 77A	Ivishak Fm.	68	13.52	1.36	33.0 ± 3.7

TRACK LENGTH DATA

Sample	Track Length Range (μm)													
Number	<5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	>17
Ignek Valley														
49A	0	0	0	0	0	1	2	4	2	38	14	14	0	0
50A	0	0	0	0	1	2	3	3	9	17	12	1	1	1
51A	0	0	0	0	0	0	1	3	4	9	10	0	0	0
52A	0	0	0	0	0	0	0	0	1	1	2	0	0	0
60A	0	0	0	0	0	4	3	3	8	24	31	23	5	0
79A	0	0	0	0	0	2	1	3	5	8	20	15	0	0
Sadlerochit River Section														
74A	0	0	0	0	2	4	2	3	5	31	43	10	1	0
75A	0	0	0	0	0	1	1	1	1	3	9	5	0	0
77A	0	0	0	0	0	1	2	10	9	14	28	4	0	0

DATA FROM IGNEK VALLEY SAMPLES

87 POS 49A APATITE CANNING FM.

IRRADIATION LU043
SLIDE NUMBER 1
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	4	22	25	0.182	5.0	1.778E+05	9.778E+05	81.2 ± 44.2
2	7	76	24	0.092	18.1	3.241E+05	3.519E+06	41.3 ± 16.3
3	0	20	36	0.000	3.2	0.000E+00	6.173E+05	0.0 ± 0.0
4	3	44	32	0.068	7.9	1.042E+05	1.528E+06	30.6 ± 18.2
5	15	71	28	0.211	14.5	5.952E+05	2.817E+06	94.2 ± 26.8
6	1	12	30	0.083	2.3	3.704E+04	4.444E+05	37.3 ± 38.9
7	7	89	16	0.079	31.8	4.861E+05	6.181E+06	35.2 ± 13.9
8	3	27	20	0.111	7.7	1.667E+05	1.500E+06	49.7 ± 30.3
9	5	85	30	0.059	16.2	1.852E+05	3.148E+06	26.4 ± 12.1
10	1	9	32	0.111	1.6	3.472E+04	3.125E+05	49.7 ± 52.4
11	28	237	30	0.118	45.1	1.037E+06	8.778E+06	52.9 ± 10.6
12	29	251	32	0.116	44.8	1.007E+06	8.715E+06	51.7 ± 10.2
13	7	51	16	0.137	18.2	4.861E+05	3.542E+06	61.4 ± 24.8
14	7	66	16	0.106	23.6	4.861E+05	4.583E+06	47.5 ± 18.9
15	1	6	35	0.167	1.0	3.175E+04	1.905E+05	74.5 ± 80.4
16	1	27	30	0.037	5.1	3.704E+04	1.000E+06	16.6 ± 16.9
17	0	17	49	0.000	2.0	0.000E+00	3.855E+05	0.0 ± 0.0
18	5	25	40	0.200	3.6	1.389E+05	6.944E+05	89.2 ± 43.8
19	2	20	24	0.100	4.8	9.259E+04	9.259E+05	44.8 ± 33.2
20	1	15	25	0.067	3.4	4.444E+04	6.667E+05	29.9 ± 30.9
21	1	22	56	0.045	2.2	1.984E+04	4.365E+05	20.4 ± 20.9
22	19	96	16	0.198	34.3	1.319E+06	6.667E+06	88.3 ± 22.2
23	2	23	49	0.087	2.7	4.535E+04	5.215E+05	39.0 ± 28.7
24	4	66	42	0.061	9.0	1.058E+05	1.746E+06	27.2 ± 14.0
25	3	23	20	0.130	6.6	1.667E+05	1.278E+06	58.3 ± 35.8
	156	1400			10.6	2.302E+05	2.066E+06	

Area of basic unit = .0000009 cm-2

Chi Squared = 25.389 with 24 degrees of freedom
P(chi squared) = 38.5 %
Correlation Coefficient = 0.938
Variance of SQR(Ns) = 2.00
Variance of SQR(Ni) = 11.81

Ns/Ni = 0.111 ± 0.009
Mean Ratio = 0.110 ± 0.011

Ages calculated using a zeta of 352.7 ± 5 for SRM612 glass
Rho D = 2.548E+06cm-2; ND = 5734

