75035

High-Ti Mare Basalt
1235 g, 16 x 14 x 7 cm

INTRODUCTION

75035 has been described as a brownish gray basalt with a plumose texture within a planar fabric (Apollo 17 Lunar Sample Information Catalog, 1973). It was collected from Station 5 near Camelot Crater. It has a triangular/subangular shape (Fig. 1) and possesses no fractures. Approximately 2-3% of the surface of 75035 is covered with vugs (up to 5mm: Fig. 1) containing euhedral crystals of pyroxene, ilmenite, and plagioclase. Many zap pits are present on B, a few on S, E, and W, and none are seen on the remaining surfaces.

PETROGRAPHY AND MINERAL CHEMISTRY

Longhi et al. (1974) described 75035 as a medium-grained subophitic high-Ti basalt. Subhedral laths of plagioclase (0.1-0.3 mm by 1 mm) are partially enclosed by clumps of anhedral clinopyroxene (0.25-0.5 mm) (Fig. 2). Large laths of ilmenite (0.5-3.0 mm) with irregular edges and holes are slightly penetrated by these plagioclase laths. Anhedral to subhedral grains of silica, pyroxferroite, minor troilite, FeNi metal, and glass fill the interstices of the interlocking plagioclase-clinopyroxene-ilmenite network. Longhi et al. (1974) reported a modal analysis of. 44% clinopyroxene; 33% plagioclase, 15% ilmenite, 5% silica, 2% pyroxferroite, and 1% FeNi metal, troilite, and mesostasis glass. Longhi et al. (1974) concluded that ilmenite was the initial liquidus phase, followed by plagioclase. Clinopyroxene appeared simultaneously or slightly after plagioclase. Further pyroxene crystallization enriched the residual melt in Fe and Si, resulting in the final precipitation of pyroxferroite and silica. Pigeonite is present on a minute scale, as

Figure 1: Hand specimen photograph of 75035.0.

Figure 2: Photomicrograph of 75035. Field of view = 2.5 mm.

demonstrated by Jagodzinski et al. (1975). These authors documented the exsolution of pigeonite from the augite in 75035.

Brown et al. (1975) classified 75035,72 as a Type II Apollo 17 high-Ti mare basalt. While these authors did not give a specific petrographic description of this basalt, they did report a modal analysis of: 45.4% clinopyroxene, 32.7% plagioclase, 13.8% opaques, 6.2% silica, and 1.9% mesostasis. No olivine is present in 75035, 72.

Meyer and Boctor (1974) undertook a detailed study of the opaque mineralogy of 75035, 76. These authors report a mode of: 45% pyroxene, 31% plagioclase, 17% ilmenite, 5% cristobalite, and 2% troilite, FeNi metal, ulvospinel, baddeleyite, zirconolite, and tranquil Iityite. Mineral analyses of the opaques are presented here. Mineral chemistry for 75035 has been reported by Longhi et al. (1974). These authors noted that the earliest formed pyroxenes, $(WO_{4O}En_{43}Fs_{15})$ are continuously zoned, decreasing in Ca and increasing in Fe until pyroxferroite crystallizes as overgrowths (Fig. 3). Plagioclase (An_{88-72}) is also zoned and has Fe/(Fe+Mg) ratios of 0.39 in the calcic cores and 0.90 in the sodic rims, reflecting Fe enrichment. Roedder and Weiblen (1975) reported the compositions of the enigmatic low- and high-K silicate melt inclusions in ilmenites from 75035.

Figure 3: Pyroxene compositions reported by Longhi et al. (1974).

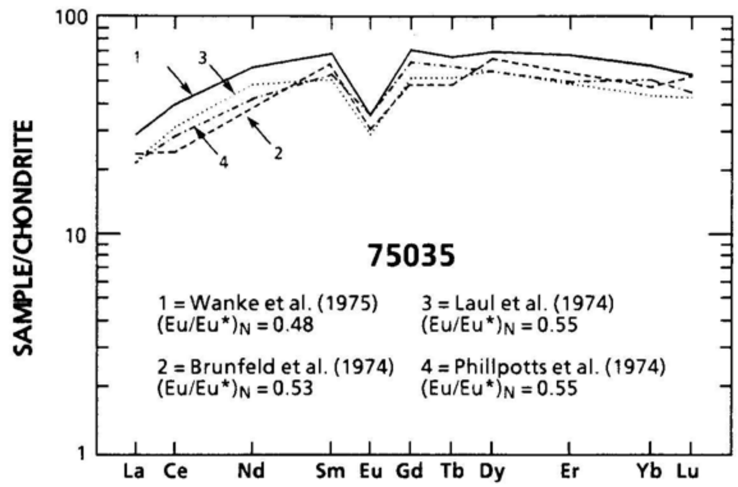

Figure 4: Chondrite -normalized rare-earth-element profiles of 75035. $(Eu/Eu^*)_N$ values noted.

