APPENDIX 4: MICROPROBE ANALYSES OF OLIVINE

APPENDIX 4. MICROPROBE ANALYSES OF OLIVINE IN CAYMAN TROUGH PLUTONICS
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ANALYSIS	611-1-1 1	611-1-1 2	611-1-1 3	611-1-1 4	611-1-1 5	611-1-1 6	611-1-1 7	611-5-1 34
SiO2	38.58	38.57	38.97	39.11	38.91	39.12	39.37	38.64
TiO2	.05	.02	.05	.02	.04	.03	.03	.01
Al2O3	.02	.00	.01	.00	.01	.02	.01	.06
FeO*	18.29	18.31	18.31	18.02	17.75	18.13	18.03	22.33
MnO	.39	.40	.41	.36	.36	.33	.34	.23
MgO	43.63	43.22	42.95	43.24	42.88	42.80	43.31	37.89
CaO	.03	.03	.03	.03	.03	.03	.03	.00
TOTAL	100.89	100.55	100.83	100.78	99.98	100.46	101.12	99.10
NO. OF IONS/4 OXYGENS								
SI	.976	.981	.989	.989	.991	.993	.992	1.013
TI	.001	.000	.001	.000	.001	.001	.001	.000
AL	.001	.000	.000	.000	.000	.001	.000	.000
FE	.388	.390	.389	.381	.378	.385	.380	.490
MN	.008	.009	.007	.008	.008	.007	.007	.005
MG	1.644	1.638	1.624	1.630	1.628	1.619	1.626	1.480
CA	.001	.001	.001	.001	.001	.001	.001	.000
TOTAL CATIONS	3.021	3.019	3.010	3.010	3.008	3.006	3.007	2.987
FO CONTENT	80.9	80.8	80.7	81.1	81.2	80.8	80.8	75.1

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ANALYSIS	611-5-2A 3U	611-5-2A 7U	611-5-2A 9U	611-5-2A 14U	611-6-1 1	611-6-1 2	611-6-1 3	611-6-1 4
SIO2	37.59	36.33	36.87	37.73	39.61	39.45	39.44	39.40
TIO2	.02	.00	.00	.01	.02	.01	.01	.00
AL2O3	.00	.00	.00	.00	.00	.00	.01	.01
FEO*	22.08	22.06	21.71	22.00	16.25	16.43	16.41	16.52
MNO	.24	.22	.21	.36	.33	.31	.34	.32
MGO	39.83	39.99	39.45	39.48	44.01	44.69	44.46	44.10
CAO	.00	.00	.00	.03	.04	.05	.05	.03
TOTAL	99.44	98.60	98.24	99.61	100.16	100.94	100.72	100.38
NO. OF IONS/4 OXYGENS								
SI	.964	.963	.977	.986	.997	.989	.991	.993
TI	.000	.000	.000	.000	.000	.000	.000	.000
AL	.000	.000	.000	.000	.000	.000	.000	.000
FE	.484	.489	.481	.481	.343	.345	.345	.348
MN	.005	.005	.005	.008	.007	.007	.007	.007
MG	1.543	1.580	1.559	1.538	1.655	1.670	1.664	1.657
CA	.001	.000	.000	.001	.001	.001	.001	.001
TOTAL CATIONS	3.016	3.037	3.023	3.014	3.003	3.011	3.009	3.007
FO CONTENT	76.1	76.4	76.4	76.2	82.8	82.9	82.8	82.6

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ANALYSIS	611-6-1 5	611-6-1 6	615-2-1 24	615-2-1 64	615-2-1 84	615-2-1 94	615-2-1 144	615-4-1 1
SIO2	39.00	39.37	40.19	39.72	39.56	39.46	40.05	37.76
TIO2	.01	.01	.04	.02	.00	.00	.06	.03
AL2O3	.00	.00	.00	.00	.00	.00	.00	.03
FeO*	16.35	16.29	15.74	15.49	15.69	15.96	15.46	23.55
MNO	.29	.37	.26	.25	.29	.26	.38	.33
MgO	44.77	44.24	41.85	43.89	44.82	43.85	44.83	38.89
CAO	.04	.07	.03	.02	.01	.01	.02	.05
TOTAL	100.49	100.45	97.81	99.39	100.67	99.54	100.80	100.64
NO. OF IONS/4 OXYGENS								
SI	.990	.992	1.032	1.005	.992	1.000	.999	.983
TI	.000	.000	.001	.000	.000	.000	.001	.001
AL	.000	.000	.000	.000	.000	.000	.000	.001
FE	.342	.345	.338	.328	.335	.336	.323	.513
MN	.006	.006	.006	.005	.006	.006	.008	.007
MG	1.671	1.661	1.597	1.655	1.675	1.656	1.667	1.509
CA	.001	.002	.001	.001	.000	.000	.001	.001
TOTAL CATIONS	3.010	3.008	2.967	2.995	3.008	3.000	2.999	3.016
FO CONTENT	83.1	82.8	82.5	83.5	83.3	83.0	83.8	74.6

