

VESPA Dating Study Supplemental File 5. Petrography and Ar/Ar dating Summary

VESPA #	GNS P#	UCSB #	Interpreted suite	Long (°E)	Lat (°S)	Depth (m)	Location	Rock description	Munsell colour	Vesics (%)	Phenos (%)	Pheno mins	Glass (%)	Groundmass minerals	Altn index	Alteration minerals
DR08A	84602	SB69-016	Intraplate	170.3263	-24.9381	2271	Loyalty Ridge	Aphyric basalt/basanite	N6	20	0	-	40	pl-gl-ol	3	ox, clay
DR10A	84607	SB69-177	High K-shosh	170.3192	-25.1513	1523	Loyalty Ridge	Basaltic andesite	N5	0	33	pl-cpx-ol-bi-ox	60	gl-ox-cpx-ox	1	zeol
DR10A	84607	SB69-019	High K-shosh	170.3192	-25.1513	1523	Loyalty Ridge	Basaltic andesite	N5	0	33	pl-cpx-ol-bi-ox	60	gl-ox-cpx-ox	1	zeol
DR13Aii*	84621	SB69-004	High K-shosh	169.5488	-25.6681	2731	Cook Fracture Zone, NW scarp	Basaltic trachyandesite	N6	0	30	pl	0	kl-pl-bi-cpx-cpx-ox	1	none
DR13Aii*	84621	SB69-179	High K-shosh	169.5488	-25.6681	2731	Cook Fracture Zone, NW scarp	Basaltic trachyandesite	N6	0	30	pl	0	kl-pl-bi-cpx-cpx-ox	1	none
DR14Aii*	84629	SB69-066	High K-shosh	169.6967	-25.5786	2112	South Loyalty Basin	Trachyandesite	N6	20	35	pl	2	pl-cpx-ox-bi-kl?	2	ox, zeol
DR14Aii*	84629	SB69-184	High K-shosh	169.6967	-25.5786	2112	South Loyalty Basin	Trachyandesite	N6	20	35	pl	2	pl-cpx-ox-bi-kl?	2	ox, zeol
DR15A	84639	SB69-186	High K-shosh	169.8381	-25.6163	2240	Cook Fracture Zone, NW scarp	Basaltic andesite boulder from pebbly sst	N3	5	30	pl-cpx-ox	30	gl-pl-cpx-ox-ox	1	zeol
DR15A	84639	SB69-193	High K-shosh	169.8381	-25.6163	2240	Cook Fracture Zone, NW scarp	Basaltic andesite boulder from pebbly sst	N3	5	30	pl-cpx-ox	30	gl-pl-cpx-ox-ox	1	zeol
DR15B	84640	SB69-195	High K-shosh	169.8381	-25.6163	2240	Cook Fracture Zone, NW scarp	Trachyte boulder from pebbly sandstone	5R 4/2	0	8	pl-bi-cpx-ox	40	gl-pl-bi-ox-kl?	1	none
DR15B	84640	SB69-068	High K-shosh	169.8381	-25.6163	2240	Cook Fracture Zone, NW scarp	Trachyte boulder from pebbly sandstone	5R 4/2	0	8	pl-bi-cpx-ox	40	gl-pl-bi-ox-kl?	1	none
DR15Ci	84641	SB69-182	High K-shosh	169.8381	-25.6163	2240	Cook Fracture Zone, NW scarp	Basaltic andesite cobble from pebbly sst	N3	2	20	cpx-ol-pl	50	gl-pl-cpx	2	ox
DR15Ci	84641	SB69-009	High K-shosh	169.8381	-25.6163	2240	Cook Fracture Zone, NW scarp	Basaltic andesite cobble from pebbly sst	N3	2	20	cpx-ol-pl	50	gl-pl-cpx	2	ox
DR17Aii*	84658	SB69-198	Marginal basin?	170.2254	-26.0258	3539	Cook Fracture Zone, NW scarp	Doleritic basalt joint block	N4	10	0	-	15	pl-cpx-ol-gl	3	clay
DR18Aii*	84670	SB69-071	Low-med K arc	170.3474	-26.0882	3457	Cook Fracture Zone, NW scarp	Basalt joint block in basaltic breccia	N6	23	25	pl	18	pl-cpx-gl-ox-bi?	1.5	clay
DR18Aii*	84670	SB69-200	Low-med K arc	170.3474	-26.0882	3457	Cook Fracture Zone, NW scarp	Basalt joint block in basaltic breccia	N6	23	25	pl	18	pl-cpx-gl-ox-bi?	1.5	clay