WHOLE-ROCK CHEMISTRY

Numerous authors have reported, to various degrees, the whole-rock chemistry of 75035 (Tables 1 & 2). The most complete analyses (majors and traces) are from Brunfelt et al. (1974), Rose et al. (1975), Wanke et al. (1975), and Duncan et al. (1976). These analyses define a somewhat variable chemical composition for 75035. For example, the MG# ranges from 36.2 to 41.9 and TiO_2 abundances range from 8.79 wt% to 9.98 wt%. Likewise with the REE (Fig. 4), although each pattern has the same LREE-depleted shape (except for the analysis by Brunfelt et al., 1974, which exhibits a flattening of the LREE) and negative Eu anomaly [(Eu/Eu*) N = 0.48-0.55], the abundances are dramatically different (Fig. 4 and Table 1). A similar scenario is witnessed with the specific studies on S and H (Table 1).

RADIOGENIC ISOTOPES

Isotopic studies in the Rb-Sr (Murthy and Coscio, 1976), Sm-Nd (Lugmair and Marti (1978), U-Th-Pb (Nunes et al., 1974), and Ar-Ar (Turner et al., 1973; Turner and Cadogan, 1974, 1975) systems have been undertaken on 75035. Murthy and Coscio (1976) reported a crystallization age of 3.81 ±0.14 Ga for 75035,43, with an initial 87Sr/86Sr ratio of 0.69918 ± 6 (Fig. 5 and Table 2). Lugmair

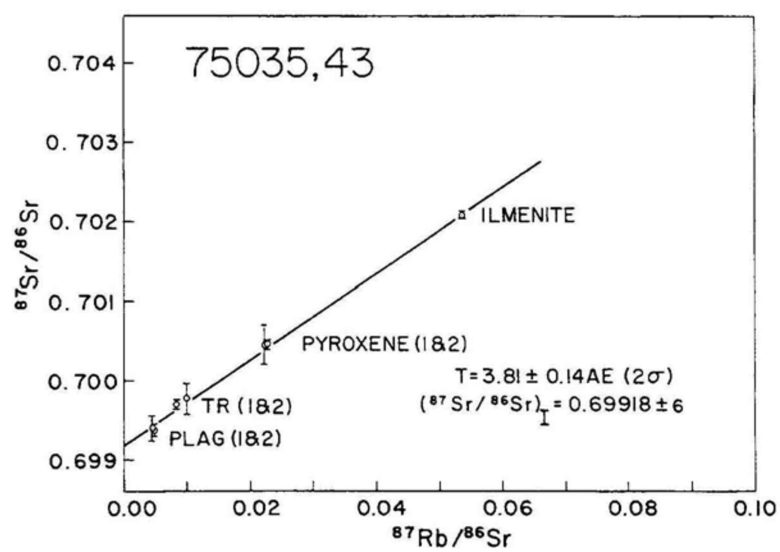

Figure 5: Rb-Sr internal isochron for 75035,43. Errors and regression analysis as noted for Figure 1. Plag 1 and 2 and pyroxene I and 2 are repeat analyses of the same mineral separates. TR 1 and 2 are different splits of the thoroughly mixed <74 um size fraction of the powdered rock sample. After Murthy and Coscio (1976).

and Marti (1978) reported a crystallization age of 3,81±0.14 Ga for 75035 and an initial e_{JUV} of + 6.2 ± 0.5, with a model age of 4.62 ± 0.09. Nunes et al. (1974) undertook a detailed U-Th-Pb isotopic study of 75035 (Table 3) and reported a U-Pb age of 3.56 ± 0.4 Ga for 75035 (Fig. 6). Finally, Turner et al. (1973) and Turner and Cadogan (1974, 1975) reported an Ar-Ar age of 3.76 ± 0.05 Ga for 75035 (Fig. 7 and Table 3). Shaeffer et al. (1977) reported the results of a laser ^{39}Ar-^{40}Ar study of 75035,52 (Table 3). The apparent ages of each mineral analyzed range from 1.68 Ga to 4,84 Ga (Table 4).

