

APPENDIX 5: MICROPROBE ANALYSES OF PYROXENES

APPENDIX 3. MICROPROBE ANALYSES OF PYROXENES IN CATHAN TROUGH PLUTONICS

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ANALYSIS	611-1-1 2-4	611-1-1 2-5	611-1-1 2-6	611-1-1 1-7	611-1-1 1-9	611-1-1 1-11	611-3-1C 1-1
SiO2	52.83	52.13	54.11	53.23	51.28	51.28	49.11
TiO2	.90	.74	.36	.43	.69	.50	1.12
Cr2O3	3.74	2.72	1.80	1.24	3.11	2.15	4.77
Al2O3	.37	.39	.14	.18	.31	.29	.57
FeO*	4.20	4.26	3.75	4.50	4.98	4.92	5.92
MnO	.14	.16	.15	.18	.17	.18	.17
MgO	16.12	14.64	17.11	16.56	15.87	15.45	15.26
CaO	22.86	22.33	24.21	24.02	21.76	23.00	20.44
Na2O	.40	.39	.12	.20	.42	.46	.29
TOTAL	101.21	95.59	103.76	101.05	96.69	98.23	98.36

NO. OF IONS/6 OXYGENS

Si	1.896	1.915	1.902	1.954	1.911	1.925	1.841
Ti	.024	.020	.010	.012	.019	.014	.031
Cr	.160	.118	.043	.053	.136	.095	.211
Al	.111	.011	.040	.005	.009	.009	.017
Fe	.127	.125	.114	.137	.135	.154	.186
Mn	.004	.005	.005	.006	.005	.006	.005
Mg	.871	.911	.922	.897	.890	.864	.892
Ca	.906	.879	.942	.935	.887	.925	.821
Na	.020	.028	.039	.014	.030	.033	.033
TOTAL CATIONS	4.003	4.014	4.009	4.012	4.012	4.026	4.025
Si	47.0	45.9	47.6	47.5	45.6	47.6	43.2
Ca	40.2	47.6	46.6	45.6	46.2	44.5	47.0
FS	6.7	6.5	5.6	6.9	8.1	7.9	9.8

APPENDIX 3. MICROPROBE ANALYSES OF PYROLENES IN CAYMAN TROUGH FLUITONICS

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ANALYSIS	611-3-1E		611-3-1E		611-3-1C		611-4-1AP		611-4-1AP	
	2-3	2-4	2-4	2-4	2-4	2-4	10*	10*	10*	10*
SiO2	49.27	49.15	49.29	51.88	51.29	49.75	49.77	49.77	49.77	49.77
TiO2	.93	1.56	.91	1.17	1.13	.28	.15	.15	.15	.15
CR2O3	4.62	4.57	3.62	3.17	4.49	.36	.57	.57	.57	.57
AL2O3	.45	.44	.23	.10	.63	---	---	---	---	---
FeO*	6.40	6.26	6.64	7.95	5.05	26.05	27.02	27.02	27.02	27.02
MNO	.6	.13	.15	.19	.14	.86	.92	.92	.92	.92
MgO	16.27	16.18	16.16	14.71	16.01	18.20	18.80	18.80	18.80	18.80
CaO	20.94	20.36	20.39	19.18	20.06	2.40	2.06	2.06	2.06	2.06
MAZO	.31	.29	.28	.25	.35	.02	.00	.00	.00	.00
TOTAL	98.14	98.24	98.19	98.60	100.54	98.36	99.27	99.27	99.27	99.27

NO. OF IONS/6 OXYGENS

SI	1.944	1.845	1.865	1.936	1.869	1.945	1.934	1.934	1.934	1.934
TI	.245	.330	.246	.033	.031	.006	.004	.004	.004	.004
CR	.205	.202	.170	.139	.193	.017	.026	.026	.026	.026
AL	.015	.013	.007	.003	.018	---	---	---	---	---
FE	.190	.190	.209	.248	.172	.852	.879	.879	.879	.879
MN	.006	.004	.005	.006	.004	.028	.030	.030	.030	.030
PU	.900	.905	.908	.181	.913	1.091	1.089	1.089	1.089	1.089
CA	.822	.819	.822	.767	.763	.101	.086	.086	.086	.086
NA	.022	.021	.020	.018	.020	.002	.000	.000	.000	.000
TOTAL_CATIONS	4.231	4.028	4.021	3.962	4.237	4.091	4.048	4.048	4.048	4.048
CU	42.0	42.8	42.4	41.8	41.9	4.9	4.2	4.2	4.2	4.2
EN	47.1	47.3	46.8	44.6	48.9	53.4	53.0	53.0	53.0	53.0
FS	10.0	9.9	10.6	13.5	9.2	41.7	42.8	42.8	42.8	42.8

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ANALYSIS	611-4-11P 3U 51.42	611-4-11P 4U 51.27	611-4-11P 5U 51.34	611-4-11P 8U 51.27	611-4-11P 12U 51.37	611-4-11P 17U 51.22	611-4-11P 18U 51.67
SiO2	51.42	51.27	51.34	51.27	51.37	51.22	51.67
TiO2	.06	.00	.15	.09	.25	.12	.11
Cr2O3	.04	.03	.03	.17	.05	.35	.64
Al2O3	—	—	—	—	—	—	—
FeO*	28.49	12.40	12.72	28.23	12.52	27.26	12.57
MnO	.97	.38	.45	.89	.44	.92	.39
MgO	18.52	12.62	12.53	18.15	12.37	18.62	12.92
CaO	1.21	20.75	23.47	1.62	21.25	2.02	20.08
Na2O	.02	.46	.47	.00	.47	.02	.41
TOTAL	99.99	98.21	98.16	100.42	99.62	100.29	99.61

NO. OF IONS/6 OXYGENS

Si	1.953	1.963	1.951	1.970	1.961	1.958	1.974
Ti	.002	.000	.004	.003	.007	.003	.003
Cr	.011	.038	.047	.008	.047	.016	.029
Al	—	—	—	—	—	—	—
Fe	.922	.401	.412	.908	.393	.875	.400
Mg	.832	.612	.615	.629	.614	.630	.613
Mn	1.008	.727	.724	1.040	.702	1.064	.732
Ca	.050	.860	.850	.067	.867	.083	.843
Na	.000	.034	.035	.000	.035	.001	.030
TOTAL CATIONS	4.019	4.035	4.039	4.023	4.046	4.031	4.024
SiO	2.5	43.3	42.6	3.3	44.2	4.1	42.7
EN	52.4	36.6	36.5	51.6	35.8	52.6	37.1
FS	45.2	20.2	20.7	45.1	20.0	43.3	20.3

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ANALYSIS	611-5-1 84	611-5-1 54	611-5-1 84	611-5-1 104	611-5-1 124	611-5-1 144	611-5-1 154
SiO2	52.62	51.93	52.16	52.59	52.11	52.34	52.12
TiO2	.76	.91	.81	.91	.85	.88	.70
CR2O3	2.75	2.73	2.58	2.48	2.68	2.34	2.18
AL2O3	---	---	---	---	---	---	---
FeO*	6.12	6.01	6.01	6.05	5.93	6.54	6.23
MnO	.14	.13	.10	.15	.11	.15	.16
MgO	15.61	15.60	15.95	15.96	16.13	16.74	16.15
CaO	21.47	21.60	21.49	21.67	21.43	19.78	21.44
Na2O	.45	.44	.46	.38	.42	.36	.39
TOTAL	100.11	99.35	99.56	100.19	99.66	99.13	99.37

