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**Appendix:
New Analyses of Aleutian Volcanic Rocks**

in

**Chapter 22
(Pages 32-46)**

Aleutian magmas in space and time

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Appendix: New Analyses of Aleutian Volcanic Rocks

The appendix consists of a listing of major element concentrations (in weight percent) and trace element concentrations (in parts per million by weight) of volcanic rocks from active and dormant volcanoes of the Aleutian arc. Oxygen isotope ratios, quoted in per mil deviations from Standard Mean Ocean Water, are listed for some samples. The major element analyses were done on fused powders, except for Na, which was done by Instrumental Neutron Activation Analysis (INAA). For major element analyses of samples from Byers (1959), only Na analyses (by INAA) are new. Trace element analyses were done by INAA, except for Rb and Zr, which were determined by X-ray Fluorescence (XRF). Where Rb is quoted, Sr was also determined by XRF. For analytical procedures, see Neuweld (1987) and S. Kay and others, *Journal of Geophysical Research*, v. 92, p. 6173-6189 (1987). Oxygen isotope analyses were done by D. White, U.S. Geological Survey, Menlo Park, California. Various papers cited in the text contain additional data (isotopic, phenocryst analyses) on selected samples. This compilation contains analyses extant as of 1988.

| Sample | Alaska Peninsula | | | | | | |
|--------------------------------|------------------|--------|--------|--------|-------|--------|--------|
| | ALE3 | ALE4 | ALE8 | ALE6 | ALE32 | PEULIK | SIM2 |
| SiO ₂ | 55.23 | 53.13 | 49.83 | 50.88 | 52.61 | 54.49 | 57.42 |
| TiO ₂ | 1.07 | 1.42 | 1.24 | 1.13 | 1.11 | 0.81 | 0.65 |
| Al ₂ O ₃ | 18.64 | 17.21 | 19.17 | 18.09 | 19.81 | 18.39 | 18.33 |
| Fe ₂ O ₃ | . | . | . | . | . | . | . |
| FeO | 8.19 | 10.77 | 10.17 | 10.09 | 8.02 | 8.48 | 6.83 |
| MnO | 0.15 | 0.25 | 0.16 | 0.16 | 0.13 | 0.13 | 0.11 |
| MgO | 3.48 | 3.54 | 4.98 | 5.84 | 2.93 | 4.91 | 4.01 |
| CaO | 8.58 | 8.77 | 10.59 | 10.02 | 9.45 | 8.77 | 8.14 |
| Na ₂ O | 3.39 | 3.40 | 3.02 | 2.97 | 3.21 | 3.21 | 3.70 |
| K ₂ O | 1.28 | 1.47 | 0.70 | 0.72 | 1.36 | 0.92 | 1.26 |
| P ₂ O ₅ | 0.21 | 0.22 | 0.21 | 0.20 | . | . | 0.41 |
| Total | 100.22 | 100.18 | 100.07 | 100.10 | 98.63 | 100.11 | 100.86 |
| La | 12.6 | 14.9 | 10.7 | 9.28 | 11.3 | 10.8 | 14.9 |
| Ce | 28.3 | 35.1 | 25.1 | 21.2 | 26.7 | 23.6 | 34.3 |
| Nd | 15.9 | 22.9 | 17.0 | 13.6 | 12.6 | 13.5 | 18.1 |
| Sm | 4.28 | 5.96 | 3.84 | 3.46 | 4.34 | 3.42 | 3.77 |
| Eu | 1.21 | 1.56 | 1.28 | 1.18 | 1.16 | 1.01 | 1.25 |
| Tb | 0.71 | 1.04 | 0.61 | 0.57 | 0.72 | 0.56 | 0.50 |
| Yb | 2.61 | 3.56 | 2.50 | 2.13 | 2.60 | 2.14 | 1.70 |
| Lu | 0.354 | 0.486 | 0.343 | 0.311 | 0.347 | 0.300 | 0.264 |
| Rb | 27.3 | 32.3 | . | 12.5 | 33.5 | . | 31. |
| Sr | 358. | 353. | . | 411. | 399. | 373. | 645. |
| Ba | 405. | 408. | 289. | 263. | 391. | 353. | 529. |
| Cs | 0.76 | 1.35 | 0.80 | 0.58 | 1.33 | 0.61 | 1.74 |
| U | 1.26 | 1.40 | 0.58 | 0.38 | 1.39 | 0.77 | 1.87 |
| Th | 2.76 | 3.25 | 1.53 | 1.33 | 2.93 | 1.95 | 3.96 |
| Hf | 3.2 | 3.7 | 2.3 | 2.3 | 3.2 | 2.3 | 2.8 |
| Zr | . | . | . | . | . | . | . |
| Ta | . | . | . | . | . | 0.13 | . |
| Sc | 25.7 | 35.0 | 33.3 | 34.1 | 24.4 | 25.5 | 18.3 |
| Cr | 14. | 12. | 27. | 42. | 8. | 72. | 26. |
| Ni | 8. | 8. | 25. | 35. | 8. | 24. | 9. |
| Co | . | . | . | . | . | 35. | . |
| δ ¹⁸ O | . | . | 6.3 | 5.8 | . | . | 5.4 |

ALE3 - Aniakchak Volcano - Kay et al. (1978)

ALE4 - Aniakchak Volcano - Kay et al. (1978)

ALE8 - Veniaminof Volcano - Kay et al. (1978)

ALE6 - Veniaminof Volcano - Kay et al. (1978)

ALE32 - Aniakchak Volcano - Kay et al. (1978)

PEULIK - Peulik Volcano, 73AMM30 of B. Dalrymple, U.S. Geological Survey

SIM2 - Mt. Simeon, Cold Bay Volcanic Center - Kay et al. (1978)