STABLE ISOTOPES

Petrowski et al. (1974) reported the C and S isotopic values for 75035,41. Their results demonstrated that this basalt is isotopically light with respect to carbon (s^{13}C = -28.5%o P) B)and reported slightly positive B34S values of + 1.7%o CDT. Gibson et al. (1975) reported a $^{S34}S_{CDT}$ value of + 0.6 for 75035.

EXPOSURE AGES AND COSMOGENIC RADIONUCLIDES

Exposure ages for 75035 have been determined by a variety of methods. Turner and Cadogan (1974) reported an Ar exposure age of 80 Ma. Arvidson et al. (1976) reported an 8^{1}Kr-Kr exposure age of 72± 2 Ma. Bhandari (1977) reported a ^{2}6A1 exposure age, but the resolution only yielded an age of > 1.3 Ma. Crozaz et al. (1974) reported a Kr age of 71.7±1.8Ma for 75035.

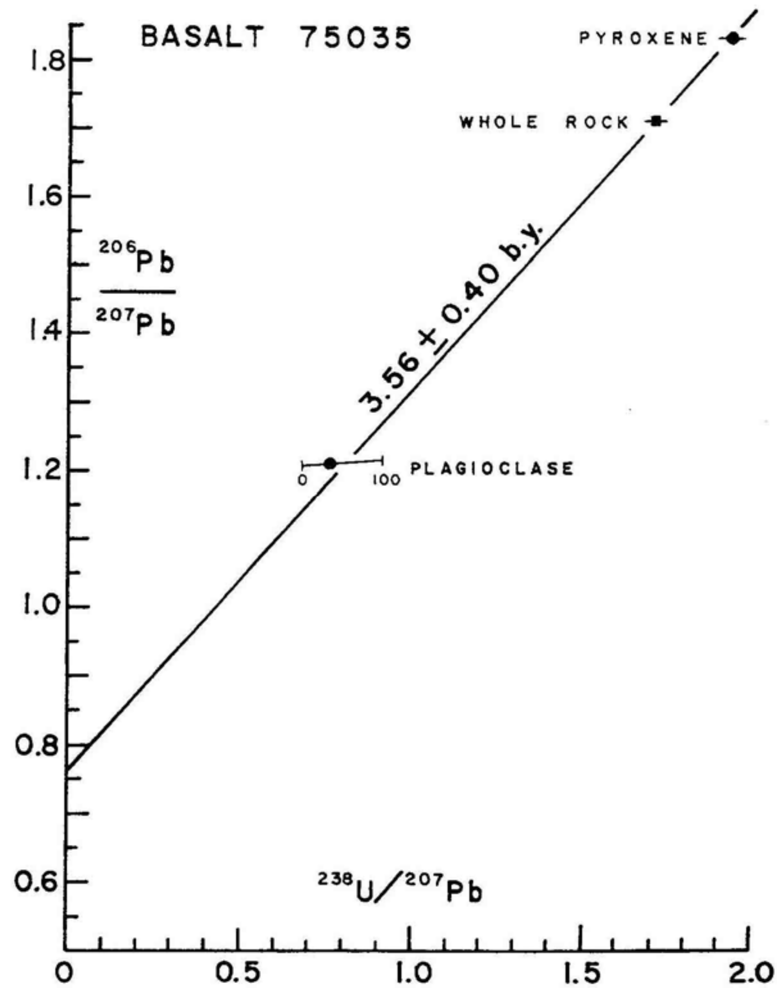

Figure 6: ^{206}Pb/^{207}Pb versus ^{238}U/^{207}Pb evolution diagram. Internal isochron for Apollo 17 basalt 75035. Data are corrected for blanks only. Pyroxene and whole-rock UIPb errors are ±2%. Plagioclase U/ Pb errors are the maximum possible errors assuming from 0% (0) to 100% (100) of the measured ^{204}Pb is attributable to terrestrial contamination. The initial ^{206}pb/^{207}Pb ratio and slope of the line drawn are 0.767 and 0.556, respectively. The slope corresponds to an age o f 3.56 ±0.40 b.v. The error in this age is a maximum error estimated graphically. After Nunes et al. (1974).