DR19D	84678	SB69-203	Low-med K arc	170.4683	-26.1529	3028	Cook Fracture Zone, NW scarp	Basalt	N6	10	25	pl	10	pl-cpx-ox-gl-bi?	1.5	zeol
DR19D	84678	SB69-073	Low-med K arc	170.4683	-26.1529	3028	Cook Fracture Zone, NW scarp	Basalt	N6	10	25	pl	10	pl-cpx-ox-gl-bi?	1.5	zeol
DR20A	84688	SB69-021	Marginal basin	170.8399	-25.9939	2651	Loyalty Ridge	Weathered basalt	5YR 4/1	8	1	ol	30	pl-px?-ol-ox	3	clay
DR21D	84691	SB69-049	Marginal basin	171.4284	-26.5021	3385	South Fiji Basin	Aphyric basalt	N5	15	0	-	5	pl-cpx-ol-ox	1	iddg
DR22A	84694	SB69-024	Intraplate	171.9271	-26.6865	2849	South Fiji Basin	Pillow basalt with glassy rind	N5	10	4	ol-pl	75	gl-pl-ox	2	clay, ox
DR24Ai	84705	SB69-214	Low-med K arc	171.9098	-27.2128	3660	Cagou Trough, E side	Basaltic andesite ?flow with glassy rind	N5	0	14	pl-ol-cpx	90	gl-pl-cpx	1	devit gl
DR24Bii	84707	SB69-205	Low-med K arc?	171.9098	-27.2128	3660	Cagou Trough, E side	Doleritic basalt	N5	0	0	-	5	pl-cpx-ol-gl?	2	clay after gl
DR24Bii	84707	SB69-075	Low-med K arc?	171.9098	-27.2128	3660	Cagou Trough, E side	Doleritic basalt	N5	0	0	-	5	pl-cpx-ol-gl?	2	clay after gl
DR25Ai	84711	SB69-028	Low-med K arc?	171.9309	-27.2067	3002	Cagou Trough, E side	Aphyric basaltic trachyandesite	N6	0	2	pl-cpx	5	pl-cpx-ox	4	clay, ox, ser
DR25Cii*	84714	SB69-207	Low-med K arc	171.9309	-27.2067	3002	Cagou Trough, E side	Doleritic basaltic andesite	N6	0	0	-	0	pl-cpx-ol?-ox	4	clay, act, ab
DR26Aiv	84722	SB69-085	High K-shosh	171.9461	-27.2030	2419	Cagou Trough, E side	Andesite	N5	0	30	pl-hb-(bi)-ox	0	fsp, bi	1.5	ox, clay
DR26Aiv	84722	SB69-087	High K-shosh	171.9461	-27.2030	2419	Cagou Trough, E side	Andesite	N5	0	30	pl-hb-(bi)-ox	0	fsp, bi	1.5	ox, clay
DR26Aiv	84722	SB69-217	High K-shosh	171.9461	-27.2030	2419	Cagou Trough, E side	Andesite	N5	0	30	pl-hb-(bi)-ox	0	fsp, bi	1.5	ox, clay
DR27B	84733	SB69-053	Marginal basin	171.9853	-26.8770	3771	South Fiji Basin	Basalt with palagonite rind	5Y 4/6	3	1	ol	30	pl-pyx-ox	2	clay, zeol
DR28C	84740	SB69-031	High K-shosh	171.9934	-27.3573	3060	Cagou Trough, E side	Basalt	5Y 2/1	5	6	ol (iddg)	10	pl-cpx-ox-ox-gl	1.5	clay, zeol
DR29A	84744	SB69-035	High K-shosh	172.0336	-27.3615	2145	Cagou Trough, E side	Basaltic trachyandesite	5Y 6/1	0	2	ol-cpx	0	pl-px-ol-ox	1.5	clay
DR30Ai	84749	SB69-210	Marginal basin	173.3406	-27.3485	3954	South Fiji Basin	Basalt with glassy rind	N5	1	20	pl-cpx-ol	20	gl-px-ox	1	zeol, clay
DR30Ai	84749	SB69-078	Marginal basin	173.3406	-27.3485	3954	South Fiji Basin	Basalt with glassy rind	N5	1	20	pl-cpx-ol	20	gl-px-ox	1	zeol, clay
DR31Ai	84754	SB69-038	Marginal basin	172.9846	-27.3491	3920	Cook Fracture Zone, SE scarp	Basalt with glassy rind	N5	3	16	pl	5	pl-px-ox-gl	1	zeol?, clay