POOLED AGE = 49.9 ± 4.3 Ma
MEAN AGE = 45.9 ± 5.2 Ma

87 POS 50A APATITE KEMIK FM.

IRRADIATION LU043
SLIDE NUMBER 2
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	8	81	9	0.099	51.4	9.877E+05	1.000E+07	44.2 ± 16.4
2	0	15	21	0.000	4.1	0.000E+00	7.936E+05	0.0 ± 0.0
3	3	15	21	0.200	4.1	1.587E+05	7.936E+05	89.2 ± 56.5
4	7	146	12	0.048	69.5	6.481E+05	1.352E+07	21.5 ± 8.3
5	6	69	21	0.087	18.8	3.175E+05	3.651E+06	39.0 ± 16.6
6	1	19	18	0.053	6.0	6.173E+04	1.173E+06	23.6 ± 24.2
7	1	35	18	0.029	11.1	6.173E+04	2.160E+06	12.8 ± 13.0
8	1	20	15	0.050	7.6	7.407E+04	1.481E+06	22.4 ± 23.0
9	3	65	35	0.046	10.6	9.524E+04	2.063E+06	20.7 ± 12.2
10	5	31	12	0.161	14.8	4.630E+05	2.870E+06	72.1 ± 34.8
11	2	63	24	0.032	15.0	9.259E+04	2.917E+06	14.2 ± 10.2
12	9	72	12	0.125	34.3	8.333E+05	6.667E+06	55.9 ± 19.8
13	7	72	27	0.097	15.2	2.881E+05	2.963E+06	43.5 ± 17.3
14	0	9	25	0.000	2.1	0.000E+00	4.000E+05	0.0 ± 0.0
15	11	132	16	0.083	47.1	7.639E+05	9.167E+06	37.3 ± 11.7
16	3	45	16	0.067	16.1	2.083E+05	3.125E+06	29.9 ± 17.8
17	0	9	32	0.000	1.6	0.000E+00	3.125E+05	0.0 ± 0.0
18	1	10	12	0.100	4.8	9.259E+04	9.259E+05	44.8 ± 47.0
19	2	10	9	0.200	6.3	2.469E+05	1.235E+06	89.2 ± 69.2
20	10	149	21	0.067	40.5	5.291E+05	7.884E+06	30.1 ± 9.8
21	4	44	16	0.091	15.7	2.778E+05	3.056E+06	40.7 ± 21.3
22	1	11	16	0.091	3.9	6.944E+04	7.639E+05	40.7 ± 42.5
23	2	25	18	0.080	7.9	1.235E+05	1.543E+06	35.8 ± 26.4
24	1	19	12	0.053	9.0	9.259E+04	1.759E+06	23.6 ± 24.2
25	1	28	24	0.036	6.7	4.630E+04	1.296E+06	16.0 ± 16.3
	89	1194			14.8	2.140E+05	2.872E+06	

Area of basic unit = .0000009 cm-2

Chi Squared = 18.831 with 24 degrees of freedom
P(chi squared) = 76.1 %
Correlation Coefficient = 0.868
Variance of SQR(Ns) = 0.94
Variance of SQR(Ni) = 8.28

Ns/Ni = 0.075 ± 0.008
Mean Ratio = 0.075 ± 0.008

Ages calculated using a zeta of 352.7 ± 5 for SRM612 glass
Rho D = 2.548E+06cm-2; ND = 5734