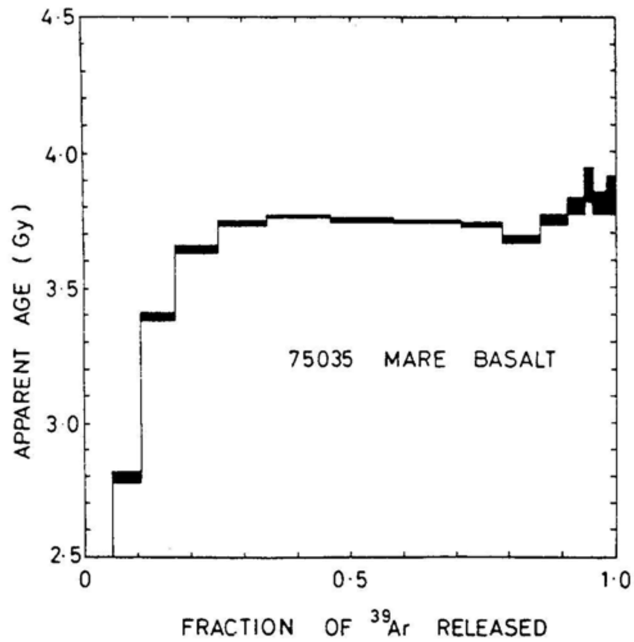

Figure 7: ^{40}Ar-^{39}Ar release pattern from whole-rock chip of Apollo 17 mare basalt, 75035. The release pattern shows evidence of 8% radiogenic argon loss from low-retentivity K-rich sites. Over the major part of the release the ($^{40}Ar/^{39}Ar$) ratio is constant indicating a cyystallization age for this sample of (3.76±0.05) G.y. Data from Turner and Cadogan (1974; 1975)

The abundances of cosmogenic radionuclides ^{22}Na and ^{26}Al were reported by Yokoyama et al. (1974) and Bhandari (1977) (Table 5). Yokoyama et al. (1974) noted that 75035 was saturated with respect to 26A1 and Kratchmer and Gentner (1976) concluded, on the basis of cosmogenic radionuclides, that 75035 had experienced a complex burial history. However, note the large discrepancy between $^{26}A1$ abundances in Table 5.

MAGNETIC STUDIES

Three magnetic studies involving 75035 have been conducted. Pearce et al. (1974) examined the Fe^{o} contents of 75035,37 (Table 6). These authors used magnetic studies to determine the Fe0/Fe^{2+} ratio of this sample. Brecher (1977) attempted to analyse the magnetic properties of 75035, but could not produce reliable results. Sugiura et al. (1979) tried to identify any remanent lunar magnetism in 75035,12 by demagnetizing the sample (Fig. 8 a,b). These authors concluded that no ancient remnant magnetism was present in 75035,12. However, a weak remanent magnetism was detected, with a maximum blocking temperature of 200°C (Fig. 8a). The origin of this remanent magnetism was unclear.

EXPERIMENTAL STUDIES

75035 has been used in a variety of experimental studies. Longhi et al. (1974) demonstrated that 75035 is the fractionation product of a more primitive low-K Apollo 17 high-Ti basalt. Longhi et al. (1978) used 75035 in their experimental determination of Fe/Mg partitioning between olivine and mare basaltic melt.

Taylor and Williams (1974) used 75035 in a study of cooling rates in Apollo 17 high-Ti basalts. These authors used the Ti contents of troilite coexisting with ilmenite in 75035,82 to demonstrate a linear relationship with temperature: as temperature decreases, so does the Ti content of troilite. Taylor and Williams (1974) interpreted this relationship to mean that 75035 had either experienced initial slow cooling or metamorphism after solidification. O'Hara and Humphris (1975) used 75035 in a study of armalcolite crystallization in and eruption conditions of Apollo 17 high-Ti basalts. They stated that 75035 was close in composition to a cotectic liquid simultaneously saturated with olivine, two pyroxenes, plagioclase, ilmenite, and armalcolite, even though olivine and armalcolite are not observed in thin section_ Usselman et al. (1975) used experimental evidence to