NO. OF IONS/6 CATIONS

Si	1.937	1.923	1.926	1.930	1.922	1.936	1.931
Ti	.021	.025	.022	.025	.024	.024	.020
CR	.120	.119	.112	.107	.117	.102	.095
AL	---	---	---	---	---	---	---
Fe	.168	.186	.196	.186	.163	.202	.193
Mn	.004	.004	.003	.005	.003	.005	.005
Mg	.853	.861	.878	.873	.887	.923	.892
Ca	.842	.857	.850	.852	.847	.784	.851
Na	.032	.032	.033	.027	.030	.026	.028
TOTAL CATIONS	3.983	4.008	4.011	4.005	4.012	4.002	4.016
Si	44.7	45.0	44.4	44.6	44.2	41.1	44.0
EN	45.3	45.2	45.9	45.7	46.3	48.4	46.1
FS	10.0	9.8	9.7	9.7	9.5	10.6	10.0

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SiO2	.67	.86	.52	.87	.76	.43	.74
TiO2	2.12	2.26	2.47	2.67	2.43	1.26	2.48
Cr2O3	---	---	---	---	---	---	---
Al2O3	5.79	6.01	5.57	6.02	6.59	13.51	6.12
FeO*	.15	.35	.06	.22	.18	.30	.22
MgO	16.11	15.52	15.75	15.75	16.41	29.21	15.63
CaO	21.60	22.47	22.52	21.79	19.70	1.00	21.92
Na2O	.34	.36	.32	.38	.38	.00	.38
TOTAL	99.79	96.58	98.02	99.48	99.01	100.34	99.63

NO. OF IONS/6 OXYGENS

Si	1.942	1.914	1.919	1.918	1.909	1.948	1.920
Ti	.019	.024	.015	.024	.021	.012	.021
Cr	.092	.100	.101	.117	.130	.053	.109
Al	---	---	---	---	---	---	---
Fe	.165	.189	.176	.187	.220	.403	.191
Mg	4.62	4.622	4.62	4.627	4.606	4.605	4.607
Mg	.864	.867	.863	.869	.913	1.552	.868
Ca	.858	.903	.908	.865	.793	.038	.875
Na	.024	.026	.023	.027	.025	.000	.027
TOTAL CATIONS	4.009	4.025	4.027	4.014	4.018	4.014	4.018
Si	44.4	46.1	46.2	45.0	41.2	1.9	45.2
EN	45.9	44.3	44.9	45.2	47.4	77.9	44.9
FS	9.0	9.6	8.9	9.7	11.4	20.2	9.9

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SiO2	52.42	52.13	53.18	52.69	52.74	51.99	52.58	52.58
TiO2	.85	.76	.61	.52	.46	.50	.55	.55
CR2O3	2.41	2.20	.14	2.31	1.64	1.95	1.78	1.78
AL2O3	---	---	.82	.18	.16	.14	.08	.08
FeO*	6.78	5.65	4.96	5.76	5.79	5.79	5.49	5.49
MnO	.23	.19	.19	.23	.20	.24	.18	.18
MgO	16.32	15.66	15.12	17.50	16.45	15.90	17.44	17.44
CaO	21.17	23.76	24.50	20.80	21.77	21.38	21.15	21.15
Na2O	.59	.48	.06	.41	.27	.34	.34	.34
TOTAL	100.18	100.13	98.34	100.42	99.48	98.21	99.60	99.60

NO. OF IONS/6 CYCLES

SI	1.923	1.922	1.997	1.923	1.949	1.945	1.936
TI	.016	.021	.000	.014	.013	.014	.015
CR	.015	.096	.006	.121	.071	.096	.077
AL	---	---	.002	.005	.005	.004	.002
FE	.209	.174	.156	.176	.179	.181	.169
MN	.147	.086	.016	.007	.036	.088	.006
MG	.876	.861	.854	.925	.936	.887	.957
CA	.835	.911	.984	.813	.862	.857	.834
NA	.522	.034	.004	.029	.019	.024	.024
TOTAL CATIONS	4.020	4.226	4.000	4.014	4.010	4.008	4.021
SiO	43.1	40.8	49.6	42.5	44.3	44.5	42.5
Ca	46.0	44.2	42.6	48.3	46.5	46.1	48.8
FS	2.0	8.9	7.8	9.2	9.2	9.4	8.6

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ANALYSIS

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SiO2	53.41	52.32	53.47	53.37	52.83	53.44	52.79
TiO2	.52	.55	.44	.54	.49	.53	.45
Cr2O3	1.71	1.74	1.99	1.76	1.64	1.57	1.60
Fe2O3	.11	.12	.12	.10	.09	.10	.12
FeO*	5.55	5.42	5.48	5.17	5.15	5.12	5.09
MnO	.24	.16	.20	.16	.23	.23	.19
MgO	17.24	17.11	17.10	17.38	17.23	17.64	16.81
CaO	21.52	21.93	21.97	21.68	21.48	21.68	21.59
Na2O	.32	.27	.29	.33	.30	.33	.32
TOTAL	100.20	99.59	100.55	100.49	99.53	100.74	98.97

NO. OF IONS/6 OXYGENS

Si	1.941	1.931	1.951	1.938	1.938	1.943	1.933
Ti	.014	.014	.012	*****	.014	.014	.012
Cr	.073	.076	.064	.075	.071	.072	.070
Al	.003	.004	.004	.003	.003	.003	.003
Fe	.172	.167	.167	.003	.159	.156	.157
Mn	.007	.005	.006	.003	.007	.007	.006
Mg	9.39	9.41	9.30	.005	9.62	9.56	9.28
Ca	8.96	8.67	8.59	.944	8.48	8.44	8.56
Na	.022	.019	.020	.846	.022	.023	.023
TOTAL CATIONS	4.617	4.625	4.617	4.623	4.622	4.617	4.609

Si	43.3	43.9	43.9	43.4	43.1	43.2	44.1
EN	48.2	47.6	47.5	48.5	48.9	48.9	47.8
FS	8.7	8.5	8.5	8.1	8.1	8.0	8.1



APPENDIX 5. MICROPROBE ANALYSES OF PYROXENES IN CAYMAN TROUGH PLUONIICS

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ANALYSIS	613-1A	613-1	613-1M	613-1-1	613-1-1	613-1-1	613-1-1
SiO2	52.05	51.50	51.35	50.58	49.62	51.28	51.75
TiO2	.49	.49	.33	.33	.35	.35	.1F
CaO	1.32	1.22	1.24	.39	1.09	.48	.91
Al2O3	.11	.01	.03	.03	.00	.00	.03
FeO*	5.31	12.96	13.47	27.10	24.74	26.88	12.23
MnO	.19	.53	.56	.99	.96	.93	.56
MgO	17.04	12.53	13.27	18.64	18.12	18.99	12.52
CaO	21.07	19.98	19.10	1.67	3.48	1.62	20.88
Na2O	.26	.39	.40	.00	.06	.01	.47
TOTAL	99.54	99.62	99.44	100.03	99.22	160.95	99.04