| Sample | Unimak Island | | | | | | | |
|--------------------------------|---------------|-------|--------|-------|--------|--------|--------|--------|
| | SAR18 | SAR7 | SAR39 | SAR11 | SAR302 | SAR24 | SAR301 | SAR4 |
| SiO ₂ | 50.00 | 50.20 | 50.98 | 51.96 | . | 59.00 | 62.09 | 63.85 |
| TiO ₂ | 2.14 | 1.38 | 2.22 | 1.59 | . | 1.46 | 1.17 | 1.23 |
| Al ₂ O ₃ | 16.50 | 18.35 | 15.22 | 16.76 | . | 16.03 | 15.43 | 16.21 |
| Fe ₂ O ₃ | . | . | . | . | . | . | . | . |
| FeO | 12.53 | 10.99 | 12.93 | 11.15 | 9.98 | 9.15 | 7.55 | 6.58 |
| MnO | 0.17 | 0.17 | 0.19 | 0.17 | . | 0.13 | 0.10 | 0.09 |
| MgO | 3.97 | 4.27 | 4.31 | 4.03 | . | 1.96 | 1.51 | 1.65 |
| CaO | 9.82 | 10.42 | 9.17 | 9.12 | . | 5.19 | 4.42 | 4.07 |
| Na ₂ O | 3.34 | 3.33 | 3.61 | 3.79 | 4.24 | 4.65 | 4.84 | 5.65 |
| K ₂ O | 1.14 | 0.77 | 1.11 | 0.95 | . | 1.96 | 1.97 | 1.90 |
| P ₂ O ₅ | 0.36 | . | 0.35 | 0.24 | . | 0.49 | 0.36 | 0.39 |
| Total | 99.97 | 99.88 | 100.09 | 99.76 | . | 100.02 | 99.44 | 101.62 |
| La | 15.6 | 9.38 | 14.8 | 11.1 | 12.4 | 24.0 | 20.3 | 20.4 |
| Ce | 36.8 | 24.4 | 37.1 | 27.0 | 28.5 | 56.3 | 48.0 | 48.6 |
| Nd | 25.4 | 12.3 | 26.9 | 18.1 | 17.1 | 36.1 | 30.9 | 35.0 |
| Sm | 6.62 | 4.19 | 6.69 | 4.87 | 5.36 | 9.31 | 7.64 | 7.82 |
| Eu | 1.89 | 1.42 | 1.99 | 1.55 | 1.65 | 2.32 | 2.00 | 2.09 |
| Tb | 1.22 | 0.77 | 1.24 | 0.89 | 1.03 | 1.57 | 1.35 | 1.35 |
| Yb | 4.10 | 2.87 | 3.93 | 3.04 | 3.48 | 5.77 | 5.09 | 5.44 |
| Lu | 0.614 | 0.388 | 0.607 | 0.467 | 0.504 | 0.841 | 0.729 | 0.738 |
| Rb | 20. | 29. | 22. | 19. | 26. | 51. | 44. | 45. |
| Sr | 396. | 400. | 382. | 379. | 401. | 360. | 281. | 305. |
| Ba | 435. | 281. | 420. | 353. | 416. | 610. | 678. | 650. |
| Cs | 0.56 | 0.96 | 0.88 | 0.97 | 1.24 | 2.53 | 1.47 | 2.40 |
| U | 1.35 | 0.83 | 1.32 | 1.04 | 1.06 | 2.63 | 2.25 | 2.10 |
| Th | 2.64 | 1.93 | 2.9 | 2.26 | 2.48 | 5.11 | 4.67 | 4.37 |
| Hf | 4.4 | 2.8 | 4.8 | 3.4 | 3.6 | 6.6 | 5.9 | 6.3 |
| Zr | 175. | . | 190. | 170. | . | 260. | . | . |
| Ta | . | 0.28 | . | . | . | . | . | . |
| Sc | 43.1 | 38.0 | 44.4 | 34.7 | 29.5 | 23.5 | 17.9 | 17.6 |
| Cr | 18. | 30. | 14. | 10. | 3. | 3. | 3. | 3. |
| Ni | 18. | 9. | 5. | 8. | 0. | 0. | 4. | 14. |
| Co | . | 35. | . | . | . | . | . | . |
| δ ¹⁸ O | 7.0 | 4.8 | 5.5 | 6.2 | 5.5 | 7.0 | 5.4 | 6.4 |

SAR18 - Westdahl Volcano - Kay et al. (1978)

SAR7 - Westdahl Volcano - Olivine basalt, Red Top Cinder Cone (59°44'N, 169°52'W)

SAR39 - Westdahl Volcano - Kay et al. (1978)

SAR11 - Westdahl Volcano - Kay et al. (1978)

SAR302 - Westdahl Volcano - Andesite fragment (54°43'N, 164°51'W)

SAR24 - Westdahl Volcano - Kay et al. (1978)

SAR301 - Westdahl Volcano - Andesite fragment (1 54°43'N, 64°51'W)

SAR4 - Westdahl Volcano - Andesite, north end of air strip (54°45'N, 164°53'W)

| Sample | Bogoslof Island | | Umnak Island | | | | |
|--------------------------------|-----------------|--------|--------------|--------|-------|-------|--------|
| | B1796N | B1927N | IA23 | IA27 | IA32 | IA21 | IA26 |
| SiO ₂ | 61.00 | 48.60 | 57.40 | 61.40 | 75.40 | 54.30 | 61.30 |
| TiO ₂ | 0.53 | 1.46 | 0.90 | 1.10 | 0.16 | 1.20 | 1.00 |
| Al ₂ O ₃ | 18.60 | 18.40 | 18.20 | 16.50 | 13.00 | 18.00 | 16.30 |
| Fe ₂ O ₃ | . | . | 2.00 | 2.60 | 0.50 | 1.70 | 2.10 |
| FeO | 4.23 | 9.51 | 5.00 | 5.40 | 0.80 | 7.80 | 6.00 |
| MnO | 0.07 | 0.14 | 0.10 | 0.12 | 0.02 | 0.18 | 0.20 |
| MgO | 1.10 | 4.54 | 4.00 | 2.20 | 0.22 | 3.80 | 1.60 |
| CaO | 6.50 | 11.93 | 7.70 | 5.60 | 1.20 | 7.90 | 5.60 |
| Na ₂ O | 4.08 | 2.63 | 3.14 | 4.72 | 3.50 | 3.45 | 5.02 |
| K ₂ O | 2.90 | 1.75 | 1.40 | 1.60 | 3.90 | 1.00 | 1.70 |
| P ₂ O ₅ | 0.28 | 0.17 | 0.16 | 0.18 | 0.06 | 0.32 | 0.42 |
| Total | 99.29 | 99.13 | 100.00 | 101.42 | 98.76 | 99.65 | 101.24 |
| La | 26.6 | 13.3 | 10.6 | 11.1 | 17.1 | 12.3 | 18.7 |
| Ce | 62.2 | 34.3 | 25.9 | 24.4 | 37.5 | 29.3 | 43.8 |
| Nd | 27.1 | 22.2 | 16.5 | 16.6 | 14.4 | 19.7 | 29.6 |
| Sm | 5.71 | 5.03 | 3.87 | 4.63 | 2.74 | 5.31 | 7.78 |
| Eu | 1.48 | 1.51 | 1.04 | 1.36 | 0.44 | 1.51 | 2.12 |
| Tb | 0.58 | 0.67 | 0.72 | 0.87 | . | 0.82 | 1.17 |
| Yb | 2.31 | 1.77 | 2.43 | 3.08 | 1.66 | 3.44 | 4.29 |
| Lu | 0.320 | 0.267 | 0.346 | 0.427 | . | 0.459 | 0.660 |
| Rb | 129. | 43. | 51. | . | 160. | 22. | 36. |
| Sr | 730. | 813. | 308. | . | 122. | 331. | 290. |
| Ba | 1725. | 731. | 551. | 564 | 955. | 388. | 615. |
| Cs | 4.80 | 1.47 | 2.67 | 3.44 | . | 1.26 | 2.48 |
| U | 4.83 | 1.28 | 2.58 | 2.13 | . | 1.07 | 1.52 |
| Th | 11.4 | 2.98 | 4.85 | 4.61 | . | 1.95 | 3.30 |
| Hf | 5.3 | 2.7 | 3.9 | 3.8 | . | 3.7 | 5.4 |
| Zr | 166. | 87. | 171. | . | 128. | 159. | 237. |
| Ta | 0.47 | 0.15 | . | . | . | . | . |
| Sc | 4.9 | 45.9 | 28.5 | 29.4 | . | 36.2 | 23.3 |
| Cr | 5. | 48. | 74. | 5. | . | 28. | 5. |
| Ni | 3. | 23. | 49. | 2. | . | 12. | 26. |
| Co | 7. | 34. | . | . | . | . | . |
| δ ¹⁸ O | 5.4 | 5.6 | . | . | 6.7 | . | . |

B1796N - Arculus et al. (1977), trace element analyses are new.

B1927N - Arculus et al. (1977), trace element analyses are new.

IA23 - Rechesnoi Volcano - Byers (1959), sample 47ABY9 (Na₂O by INAA).

IA27 - Rechesnoi Volcano - Byers (1959), sample 47ABY57 (Na₂O by INAA).