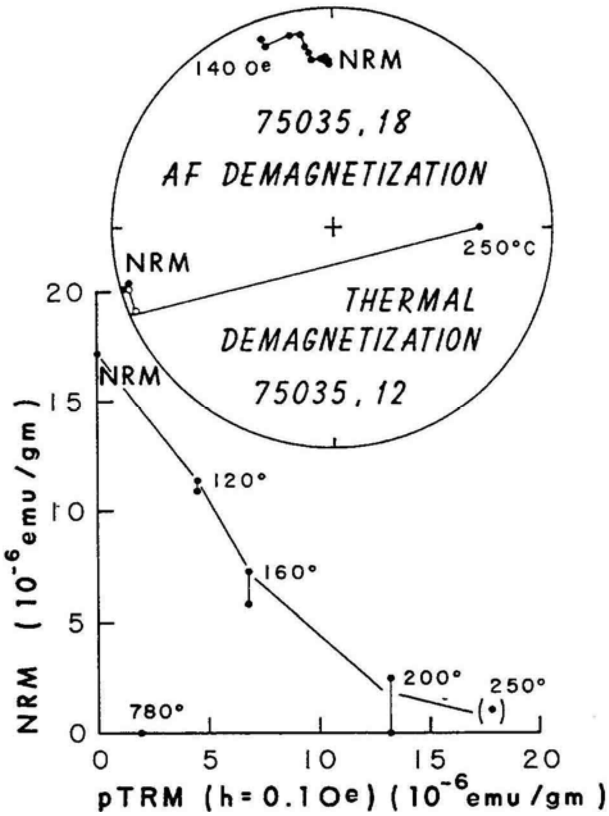

Figure 8a: NRM vs. pTRM plot for 75035,12 and directional change of NRM during AF and thermal demagnetization. Relative orientation of the two pieces is not known. Total TRM (780°C) is much smaller than pTRMs.

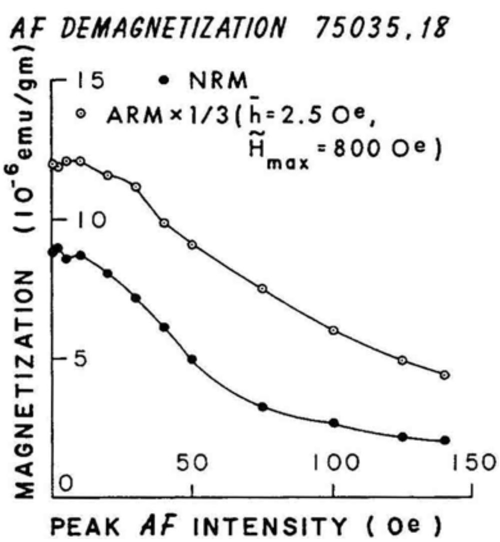

Figure 8b: AF demagnetization of NRM and RM in 75035,18. After Sugiura et al. (1978).

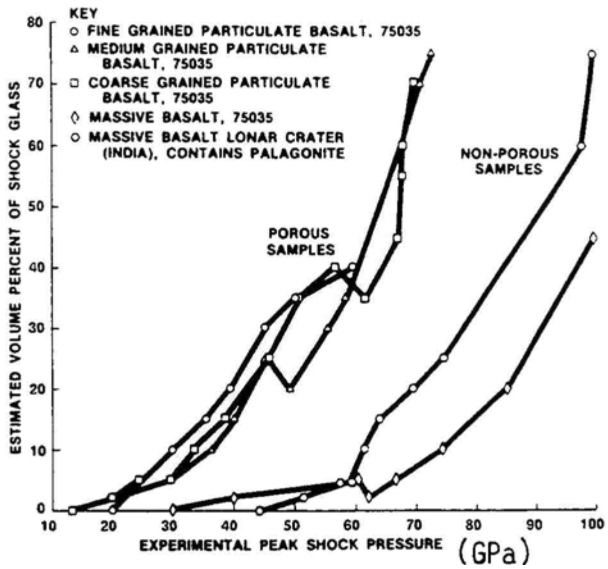

Figure 9: Abundance of intergranular and vesicular shock glass in experimentally shocked basalt. After Horz and Schaal (1979).

estimate a cooling rate of <1°C per hour for 75035.

McCallum and Charette (1977, 1978) have used 75035 to study Zr and Nb partition coefficients. McCallum and Charette (1977) noted that the Kd for Zr in ilmenite is remarkably constant at 0.27. For Zr in armalcolite. McCallum and Charette (1977) reported values between 1.02 to 125, and for Zr in clinopyroxene between 0.11 and 0.19. McCallum and Charette (1978) expanded this study to include Nb and reported recommended values of Zr and Nb crystal/liquid distribution coefficients (Table 6).

75035 has also been used in experimentally induced shock studies. Harrison and Horz (1981) used 75035 in a study of shock metamorphism in calcic plagioclase and Horz and Schaal (1979) reported the results of a study involving glass production via shock in massive versus porous basalts. Results of the Horz and Schaal (1979) are presented in Figure 9, demonstrating the porous basalts require less shock pressure to melt than massive basalts. Schaal and Horz (1977) compared the shock metamorphism of lunar and terrestrial basalts, using 75035 in their lunar examples. They concluded that the shock features and associated peak pressures in 75035 are compatible with the terrestrial Lonar basalt which had also been shocked by meteorite impact. This study was expanded in Schaal and Horz (1979).

PROCESSING

The original sample 75035,0 has been entirely subdivided. The largest remaining sub-samples are: 75035,1 (4098); ,2 (62g); ,28 (3878); ,33 (66g). Fifteen thin sections have been made from this sample - 775035,71 through ,85.