DR31Ai	84754	SB69-219	Marginal basin	172.9846	-27.3491	3920	Cook Fracture Zone, SE scarp	Basalt with glassy rind	N5	3	16	pl	5	pl-px-ox-gl	1	zeol?, clay
DR33Ai	84761	SB69-080	Low-med K arc	173.0522	-28.3423	1391	Three Kings Ridge	Basalt	N6	0	30	pl>ol	2	pl-pyx-ox=kl	1	zeol
DR33Ai	84761	SB69-212	Low-med K arc	173.0522	-28.3423	1391	Three Kings Ridge	Basalt	N6	0	30	pl>ol	2	pl-pyx-ox=kl	1	zeol
DR36B	84771	SB69-055	Marginal basin?	173.0451	-27.5167	3936	Three Kings Ridge	Columnar-jointed aphyric basalt	N5	30	0	-	30	pl-cpx-ox-ol	2.5	iddg, clay
DR37Ai	84775	SB69-042	Marginal basin?	172.7205	-27.2333	4157	Cook Fracture Zone, SE scarp	Columnar-jointed aphyric basalt	N4	5	0	-	15	pl-cpx-ox-gl	2.5	iddg, clay
DR38A	84781	SB69-059	Low-med K arc?	172.7225	-27.4344	2072	Above Cook Fracture Zone, SE scarp	V altered hyaloclastite breccia	5YR 8/4	45	0	-	70	pl-ox-gl	3	clay, zeol
DR39C*	84785	SB69-221	Marginal basin	172.4261	-27.1165	3957	Cook Fracture Zone, SE scarp	Dolerite	5YR 2/1	5	0	-	10	pl-cpx-ol-gl	3	clay, zeol
DR40C*	84792	SB69-222	High K-shosh	172.0745	-27.0257	3721	Cook Fracture Zone, SE scarp	Basaltic andesite volcanic breccia clast	5Y 7/2	35	30	pl>cpx-ol	70	pl-cpx-ox	1	clay
DR40C*	84792	SB69-082	High K-shosh	172.0745	-27.0257	3721	Cook Fracture Zone, SE scarp	Basaltic andesite volcanic breccia clast	5Y 7/2	35	30	pl>cpx-ol	70	pl-cpx-ox	1	clay
DR41Ai	84798	SB69-061	High K-shosh	170.0669	-24.2663	2861	Loyalty Ridge	Basalt joint block with glassy rind	N7	10	18	cpx-ol(iddg)-pl	30	pl-px-ox-gl	2	clay, zeol, iddg
DR43Ai	84812	na	Intraplate	166.4114	-22.8864	2299	Norfolk Ridge, canyon	Basaltic trachyandesite	5YR 2/1	35	20	pl-ol	90-100	bm clays, zeol, ox	3	clay zeol ox
BATHUS-777	na	SB69-094	High K-shosh	170.0998	-24.7186	800	Loyalty Ridge	Basaltic andesite	10R 6/6	15	20	bi-pl-ox	50	pl-gl	?	clay
SEAPSO-D2C	na	SB69-064	Low-med K arc	166.7198	-16.1319	3400	Bougainville Seamount	Rhyolite ('chart' of Collet et al 1992)	5GY 6/1	0	5	pl>cpx>ox	30	pl-ox-gl	?	clay
SEAPSO-D2C	na	SB69-175	Low-med K arc	166.7198	-16.1319	3400	Bougainville Seamount	Rhyolite ('chart' of Collet et al 1992)	5GY 6/1	0	5	pl>cpx>ox	30	pl-ox-gl	?	clay
* Chemistry done on near-identical but separate hand sample in same dredge																
Mineral abbreviations: pl=plagioclase, ol=olivine, px=pyroxene, cpx=clinopyroxene, ox=orthopyroxene, hb=hornblende, bi=biotite, ox=FeTi oxide, gl=glass, gm=groundmass, zeo=zeolite, iddg=iddingsite, devit=devitrified, act=actinolite, ab=albite																
% modes are visual estimates from thin section																
Longitude, latitude and depth are estimates of mid-point of dredge track on sea floor, coordinates are in WGS84																