IA32 - Rechesnoi Volcano - Byers (1959), sample 47ABY28.

IA21 - Vsevidof Volcano - Byers (1959), sample 47ABY73 (Na₂O by INAA).

IA26 - Vsevidof Volcano - Byers (1959), sample 47ABY72 (Na₂O by INAA).

Umnak Island: Okmok Volcano

| Sample | UM10 | UM26 | UM4 | UM22 | UM21 | UM5 | UM16N |
|--------------------------------|-------|-------|-------|-------|--------|--------|-------|
| SiO ₂ | 51.30 | 50.05 | 51.70 | 51.28 | 52.24 | 53.60 | 54.10 |
| TiO ₂ | 0.68 | 1.04 | 1.12 | 1.06 | 1.09 | 1.30 | 1.86 |
| Al ₂ O ₃ | 16.20 | 19.65 | 17.70 | 18.36 | 17.62 | 16.50 | 15.10 |
| Fe ₂ O ₃ | . | . | . | . | . | . | . |
| FeO | 8.30 | 8.92 | 8.92 | 8.70 | 9.70 | 11.20 | 10.75 |
| MnO | 0.12 | 0.15 | 0.14 | 0.14 | 0.15 | 0.17 | 0.17 |
| MgO | 7.45 | 5.66 | 5.45 | 4.91 | 4.97 | 4.46 | 4.18 |
| CaO | 11.32 | 10.52 | 10.12 | 11.17 | 10.80 | 9.17 | 7.99 |
| Na ₂ O | 2.08 | 2.80 | 3.07 | 2.73 | 2.91 | 3.59 | 3.01 |
| K ₂ O | 0.61 | 0.51 | 0.97 | 0.53 | 0.66 | 0.77 | 1.02 |
| P ₂ O ₅ | 0.13 | 0.13 | 0.20 | . | . | 0.18 | 0.06 |
| Total | 98.19 | 99.43 | 99.39 | 98.88 | 100.14 | 100.94 | 98.24 |
| La | 6.70 | 2.58 | 11.6 | 5.23 | 6.42 | 9.61 | 3.92 |
| Ce | 15.1 | 5.7 | 26.6 | 12.7 | 16.6 | 22.7 | . |
| Nd | 9.5* | . | 15.4* | . | . | 14.8* | 3.6 |
| Sm | 2.58 | 1.39 | 4.04 | 2.34 | 2.92 | 4.05 | 0.83 |
| Eu | 0.81 | 0.71 | 1.28 | 0.90 | 1.04 | 1.28 | 1.19 |
| Tb | 0.36 | 0.21 | 0.72 | 0.53 | 0.61 | 0.78 | 0.51 |
| Yb | 1.34 | 0.80 | 2.36 | 1.82 | 2.22 | 3.14 | 2.62 |
| Lu | 0.201 | 0.190 | 0.352 | 0.265 | 0.311 | 0.477 | 0.387 |
| Rb | 8. | 9. | 19. | 10. | 16. | 20. | 26. |
| Sr | 557. | 470. | 442. | 377. | 360. | 367. | 317. |
| Ba | 239. | 213. | 297. | 201. | 204. | 412. | 406. |
| Cs | 0.31 | 0.37 | 1.28 | 0.70 | 1.00 | 1.79 | 1.84 |
| U | 0.79 | . | 0.80 | 0.51 | 0.62 | 1.09 | 1.12 |
| Th | 1.67 | 0.47 | 1.96 | 0.97 | 1.40 | 2.22 | 2.05 |
| Hf | 1.5 | 1.2 | 3.5 | 1.7 | 2.1 | 3.3 | 3.6 |
| Zr | 85. | 33. | 125. | 39. | . | 116. | 143. |
| Ta | . | . | 0.33 | . | 0.26 | . | . |
| Sc | 43.8 | 33.1 | 36.1 | 41.4 | 43.0 | 46.4 | 38.9 |
| Cr | 214. | 57. | 103. | 67. | 62. | 54. | 22. |
| Ni | 37. | 35. | 37. | 22. | 17. | 15. | 20. |
| Co | . | . | 35. | . | 33. | . | . |
| δ ¹⁸ O | 5.7 | 4.8 | 6.0 | 4.6 | 4.4 | 5.1 | 4.7 |

UM10 - Kay et al. (1978)

UM26 - Kay et al. (1978)

UM4 - Kay et al. (1978)

UM22 - Kay et al. (1978)

UM21 - Clinopyroxene-plagioclase basalt. Byers (1959) map unit Cone B, plate 41.

UM5 - Kay et al. (1978)

UM16N - Kay et al. (1978)

* isotope dilution analysis

| Umnak Island: Okmok Volcano (cont.) | | | | | | | |
|-------------------------------------|-------|--------|-------|--------|-------|-------|-------|
| Sample | OK3 | OK10 | UM20 | OK5 | OK11 | UM18 | OK17 |
| SiO ₂ | 48.7 | 52.43 | 54.60 | 50.10 | 52.2 | 55.20 | 63.50 |
| TiO ₂ | 1.2 | 1.48 | 1.27 | 0.74 | 1.80 | 2.48 | 0.81 |
| Al ₂ O ₃ | 14.9 | 15.27 | 15.87 | 23.00 | 14.97 | 14.80 | 16.10 |
| Fe ₂ O ₃ | 4.7 | 5.96 | . | 2.60 | 3.86 | . | 1.40 |
| FeO | 3.4 | 6.99 | 9.80 | 5.40 | 8.81 | 11.80 | 5.00 |
| MnO | 0.2 | 0.17 | 0.17 | 0.11 | 0.21 | 0.17 | 0.10 |
| MgO | 4.2 | 4.13 | 4.03 | 3.60 | 4.00 | 2.72 | 1.20 |
| CaO | 7.8 | 8.70 | 7.86 | 11.60 | 8.64 | 6.86 | 3.80 |
| Na ₂ O | 2.1 | 3.82 | 3.46 | 2.67 | 3.52 | 3.98 | 4.50 |
| K ₂ O | 0.92 | 1.24 | 1.03 | 0.44 | 1.22 | 1.14 | 2.60 |
| P ₂ O ₅ | 0.22 | 0.36 | 0.19 | 0.11 | 0.38 | 0.51 | 0.23 |
| Total | 98.44 | 100.55 | 98.28 | 100.37 | 99.69 | 99.66 | 99.24 |
| La | 8.92 | 13.1 | 9.46 | 4.29 | 12.6 | 14.4 | 18.8 |
| Ce | 22.6 | 32.4 | 21.1 | 10.3 | 30.9 | 35.7 | 43.8 |
| Nd | 15.9 | 20.9 | . | . | 20.2 | 24.6 | 28.8 |
| Sm | 4.00 | 5.77 | 3.79 | 1.84 | 5.76 | 6.76 | 7.89 |
| Eu | 1.21 | 1.57 | 1.19 | 0.71 | 1.55 | 1.94 | 1.66 |
| Tb | 0.79 | 1.12 | 0.75 | 0.38 | 1.12 | 1.29 | 1.45 |
| Yb | 2.8 | 3.79 | 2.63 | 1.24 | 3.73 | 4.2 | 5.83 |
| Lu | 0.428 | 0.593 | 0.442 | 0.196 | 0.592 | 0.65 | 0.851 |
| Rb | . | . | 20. | . | . | 28. | . |
| Sr | 257. | 468. | 320. | 470. | 372. | 349. | 252. |
| Ba | 317. | 454. | 477. | 153. | 457. | 471. | 780. |
| Cs | 1.52 | 2.4 | 1.64 | 0.59 | 2.37 | 2.33 | 4.7 |
| U | 1.06 | 1.58 | 1.36 | 0.56 | 1.61 | 1.51 | 2.97 |
| Th | 2.03 | 3.06 | 2.22 | 1.04 | 2.99 | 2.88 | 6.38 |
| Hf | 3.0 | 4.5 | 3.3 | 1.1 | 4.5 | 4.5 | 8.0 |
| Zr | . | . | 126. | . | . | 180. | . |
| Ta | 0.23 | 0.41 | . | 0.10 | 0.50 | . | 0.61 |
| Sc | 36.5 | 46.6 | 37.5 | 28.1 | 44.7 | 40.3 | 17.2 |
| Cr | 22. | 48. | 17. | 46. | 23. | 7. | 5. |
| Ni | 9. | 20. | 23. | 12. | 15. | 1. | 1. |
| Co | 29. | 34. | . | 25. | 31. | . | 6. |
| δ ¹⁸ O | 7.0 | 4.7 | 4.7 | 5.1 | 4.5 | 4.8 | 4.3 |