Table 1: Whole-rock chemistry of 75035.

Sample	,39	,65	,46	,19	,48	,44	,57	,41		,37	,37	,37	,36		,67		,36	,42	,42
Method	XN	X	XN	X	N	I	C	C	C	C	A	GC	R	A	A		N		GC
Ref.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
SiO_2 (wt%)			42.61	41.09	42.31													40.87	
TiO_2	9.09	9.59	9.98	8.95	9.0												8.75		
Al_2O_3	9.68	10.05	9.24	10.3	9.9												8.69		
Cr_2O_3	0.228	0.26	0.235	0.207	0.221														
FeO	18.45	18.88	19.22	18.57	18.88								17.67				18.45		
MnO	0.248	0.27	0.269	0.262	0.236												0.249		
MgO	6.81	6.25	6.13	6.28	7												7.47		
CaO	10.64	12.53	11.69	12.15	11.3												12.88		
Na_2O	0.405	0.39	0.46	0.53	0.42												0.45		
K_2O	0.068	0.08	0.08	0.061	0.074	0.066													
P_2O_5		0.06	0.09	0.084										0.03	0.03				
S			0.14	0.219			0.185	0.185	0.314	0.277								0.314	
Nb (ppm)		<10	24	29.1															
Zr		255	300	319									386						
Hf	10.0		11.2		8.7								12.5						
Ta	1.81		2.01		1.6														
U	0.113		0.149												0.18				
Th	0.35				0.3														
W	0.120		0.085																
Y		104	105	118															
Sr	195	168	209	223		192													
Rb	0.6	<1	0.81	1.5		0.679													
Li		10				11.0													
Ba	81	224	102	126	95	92.9													
Cs	0.04		0.026																
Be		<1																	
Zn	2	4.6	2.1	<2															
Pb		5.2																	
Cu	3.8	3.2	3.34	<2															
Ni	<10	11		<2															
Cr	1560		1610										1380						
Co	13.7	18	14.5	13	16								16.6						
V	30	16		19	30														
Sc	82	74	83.6		76								79.3						
La	7.6	<10	9.07		7.3														
Ce	20.4		35		27	23.6													
Nd			36.5		30	27.3													
Sm	12.9		13.6		10.8	11.2													
Eu	2.25		2.6		2.20	2.52							2.02						
Gd			19.8			17.1													
Tb	2.81		3.8		3.1								1.5						
Dy	22.9		24.0		20	19.7													
Er			15.0			11.1													
Yb	10.7	10	13.2		10	11.4													
Lu	1.82		1.88		1.5	1.70													
Ga	4.5	6.2	3.95																
F																			
Cl																			
C								23			64							64	64
N							0.4												85
H											11.2	1.8				0.32			
He																			
Pd (ppb)																			
Ge																			
Re																			
Ir																			
Au			0.033																
Ru																			
Os															0.03				

X = XRF; N = Neutron Activation; C = Combustion; A = Acid Hydrolysis; R = RNA; GC = Gas Chromatography.

1 = Brunfelt et al. (1974; 2 = Rose et al. (1975); 3 = Wanke et al. (1975); 4 = Duncan et al. (1976); 5 = Laul et al. (1974); 6 = Phillpotts et al. (1974); 7 = Des Maris (1978); 8 = Petrowski et al. (1974); 9 = Moore (1975); 10 = Gibson and Moore (1974); 11 = Gibson et al. (1975); 12 = Gibson et al. (1987); 13 = Garg and Ehmann (1976); 14 = Jovanovic and Reed (1980); 15 = Jovanovic et al. (1977); 16 = Merlivat et al. (1977); 17 = Miller et al. (1974); 18 = Moore et al. (1974); 19 = Moore and Lewis (1976).

Table 2: Rb-Sr data from 75035.
Data from Murthy and Coscio (1976).

Sample	Whole-Rock 1	Plag. 1	Plag. 2	Pyroxene 1	Pyroxene 2	Ilmenite	Glass
wt (mg)	14.82	9.55	8.78	14.22	15.31	15.63	9.54
K (ppm)	604	1210	1135	358	324	188	--
Ba (ppm)	86.5	131.8	138.6	56.4	70.6	32.9	--
Rb (ppm)	0.655	0.895	0.856	0.514	0.501	0.327	1.412
Sr (ppm)	189.3	555.8	528.5	66.45	64.09	17.62	462.5
$^{87}Rb/^{86}Sr$	0.01	0.00465	0.00468	0.0224	0.0226	0.0536	0.0083
$^{87}Sr/^{86}Sr$	0.69977 + 20	0.69940 + 15	0.69937 + 7	0.70044 + 24	0.70045 + 6	0.70208 + 5	0.69970 + 7

Table 3: U-Th-Pb data of 75035.
Data from Nunes et al. (1974).