NO. OF IONS/6 OXYGENS

	613-1A	613-1	613-1M	613-1-1	613-1-1	613-1-1	613-1-1
Si	1.940	1.960	1.941	1.956	1.916	1.958	1.979
Ti	.014	.014	.016	.010	.040	.010	.005
Ca	.055	.055	.056	.017	.066	.022	.041
Al	.002	.000	.000	.001	.000	.000	.001
Fe	.164	.142	.147	.871	.799	.858	.391
Mn	.000	.017	.016	.032	.031	.030	.015
Mg	.931	.711	.761	1.069	1.043	1.076	.665
Ca	.825	.815	.751	.069	.144	.066	.856
Na	.001	.029	.030	.000	.004	.000	.035
TOTAL CATIONS	4.042	4.013	4.020	4.025	4.033	4.021	4.012
40	43.7	2.0	39.7	3.4	7.2	3.3	44.3
LN	47.0	36.7	38.6	53.2	52.5	53.8	35.5
FS	8.4	21.3	21.7	43.4	40.2	42.9	20.2

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ANALYSIS	613-2-1 814U	613-2-1 18U	613-2-1 1841	613-2-1 17	613-2-1 83	613-2-1 74	613-2-1 52	613-2-1 52	613-2-1 52
SiO2	53.1	52.31	51.45	53.81	52.29	54.21	54.21	52.84	52.84
TiO2	.00	.58	.50	.31	.03	.32	.32	.76	.76
Cr2O3	2.66	2.52	3.24	1.45	2.98	1.72	1.72	2.89	2.89
Al2O3	—	—	.49	.17	.20	.43	.20	.35	.35
FeO*	9.66	6.56	6.54	15.92	6.45	15.79	15.79	8.27	8.27
MnO	.37	.24	.14	.32	.42	.29	.29	.27	.27
MgO	16.72	15.80	15.37	26.27	15.27	26.39	26.39	14.23	14.23
CaO	17.12	21.84	21.34	1.01	21.63	1.06	1.06	20.81	20.81
Na2O	.55	.65	.52	.60	.43	.60	.60	.60	.60

TOTAL	101.25	101.00	100.13	99.25	100.32	99.57	99.57	101.17	101.17
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NO. OF IONS/e OXYGENS

Si	1.947	1.921	1.899	1.961	1.916	1.967	1.967	1.936	1.936
Ti	.216	.016	.025	.009	.023	.009	.009	.021	.021
Cr	.116	.125	.145	.062	.125	.056	.056	.125	.125
Al	—	—	.014	.005	.012	.006	.006	.012	.012
Fe	.257	.200	.202	.485	.198	.479	.479	.253	.253
Mn	.011	.017	.005	.010	.007	.009	.009	.018	.018
Mg	.605	.857	.645	1.427	.837	1.427	1.427	.781	.781
Ca	.691	.681	.843	.039	.832	.041	.041	.817	.817
Na	.033	.046	.037	.000	.031	.000	.000	.049	.049
TOTAL CATIONS	3.994	4.022	4.015	3.927	4.056	3.994	3.994	4.022	4.022

Si	36.9	44.6	44.6	2.0	45.2	2.1	2.1	44.1	44.1
Cr	4.8	44.9	44.7	73.1	44.3	73.3	73.3	42.2	42.2
Fe	14.7	10.5	10.7	24.9	10.5	24.6	24.6	13.7	13.7

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ANALYSIS	613-2-1 87	613-2-1 78	613-2-1 79	613-2-1 810	615-1-1 12	615-1-1 23
SiO2	52.41	52.22	52.41	52.24	52.64	52.60
TiO2	.63	.21	.79	.96	.72	.64
Cr2O3	3.21	.77	3.26	3.08	2.99	3.02
Al2O3	.47	.21	.43	.35	.40	.30
FeO*	6.92	7.10	7.62	6.60	5.37	4.69
MnO	.15	.20	.19	.18	.19	.14
MgO	15.45	15.45	15.07	15.07	15.38	15.98
CaO	9.00	23.00	20.40	22.11	22.53	22.44
Na2O	21.98	.25	.39	.58	.39	.41
TOTAL	.40	101.46	101.19	101.16	101.04	100.72

NO. OF IONS/6 OXYGENS

Si	1.915	1.978	1.912	1.909	1.919	1.923
Ti	.017	.026	.042	.020	.020	.023
Cr	.033	.133	.128	.128	.128	.130
Al	.014	.026	.012	.010	.009	.009
Fe	.211	.217	.233	.202	.167	.149
Mn	.065	.026	.026	.026	.026	.024
Mg	.618	.842	.853	.821	.943	.862
Ca	.857	.899	.798	.866	.877	.872
Na	.032	.018	.028	.041	.027	.029
TOTAL CATIONS	4.207	4.025	4.024	4.014	4.005	4.011

Si	45.6	45.9	42.3	45.9	46.3	46.4
Al	43.4	43.0	45.2	43.5	45.5	45.7
Fe	11.2	11.1	12.4	10.7	8.1	7.9

APPENDIX 5. MICROPROBE ANALYSES OF PYROXENES IN CAYMAN TROUGH PLUTONICS

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ANALYSIS	615-1-1 34	615-1-1 45	615-1-1 6	615-1-1 87	615-1-1 9	615-1-1 8714	615-21
SiO2	52.62	52.36	52.64	52.70	52.28	52.73	55.68
TiO2	.34	.56	.71	1.07	.85	.58	.22
Cr2O3	3.27	2.35	3.11	2.99	3.26	2.86	1.23
Al2O3	.6	.53	.45	.15	.22	.24	--
FeO*	4.92	5.13	4.81	5.69	5.37	5.6C	10.34
MnO	.14	.22	.16	.19	.13	.2C	.27
MgO	15.27	14.25	15.92	15.45	15.28	15.77	22.55
CaO	22.24	21.67	22.31	22.10	22.23	22.14	.67
Na2O	.41	.34	.36	.42	.40	.36	.00
TOTAL	100.23	100.51	100.56	100.76	100.61	100.54	98.08

NO. OF IONS/6 OXYGENS

Si	1.914	1.910	1.924	1.922	1.918	1.929	1.992
Ti	.045	.015	.019	.029	.023	.016	.009
Cr	.141	.144	.128	.128	.140	.123	.053
Al	.017	.015	.013	.004	.006	.007	--
Fe	.152	.157	.146	.173	.164	.171	.309
Mn	.004	.007	.005	.006	.004	.006	.008
Mg	.860	.889	.864	.840	.847	.859	1.576
Ca	.972	.947	.871	.864	.809	.867	.026
Na	.025	.024	.025	.030	.028	.026	.000
TOTAL CATIONS	4.566	4.507	4.590	4.927	4.900	4.903	3.973
SiO	46.7	44.7	46.3	46.0	46.2	45.7	1.4
SiM	3.0	47.0	45.9	44.7	45.1	45.3	82.5
FS	45.6	8.3	7.6	9.2	8.7	9.0	16.2