POOLED AGE = 33.4 ± 3.7 Ma
MEAN AGE = 33.9 ± 4.9 Ma

87 POS 51A APATITE CANNING FM.

IRRADIATION LU043
SLIDE NUMBER 3
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	0	8	20	0.000	2.3	0.000E+00	4.444E+05	0.0 ± 0.0
2	3	21	20	0.143	6.0	1.667E+05	1.167E+06	63.9 ± 39.4
3	2	13	32	0.154	2.3	6.944E+04	4.514E+05	68.8 ± 52.2
4	4	58	36	0.069	9.2	1.235E+05	1.790E+06	30.9 ± 16.0
5	2	7	10	0.286	4.0	2.222E+05	7.778E+05	127.1 ± 102.0
6	1	8	18	0.125	2.5	6.173E+04	4.938E+05	55.9 ± 59.3
7	12	94	8	0.128	67.1	1.667E+06	1.306E+07	57.1 ± 17.5
8	1	16	16	0.062	5.7	6.944E+04	1.111E+06	28.0 ± 28.9
9	29	231	16	0.126	82.5	2.014E+06	1.604E+07	56.2 ± 11.1
10	10	71	9	0.141	45.1	1.235E+06	8.765E+06	63.0 ± 21.3
11	0	12	28	0.000	2.4	0.000E+00	4.762E+05	0.0 ± 0.0
12	11	145	20	0.076	41.4	6.111E+05	8.056E+06	34.0 ± 10.7
13	20	189	24	0.106	45.0	9.259E+05	8.750E+06	47.4 ± 11.2
14	0	12	25	0.000	2.7	0.000E+00	5.333E+05	0.0 ± 0.0
15	1	6	16	0.167	2.1	6.944E+04	4.167E+05	74.5 ± 80.4
16	6	68	20	0.088	19.4	3.333E+05	3.778E+06	39.5 ± 16.8
17	7	64	16	0.109	22.8	4.861E+05	4.444E+06	49.0 ± 19.5
18	5	104	20	0.048	29.7	2.778E+05	5.778E+06	21.6 ± 9.9
19	6	65	28	0.092	13.3	2.381E+05	2.579E+06	41.3 ± 17.7
20	7	103	49	0.068	12.0	1.587E+05	2.336E+06	30.5 ± 11.9
	127	1295			17.2	3.274E+05	3.338E+06	

Area of basic unit = .0000009 cm-2

Chi Squared = 14.633 with 19 degrees of freedom
P(chi squared) = 74.6 %
Correlation Coefficient = 0.945
Variance of SQR(Ns) = 2.09
Variance of SQR(Ni) = 15.65

Ns/Ni = 0.098 ± 0.009
Mean Ratio = 0.098 ± 0.009

Ages calculated using a zeta of 352.7 ± 5 for SRM612 glass
Rho D = 2.548E+06cm-2; ND = 5734

POOLED AGE = 43.9 ± 4.2 Ma
MEAN AGE = 44.5 ± 6.7 Ma

87 POS 52A APATITE CANNING FM.

IRRADIATION LU043
SLIDE NUMBER 4
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	1	20	15	0.050	7.6	7.407E+04	1.481E+06	22.4 ± 23.0
2	0	14	20	0.000	4.0	0.000E+00	7.778E+05	0.0 ± 0.0
3	17	206	36	0.083	32.7	5.247E+05	6.358E+06	37.0 ± 9.4
4	0	7	24	0.000	1.7	0.000E+00	3.241E+05	0.0 ± 0.0
5	29	274	30	0.106	52.2	1.074E+06	1.015E+07	47.4 ± 9.3
6	1	32	24	0.031	7.6	4.630E+04	1.481E+06	14.0 ± 14.2
7	2	7	6	0.286	6.7	3.704E+05	1.296E+06	127.1 ± 102.0
8	1	24	9	0.042	15.2	1.235E+05	2.963E+06	18.7 ± 19.1
9	1	4	15	0.250	1.5	7.407E+04	2.963E+05	111.4 ± 124.5
10	0	7	16	0.000	2.5	0.000E+00	4.861E+05	0.0 ± 0.0
11	0	5	16	0.000	1.8	0.000E+00	3.472E+05	0.0 ± 0.0
12	1	24	16	0.042	8.6	6.944E+04	1.667E+06	18.7 ± 19.1
13	4	24	40	0.167	3.4	1.111E+05	6.667E+05	74.5 ± 40.2
14	8	104	25	0.077	23.8	3.556E+05	4.622E+06	34.5 ± 12.7
15	6	44	16	0.136	15.7	4.167E+05	3.056E+06	61.0 ± 26.6
16	1	15	32	0.067	2.7	3.472E+04	5.208E+05	29.9 ± 30.9
17	1	14	16	0.071	5.0	6.944E+04	9.722E+05	32.0 ± 33.1
18	0	6	12	0.000	2.9	0.000E+00	5.556E+05	0.0 ± 0.0
19	1	7	8	0.143	5.0	1.389E+05	9.722E+05	63.9 ± 68.3
20	1	15	24	0.067	3.6	4.630E+04	6.944E+05	29.9 ± 30.9
21	32	291	15	0.110	110.8	2.370E+06	2.156E+07	49.2 ± 9.2
	107	1144			15.7	2.865E+05	3.063E+06	