Analysis	Whole rock		Handpicked Px		Plag. p < 2.8	
Comp./Conc.	P	C	P	C	P	C
Weight (mg)	120.7	209.4	63.4	35.7	145.5	92.1
U (ppm)		0.1505		0.1316		0.0255
Th (ppm)		0.4879		0.4354		---
Pb (ppm)		0.3258		0.2721		0.1011
$^{206}Pb/^{204}Pb^{1}$	384.6	397.5	146.8	185.8	83.07	68.33
$^{207}Pb/^{204}Pb^{1}$	228.1	232.4	83.32	104.5	68.56	57.36
$^{208}Pb/^{204}Pb^{1}$	352.3	--	146.7	--	95.33	--
$^{206}Pb/^{204}Pb^{2}$	579.2	509.1	203.1	511.0	114.8	102.7
$^{207}Pb/^{204}Pb^{2}$	341.0	296.3	113.1	277.3	94.67	86.09
$^{208}Pb/^{204}Pb^{2}$	520.5	--	194.8	--	123.9	--
$^{232}Th/^{238}U^{2}$		3.35		3.42		--
$^{238}U/^{204}Pb^{2}$		507		538		65.1
$^{206}Pb/^{238}U^{3}$		0.9850		0.9328		1.436
$^{207}Pb/^{235}U^{3}$		77.66		68.40		160.6
$^{207}Pb/^{206}Pb^{3}$		0.5721		0.5321		0.8117
$^{208}Pb/^{232}Th^{3}$		0.2529		0.2262		--

1 = Observed; 2 = Corrected for Blank; 3 = Corrected for Blank and Primordial Pb.

Table 4: Ar-Ar data from 75035.

Reference Sample	1 Whole-Rock	1 Crushed Whole-Rock	2 Pyroxene	2 Ilmenite	2 Plag 100-200 mesh	2 Plag 60-100 mesh
$^{36}Ar/^{38}Ar$	0.61	0.73	0.59	0.11	0.59	0.60
$^{38}Ar/^{37}Ar$	0.0024	0.0025	0.0033	0.021	0.0022	0.0022
$^{38}Ar/^{37}Ar$@	0.0024	0.0025				
$^{39}Ar/^{37}Ar$	0.016	0.014	0.014	0.023	0.0212	0.0175
$^{40}Ar/^{39}Ar$	45.2	53.6	41.8	44.9	43.0	49.5
Apparent Age (Ga)	3.63	3.91	3.50	3.62	3.55	3.78
^{39}Ar*	68.6	48.2	54.3	43.7	120.2	108.8
K%			0.06	0.05	0.13	0.12
Ca%			8.8	3.7	11.7	12.8

1 = Turner and Cadogan (1974); 2 = Turner and Cadogan (1975); @ = $^{38}Ar/^{37}Ar$ calculated assuming ^{38}Ar originates solely as cosmogenic Ar; * = amounts in units of 10^{-8} STP/g.

Table 5: Laser Released Ar isotopes from Minerals of Basalt 75035 in 10^{-12} CIO.
Data from Schaeffer et al. (1977).