APPENDIX 5. MICROPROBE ANALYSES OF PYROXENES IN CAYMAN TROUGH PLUTONICS

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ANALYSIS	615-2-1	616-2-1	615-4-1	615-4-1	615-4-1	615-4-1
SiO2	56.25	51.90	52.37	51.15	51.01	51.35
TiO2	.35	.73	.03	.47	.44	.74
Cr2O3	1.05	2.55	2.53	3.16	3.42	2.70
Al2O3	---	---	---	---	---	---
FeO*	10.16	4.33	6.52	6.54	6.28	6.36
MgO	31.70	16.32	16.30	16.68	16.01	15.76
CaO	1.79	22.99	21.46	20.12	20.49	21.90
Na2O	0.22	0.38	0.37	0.38	0.45	0.45
TOTAL	100.00	99.28	100.00	98.83	99.82	99.49

1704  
51.35  
2741-1-1

NO. OF IONS/6 CATIONS

Si	1.963	1.917	1.916	1.909	1.906	1.909	1.901
Ti	.009	.020	.017	.011	.012	.021	.025
Cr	.047	.111	.122	.139	.148	.118	.146
Al	---	---	---	---	---	---	.016
Fe	.297	.134	.200	.030	.193	.198	.173
Mg	1.651	.699	.889	.004	.921	.066	.005
Ca	.030	.910	.941	.924	.858	.872	.845
Na	.000	.027	.026	.032	.032	.032	.038

TOTAL CATIONS	4.024	4.021	4.018	4.027	4.024	4.028	4.012
Si	1.5	46.8	43.7	41.6	42.0	44.9	47.1
Mg	83.5	46.3	46.1	47.9	47.9	48.9	43.7
FS	15.2	6.5	10.4	10.5	10.0	10.2	9.2

APPENDIX 9. MICROPROBE ANALYSES OF PYROXENES IN CATHAN TROUGH PLUTONICS

PAGE 13

ANALYSIS	615-4-1	615-4-1	615-4-1	615-4-1	615-4-1	615-4-1	615-4-1
SiO2	52.87	51.87	52.86	52.86	52.86	51.32	51.32
TiO2	.71	.54	.97	.53	.53	1.01	1.01
Cr2O3	3.07	4.23	4.24	3.99	2.81	3.19	3.19
Al2O3	.68	1.24	1.25	.94	.24	.42	.32
FeO*	5.23	6.18	5.64	5.42	5.66	6.20	5.50
MnO	.19	.16	.14	.13	.13	.21	.17
MgO	15.11	15.11	14.52	14.56	17.55	16.96	16.71
CaO	22.05	27.33	21.78	21.44	21.72	20.32	21.41
Na2O	.47	.51	.57	.54	.46	.43	.47

TOTAL	99.93	99.58	99.47	99.12	101.45	100.74	100.11
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NO. OF IONS/6 OXYGENS

Si	1.916	1.895	1.867	1.914	1.901	1.915	1.887
Ti	.020	.015	.013	.015	.025	.014	.028
Cr	.134	.184	.165	.170	.120	.135	.138
Al	.019	.036	.037	.027	.037	.012	.009
Fe	.172	.191	.175	.168	.172	.189	.169
Mg	2.596	2.595	2.585	2.594	2.594	2.607	2.605
Mg	.832	.832	.802	.804	.801	.816	.816
Ca	.870	.854	.865	.851	.854	.793	.843
Na	.034	.036	.041	.038	.033	.030	.034

TOTAL_CATIONS	4.602	3.998	4.010	3.992	4.026	4.012	4.029
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40	46.5	44.0	47.0	46.7	43.6	41.8	43.7
EN	44.2	45.5	43.6	44.1	47.6	48.3	47.5
FS	9.2	10.4	9.5	9.2	8.9	9.9	8.6

APPENDIX 5. MICROPROBE ANALYSES OF PYROXENES IN CAYMAN TROUGH PLUTONICS

PAGE 14

ANALYSIS	615-4-1 2-87	618-4-1 2-87	616-6-1 2-87	616-6-1 4	616-6-1 7	616-6-1 9	616-6-1 10
SiO2	51.47	51.57	51.92	50.56	52.56	51.98	51.17
TiO2	.63	1.00	.64	1.31	.58	.63	.40
CaO	2.75	3.12	3.35	4.75	3.01	3.59	3.56
Al2O3	.41	.34	.26	.34	.36	.45	.37
FeO*	6.62	5.80	5.62	6.73	5.91	5.68	6.46
MgO	.20	.20	.12	.14	.15	.12	.13
MnO	17.55	17.27	18.79	15.13	13.54	12.94	13.23
CaO	20.22	21.43	22.92	19.78	22.37	22.35	21.28
Na2O	.56	.41	.41	1.05	.37	.46	.52
TOTAL	100.07	100.95	99.77	98.61	98.66	98.21	98.12

NO. OF IONS/6 OXYGENS

Si	1.885	1.883	1.916	1.879	1.952	1.945	1.954
Ti	.023	.027	.018	.028	.016	.018	.011
Ca	.127	.134	.146	.209	.132	.158	.157
Al	.010	.010	.008	.010	.011	.013	.011
Fe	.205	.177	.210	.210	.164	.178	.202
Mg	.006	.006	.004	.004	.005	.004	.004
Mn	.928	.928	.814	.842	.752	.722	.739
Ca	.793	.828	.895	.763	.894	.896	.854
Na	.020	.029	.030	.076	.036	.033	.038
TOTAL CATIONS	4.035	4.032	4.024	4.021	3.973	3.968	3.970
Si	40.6	43.1	47.5	42.0	48.8	49.9	47.6
Ca	49.7	47.8	43.2	46.4	41.1	40.2	41.2
FS	1.5	9.1	9.2	11.6	10.1	9.9	11.3

APPENDIX 5. MICROPROBE ANALYSES OF PYROXENES IN CAYMAN TROUGH PLUONIICS

PAGE 19

ANALYSIS	616-6-1 #12	616-6-1 13	616-6-1 59.66	616-6-1 59.66	616-7-2B 51.38	616-7-2B 52.57	616-7-2B 51.35	616-7-2B 51.35	616-7-2B 51.84
SiO2	49	51	12	12	44	47	44	44	49
TiO2	3.72	3.24	1.17	1.17	3.15	3.16	3.36	3.16	3.16
Cr2O3	.52	.51	.31	.31	.25	.20	.26	.31	.31
Al2O3	4.7	4.22	3.76	3.76	8.72	7.59	8.00	9.56	9.56
FeO*	.14	.11	.12	.12	.27	.26	.26	.29	.29
MnO	15.74	13.66	14.74	14.74	13.85	14.89	14.82	14.41	14.41
CaO	22.41	22.87	24.21	24.21	21.33	21.78	21.32	20.00	20.00
MgO	.58	.36	.17	.17	.49	.49	.50	36.00	36.00
TOTAL	100.44	98.66	98.84	98.84	99.95	100.40	99.72		.44