OK3 - Byers (1959), sample 47ABY72. Palagonite. Total contains 10.1% H₂O.

OK10 - Byers (1959), sample 46ABY45 (Na₂O by INAA).

UM20 - Kay et al. (1978)

OK5 - Byers (1959) analysis 5, sample 46ABY609 (Na₂O by INAA).

OK11 - Byers (1959) analysis 11, sample 46ABY54 (Na₂O by INAA).

UM18 - Kay et al. (1978)

OK17 - Byers (1959) analysis 17, sample 46AFR2 (Na₂O by INAA).

| Sample | Islands of Four Mountains | | | | | | |
|--------------------------------|---------------------------|-------|-------|-------|--------|--------|-------|
| | FMI1 | FMI7 | FMI5 | FMI8 | FMI2 | FMI6 | FMI3 |
| SiO ₂ | 54.19 | 59.37 | 59.55 | 60.25 | 63.00 | 70.08 | . |
| TiO ₂ | 0.98 | 0.77 | 0.88 | 0.57 | 1.09 | 0.62 | . |
| Al ₂ O ₃ | 17.87 | 17.44 | 18.39 | 18.01 | 16.39 | 15.00 | . |
| Fe ₂ O ₃ | . | . | . | . | . | . | . |
| FeO | 8.35 | 6.38 | 6.47 | 5.82 | 6.61 | 4.01 | 3.29 |
| MnO | 0.12 | 0.09 | 0.10 | 0.09 | 0.10 | 0.06 | . |
| MgO | 5.16 | 3.58 | 2.08 | 2.35 | 2.09 | 0.94 | . |
| CaO | 9.69 | 7.10 | 7.40 | 6.16 | 5.59 | 3.13 | . |
| Na ₂ O | 2.99 | 3.83 | 4.11 | 4.23 | 5.49 | 4.53 | 4.61 |
| K ₂ O | 0.60 | 1.09 | 0.82 | 1.78 | 1.13 | 2.69 | . |
| P ₂ O ₅ | 0.12 | 0.12 | 0.15 | 0.17 | 0.18 | 0.12 | . |
| Total | 100.07 | 99.77 | 99.95 | 99.43 | 101.67 | 101.18 | . |
| La | 5.74 | 7.51 | 7.12 | 18.0 | 11.4 | 14.6 | 20.8 |
| Ce | 14.1 | 17.5 | 16.7 | 36.5 | 26.6 | 32.4 | 43.4 |
| Nd | 9.5 | 9.5 | 11.3 | 20.1 | 15.9 | 18.6 | 26.8 |
| Sm | 2.95 | 2.66 | 3.33 | 3.73 | 4.73 | 5.05 | 5.07 |
| Eu | 0.92 | 0.90 | 1.11 | 1.15 | 1.50 | 1.15 | 1.32 |
| Tb | 0.61 | 0.52 | 0.71 | 0.52 | 0.92 | 0.88 | 0.70 |
| Yb | 2.30 | 2.00 | 2.58 | 1.80 | 3.62 | 3.35 | 2.79 |
| Lu | 0.370 | 0.306 | 0.403 | 0.265 | 0.550 | 0.505 | 0.431 |
| Rb | . | . | . | . | . | . | . |
| Sr | . | . | . | . | . | . | . |
| Ba | 224. | 391. | 350. | 635. | 462. | 749. | 552. |
| Cs | 1.00 | 0.44 | 0.40 | 1.09 | 0.37 | 3.79 | 2.10 |
| U | 0.82 | 0.72 | 0.74 | 1.44 | 1.42 | 3.33 | 1.95 |
| Th | 1.13 | 1.69 | 1.38 | 3.38 | 2.23 | 6.37 | 3.76 |
| Hf | 2.07 | 2.35 | 2.34 | 3.47 | 3.66 | 6.09 | 5.12 |
| Zr | . | . | . | . | . | . | . |
| Ta | 0.26 | 0.31 | 0.36 | 0.89 | 0.38 | 0.62 | 0.62 |
| Sc | 35.9 | 21.7 | 25.2 | 7.8 | 24.0 | 3.1 | 2.5 |
| Cr | 88. | 40. | 5. | 3. | 3. | 3. | 1. |
| Ni | 30. | 20. | 15. | 4. | 1. | 1. | . |
| Co | 33. | 23. | 19. | 25. | 15. | 11. | 3. |
| δ18O | 6.1 | 6.6 | 6.5 | 5.9 | 5.3 | 7.2 | 8.6 |

- FMI1 - Amutka Island: vesicular olivine-clinopyroxene-plagioclase basalt flow, north shore (52°32'N, 171°14'W). Sample of F. Zeilemaker, U.S. Fish and Wildlife.
- FMI7 - Carlisle Island: 2 pyroxene-plagioclase andesite, east shore, small point near cabin (52°52'N, 170°14'W). Sample of F. Zeilemaker, U.S. Fish and Wildlife.
- FMI5 - Herbert Island: clinopyroxene-plagioclase andesite vitrophyre, tip of SW point (52°43'N, 170°10'W). Sample of F. Zeilemaker, U.S. Fish and Wildlife.
- FMI8 - Uliaga Island: amphibole-plagioclase andesite, east shore (53°04'N, 169°44'W). Sample of F. Zeilemaker, U.S. Fish and Wildlife.
- FMI2 - Yunaska Island: clinopyroxene-plagioclase andesite vitrophyre, north shore (52°42'N, 170°41'W). Sample of F. Zeilemaker, U.S. Fish and Wildlife.
- FMI6 - Chuginadak Island: 2 pyroxene-plagioclase rhyolite, east shore Concord Point (53°02'N, 169°37'W). Sample of F. Zeilemaker, U.S. Fish and Wildlife.
- FMI3 - Kagamil Island: hydrothermally altered dacite, south shore (52°57'N, 169°44'W). Sample of F. Zeilemaker, U.S. Fish and Wildlife.