Area of basic unit = .0000009 cm-2

Chi Squared = 13.704 with 20 degrees of freedom
P(chi squared) = 84.5 %
Correlation Coefficient = 0.987
Variance of SQR(Ns) = 2.78
Variance of SQR(Ni) = 21.69

Ns/Ni = 0.094 ± 0.009
Mean Ratio = 0.094 ± 0.009

Ages calculated using a zeta of 352.7 ± 5 for SRM612 glass
Rho D = 2.548E+06cm-2; ND = 5734

POOLED AGE = 41.9 ± 4.3 Ma
MEAN AGE = 36.8 ± 7.8 Ma

88 POS 60A APATITE FIRE CREEK SS.

IRRADIATION LU043
SLIDE NUMBER 5
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	23	219	18	0.105	69.5	1.420E+06	1.352E+07	47.0 ± 10.3
2	3	14	15	0.214	5.3	2.222E+05	1.037E+06	95.6 ± 60.8
3	5	41	16	0.122	14.6	3.472E+05	2.847E+06	54.6 ± 25.9
4	1	14	12	0.071	6.7	9.259E+04	1.296E+06	32.0 ± 33.1
5	20	261	20	0.077	74.5	1.111E+06	1.450E+07	34.3 ± 8.0
6	3	56	21	0.054	15.2	1.587E+05	2.963E+06	24.0 ± 14.2
7	3	62	12	0.048	29.5	2.778E+05	5.741E+06	21.7 ± 12.8
8	7	69	16	0.101	24.6	4.861E+05	4.792E+06	45.4 ± 18.0
9	5	44	20	0.114	12.6	2.778E+05	2.444E+06	50.9 ± 24.0
10	1	27	12	0.037	12.9	9.259E+04	2.500E+06	16.6 ± 16.9
11	13	174	15	0.075	66.3	9.630E+05	1.289E+07	33.5 ± 9.6
12	4	53	25	0.075	12.1	1.778E+05	2.356E+06	33.8 ± 17.6
13	29	367	30	0.079	69.9	1.074E+06	1.359E+07	35.4 ± 6.9
14	8	99	24	0.081	23.6	3.704E+05	4.583E+06	36.2 ± 13.3
15	1	41	24	0.024	9.8	4.630E+04	1.898E+06	10.9 ± 11.1
16	7	87	16	0.080	31.1	4.861E+05	6.042E+06	36.1 ± 14.2
17	1	51	25	0.020	11.7	4.444E+04	2.267E+06	8.8 ± 8.9
18	3	59	24	0.051	14.0	1.389E+05	2.731E+06	22.8 ± 13.5
19	5	87	16	0.057	31.1	3.472E+05	6.042E+06	25.8 ± 11.9
20	7	75	16	0.093	26.8	4.861E+05	5.208E+06	41.8 ± 16.5
21	38	429	12	0.089	204.2	3.519E+06	3.972E+07	39.7 ± 6.8
22	10	215	16	0.047	76.8	6.944E+05	1.493E+07	20.9 ± 6.8
23	6	107	24	0.056	25.5	2.778E+05	4.954E+06	25.1 ± 10.6
24	9	74	12	0.122	35.2	8.333E+05	6.852E+06	54.4 ± 19.2
25	2	33	9	0.061	20.9	2.469E+05	4.074E+06	27.2 ± 19.8
	214	2758			35.0	5.284E+05	6.810E+06	

Area of basic unit = .0000009 cm-2

Chi Squared = 18.735 with 24 degrees of freedom
P(chi squared) = 76.6 %
Correlation Coefficient = 0.964
Variance of SQR(Ns) = 1.91
Variance of SQR(Ni) = 20.10

Ns/Ni = 0.078 ± 0.006
Mean Ratio = 0.078 ± 0.006

Ages calculated using a zeta of 352.7 ± 5 for SRM612 glass
Rho D = 2.548E+06cm-2; ND = 5734