NO. OF IONS/6 OXYGENS	616-6-1 #12	616-6-1 13	616-6-1 59.66	616-6-1 59.66	616-7-2B 51.38	616-7-2B 52.57	616-7-2B 51.35	616-7-2B 51.35	616-7-2B 51.84
Si	1.926	1.966	2.000	2.000	1.916	1.919	1.907	1.916	1.916
Ti	.013	.014	.003	.003	.014	.013	.012	.014	.014
Cr	.162	.141	.051	.051	.138	.137	.148	.139	.139
Al	.213	.015	.009	.007	.006	.006	.008	.009	.009
Fe	.144	.131	.122	.122	.272	.218	.249	.295	.295
Mn	.004	.003	.004	.004	.008	.008	.008	.009	.009
Mg	.57	.752	.813	.813	.770	.818	.801	.794	.794
Ca	.878	.906	.900	.900	.852	.867	.852	.806	.806
Na	.328	.027	.012	.012	.035	.035	.036	.031	.031
TOTAL CATIONS	4.005	3.856	3.973	3.973	4.014	4.014	4.021	4.013	4.013

SiO	46.7	50.6	50.6	50.6	45.0	45.3	44.8	42.5	42.5
Ca	45.7	42.1	42.9	42.9	40.7	43.1	42.1	41.9	41.9
FS	7.8	7.3	6.5	6.5	14.4	11.5	13.1	15.6	15.6



APPENDIX 5. MICROPROBE ANALYSES OF PYROXENES IN CAYMAN TROUGH PLUTONICS

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ANALYSIS	620-5-1 14	620-5-1 24	620-5-1 54	620-5-1 44	620-5-1 134	620-5-1 194
SiO2	52.19	52.71	52.26	52.21	51.60	51.14
TiO2	.89	.51	1.02	.76	.86	.82
Cr2O3	2.42	2.51	2.97	2.13	2.84	2.45
Al2O3						
FeO*	7.05	7.50	7.40	7.40	7.16	7.24
MnO	.23	.18	.24	.27	.28	.27
MgO	16.74	15.56	15.34	14.73	14.42	15.76
CaO	19.99	21.01	21.59	21.73	22.17	21.53
Na2O	.41	.48	.52	.47	.49	.51
TOTAL	100.53	101.16	100.98	99.65	100.05	99.82

NO. OF IONS/6 OXYGENS

Si	1.916	1.925	1.913	1.932	1.923	1.917	1.904
Ti	.025	.022	.028	.028	.021	.024	.023
Cr	.104	.106	.126	.110	.092	.124	.108
Al							
Fe	.235	.229	.216	.213	.228	.223	.226
Mn	.047	.036	.037	.036	.039	.036	.036
Mg	.869	.837	.837	.809	.809	.799	.875
Ca	.787	.822	.847	.863	.832	.863	.859
Na	.029	.034	.037	.038	.034	.035	.037
TOTAL CATIONS	4.042	4.015	4.013	4.005	4.027	4.014	4.017

Si	42.5	42.8	44.6	45.7	42.7	46.4	43.8
Fe	47.3	45.3	44.1	43.1	45.6	41.9	44.6
FS	12.1	11.9	11.4	11.3	11.7	11.7	11.5

APPENDIX 2. MICROPROBE ANALYSES OF PYROXENES IN CAYMAN TROUGH PLUTONICS

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ANALYSIS	620-5-1 174	621-3-1	621-3-1	621-3-1	621-3-2	621-3-2	621-3-2
SiO2	51.97	53.02	52.49	53.00	51.85	52.71	51.83
TiO2	.95	.71	.73	.68	.56	.64	.61
Cr2O3	2.76	3.41	3.41	3.34	3.02	4.33	3.09
Al2O3	—	.62	.58	.57	.83	.77	.87
FeO*	7.06	3.98	4.05	3.60	3.61	3.80	3.88
MnO	.24	.15	.15	.18	.12	.14	.18
MgO	16.99	16.10	15.96	15.97	16.22	15.78	16.21
CaO	28.29	22.84	22.39	22.80	23.12	22.54	23.09
Na2O	.53	.41	.38	.40	.39	.38	.40
TOTAL	100.49	101.23	100.13	100.56	99.92	99.09	100.26

NO. OF IONS/6 OXYGENS

Si	1.912	1.914	1.915	1.924	1.914	1.885	1.912
Ti	.020	.019	.020	.018	.016	.018	.017
Cr	.120	.145	.147	.139	.131	.190	.134
Al	—	.018	.017	.016	—	—	—
Fe	.236	.120	.124	.112	.118	.118	.120
Mn	.017	.034	.004	.006	.004	.004	.006
Mg	.862	.867	.863	.864	.893	.874	.890
Ca	.000	.883	.887	.887	.915	.898	.911
Na	.038	.029	.027	.028	.028	.027	.029
TOTAL CATIONS	4.021	4.000	3.997	3.994	4.018	4.015	4.018
40	41.7	47.2	46.9	47.6	47.5	47.5	47.4
EN	46.0	46.3	46.5	46.4	46.2	46.2	46.3
FS	12.3	6.4	6.6	6.0	6.1	6.2	6.2

APPENDIX 5. MICROPROBE ANALYSES OF PYROXENES IN CAYMAN TROUGH PLUIONICS

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ANALYSIS	621-6-1 2	621-6-1 3	621-6-1 5	623-6-1 34	623-6-1 94	623-6-1 104
SiO2	52.74	52.12	51.68	52.35	52.26	52.85
TiO2	.01	.54	1.05	.59	.51	.42
Cr2O3	3.49	3.41	3.84	2.75	2.82	2.94
Al2O3	.01	.93	.93	---	---	---
FeO*	4.80	4.50	4.84	5.24	5.95	4.68
MnO	<C	.18	.14	.21	.25	.23
MgO	15.79	15.73	13.90	16.41	17.33	17.16
CaO	22.52	21.70	23.70	21.18	20.37	22.51
Na2O	.71	1.10	.53	.54	.59	.44
TOTAL	101.45	100.41	101.48	98.27	99.88	101.23

NO. OF IONS/6 OXYGENS

Si	1.906	1.905	1.910	1.985	1.930	1.913
Ti	.016	.015	.016	.029	.016	.011
Cr	.149	.147	.145	.166	.120	.125
Al	.017	.027	.025	.027	---	---
Fe	.145	.137	.129	.149	.162	.142
Mn	.006	.006	.006	.004	.007	.007
Mg	.852	.868	.848	.760	.922	.926
Ca	.873	.850	.931	.837	.837	.873
Na	.050	.078	.039	.038	.039	.031
TOTAL CATIONS	4.017	4.033	4.008	3.999	4.012	4.028
MO	46.7	45.8	47.7	50.6	44.0	45.0
EN	45.5	46.8	45.4	41.3	47.4	47.7
FS	7.8	7.4	6.9	8.1	8.5	7.3

APPENDIX 5. MICROPROBE ANALYSES OF PYROXENES IN GAYMAN TROUGH PLUIONICS.