| Sample | Atka | Great Sitkin Volcano | | | | SIT5B |
|--------------------------------|--------|----------------------|-------|--------|-------|-------|
| | ATK9 | G725B | GS726 | G721BX | G725A | |
| SiO ₂ | 55.94 | 52.39 | 53.94 | 55.15 | 56.94 | 56.19 |
| TiO ₂ | 0.80 | 0.89 | 0.83 | 0.79 | 0.68 | 0.61 |
| Al ₂ O ₃ | 17.28 | 18.62 | 18.46 | 17.48 | 18.31 | 16.40 |
| Fe ₂ O ₃ | . | . | . | . | . | . |
| FeO | 7.74 | 9.08 | 8.57 | 8.97 | 7.42 | 7.35 |
| MnO | 0.13 | 0.14 | 0.13 | 0.13 | 0.11 | 0.12 |
| MgO | 4.68 | 4.14 | 4.10 | 3.79 | 3.43 | 6.37 |
| CaO | 8.39 | 9.72 | 9.28 | 8.35 | 8.22 | 8.21 |
| Na ₂ O | 3.40 | 3.12 | 3.14 | 3.5 | 3.41 | 3.27 |
| K ₂ O | 1.57 | 1.10 | 0.95 | 0.97 | 1.04 | 1.13 |
| P ₂ O ₅ | 0.21 | . | . | . | . | 0.17 |
| Total | 100.14 | 99.20 | 99.40 | 99.13 | 99.56 | 99.82 |
| La | 11.4 | 8.82 | 7.84 | 6.82 | 8.09 | 8.74 |
| Ce | 27.2 | 21.9 | 19.1 | 16.1 | 18.9 | 21.9 |
| Nd | 13.2 | 14.0 | 12.6 | 10.3 | 11.5 | 7.7 |
| Sm | 2.81 | 3.92 | 3.40 | 3.06 | 2.92 | 3.45 |
| Eu | 1.02 | 1.11 | 1.07 | 1.06 | 0.93 | 0.97 |
| Tb | 0.66 | 0.74 | 0.63 | 0.59 | 0.51 | 0.55 |
| Yb | 2.62 | 2.72 | 2.40 | 2.49 | 2.18 | 2.08 |
| Lu | 0.417 | 0.379 | 0.364 | 0.396 | 0.290 | 0.307 |
| Rb | 32. | . | . | . | . | 33. |
| Sr | 475. | 467. | 468. | 389. | 432. | 380. |
| Ba | 456. | 401. | 392. | 350. | 383. | 449. |
| Cs | 1.42 | 1.40 | 0.58 | 1.65 | 0.61 | 1.72 |
| U | 1.59 | 1.01 | 0.95 | 1.00 | 1.27 | 1.17 |
| Th | 3.12 | 2.45 | 1.84 | 1.92 | 2.71 | 2.85 |
| Hf | 3.6 | 2.8 | 2.4 | 2.0 | 2.1 | 2.5 |
| Zr | 108. | . | . | . | . | 72. |
| Ta | 0.29 | 0.31 | 0.22 | . | . | 0.32 |
| Sc | 28.1 | 28.8 | 27.7 | 24.0 | 21.0 | 23.6 |
| Cr | 37 | 12 | 6 | 5 | 6 | 468 |
| Ni | 24 | 9 | 12 | 6 | 6 | 104 |
| Co | 28. | 25. | 22. | 11. | 17. | . |
| δ ¹⁸ O | . | . | 3.8 | 5.6 | 6.8 | 6.3 |

ATK9 - Atka Volcano: northwest edge of Korovin crater. Sample of M. Clark, Cambridge Univ.

G725B - Neuweld (1987)

GS726 - Neuweld (1987)

G721BX - Neuweld (1987)

G725A - Neuweld (1987)

SIT5B - Neuweld (1987)

| Sample | Great Siltkin (cont.) | | | | | | |
|--------------------------------|-----------------------|-------|-------|-------|--------|--------|--------|
| | SITRK1 | G720C | GS724 | G721A | G721B | GS723 | STRK4 |
| SiO ₂ | 57.39 | 57.70 | 58.51 | 58.88 | 59.88 | 61.21 | 66.90 |
| TiO ₂ | 0.64 | 0.61 | 0.70 | 0.68 | 0.76 | 0.65 | 0.49 |
| Al ₂ O ₃ | 18.29 | 18.36 | 17.14 | 17.38 | 16.76 | 17.20 | 16.85 |
| Fe ₂ O ₃ | . | . | . | . | . | . | . |
| FeO | 7.12 | 7.01 | 7.21 | 7.22 | 7.55 | 6.48 | 4.34 |
| MnO | 0.12 | 0.11 | 0.11 | 0.11 | 0.11 | 0.09 | 0.15 |
| MgO | 3.13 | 3.25 | 3.02 | 3.01 | 3.25 | 2.62 | 1.20 |
| CaO | 7.56 | 7.69 | 7.06 | 7.14 | 7.32 | 6.37 | 3.53 |
| Na ₂ O | 3.88 | 3.51 | 3.75 | 3.84 | 3.86 | 4.01 | 5.30 |
| K ₂ O | 1.24 | 1.27 | 1.25 | 1.35 | 1.31 | 1.41 | 2.63 |
| P ₂ O ₅ | 0.17 | . | . | . | . | . | 0.17 |
| Total | 99.54 | 99.51 | 98.75 | 99.61 | 100.80 | 100.04 | 101.56 |
| La | 8.97 | 10.5 | 8.73 | 8.81 | 8.41 | 9.29 | 14.6 |
| Ce | 21.3 | 26.3 | 21.3 | 21.6 | 20.2 | 23.2 | 32.0 |
| Nd | 12.4 | 15.3 | 12.9 | . | 13.2 | 13.9 | 18.3 |
| Sm | 3.57 | 3.75 | 3.46 | 3.48 | 3.32 | 3.69 | 4.68 |
| Eu | 1.03 | 1.08 | 0.99 | 1.03 | 1.01 | 1.04 | 1.09 |
| Tb | 0.69 | 0.61 | 0.66 | 0.66 | 0.64 | 0.68 | 0.76 |
| Yb | 2.79 | 2.57 | 2.76 | 2.74 | 2.72 | 2.92 | 3.42 |
| Lu | 0.398 | 0.335 | 0.395 | 0.407 | 0.377 | 0.431 | 0.500 |
| Rb | 26. | . | . | . | . | . | 58. |
| Sr | 326. | 396. | 324. | 353. | 367. | 326. | 255. |
| Ba | 454. | 630. | 458. | 472. | 414. | 466. | 935. |
| Cs | 1.13 | 0.60 | 0.63 | 2.45 | 2.32 | 0.86 | 1.28 |
| U | 1.27 | 1.59 | 1.02 | 1.21 | 1.13 | 1.37 | 2.58 |
| Th | 3.08 | 3.47 | 2.60 | 2.81 | 2.61 | 3.18 | 5.26 |
| Hf | 2.9 | 2.7 | 2.7 | 3.0 | 2.8 | 3.1 | 4.6 |
| Zr | 65. | . | . | . | . | . | 153. |
| Ta | 0.24 | 0.25 | 0.44 | 0.53 | 0.56 | 0.54 | 0.35 |
| Sc | 18.7 | 18.6 | 19.0 | 17.9 | 20.9 | 15.9 | 9.3 |
| Cr | 6. | 10. | 5. | 4. | 3. | 4. | 2. |
| Ni | 13. | 6. | 5. | 1. | 4. | 1. | 2. |
| Co | . | 14. | 14. | 14. | 10. | 13. | 30. |
| δ18O | 6.2 | 5.1 | 6.5 | 6.1 | 5.6 | 6.6 | 6.5 |

SITRK1 - Neuweld (1987)

GS720C - Neuweld (1987)

GS724 - Neuweld (1987)

GS721A - Neuweld (1987)

GS721B - Neuweld (1987)