POOLED AGE = 34.8 ± 2.6 Ma
MEAN AGE = 35.0 ± 3.6 Ma

88 POS 79A APATITE KEMIK FM.

IRRADIATION LU043
SLIDE NUMBER 10
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	8	103	24	0.078	24.5	3.704E+05	4.769E+06	34.8 ± 12.8
2	4	47	12	0.085	22.4	3.704E+05	4.352E+06	38.1 ± 19.9
3	4	77	30	0.052	14.7	1.481E+05	2.852E+06	23.3 ± 12.0
4	41	471	32	0.087	84.1	1.424E+06	1.635E+07	39.0 ± 6.4
5	8	102	24	0.078	24.3	3.704E+05	4.722E+06	35.1 ± 12.9
6	1	27	16	0.037	9.6	6.944E+04	1.875E+06	16.6 ± 16.9
7	2	107	36	0.019	17.0	6.173E+04	3.302E+06	8.4 ± 6.0
8	1	36	16	0.028	12.9	6.944E+04	2.500E+06	12.5 ± 12.6
9	6	48	35	0.125	7.8	1.905E+05	1.524E+06	55.9 ± 24.2
10	1	24	35	0.042	3.9	3.175E+04	7.619E+05	18.7 ± 19.1
11	2	30	20	0.067	8.6	1.111E+05	1.667E+06	29.9 ± 21.8
12	9	81	24	0.111	19.3	4.167E+05	3.750E+06	49.7 ± 17.5
13	5	77	30	0.065	14.7	1.852E+05	2.852E+06	29.1 ± 13.4
14	7	72	24	0.097	17.1	3.241E+05	3.333E+06	43.5 ± 17.3
15	0	47	25	0.000	10.7	0.000E+00	2.089E+06	0.0 ± 0.0
16	4	98	20	0.041	28.0	2.222E+05	5.444E+06	18.3 ± 9.3
17	3	56	20	0.054	16.0	1.667E+05	3.111E+06	24.0 ± 14.2
18	9	179	36	0.050	28.4	2.778E+05	5.525E+06	22.6 ± 7.7
19	5	49	20	0.102	14.0	2.778E+05	2.722E+06	45.7 ± 21.5
20	3	37	9	0.081	23.5	3.704E+05	4.568E+06	36.3 ± 21.8
	123	1768			20.7	2.801E+05	4.026E+06	

Area of basic unit = .0000009 cm-2

Chi Squared = 18.693 with 19 degrees of freedom
P(chi squared) = 47.7 %
Correlation Coefficient = 0.958
Variance of SQR(Ns) = 1.63
Variance of SQR(Ni) = 13.94

Ns/Ni = 0.070 ± 0.006
Mean Ratio = 0.068 ± 0.007

Ages calculated using a zeta of 352.7 ± 5 for SRM612 glass
Rho D = 2.548E+06cm-2; ND = 5734