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ANALYSIS

	737-1-2 1	737-1-2 2	737-1-2 3	737-1-2 4	737-1-2 5	737-1-2 6	737-1-1 7
SiO2	54.84	54.73	55.6	52.50	51.81	52.70	52.19
TiO2	.39	.35	.35	.82	.88	.86	1.14
Cr2O3	.57	1.34	.95	2.43	2.52	2.54	3.54
Al2O3	.00	.33	.01	.05	.09	.03	.77
FeO*	17.86	16.04	17.67	7.84	8.27	8.02	3.72
MnO	.32	.43	.42	.24	.16	.24	.09
MgO	25.82	25.19	25.32	14.90	14.87	14.78	16.31
CaO	1.11	1.05	1.01	21.67	21.46	21.45	22.41
Na2O	.01	.81	.04	.39	.42	.58	.51

TOTAL	101.25	100.85	101.02	100.83	100.48	101.20	100.67
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NO. OF IONS/6 OXYGENS

Si	1.976	1.978	1.984	1.931	1.918	1.931	1.895
Ti	.011	.010	.009	.023	.024	.024	.031
Cr	.035	.004	.040	.105	.110	.110	.151
Al	.008	.001	.000	.002	.003	.001	.022
Fe	.537	.546	.538	.241	.256	.246	.113
Mn	.10	.012	.013	.007	.005	.008	.003
Mg	1.377	1.357	1.360	.817	.821	.808	.882
Ca	.043	.041	.039	.854	.851	.842	.872
Na	.001	.001	.003	.028	.030	.042	.036

TOTAL CATIONS	3.994	3.990	3.988	4.007	4.017	4.010	4.005
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Al	2.2	2.1	2.0	44.7	44.1	44.4	46.7
Fe	70.4	69.8	70.2	42.7	42.6	42.6	47.3
FS	27.4	28.1	27.8	12.6	13.3	13.0	6.0

APPENDIX 5. MICROPROBE ANALYSES OF PYROXENES IN GAYMAN TROUGH PLUTONICS

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ANALYSIS	759-1-1 3	759-1-1 4	759-2-2 1	759-2-2 2	759-2-2 3	759-3-1 2	759-3-1 2
SiO2	51.49	51.34	50.59	51.66	52.13	52.96	52.68
TiO2	1.35	1.35	1.51	1.19	.92	1.01	.95
Cr2O3	3.73	3.91	4.23	3.65	3.30	2.85	3.31
Al2O3	.80	.80	.46	.41	.41	.33	.45
FeO*	3.78	3.96	3.51	3.47	3.52	4.47	4.50
MnO	.13	.11	.15	.13	.19	.22	.20
MgO	15.81	15.15	15.57	16.07	16.45	15.81	16.11
CaO	23.15	23.22	23.02	22.53	23.29	23.16	22.73
Na2O	.56	.38	.42	.45	.38	.37	.49

TOTAL	100.62	100.41	99.35	99.56	100.39	101.18	101.42
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NO. OF IONS/6 OXYGENS

Si	1.875	1.883	1.870	1.895	1.900	1.920	1.905
Ti	.039	.037	.042	.033	.025	.028	.026
Cr	.160	.168	.175	.158	.140	.122	.141
Al	.023	.023	.013	.012	.012	.009	.013
Fe	.115	.121	.108	.106	.107	.135	.136
Mn	.014	.003	.005	.004	.006	.007	.006
Mg	.863	.825	.856	.878	.883	.854	.868
Ca	.907	.909	.910	.885	.910	.899	.880
Na	.040	.027	.030	.032	.027	.026	.035

TOTAL CATIONS	4.013	3.927	4.009	4.028	4.011	4.000	4.010
Si	45.0	49.0	48.5	47.3	47.9	47.6	46.7
Cr	45.9	44.5	45.7	47.0	46.5	45.2	46.1
FS	6.1	6.5	5.8	5.7	5.6	7.2	7.2

APPENDIX 5. MICROPROBE ANALYSES OF PYROXENES IN CAYMAN TROUGH PLUTONICS

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ANALYSIS

	739-3-1 4	739-3-1 5	739-3-1 6	739-3-1 7	739-4-2 3	739-4-2 4	739-4-2 5
SiO2	51.25	51.24	52.01	51.65	51.71	52.70	51.48
TiO2	1.29	1.15	1.10	.92	.55	.28	.45
Cr2O3	4.12	3.59	3.28	3.19	1.54	1.18	1.63
Al2O3	.80	.62	.54	.67	.00	.00	.01
FeO*	4.30	3.76	3.95	3.95	10.21	10.25	11.06
MnO	.19	.22	.12	.14	.42	.49	.46
MgO	16.27	15.65	15.76	15.27	13.84	13.66	13.73
CaO	19.84	23.23	23.19	22.55	21.89	21.78	20.81
Na2O	1.03	.35	.26	.25	.47	.40	.58
TOTAL	99.82	99.91	99.87	99.09	100.04	100.74	100.22

NO. OF IONS/6 OXYGENS

Si	1.683	1.885	1.905	1.905	1.944	1.964	1.937
Ti	.035	.032	.030	.026	.010	.008	.013
Cr	.178	.155	.141	.139	.068	.052	.072
Al	.243	.016	.016	.019	.000	.000	.000
Fe	.131	.115	.111	.106	.341	.320	.348
Mn	.040	.027	.024	.024	.014	.015	.015
Mg	.920	.857	.860	.878	.764	.759	.770
Ca	.768	.914	.910	.903	.874	.870	.839
Na	.173	.025	.018	.018	.034	.029	.042
TOTAL_CATIONS	4.019	4.609	3.996	3.999	4.029	4.517	4.036

Si	42.2	48.5	48.4	47.8	44.6	44.6	42.9
Ca	5.5	45.4	45.7	46.5	39.0	39.0	39.3
FS	7.2	6.1	5.9	5.6	16.4	16.4	17.6

APPENDIX 5. MICROPROBE ANALYSES OF PYROXENES IN CAYMAN TROUGH PLUTONICS

PAGE 22

ANALYSIS	739-4-2	739-4-2	739-6-1	739-6-1	739-6-1	739-6-1	739-6-1
SiO2	50.6	52.45	51.56	52.09	50.24	53.04	51.88
TiO2	.47	.16	.53	.41	1.05	.32	.43
Cr2O3	1.56	1.00	3.51	3.51	5.33	1.67	3.70
Al2O3	.00	.00	.74	.89	.63	.69	1.01
FeO*	10.92	9.78	4.30	4.48	5.00	4.92	4.62
MnO	.45	.51	.12	.14	.19	.22	.13
MgO	13.26	14.01	16.34	16.74	16.99	15.76	15.27
CaO	21.16	21.82	20.89	21.46	17.74	22.97	21.92
Na2O	.60	.31	.60	.37	1.02	.37	.56
TOTAL	99.06	100.03	99.34	100.09	99.11	100.16	100.10

NO. OF TMS/6 OXYGENS

	739-4-2	739-4-2	739-6-1	739-6-1	739-6-1	739-6-1	739-6-1
Si	1.931	1.966	1.898	1.903	1.855	1.987	1.900
Ti	.113	.035	.015	.011	.029	.009	.012
Cr	.071	.044	.152	.151	.232	.081	.160
Al	.000	.000	.027	.026	.024	.020	.029
Fe	3.48	3.06	1.34	1.37	1.72	1.51	1.42
Mn	.113	.015	.044	.004	.016	.007	.004
Mg	1.754	1.783	1.924	1.912	1.933	1.862	1.866
Ca	1.505	1.576	1.524	1.540	1.400	1.584	1.560
Na	.144	.022	.043	.026	.074	.027	.039
TOTAL CATIONS	4.852	4.819	4.820	4.810	4.825	4.807	4.813
SiO	44.5	44.6	43.0	44.5	38.8	47.1	46.1
Si	3.3	3.8	4.9	4.3	5.7	4.0	4.4
FS	17.7	15.6	7.1	7.2	9.6	7.9	7.6