Mineral	Temp.@	^{40}Ar	$^{39}Ar^*$	$^{38}Ar^*$	^{37}Ar	$^{36}Ar^*$	$^{40}Ar_K/^{39}Ar_K$	AGE (Ga)
Plagioclase[a]	----	117.2±11.2	2.53±0.15	2.94±2.94	545.4±54.5	9.64±8.91	67.99± 6.63	3.78±0.14
Plagioclase[a]	----	325.9±18.4	4.79±0.41	2.85±1.96	583.9±50.6	8.49±4.31	67.29± 7.01	3.76±0.15
Cristobalite[a]	----	2381.2±50.3	39.15±2.18	5.87±5.87	28.6±25.7	5.74±5.74	60.79± 3.62	3.60±0.09
Cristobalite[a]	----	3559.0±80.7	55.72±2.08	3.36±3.13	29.6±18.6	3.35±3.35	63.86± 2.79	3.68±0.07
Pyroxene[a]	----	106.4±5.4	1.84±0.36	6.30±5.09	2245.1±63.8	6.71±6.71	57.10±12.09	3.50±0.29
Pyroxene[a]	----	426.6±18.2	11.36±0.56	3.36±3.13	2315.2±134.1	5.75±5.75	37.39± 2.46	2.85±0.09
Plagioclase[a]	650°C	281.7±4.2	4.16±0.18	2.87±1.96	331.3±37.4	4.79±4.79	67.34± 3.19	3.76±0.07
Plagioclase[a]	650°C	178.1±2.7	2.51±0.11	2.21±0.78	269.8±35.7	8.27±2.59	69.50± 3.72	3.81±0.08
Cristobalite[a]	650°C	336.4±4.3	5.16±0.15	2.78±0.88	175.0±31.2	7.62±2.87	64.56± 2.19	3.69±0.05
Cristobalite[a]	650°C	574.9±6.4	8.81±0.38	2.83±0.88	321.9±25.4	7.97±2.01	64.83± 2.91	3.70±0.07
Pyroxene[a]	650°C	132.0±2.1	1.38±0.18	10.87±0.88	2818.4±44.6	12.66±3.07	93.43±12.94	4.31±0.19
Plagioclase[a]	900°C	246.2±4.6	3.44±0.21	2.39±0.97	387.6±43.1	9.59±2.20	70.25± 2.20	3.83±0.10
Cristobalite[a]	900°C	817.2±10.5	11.68±0.22	1.93±1.08	73.2±29.3	9.75±2.20	69.53± 1.64	3.81±0.04
Pyroxene[a]	900°C	5.2±1.5	0.32±0.10	2.94±1.27	1500.8±21.9	2.49±2.49	15.17± 8.26	1.68±0.75
Pyroxene[a]	900°C	37.0±1.5	0.39±0.16	2.35±1.27	1493.6±54.2	6.71±6.71	86.88±40.22	4.18±0.64
Plagioclase[b]	800°C	229.0±2.0	3.16±0.08	3.86±1.96	439.9±3.3	4.79±4.79	72.08± 2.15	3.87±0.05
Plagioclase[b]	800°C	162.3±1.3	2.12±0.12	4.45±1.47	477.2±1.9	11.77±2.20	73.96± 4.99	3.92±0.09
Cristobalite[b]	800°C	57.7±0.7	1.00±0.08	0.98±0.98	39.2±2.4	4.79±4.79	55.15± 5.71	3.44±0.14
Cristobalite[b]	800°C	267.0±2.3	4.43±0.09	2.88±0.98	121.2±3.1	7.64±2.87	59.49± 1.55	3.56±0.04
Pyroxene[b]	800°C	126.0±2.2	1.51±0.10	3.33±3.33	910.7±7.8	2.87±2.87	83.17± 5.99	4.11±0.10
Plagioclase[b]	1050°C	93.7±3.6	0.73±0.09	2.94±2.94	201.2±2.8	2.87±2.87	127.41±16.61	4.84±0.18
Plagioclase[b]	1050°C	36.0±1.5	0.48±0.07	2.44±2.44	73.4±4.4	6.71±6.71	69.33±14.92	3.81±0.29
Cristobalite[b]	1050°C	19.2±1.6	0.37±0.18	2.94±2.94	8.62±8.62	9.58±9.58	40.00±31.49	2.95±1.10

@ = Preheated prior to lasing; * = corrected for neutron-induced contributions; a,b = analyses made on two different chips.

Table 6: Cosmogenic radionuclide and U and Th abundances in 75035.

Reference Sample	1 ,22 (Top)	2 ,122 + ,124
Weight (g)	2.19	
^{22}Na (dpm/kg)	170 ± 25	
^{26}Al (dpm/kg)	107 ± 15	240 ± 60
Th (ppm)	0.65 ± 0.39	
U (ppm)	0.22 ± 0.22	

1 = Yokoyama et al. (1974); 2 = Bhandari (1977).

Table 7: Zr and Nb crystal/liquid distribution coefficients determined using 75035.
Data from McCallum and Charette (1978).

	Ilmenite	Armalcolite	Cpx	Rutile	Plagioclase
D_{Zr}	0.28	1.17	0.12	---	<0.01
D_{Nb}	0.81	1.41	0.02	15.6	<0.01

Table 8: Magnetic data for 75035, 37.
Data from Pearce et al. (1974).

	75035,37
J_s (emu/g)	0.129
X_p (emu/g Oe) x 10^6	38.4
X^o (emu/g Oe) x 10^4	0.4
Equiv. wt% Fe^o	0.06
Equiv. wt% Fe^{2+}	17.6
Fe^o/Fe^{2+}	0.0034