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ANALYSIS	615-4-1 2	615-4-1 3	615-4-1 4	615-4-1 5	615-4-1 6	615-4-1 8	615-4-1 9	615-4-1 44
SIO2	37.67	38.42	38.16	38.44	38.91	37.51	38.49	37.14
TIO2	.04	.05	.04	.04	.04	.04	.03	.04
AL2O3	.04	.01	.02	.00	.01	.00	.01	.00
FEO*	22.67	22.80	22.50	22.73	22.32	22.05	22.67	23.67
MNO	.36	.36	.35	.35	.35	.35	.32	.36
MGO	38.65	39.02	40.07	39.53	39.42	39.16	39.94	36.70
CAO	.05	.05	.04	.04	.04	.04	.05	.04
TOTAL	99.79	100.71	101.18	101.13	101.09	99.15	101.51	97.95
NO. OF IONS/4 OXYGENS								
SI	.986	.995	.983	.991	1.000	.986	.988	.996
TI	.001	.001	.001	.001	.001	.001	.001	.001
AL	.001	.000	.001	.000	.000	.000	.000	.000
FE	.496	.494	.485	.490	.480	.485	.487	.531
MN	.008	.008	.008	.008	.008	.008	.007	.008
MG	1.507	1.505	1.538	1.518	1.510	1.534	1.528	1.466
CA	.001	.001	.001	.001	.001	.001	.001	.001
TOTAL CATIONS	3.009	3.004	3.016	3.009	2.999	3.014	3.011	3.004
FO CONTENT	75.2	75.3	76.0	75.6	75.9	76.0	75.8	73.4

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ANALYSIS	615-4-1 5U	615-4-1 8U	615-4-1 11U	615-4-1 16U	620-5-1 19U	620-5-1 21U	621-3-1 1	621-3-1 2
SIO2	37.98	36.87	38.28	38.83	37.32	38.05	39.07	39.62
TIO2	.02	.04	.02	.02	.04	.00	.01	.02
AL2O3	.00	.00	.00	.00	.00	.00	.00	.03
FEO*	23.86	23.71	23.26	24.04	26.27	24.39	14.03	13.96
MNO	.41	.42	.38	.45	.46	.41	.16	.20
MGO	38.24	37.50	39.45	37.41	36.02	38.36	45.91	45.85
CAO	.07	.06	.07	.06	.02	.05	.03	.04
TOTAL	100.59	98.60	101.44	100.81	100.13	101.26	99.21	99.74
NO. OF IONS/4 OXYGENS								
SI	.992	.954	.956	1.009	.990	.988	.986	.993
TI	.000	.001	.000	.000	.001	.000	.000	.000
AL	.000	.000	.000	.000	.000	.000	.000	.001
FE	.517	.513	.501	.522	.583	.530	.296	.293
MN	.009	.009	.008	.010	.010	.009	.003	.004
MG	1.488	1.446	1.515	1.448	1.424	1.484	1.727	1.713
CA	.002	.002	.002	.002	.001	.001	.001	.001
TOTAL CATIONS	3.008	2.925	3.014	2.991	3.009	3.012	3.014	3.006
FO CONTENT	74.2	73.8	75.1	73.5	71.0	73.7	85.4	85.4