GS723 - Neuweld (1987)

SITRK4 - Neuweld (1987)

| Adak Island (Mt. Moffett) | | | | | | | | | |
|--------------------------------|-------|-------|-------|-------|--------|-------|-------|--------|-------|
| Sample | MF18B | MF2A | MF18A | ADK6 | MF19 | MF5B | MFHOS | ADK58 | ADK55 |
| SiO ₂ | 49.94 | 50.31 | 50.90 | 52.35 | 53.11 | 54.67 | 56.32 | 56.78 | 56.82 |
| TiO ₂ | 0.85 | 0.80 | 0.89 | 0.67 | 0.74 | 0.79 | 0.63 | 0.77 | 0.54 |
| Al ₂ O ₃ | 18.37 | 17.55 | 19.30 | 16.40 | 16.33 | 17.85 | 17.75 | 15.45 | 17.60 |
| Fe ₂ O ₃ | . | . | . | . | . | . | . | . | . |
| FeO | 9.95 | 9.45 | 9.31 | 8.85 | 8.50 | 7.88 | 6.39 | 6.86 | 7.15 |
| MnO | 0.15 | 0.14 | 0.15 | 0.13 | 0.12 | 0.12 | 0.10 | 0.11 | 0.10 |
| MgO | 5.42 | 5.54 | 4.16 | 6.25 | 6.42 | 4.34 | 4.11 | 7.38 | 3.52 |
| CaO | 11.11 | 10.86 | 9.85 | 10.70 | 10.67 | 9.64 | 8.38 | 8.56 | 7.97 |
| Na ₂ O | 2.94 | 2.88 | 3.31 | 2.71 | 2.96 | 3.27 | 3.46 | 2.92 | 3.62 |
| K ₂ O | 0.95 | 1.27 | 1.27 | 1.26 | 1.30 | 1.17 | 2.07 | 1.48 | 1.45 |
| P ₂ O ₅ | 0.21 | 0.15 | 0.24 | 0.09 | 0.19 | 0.14 | . | . | 0.37 |
| Total | 99.89 | 98.95 | 99.38 | 99.41 | 100.34 | 99.87 | 99.21 | 100.31 | 99.14 |
| La | 8.24 | 8.91 | 9.45 | 5.90 | 9.52 | 8.90 | 14.1 | 11.3 | 13.9 |
| Ce | 18.6 | 19.9 | 21.6 | 13.0 | 23.5 | 21.8 | 31.2 | 23.7 | 27.6 |
| Nd | 11.1 | 13.8 | 12.0 | 7.8 | 13.9 | 12.7 | 11.9 | 13.5 | 16.9 |
| Sm | 3.32 | 3.43 | 3.47 | 2.17 | 3.32 | 3.19 | 3.46 | 2.88 | 3.25 |
| Eu | 0.95 | 1.01 | 0.98 | 0.89 | 0.98 | 1.02 | 1.01 | 0.83 | 0.99 |
| Tb | 0.48 | 0.55 | 0.55 | 0.34 | 0.42 | 0.51 | 0.41 | 0.40 | 0.49 |
| Yb | 1.82 | 1.67 | 1.87 | 1.28 | 1.54 | 1.96 | 1.54 | 1.29 | 1.95 |
| Lu | 0.227 | 0.232 | 0.260 | 0.213 | 0.228 | 0.305 | 0.210 | 0.217 | 0.260 |
| Rb | . | . | . | 19. | 24. | 35. | 35 | 29 | 32 |
| Sr | . | 587. | . | 685. | 687. | 470. | 470. | 652. | 655. |
| Ba | 345. | 359. | 423. | 362. | 341. | 500. | 539. | 588. | 544. |
| Cs | 0.63 | 1.29 | 1.36 | 0.52 | 1.20 | 2.23 | 1.85 | 2.09 | 1.48 |
| U | 0.83 | 0.99 | 0.91 | 1.22 | 1.09 | 1.52 | 1.93 | 1.64 | 1.85 |
| Th | 1.63 | 2.19 | 2.34 | 2.22 | 2.48 | 3.14 | 4.27 | 3.88 | 3.52 |
| Hf | 1.4 | 1.8 | 1.9 | 1.8 | 1.9 | 2.3 | 2.3 | 2.0 | 2.4 |
| Zr | . | . | . | . | 67. | 78. | 78. | 83. | 80. |
| Ta | 0.33 | 0.31 | 0.22 | . | 0.27 | 0.22 | 0.14 | . | . |
| Sc | 37.6 | 37.2 | 23.1 | 38.7 | 38.5 | 29.0 | 23.9 | 26.4 | 16.7 |
| Cr | 32 | 55 | 9 | 155 | 162 | 40 | 84 | 493 | 15 |
| Ni | 20 | 31 | 12 | 46 | 30 | 10 | 33 | 104 | 12 |
| Co | 34. | 35. | 47. | . | . | . | 19. | . | . |
| δ ¹⁸ O | . | . | . | 5.4 | 5.8 | 5.8 | 5.8 | 5.5 | 6.3 |

MF18B - Coats (1956) Plate 9, Parasitic cone (51°57'N, 176°43'W elev. 1700 ft.)

MF2A - Coats (1956) Plate 9, Parasitic cone (51°57'N, 176°41'W elev. 600 ft.)

MF18A - Coats (1956) Plate 9, Parasitic cone (51°57'N, 176°43'W elev. 1800 ft.)

ADK6 - Coats (1956) Plate 9, Parasitic cone (51°57'N, 176°41'W elev. 400 ft.)

MF19 - Coats (1956) Plate 9, Parasitic cone (51°57'N, 176°42'W elev. 600 ft.)

MF5B - Neuweld (1987), Basalt Dome

MFHOS - Coats (1956) Plate 9, Composite cone (51°58'N, 176°44'W sea level)

ADK58 - Coats (1956) Plate 9, Composite cone (51°58'N, 176°43'W elev. 800 ft.)

ADK55 - Coats (1956) Plate 9, Composite cone (51°58'N, 176°43'W elev. 700 ft.)

Adak Island (Mt. Moffett cont.)