APPENDIX 5. MICROPORE ANALYSES OF PYROXENES IN CAYMAN TROUGH PLUTONICS

PAGE 23

ANALYSIS

	739-6-1 7	739-6-1 8	739-6-1 9	740-7-1 10	740-7-1 11	740-7-1 12	740-7-1 13
SiO <sub>2</sub>	52.14	52.58	53.40	52.51	51.24	51.32	51.85
TiO <sub>2</sub>	.50	.44	.23	.15	.64	.62	.53
CR2O3	2.61	3.19	.98	1.99	3.90	2.81	2.32
AL2O3	.34	.60	.18	.35	.73	.60	.42
FeO*	6.61	4.93	4.04	5.17	4.80	4.40	4.82
MnO	.27	.18	.19	.22	.14	.22	.19
MgO	18.11	16.63	16.32	16.25	16.17	15.78	15.27
CaO	16.13	21.54	23.54	21.00	21.00	22.74	22.51
Na2O	.37	.33	.17	.33	.45	.40	.50
TOTAL	99.00	100.42	99.15	98.21	99.48	99.50	99.11

NO. OF IONS/6 OXYGENS

Si	1.928	1.916	1.974	1.960	1.883	1.916	1.924
Ti	.215	.012	.036	.034	.018	.017	.015
CR	.121	.137	.043	.074	.170	.122	.101
AL	.038	.017	.035	.010	.021	.017	.012
Fe	.192	.150	.143	.161	.148	.136	.157
Mg	2.97	2.83	2.86	2.87	2.84	2.80	2.76
Mn	.605	.593	.599	.594	.569	.568	.534
Ca	7.07	8.41	9.12	8.61	8.54	8.99	8.95
Na	.026	.023	.012	.024	.032	.029	.036
TOTAL CATIONS	3.294	4.006	4.592	4.006	4.020	4.011	4.023
XO	37.8	44.4	46.7	44.7	45.1	47.2	46.4
EN	52.5	47.7	46.0	46.9	47.0	45.6	45.8
FS	9.6	7.9	7.3	8.4	7.6	7.1	7.8



APPENDIX 5. MICROFACEL ANALYSES OF PYROLINES IN CAYMAN TROUGH PLUTONICS

PAGE 24

ANALYSIS	740-7-1 4	741-1-1 1	741-1-1 2	741-1-1 3	741-1-1 4	741-1-1 5	741-1-1 6
SiO <sub>2</sub>	51.00	53.30	53.01	53.59	52.52	52.49	52.55
TiO <sub>2</sub>	.47	.62	.68	.50	.53	.56	.53
CR2O3	2.77	2.89	1.02	2.74	2.84	1.88	2.20
AL2O3	.62	.12	.07	.17	.19	.11	.07
FeO*	6.03	5.85	6.14	6.39	5.78	6.55	5.97
MgO	.23	.16	.29	.27	.22	.26	.17
MnO	17.24	15.19	15.39	15.37	15.40	14.55	14.93
CaO	18.22	21.62	22.61	21.93	20.90	22.36	22.25
Na2O	.45	.55	.41	.40	.41	.36	.36
TOTAL	98.34	100.19	99.02	100.86	99.05	99.14	98.82

NO. OF IONS/6 OXYGENS

Si	1.940	1.950	1.972	1.938	1.946	1.956	1.950
Ti	.012	.017	.008	.014	.015	.010	.015
Cr	.121	.125	.045	.118	.124	.083	.097
Al	.012	.004	.002	.005	.005	.003	.002
Fe	.204	.179	.190	.195	.185	.204	.186
Mg	.007	.005	.009	.008	.007	.008	.005
Mn	.951	.823	.850	.837	.850	.808	.829
Ca	.732	.846	.876	.858	.829	.898	.866
Na	.032	.039	.030	.028	.029	.027	.026
TOTAL CATIONS	4.005	3.838	4.012	4.001	3.989	3.999	3.998
SiO	30.7	45.8	46.5	45.4	44.5	46.9	46.7
CaO	5.04	44.5	43.7	44.3	45.6	42.4	43.6
FS	1.00	9.7	9.8	10.3	9.9	10.7	9.8

APPENDIX 3. MICROSCOPE ANALYSES OF PYROXENES IN CATHAN TROUGH, PLUTONICS

PAGE 29

ANALYSIS	741-1-1	741-1-1	741-1-7	741-1-1	741-1-1	741-1-1	741-2-1	741-2-1
SiO2	53.49	51.33	51.09	51.78	55.38	53.88	54.32	54.32
TiO2	.59	.70	.62	.67	.20	.38	.41	.41
CaO	1.51	2.17	3.16	1.93	.53	2.02	2.51	2.51
Al2O3	.05	.54	.59	.38	.00	.00	.00	.00
FeO*	5.44	5.54	5.50	5.33	14.94	6.32	5.77	5.77
MnO	.19	.16	.17	.17	.40	.17	.20	.20
MgO	15.34	15.38	15.42	15.48	28.53	17.21	15.52	15.52
CaC	22.91	23.01	22.52	22.66	.62	21.18	22.81	22.81
Na2O	.41	.30	.47	.36	.00	.34	.09	.09
TOTAL	99.00	99.09	99.06	98.34	100.05	101.51	101.13	101.13

NO. OF IONS/6 CATIONS

	741-1-1	741-1-1	741-1-7	741-1-1	741-1-1	741-2-1	741-2-1
Si	1.503	1.930	1.931	1.938	1.972	1.947	1.970
Ti	.011	.019	.013	.019	.005	.010	.011
Ca	.044	.093	.139	.085	.035	.086	.086
Al	.002	.001	.003	.002	.000	.000	.000
Fe	.169	.172	.171	.167	.445	.191	.175
Mn	.005	.005	.005	.005	.012	.005	.008
Mg	.848	.854	.856	.864	1.512	.927	.839
Ca	.911	.917	.870	.909	.044	.820	.886
Na	.015	.021	.034	.019	.000	.024	.006
TOTAL CATIONS	3.992	4.014	4.062	4.098	4.005	4.031	3.979
Mg	47.2	47.2	46.4	46.9	1.2	42.3	46.6
Ca	44.0	43.9	44.7	44.5	76.3	47.8	44.1
FS	8.9	8.9	8.9	8.6	22.5	9.9	9.2

APPENDIX 5a. MICROPROBE ANALYSES OF PYROXENES IN CAYMAN TROUGH PLUTONICS

PAGE 26

ANALYSIS	741-2-1 4	741-2-1 6	741-2-1 7	741-2-1 8	741-3-1	741-3-1 2
SiO2	53.62	54.55	54.42	54.50	52.08	51.96
TiO2	.47	.50	.31	.40	1.74	1.02
CaO	2.13	1.30	1.19	1.02	3.43	3.45
Al2O3	.07	.33	.03	.00	.66	.64
FeO*	5.92	15.24	18.43	17.56	4.95	4.45
MnO	.24	.40	.57	.46	.19	.10
MgO	15.48	21.40	22.72	23.90	14.98	15.23
CaO	23.19	5.74	1.46	.01	22.53	22.25
Na2O	.39	.17	.02	.00	.47	.49

TOTAL	101.52	101.08	99.62	99.15	99.45	100.33	99.58
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NO. OF IONS/6 OXYGENS