POOLED AGE = 31.2 ± 3.0 Ma
MEAN AGE = 29.1 ± 3.3 Ma

DATA FROM SADLEROCHIT RIVER SAMPLES

88 POS 74A APATITE LEDGE SS.

IRRADIATION LU043
SLIDE NUMBER 6
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	3	18	15	0.167	6.9	2.222E+05	1.333E+06	74.5 ± 46.5
2	2	10	30	0.200	1.9	7.407E+04	3.704E+05	89.2 ± 69.2
3	9	110	21	0.082	29.9	4.762E+05	5.820E+06	36.7 ± 12.7
4	1	8	28	0.125	1.6	3.968E+04	3.175E+05	55.9 ± 59.3
5	1	9	12	0.111	4.3	9.259E+04	8.333E+05	49.7 ± 52.4
6	4	41	9	0.098	26.0	4.938E+05	5.062E+06	43.7 ± 22.9
7	3	28	16	0.107	10.0	2.083E+05	1.944E+06	48.0 ± 29.2
8	0	38	20	0.000	10.9	0.000E+00	2.111E+06	0.0 ± 0.0
9	4	75	12	0.053	35.7	3.704E+05	6.944E+06	23.9 ± 12.3
10	3	64	12	0.047	30.5	2.778E+05	5.926E+06	21.0 ± 12.4
11	9	132	12	0.068	62.8	8.333E+05	1.222E+07	30.6 ± 10.5
12	4	91	9	0.044	57.8	4.938E+05	1.123E+07	19.7 ± 10.1
13	0	12	12	0.000	5.7	0.000E+00	1.111E+06	0.0 ± 0.0
14	0	5	20	0.000	1.4	0.000E+00	2.778E+05	0.0 ± 0.0
15	9	67	15	0.134	25.5	6.667E+05	4.963E+06	60.1 ± 21.4
16	0	32	15	0.000	12.2	0.000E+00	2.370E+06	0.0 ± 0.0
17	14	138	6	0.101	131.4	2.593E+06	2.556E+07	45.4 ± 12.8
18	3	30	15	0.100	11.4	2.222E+05	2.222E+06	44.8 ± 27.1
19	2	36	18	0.056	11.4	1.235E+05	2.222E+06	24.9 ± 18.1
20	1	12	12	0.083	5.7	9.259E+04	1.111E+06	37.3 ± 38.9
21	13	123	30	0.106	23.4	4.815E+05	4.556E+06	47.3 ± 13.8
22	8	135	12	0.059	64.3	7.407E+05	1.250E+07	26.6 ± 9.7
23	9	104	8	0.087	74.3	1.250E+06	1.444E+07	38.8 ± 13.5
24	10	99	16	0.101	35.3	6.944E+05	6.875E+06	45.2 ± 15.0
25	17	168	30	0.101	32.0	6.296E+05	6.222E+06	45.3 ± 11.6
	129	1585			22.4	3.539E+05	4.348E+06	

Area of basic unit = .0000009 cm-2

Chi Squared = 19.645 with 24 degrees of freedom
P(chi squared) = 71.7 %
Correlation Coefficient = 0.910
Variance of SQR(Ns) = 1.50
Variance of SQR(Ni) = 11.25

Ns/Ni = 0.081 ± 0.007
Mean Ratio = 0.081 ± 0.007

Ages calculated using a zeta of 352.7 ± 5 for SRM612 glass
Rho D = 2.548E+06cm-2; ND = 5734

POOLED AGE = 36.5 ± 3.4 Ma
MEAN AGE = 36.4 ± 4.6 Ma

88 POS 75A APATITE LEDGE SS.

IRRADIATION LU043
SLIDE NUMBER 7
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	1	8	12	0.125	3.8	9.259E+04	7.407E+05	55.9 ± 59.3
2	1	9	4	0.111	12.9	2.778E+05	2.500E+06	49.7 ± 52.4
3	0	14	6	0.000	13.3	0.000E+00	2.593E+06	0.0 ± 0.0
4	0	10	4	0.000	14.3	0.000E+00	2.778E+06	0.0 ± 0.0
5	1	12	4	0.083	17.1	2.778E+05	3.333E+06	37.3 ± 38.9
6	0	3	4	0.000	4.3	0.000E+00	8.333E+05	0.0 ± 0.0
7	13	125	4	0.104	178.5	3.611E+06	3.472E+07	46.6 ± 13.6
8	1	10	4	0.100	14.3	2.778E+05	2.778E+06	44.8 ± 47.0
9	0	8	4	0.000	11.4	0.000E+00	2.222E+06	0.0 ± 0.0
10	4	39	4	0.103	55.7	1.111E+06	1.083E+07	45.9 ± 24.1
11	4	26	6	0.154	24.8	7.407E+05	4.815E+06	68.8 ± 37.0
12	0	2	6	0.000	1.9	0.000E+00	3.704E+05	0.0 ± 0.0
13	1	6	4	0.167	8.6	2.778E+05	1.667E+06	74.5 ± 80.4
14	1	15	4	0.067	21.4	2.778E+05	4.167E+06	29.9 ± 30.9
15	10	32	12	0.312	15.2	9.259E+05	2.963E+06	138.9 ± 50.4
16	0	6	4	0.000	8.6	0.000E+00	1.667E+06	0.0 ± 0.0
17	2	25	4	0.080	35.7	5.556E+05	6.944E+06	35.8 ± 26.4
18	2	29	4	0.069	41.4	5.556E+05	8.056E+06	30.9 ± 22.6
19	0	17	4	0.000	24.3	0.000E+00	4.722E+06	0.0 ± 0.0
20	3	32	6	0.094	30.5	5.556E+05	5.926E+06	42.0 ± 25.4
21	0	15	4	0.000	21.4	0.000E+00	4.167E+06	0.0 ± 0.0
22	1	12	6	0.083	11.4	1.852E+05	2.222E+06	37.3 ± 38.9
23	2	25	6	0.080	23.8	3.704E+05	4.630E+06	35.8 ± 26.4
24	1	4	4	0.250	5.7	2.778E+05	1.111E+06	111.4 ± 124.5
25	1	7	4	0.143	10.0	2.778E+05	1.944E+06	63.9 ± 68.3
	49	491			21.9	4.253E+05	4.262E+06	