| Sample | MF9A | MF11B | MF13 | ADK9 | MF56A | MF7 | ADK52 |
|--------------------------------|--------|-------|--------|-------|-------|-------|-------|
| SiO ₂ | 57.22 | 57.32 | 58.82 | 60.61 | 62.57 | 62.80 | 56.56 |
| TiO ₂ | 0.71 | 0.62 | 0.69 | 0.47 | 0.55 | 0.54 | .82 |
| Al ₂ O ₃ | 17.39 | 18.66 | 18.09 | 18.02 | 17.52 | 17.00 | 16.54 |
| Fe ₂ O ₃ | . | . | . | . | . | . | . |
| FeO | 6.38 | 6.88 | 6.51 | 5.35 | 5.13 | 5.30 | 5.84 |
| MnO | 0.10 | 0.11 | 0.15 | 0.09 | 0.08 | 0.09 | 0.14 |
| MgO | 4.72 | 3.44 | 3.31 | 2.82 | 2.07 | 2.27 | 5.84 |
| CaO | 8.26 | 7.87 | 8.11 | 7.30 | 6.38 | 6.03 | 9.17 |
| Na ₂ O | 3.78 | 3.22 | 3.17 | 3.49 | 3.68 | 3.82 | 2.82 |
| K ₂ O | 1.30 | 1.06 | 1.25 | 1.50 | 1.65 | 1.51 | 1.57 |
| P ₂ O ₅ | 0.20 | 0.19 | 0.19 | . | 0.20 | 0.16 | 0.34 |
| Total | 100.06 | 99.37 | 100.29 | 99.65 | 99.83 | 99.52 | 99.64 |
| La | 10.5 | 11.1 | 10.0 | 6.85 | 12.7 | 12.8 | 32.9 |
| Ce | 25.3 | 23.0 | 22.4 | 13.4 | 27.0 | 25.4 | 73.2 |
| Nd | 15.0 | 12.0 | 13.4 | 8.5 | 14.0 | 14.0 | 38.5 |
| Sm | 3.95 | 2.95 | 3.14 | 2.07 | 3.66 | 3.19 | 6.36 |
| Eu | 1.07 | 0.90 | 0.99 | 0.81 | 0.89 | 0.88 | 1.78 |
| Tb | 0.60 | 0.43 | 0.45 | 0.32 | 0.51 | 0.44 | 0.49 |
| Yb | 2.07 | 1.89 | 1.91 | 1.48 | 2.11 | 1.92 | 0.98 |
| Lu | 0.314 | 0.275 | 0.298 | 0.227 | 0.294 | 0.284 | 0.146 |
| Rb | . | 32. | 31. | 41. | 48.1 | 48. | 17. |
| Sr | 642. | 511. | 532. | 527. | 461. | 451. | 1758. |
| Ba | 440. | 558. | 523. | 750. | 696. | 825. | 492. |
| Cs | 0.79 | 2.81 | 2.18 | 2.26 | 1.83 | 12.52 | 0.42 |
| U | 1.21 | 1.77 | 1.39 | 1.66 | 2.33 | 12.53 | 1.34 |
| Th | 2.01 | 3.7 | 3.22 | 3.44 | 4.67 | 11.73 | 3.03 |
| Hf | 3.3 | 2.3 | 2.3 | 2.5 | 2.7 | 3.11 | 4.1 |
| Zr | . | 109. | 95. | 135. | 90. | 109. | . |
| Ta | 0.68 | 0.21 | 0.33 | . | 0.31 | 0.38 | . |
| Sc | 21.9 | 17.7 | 22.9 | 11.4 | 11.8 | 13.9 | 19.9 |
| Cr | 252 | 11 | 13 | 17 | 4 | 11 | 267 |
| Ni | 62 | 11 | 11 | 10 | 4 | 0 | 113 |
| Co | 9. | 43. | . | . | 14. | 20. | . |
| δ ¹⁸ O | 7.2 | . | 6.0 | 6.1 | . | . | . |

MF9A - Coats (1956) Composite cone (51°57'N, 176°42'W - elev. 100ft.)

MF11B - Andesite clast in volcanic breccia under tephra on road to ski lodge
(51°57'N, 176°42'W elev. 700ft.)

MF13 - Neuweld (1987), "Basalt" dome.

ADK9 - Coats (1956) Parasitic cone (51°57'N, 176°41'W elev. 800 ft.)

MF56A - Coats (1956) Composite cone (51°56'N, 176°44'W elev. 2680 ft.)

MF7 - Coats (1956) Composite cone (51°54'N, 176°43'W elev. 2040 ft.)

ADK52 - Coats (1956), Kay (1978), Magnesian andesite (51°58'N, 176°43'W sea level)

| Adak Island (Mt. Adagdak) | | | | |
|----------------------------------|--------------|--------------|--------------|--------------|
| Sample | ADG7A | ADG2 | ADG7 | ADG8 |
| SiO ₂ | 50.79 | 57.49 | 53.62 | 60.96 |
| TiO ₂ | 0.91 | 0.49 | 0.67 | 0.48 |
| Al ₂ O ₃ | 19.10 | 19.33 | 19.50 | 17.43 |
| Fe ₂ O ₃ | . | . | . | . |
| FeO | 9.62 | 6.75 | 7.96 | 6.00 |
| MnO | 0.15 | 0.11 | 0.13 | 0.10 |
| MgO | 4.79 | 2.44 | 3.30 | 2.53 |
| CaO | 10.24 | 8.16 | 9.59 | 7.17 |
| Na ₂ O | 2.83 | 3.56 | 3.21 | 3.74 |
| K ₂ O | 0.97 | 1.02 | 0.85 | 1.09 |
| P ₂ O ₅ | 0.20 | 0.21 | 0.20 | 0.17 |
| Total | 99.60 | 99.56 | 99.03 | 99.67 |
| La | 7.80 | 9.85 | 8.26 | 11.1 |
| Ce | 18.3 | 20.5 | 18.6 | 22.3 |
| Nd | 13.5 | 12.6 | 13.3 | 12.6 |
| Sm | 3.22 | 3.49 | 3.32 | 2.98 |
| Eu | 1.06 | 1.06 | 1.04 | 0.91 |
| Tb | 0.51 | 0.58 | 0.60 | 0.48 |
| Yb | 1.86 | 2.08 | 2.19 | 1.94 |
| Lu | 0.258 | 0.323 | 0.324 | 0.307 |
| Rb | 24. | 41. | 22. | . |
| Sr | 472. | 408. | 480. | 396. |
| Ba | 406. | 453. | 354. | 528. |
| Cs | 1.18 | 1.14 | 1.23 | 2.83 |
| U | 0.94 | 1.12 | 0.79 | 1.55 |
| Th | 1.94 | 2.44 | 1.71 | 3.04 |
| Hf | 1.6 | 2.1 | 2.2 | 2.6 |
| Zr | 57. | 80. | 68. | . |
| Ta | 0.31 | 0.39 | 0.38 | 0.55 |
| Sc | 26.6 | 9.9 | 16.4 | 12.4 |
| Cr | 14. | 3. | 8. | 6. |
| Ni | 1. | 2. | 9. | 5. |
| Co | 48. | 16. | 22. | 15. |
| δ ¹⁸ O | 6.2 | 5.9 | . | . |

ADG7A - Coats (1956) Plate 9, map unit Td (51°58'N,176°34'W, elev. 1080 ft.)

ADG2 - Coats (1956) Plate 9, map unit TIs (51°57'N,176°34'W, sea level)

ADG7 - Coats (1956) Plate 9, map unit Td (51°58'N,176°34'W, elev. 1080 ft.)

ADG8 - Coats (1956) Plate 9, map unit TIs (51°58'N,176°34'W, elev. 500 ft.)