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ANALYSIS	621-3-1 3	621-3-1 4	621-3-1 5	621-3-1 6	621-3-2 1	621-3-2 2	621-3-2 3	621-3-2 4
SIO2	40.07	39.53	40.11	39.61	39.97	40.26	40.00	40.50
TIO2	.02	.00	.02	.00	.02	.01	.02	.04
AL2O3	.01	.01	.02	.01	.00	.00	.00	.00
FEO*	14.15	13.47	13.74	13.32	13.98	14.13	13.92	14.33
MNO	.24	.19	.22	.18	.27	.27	.20	.25
MGO	46.51	45.57	46.00	46.29	45.98	46.02	46.10	45.96
CAO	.04	.03	.03	.00	.03	.02	.02	.03
TOTAL	101.04	98.80	100.14	99.41	100.25	100.71	100.26	101.11
NO. OF IONS/4 OXYGENS								
SI	.992	.998	.994	.993	.996	.999	.996	1.001
TI	.000	.000	.000	.000	.000	.000	.000	.001
AL	.000	.000	.001	.000	.000	.000	.000	.000
FE	.293	.284	.285	.279	.292	.293	.290	.296
MN	.005	.004	.005	.004	.006	.006	.004	.005
MG	1.716	1.714	1.721	1.730	1.708	1.702	1.712	1.694
CA	.001	.001	.001	.000	.001	.001	.001	.001
TOTAL CATIONS	3.008	3.002	3.006	3.007	3.003	3.001	3.003	2.998
FO CONTENT	85.4	85.8	85.8	86.1	85.4	85.3	85.5	85.1

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ANALYSIS	621-3-2 5	621-3-2 6	622-1-1 1	622-1-1 2	622-1-1 3	622-1-1 4	622-1-1 5	622-1-1 6
SIO2	39.61	40.13	40.37	40.25	39.68	40.40	40.39	41.00
TIO2	.02	.03	.01	.03	.09	.03	.03	.02
AL2O3	.00	.00	.00	.00	.00	.00	.00	.00
FEO*	14.81	14.22	14.16	13.93	13.63	13.72	13.72	13.53
MNO	.26	.24	.27	.26	.30	.22	.27	.24
MGO	45.26	46.44	46.50	46.56	46.67	46.52	46.44	46.24
CAO	.04	.06	.02	.03	.02	.05	.06	.03
TOTAL	99.89	101.12	101.33	101.36	100.59	100.94	100.91	101.06
NO. OF IONS/4 OXYGENS								
SI	.993	.993	.996	.992	.990	.998	.998	1.009
TI	.000	.001	.000	.001	.002	.001	.001	.000
AL	.000	.000	.000	.000	.000	.000	.000	.000
FE	.311	.294	.292	.287	.283	.284	.284	.279
MN	.006	.005	.006	.005	.006	.005	.006	.005
MG	1.695	1.712	1.710	1.721	1.727	1.713	1.711	1.696
CA	.001	.002	.001	.001	.001	.001	.002	.001
TOTAL CATIONS	3.007	3.007	3.004	3.007	3.008	3.001	3.001	2.990
FO CONTENT	84.5	85.3	85.4	85.7	85.9	85.8	85.8	85.9

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ANALYSIS	739-1-1 2	739-1-1 3	739-1-1 4	739-1-1 5	739-1-1 6	739-2-2 1	739-2-2 2	739-2-2 3
SiO2	39.80	39.94	39.15	39.51	39.91	40.48	40.89	40.97
TiO2	.01	.04	.07	.05	.05	.02	.03	.03
Al2O3	.03	.06	.02	.01	.00	.01	.00	.05
FeO*	14.42	13.82	13.96	13.97	14.15	12.28	12.27	12.21
MnO	.23	.24	.33	.26	.27	.26	.21	.27
MgO	46.08	45.32	45.55	45.40	45.00	46.94	47.70	47.86
CaO	.02	.03	.04	.04	.01	.00	.00	.02
TOTAL	100.45	99.43	99.16	99.24	100.39	99.99	101.10	101.41
NO. OF IONS/4 OXYGENS								
Si	.992	1.003	.989	.996	.994	1.003	1.001	1.000
Ti	.000	.001	.001	.001	.001	.000	.001	.001
Al	.001	.002	.001	.000	.000	.000	.000	.001
Fe	.296	.290	.295	.295	.295	.254	.251	.249
Mn	.005	.005	.007	.006	.006	.005	.004	.006
Mg	1.711	1.695	1.716	1.705	1.700	1.733	1.741	1.741
Ca	.001	.001	.001	.001	.000	.000	.000	.001
TOTAL CATIONS	3.008	2.996	3.010	3.003	3.002	2.997	2.998	2.999
FO CONTENT	85.3	85.4	85.3	85.3	85.2	87.2	87.4	87.5