Area of basic unit = .0000009 cm-2

Chi Squared = 21.009 with 24 degrees of freedom
P(chi squared) = 63.8 %
Correlation Coefficient = 0.868
Variance of SQR(Ns) = 0.94
Variance of SQR(Ni) = 3.98

Ns/Ni = 0.100 ± 0.015
Mean Ratio = 0.097 ± 0.017

Ages calculated using a zeta of 352.7 ± 5 for SRM612 glass
Rho D = 2.548E+06cm-2; ND = 5734

POOLED AGE = 44.7 ± 6.8 Ma
MEAN AGE = 38.1 ± 7.2 Ma

88 POS 77A APATITE LEDGE SS.

IRRADIATION LU043
SLIDE NUMBER 8
COUNTED BY: POS

No.	Ns	Ni	Na	RATIO	U (ppm)	RHOs	RHOi	F.T. AGE (Ma)
1	1	37	16	0.027	13.2	6.944E+04	2.569E+06	12.1 ± 12.3
2	12	197	25	0.061	45.0	5.333E+05	8.756E+06	27.3 ± 8.1
3	0	9	4	0.000	12.9	0.000E+00	2.500E+06	0.0 ± 0.0
4	6	84	12	0.071	40.0	5.556E+05	7.778E+06	32.0 ± 13.5
5	9	109	18	0.083	34.6	5.556E+05	6.728E+06	37.0 ± 12.8
6	1	25	16	0.040	8.9	6.944E+04	1.736E+06	17.9 ± 18.3
7	8	87	12	0.092	41.4	7.407E+05	8.056E+06	41.2 ± 15.2
8	3	48	10	0.062	27.4	3.333E+05	5.333E+06	28.0 ± 16.7
9	3	45	9	0.067	28.6	3.704E+05	5.556E+06	29.9 ± 17.8
10	1	22	10	0.045	12.6	1.111E+05	2.444E+06	20.4 ± 20.9
11	0	3	15	0.000	1.1	0.000E+00	2.222E+05	0.0 ± 0.0
12	4	54	6	0.074	51.4	7.407E+05	1.000E+07	33.2 ± 17.2
13	9	65	18	0.138	20.6	5.556E+05	4.012E+06	61.9 ± 22.1
14	5	71	12	0.070	33.8	4.630E+05	6.574E+06	31.6 ± 14.6
15	1	15	12	0.067	7.1	9.259E+04	1.389E+06	29.9 ± 30.9
16	0	42	16	0.000	15.0	0.000E+00	2.917E+06	0.0 ± 0.0
17	16	165	9	0.097	104.7	1.975E+06	2.037E+07	43.4 ± 11.4
18	0	7	9	0.000	4.4	0.000E+00	8.642E+05	0.0 ± 0.0
19	1	25	15	0.040	9.5	7.407E+04	1.852E+06	17.9 ± 18.3
20	6	59	6	0.102	56.2	1.111E+06	1.093E+07	45.5 ± 19.5
	86	1169			26.7	3.822E+05	5.196E+06	