| Sample | Kanaga Volcano | | | | | | | | |
|--------------------------------|----------------|-------|-------|-------|-------|-------|--------|-------|--------|
| | S508 | S489 | S549 | S447 | S561 | S456 | KN514 | KN58 | KN59 |
| SiO ₂ | 47.66 | 48.06 | 48.32 | 48.36 | 48.38 | 48.44 | 48.96 | . | 58.54 |
| TiO ₂ | 1.18 | 1.10 | 1.06 | 1.11 | 1.05 | 1.06 | 1.04 | . | 0.63 |
| Al ₂ O ₃ | 18.58 | 19.17 | 19.51 | 18.76 | 17.63 | 19.37 | 18.86 | . | 18.71 |
| Fe ₂ O ₃ | . | . | . | . | . | . | . | . | . |
| FeO | 10.28 | 10.07 | 10.16 | 10.36 | 10.14 | 10.32 | 10.17 | 7.06 | 6.41 |
| MnO | 0.16 | 0.15 | 0.15 | 0.16 | 0.16 | 0.15 | 0.16 | . | 0.15 |
| MgO | 6.06 | 5.65 | 4.83 | 5.76 | 5.49 | 5.01 | 5.28 | . | 3.30 |
| CaO | 11.41 | 11.27 | 10.58 | 11.38 | 11.42 | 10.86 | 11.46 | . | 7.73 |
| Na ₂ O | 2.68 | 2.94 | 3.18 | 2.84 | 2.76 | 3.00 | 3.17 | 3.38 | 3.46 |
| K ₂ O | 0.87 | 0.91 | 0.98 | 0.93 | 0.87 | 0.92 | 0.98 | . | 1.46 |
| P ₂ O ₅ | . | . | . | . | . | . | . | . | 0.36 |
| Total | 98.88 | 99.32 | 98.77 | 99.66 | 97.90 | 99.13 | 100.08 | . | 100.75 |
| La | 7.11 | 7.74 | 8.61 | 7.71 | 8.02 | 8.14 | 8.63 | 10.2 | 9.40 |
| Ce | 16.9 | 18.2 | 19.7 | 17.9 | 17.9 | 19.2 | 21.1 | 24.4 | 22.2 |
| Nd | 12.7 | 14.6 | 13.1 | 12.9 | 12.8 | 11.8 | 14.2 | 12.8 | 13.3 |
| Sm | 3.46 | 3.65 | 3.80 | 3.63 | 3.72 | 3.72 | 3.84 | 3.65 | 3.47 |
| Eu | 1.09 | 1.13 | 1.14 | 1.13 | 1.13 | 1.13 | 1.15 | 1.03 | 0.95 |
| Tb | .58 | 0.57 | 0.59 | 0.59 | 0.60 | 0.61 | 0.64 | 0.60 | 0.56 |
| Yb | 1.89 | 2.07 | 2.07 | 1.96 | 2.15 | 2.07 | 1.95 | 2.51 | 2.11 |
| Lu | 0.266 | 0.283 | 0.288 | 0.272 | 0.292 | 0.282 | 0.304 | 0.342 | 0.328 |
| Rb | . | . | . | . | . | . | 18. | . | 41. |
| Sr | . | 528. | 595. | 544. | 545. | 567. | 616. | . | 439. |
| Ba | 351. | 372. | 400. | 355. | 345. | 417. | 366. | 471. | 509. |
| Cs | 0.39 | 0.34 | 0.67 | 0.45 | 0.37 | 0.27 | 0.19 | 2.55 | 1.22 |
| U | 0.81 | 0.79 | 0.84 | 0.69 | 0.66 | 0.85 | 1.10 | 1.66 | 1.69 |
| Th | 1.54 | 1.76 | 2.03 | 1.71 | 1.76 | 1.86 | 2.04 | 3.71 | 3.97 |
| Hf | 1.8 | 1.9 | 2.1 | 2.0 | 2.0 | 2.0 | 2.0 | 3.0 | 2.8 |
| Zr | . | . | . | . | . | . | 41. | 109. | 110. |
| Ta | 0.39 | 0.31 | 0.44 | 0.33 | 0.54 | 0.54 | 0.11 | 0.17 | 0.14 |
| Sc | 46.5 | 41.9 | 30.4 | 41.4 | 43.5 | 34.8 | 29.9 | 24.2 | 15.7 |
| Cr | 35. | 29. | 10. | 12. | 16. | 25. | 23. | 21. | . |
| Ni | 18. | 17. | 11. | 11. | 19. | 17. | 12. | 9. | . |
| Co | 47. | 44. | 42. | 48. | 44. | 44. | 32. | 21. | 16. |

δ¹⁸O

5.4 5.3

S508 - Round Top section: flow 14. Sample of D. Stone (Geoph. Jour. 28, 317-335, 1972).

S489 - Round Top section: flow 11. Sample of D. Stone (Geoph. Jour. 28, 317-335, 1972).

S549 - Round Top section: flow 1. Sample of D. Stone (Geoph. Jour. 28, 317-335, 1972).

S447 - Round Top section: flow 5. Sample of D. Stone (Geoph. Jour. 28, 317-335, 1972).

S561 - Round Top section: flow 3. Sample of D. Stone (Geoph. Jour. 28, 317-335, 1972).

S456 - Round Top section: flow 6. Sample of D. Stone (Geoph. Jour. 28, 317-335, 1972).

KN514 - Round Top clinopyroxene basalt flow.

KN58 - Kanaga Volcano Lava: post-1900 clinopyroxene-plagioclase andesite lava.

KN59 - Kanaga Volcano Lava: post-1900 clinopyroxene-plagioclase andesite lava.

| Sample | Bobrof | | Buldir | Seamount |
|--------------------------------|--------|--------|--------|----------|
| | BO98A | BO96A | BI93A | 70B29 |
| SiO ₂ | 53.73 | 62.00 | 60.79 | 63.0 |
| TiO ₂ | 0.69 | 0.56 | 0.48 | 0.52 |
| Al ₂ O ₃ | 20.34 | 17.69 | 18.01 | 17.5 |
| Fe ₂ O ₃ | . | . | . | 1.9 |
| FeO | 7.63 | 5.43 | 5.20 | 2.4 |
| MnO | 0.13 | 0.09 | 0.07 | 0.06 |
| MgO | 3.24 | 2.77 | 3.36 | 2.9 |
| CaO | 10.13 | 6.96 | 6.62 | 5.9 |
| Na ₂ O | 2.85 | 3.82 | 4.24 | 3.8 |
| K ₂ O | 0.84 | 1.32 | 1.36 | 1.2 |
| P ₂ O ₅ | 0.55 | 0.17 | 0.19 | 0.11 |
| Total | 100.13 | 100.81 | 100.32 | 99.29 |
| La | 9.19 | 14.1 | 11.1 | 10.8 |
| Ce | 21.9 | 27.1 | 25.7 | 26.6 |
| Nd | 12.7 | 14.3 | 14.6 | 16.1 |
| Sm | 3.42 | 3.69 | 2.99 | 3.56 |
| Eu | 0.99 | 1.01 | 0.94 | 1.05 |
| Tb | 0.50 | 0.51 | 0.36 | 0.39 |
| Yb | 2.09 | 2.02 | 1.41 | 1.10 |
| Lu | 0.318 | 0.313 | 0.212 | 0.150 |
| Rb | 26. | 44. | 35. | . |
| Sr | 504. | 469. | 495. | . |
| Ba | 370. | 645. | 363. | 258. |
| Cs | 1.47 | 1.98 | 1.09 | 0.50 |
| U | 1.11 | 1.90 | 1.19 | 0.65 |
| Th | 2.69 | 4.81 | 2.73 | 1.38 |
| Hf | 2.2 | 2.8 | 3.1 | 2.8 |
| Zr | 55. | 71. | 84. | . |
| Ta | 0.11 | 0.18 | 0.35 | 0.10 |
| Sc | 11.7 | 15.4 | 14.0 | 11.8 |
| Cr | 15. | 37. | 59. | 48. |
| Ni | 5. | 12. | 22. | 36. |
| Co | 17. | 14. | . | 14. |
| δ ¹⁸ O | 5.5 | 6.9 | 7.1 | . |

BO98A - Basaltic andesite, north shore Bobrof Island (near seismic station)

BO96A - Andesite, north shore Bobrof Island (near seismic station)

BI93A - Hornblende andesite, pass (1300') west of Round Mt. , Buldir Island. Sample of F. Zeilemaker.

70-B29 - Hornblende andesite (Scholl et al. 1976: GSA Bull., v.87, p. 547-554). 52.6° N, 174.8° E, depth 750m.