Si	1.948	1.982	1.962	2.006	1.949	1.908	1.911
Ti	.043	.008	.016	.039	.011	.029	.028
Ca	.091	.056	.052	.078	.148	.150	.150
Al	.002	.001	.001	.000	.019	.019	.019
Fe	.174	.467	.406	.568	.536	.152	.137
Mn	.007	.012	.018	.014	.006	.003	.003
Mg	.836	1.108	1.041	1.248	1.300	.618	.835
Ca	.972	.341	.058	.052	.884	.884	.877
Na	.028	.012	.030	.002	.000	.034	.035

TOTAL CATIONS	4.826	3.988	3.975	3.960	3.961	3.927	3.994
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Si	47.0	17.8	20.9	3.1	1.7	47.7	47.4
EN	43.6	57.8	56.9	66.6	62.6	44.1	45.2
FS	9.3	24.4	22.2	30.3	28.7	8.2	7.4

APPENDIX B. MICROPROBE ANALYSES OF PYROXENES IN GAYMAN TROUGH PLUIONICS

PAGE 27

ANALYSIS

	741-3-1 24	741-3-1 5	741-3-1 6	741-3-1 7	743-3-1 8	742-2-1 1
SiO2	52.45	51.78	52.20	51.48	51.10	52.24
TiO2	1.15	1.07	1.26	.67	.70	.64
Cr2O3	3.95	3.48	3.70	3.72	3.61	3.23
Al2O3	.84	.51	.73	.72	.76	.03
FeO*	4.88	5.22	4.76	5.37	4.83	7.12
MnO	.15	.16	.19	.14	.18	.21
MgO	15.18	15.25	14.41	14.76	14.13	15.15
CaO	22.40	22.33	22.44	21.79	22.19	21.25
Na2O	.56	.49	.57	.56	.50	.53
TOTAL	100.95	100.28	99.46	99.32	99.02	100.40

NO. OF IONS/6 OXYGENS

Si	1.899	1.900	1.895	1.919	1.909	1.912	1.921
Ti	.031	.030	.035	.019	.020	.020	.018
Cr	.159	.150	.172	.161	.163	.159	.140
Al	.018	.015	.021	.021	.023	.022	.001
Fe	.140	.140	.147	.156	.150	.160	.219
Mn	.005	.005	.008	.004	.006	.007	.007
Mg	.822	.834	.788	.812	.809	.796	.830
Ca	.864	.878	.889	.862	.862	.885	.837
Na	.039	.035	.041	.033	.036	.032	.038

TOTAL CATIONS

	3.994	4.006	3.994	3.987	3.996	3.993	4.010
W	47.1	46.9	48.7	47.1	47.9	48.1	44.4
EN	44.9	44.6	43.2	44.4	43.9	43.2	44.0
FS	8.1	8.6	8.1	8.5	8.1	8.7	11.6

APPENDIX 5. MICROPROBE ANALYSES OF PYROXENES IN CAYMAN TROUGH PLUMINICS

PAGE 2b

ANALYSIS

	742-2-1 2	742-2-1 3	742-2-1 4	742-2-1 5	742-2-1 6	742-2-1 4	742-2-1 5	742-2-1 5
SiO2	53.71	52.33	51.93	51.21	52.04	52.89	53.30	53.30
TiO2	.46	.74	.19	1.10	.46	.98	.45	.45
Cr2O3	1.89	4.11	2.95	5.43	2.02	4.89	1.68	1.68
Al2O3	.00	.02	.01	.01	.02	.23	.49	.49
FeO*	6.31	8.33	8.62	7.62	9.27	5.96	8.64	8.64
MnO	.42	.22	.25	.12	.29	.18	.14	.14
MgO	15.23	16.87	13.99	16.27	16.57	16.85	16.20	16.20
CaO	23.43	15.19	22.20	16.63	17.17	18.99	23.19	23.19
Na2O	.46	.78	.37	1.25	.40	.85	.35	.35

TOTAL	100.06	98.59	100.11	98.66	100.93	101.82	100.44	100.44
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NO. OF IONS/6 OXYGENS

Si	1.950	1.934	1.920	1.866	1.927	1.902	1.948	1.948
Ti	.043	.021	.005	.011	.013	.027	.012	.012
Cr	.073	.179	.129	.238	.113	.190	.072	.072
Al	.000	.001	.000	.000	.000	.007	.014	.014
Fe	.194	.257	.269	.237	.283	.179	.142	.142
Mn	.067	.007	.008	.004	.009	.005	.004	.004
Mg	.634	.929	.777	.901	.982	.903	.883	.883
Ca	.942	.651	.866	.662	.671	.731	.908	.908
Na	.019	.056	.027	.090	.014	.059	.025	.025

TOTAL CALICNS	4.011	3.884	4.023	4.022	4.011	4.003	4.009	4.009
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40	47.3	33.6	45.9	36.8	39.7	40.3	47.0	47.0
6M	42.3	52.0	40.2	50.1	50.7	49.8	45.7	45.7
FS	9.9	14.4	13.9	13.2	14.6	9.9	7.3	7.3

APPENDIX 3. MICROPROBEL ANALYSES OF PYROXENES IN CAYMAN TROUGH PLUTONICS.

PAGE 29

ANALYSIS

	742-5-2 52.11	742-5-2 52.46	742-5-2 52.51	742-5-2 52.57	742-5-2 53.02	742-5-2 53.07	742-5-2 53.87
SiO2	.15	.29	.24	.10	.28	.22	.17
TiO2	1.45	2.28	1.91	1.14	1.16	1.45	1.40
Al2O3	.38	.48	.50	.37	.42	.41	.40
FeO*	5.33	5.62	5.60	5.60	8.57	6.88	6.94
MgO	.16	.18	.16	.21	.29	.26	.23
MnO	15.77	15.63	12.81	18.32	14.77	15.11	15.25
CaO	22.66	22.11	22.33	22.37	21.09	21.70	21.54
Na2O	.34	.47	.45	.37	.53	.31	.30

TOTAL 99.70 99.34 99.57 99.45 100.38 99.38 100.25

NO. OF IONS/6 CATIONS

	742-5-2 52.11	742-5-2 52.46	742-5-2 52.51	742-5-2 52.57	742-5-2 53.02	742-5-2 53.07	742-5-2 53.87
Si	1.964	1.945	1.943	1.961	1.963	1.970	1.983
Ti	.104	.098	.097	.093	.098	.096	.095
Cr	.056	.091	.063	.050	.050	.064	.060
Al	.111	.014	.015	.011	.017	.012	.012
Fe	.160	.174	.174	.174	.265	.214	.213
Mn	1.72	1.66	1.06	1.69	1.52	1.67	1.67
Mg	.609	.663	.672	.901	.813	.837	.838
Ca	.697	.678	.685	.887	.835	.664	.848
Na	.024	.034	.032	.026	.024	.023	.021

TOTAL CATIONS 4.11 4.012 4.017 4.019 3.893 3.927 3.987

Si	46.7	45.8	45.8	45.2	43.6	45.1	44.7
Ti	4.6	4.1	4.1	4.2	4.2	4.3	4.4
Fe	6.3	9.1	9.0	8.8	13.8	11.2	11.2