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ANALYSIS	739-2-2 4	739-2-2 5	739-2-2 6	739-2-2 7	739-2-2 8	739-3-1 1	739-3-1 2	739-3-1 3
SIO2	40.01	40.66	39.91	39.51	40.57	39.63	39.80	39.22
TIO2	.02	.03	.02	.03	.03	.04	.03	.07
AL2O3	.00	.01	.02	.02	.01	.02	.04	.01
FEO*	12.21	10.34	12.35	11.90	11.90	16.76	16.46	16.62
MNO	.24	.23	.26	.28	.23	.32	.34	.32
MGO	47.29	48.03	47.65	47.22	47.64	44.22	44.31	44.20
CAO	.03	.00	.02	.04	.02	.03	.07	.05
TOTAL	99.80	101.32	100.23	99.00	100.40	101.02	101.05	100.49
NO. OF IONS/4 OXYGENS								
SI	.994	.995	.989	.990	.999	.993	.996	.989
TI	.001	.001	.000	.001	.001	.001	.001	.001
AL	.000	.000	.001	.001	.000	.001	.001	.000
FE	.254	.253	.256	.249	.245	.351	.344	.351
MN	.005	.005	.005	.006	.005	.007	.007	.007
MG	1.751	1.751	1.759	1.763	1.749	1.652	1.652	1.661
CA	.001	.000	.001	.001	.001	.001	.002	.001
TOTAL CATIONS	3.006	3.004	3.011	3.010	3.000	3.006	3.003	3.010
FO CONTENT	87.3	87.4	87.3	87.6	87.7	82.5	82.8	82.6

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ANALYSIS	739-3-1 4	739-6-1 1	739-6-1 2	739-6-1 3	739-6-1 4	739-6-1 5	739-6-1 6	741-3-1 2
SiO2	39.5[illegible]	40.17	39.61	40.02	40.14	39.83	39.52	38.97
TiO2	.[illegible]	.00	.02	.00	.00	.00	.00	.04
AL2O3	.03	.00	.03	.01	.00	.00	.01	.00
FEO*	16.71	17.50	16.90	16.95	17.11	18.06	17.75	19.83
MNO	.36	.32	.30	.24	.33	.39	.29	.31
MGO	44.77	43.47	43.60	43.87	43.27	43.01	43.11	41.77
CAO	.0[illegible]	.03	.02	.03	.01	.02	.03	.03
TOTAL	101.52	101.44	100.48	101.12	100.86	101.31	100.71	100.95
NO. OF IONS/4 OXYGENS								
SI	.987	1.003	.998	1.001	1.007	1.001	.998	.992
TI	.001	.000	.000	.000	.000	.000	.000	.001
AL	.001	.000	.001	.000	.000	.000	.000	.000
FE	.349	.366	.356	.355	.359	.380	.375	.422
MN	.00[illegible]	.007	.006	.005	.007	.008	.006	.007
MG	1.665	1.620	1.638	1.636	1.619	1.610	1.622	1.585
CA	.001	.001	.001	.001	.000	.001	.001	.001
TOTAL CATIONS	3.012	2.997	3.001	2.998	2.993	2.999	3.002	3.007
FO CONTENT	82.7	81.6	82.1	82.2	81.9	80.9	81.2	79.0

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ANALYSES	741-3-1 3	741-3-1 4	741-3-1 5	741-3-1 6	742-5-2 1	742-5-2 2	742-5-2 3
SiO2	39.26	39.31	38.97	39.12	37.64	37.28	37.67
TiO2	.03	.02	.03	.02	.04	.05	.03
Al2O3	.00	.00	.00	.00	.00	.00	.00
FeO*	19.73	19.82	18.96	16.85	24.73	24.99	25.62
MnO	.28	.27	.25	.33	.40	.39	.40
MgO	41.73	41.73	42.26	42.30	37.57	36.54	37.18
CaO	.02	.02	.05	.03	.02	.02	.03
TOTAL	100.99	101.17	100.12	100.35	100.60	99.27	100.33
NO. OF IONS/4 OXYGENS							
Si	.996	.997	.987	.997	.991	.992	.991
Ti	.001	.000	.001	.000	.001	.001	.001
Al	.000	.000	.000	.000	.000	.000	.000
Fe	.419	.421	.406	.402	.542	.556	.550
Mn	.006	.006	.005	.007	.009	.009	.009
Mg	1.581	1.578	1.612	1.595	1.466	1.449	1.457
Ca	.001	.001	.001	.001	.001	.001	.001
TOTAL CATIONS	3.003	3.002	3.012	3.003	3.009	3.007	3.009
FO CONTENT	79.1	78.9	79.9	79.9	73.0	72.3	72.6