Area of basic unit = .0000009 cm-2

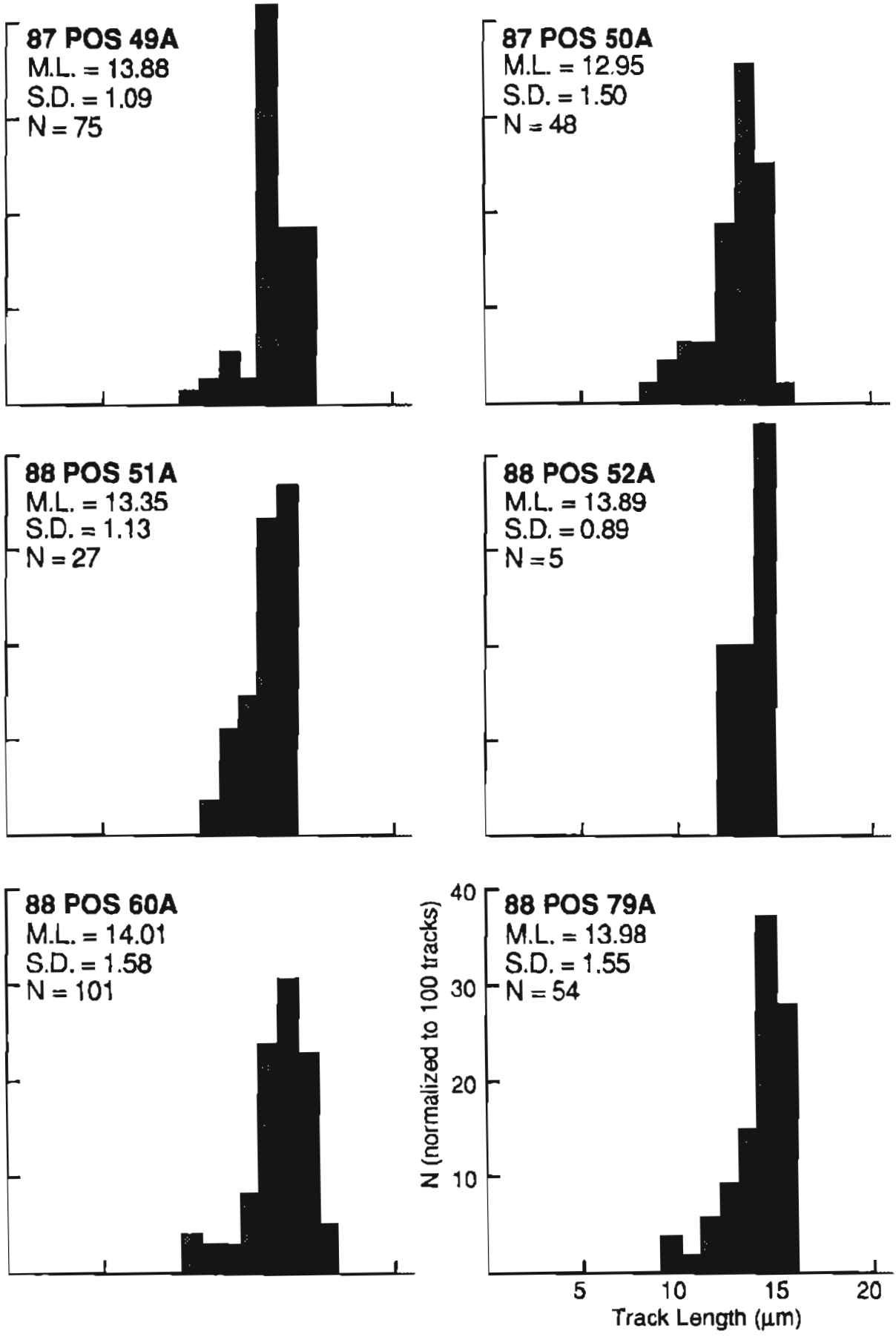
Chi Squared = 12.482 with 19 degrees of freedom
P(chi squared) = 86.4 %
Correlation Coefficient = 0.925
Variance of SQR(Ns) = 1.50
Variance of SQR(Ni) = 10.34

Ns/Ni = 0.074 ± 0.008
Mean Ratio = 0.074 ± 0.008

Ages calculated using a zeta of 352.7 ± 5 for SRM612 glass
Rho D = 2.548E+06cm-2; ND = 5734

POOLED AGE = 33.0 ± 3.7 Ma
MEAN AGE = 25.5 ± 3.9 Ma

LENGTH DATA FROM IGNEK VALLEY SAMPLES



LENGTH DATA FROM SADLEROCHIT RIVER SAMPLES