Appendix B. Hf isotopic data from the Chugach-Prince William terrane, Alaska.

Analytical methods at the Arizona LaserChron Center

Hf isotope analyses are conducted with a Nu HR ICPMS connected to a New Wave UP193HE laser (2009-2010) or a Photon Machines Analyte G2 excimer laser (2011). Instrument settings are established first by analysis of 10 ppb solutions of JMC475 and a Spex Hf solution, and then by analysis of 10 ppb solutions containing Spex Hf, Yb, and Lu. The mixtures range in concentration of Yb and Lu, with ^{176}(Yb+Lu) up to 70% of the ^{176}Hf. When all solutions yield $^{176}Hf/^{177}Hf$ of ~0.28216, instrument settings are optimized for laser ablation analyses and seven different standard zircons (Mud Tank, 91500, Temora, R33, FC52, Plesovice, and Sri Lanka) are analyzed. These standards are included with unknowns on the same epoxy mounts. When precision and accuracy are acceptable, unknowns are analyzed using exactly the same acquisition parameters.

Laser ablation analyses are conducted with a laser beam diameter of 40 microns, with the ablation pits located on top of the U-Pb analysis pits. CL images are used to ensure that the ablation pits do not overlap multiple age domains or inclusions. Each acquisition consists of one 40-second integration on backgrounds (on peaks with no laser firing) followed by 60 one-second integrations with the laser firing. Using a typical laser fluence of ~5 J/cm2 and pulse rate of 7 hz, the ablation rate is ~0.8 microns per second. Each standard is analyzed once for every ~20 unknowns.

Isotope fractionation is accounted for using the method of Woodhead et al. (2004): βHf is determined from the measured $^{179}Hf/^{177}Hf$; βYb is determined from the measured $^{173}Yb/^{171}Yb$ (except for very low Yb signals); βLu is assumed to be the same as βYb; and an exponential formula is used for fractionation correction. Yb and Lu interferences are corrected by measurement of $^{176}Yb/^{171}Yb$ and $^{176}Lu/^{175}Lu$ (respectively), as advocated by Woodhead et al. (2004). Critical isotope ratios are $^{179}Hf/^{177}Hf$ =0.73250 (Patchett & Tatsumoto, 1980); $^{173}Yb/^{171}Yb$ = 1.132338 (Vervoort et al. 2004); $^{176}Yb/^{171}Yb$ =0.901691 (Vervoort et al., 2004; Amelin and Davis, 2005); $^{176}Lu/^{175}Lu$ = 0.02653 (Patchett, 1983). All corrections are done line-by-line. For very low Yb signals, βHf is used for fractionation of Yb isotopes. The corrected $^{176}Hf/^{177}Hf$ values are filtered for outliers (2-sigma filter), and the average and standard error are calculated from the resulting ~58 integrations. There is no capability to use only a portion of the acquired data.

All solutions, standards, and unknowns analyzed during a session are reduced together. The cutoff for using βHf versus βYb is determined by monitoring the average offset of the standards from their known values, and the cutoff is set at the minimum offset. For most data sets, this is achieved at ~6 mv of ^{171}Yb. For sessions in which the standards yield $^{176}Hf/^{177}Hf$ values that are shifted consistently from the know values, a correction factor is applied to the $^{176}Hf/^{177}Hf$ of all standards and unknowns. This correction factor, which is not necessary for most sessions, averages 1 epsilon unit.

The $^{176}Hf/^{177}Hf$ at time of crystallization is calculated from measurement of present-day $^{176}Hf/^{177}Hf$ and $^{176}Lu/^{177}Hf$, using the decay constant of ^{176}Lu (λ = 1.867e^{-11}) from Scherer et al. (2001) and Söderlund et al. (2004). No capability is provided for calculating Hf Depleted Mantle model ages because the $^{176}Hf/^{177}Hf$ and $^{176}Lu/^{177}Hf$ of the source material(s) from which the zircon crystallized is not known.

Notes for Table B:

1. Data reduction methodology is from Woodhead et al. (2004)
2. Analytical methods described in detail by Gehrels and Pecha (2014)
3. (176Yb + 176Lu) / 176Hf (%) expresses the proportion of 176 due to 176Yb + 176Lu versus the proportion due to 176Hf, in %.
4. Volts Hf is the sum of voltages of all Hf isotopes.
5. 176Hf/177Hf is the measured 176Hf/177Hf, corrected for fractionation and interfences. Shown with uncertainty expressed at 1-sigma.
6. 176Lu/177Hf is the intensity of 176Lu, calculated from the measured instensity of 175Lu and 176Lu/175Lu=0.02653 (from Patchett, 1983), compared to the measured intensity of 177Hf. Fractionation of Lu isotopes is assumed to be the same as fractionation of Yb isotopes.
7. 176Hf/177Hf (T) is the 176Hf/177Hf corrected to the time of crystallization using a decay constant of 1.867e-11 (from Scherer et al., 2001 and Soderland et al., 2004)
8. E-Hf (0) is the present-day epsilon Hf value using 176Hf/177Hf=0.282785 and 176Lu/177Hf=0.0336 (from Bouvier et al., 2008). The uncertainty is expressed at 1-sigma.
9. E-Hf (T) is the epsilon Hf value at the time of crystallization. The uncertainty is expressed at 1-sigma.
10. U-Pb ages are based on 206/238 for ages younger than ~1.0 Ga, and on 206/207 for ages older than ~1.0 Ga. This age cutoff may be slightly different for each sample.
11. Isotope ratios as follows:

180/177	1.8866600	Patchett (1983)
179/177	0.7325000	Patchett & Tatsumoto (1980)
178/177	1.4671800	Patchett (1983)
176/177	0.2821600	Patchett (1983)
174/177	0.0087100	Patchett (1983)
176/175	0.0265300	Patchett (1983)
176/171	0.9016910	Vervoort et al. (2004)
173/171	1.1323569	Vervoort et al. (2004)
172/171	1.5317360	Vervoort et al. (2004)

References

Amelin, Y., and Davis, W.J., 2005, Geochemical test for branching decay of 176Lu: Geochimica et Cosmochimica Acta, v. 69, p. 465-473.

Bahlburg, H., Vervoort, J.D., and DuFrane, S.A., 2010, Plate tectonic significance of Middle Cambrian and Ordovician siliciclastic rocks of the Bavarian facies, Armorican terrane assemblage, Germany -- U-Pb and Hf isotope evidence from detrital zircons: Gondwana Research, v. 17 (2-3), p. 223-235.

Bouvier, A., Vervoort, J., and Patchett, J., 2008, The Lu-Hf and Sm-Nd isotopic composiiton of CHUR: Consraints from unequilibrated chondrites and implications for the bulk composition of terrestrial planets: Earth and Planetary

Science Letters: v. 273, p. 48-57.
Gehrels, G. and Pecha, M., 2014, Detrital zircon U-Pb geochronology and Hf isotope geochemistry of Paleozoic and Triassic passive margin strata of western North America: Geosphere, v. 10 (1), p. 49-65.
Patchett, P.J., 1983, Importance of the Lu-Hf isotopic system in studies of planetary chronology and chemical evolution: Geochimica and Cosmochimica Acta, v. 47, p. 81-91.
Patchett, P.J., and Tatsumoto, M., 1980, A routine high-precision method for Lu-Hf isotope geochemistry and chronology: Contributions to Mineralogy and Petrology, v. 75, 263-267.
Scherer, E., Münker, C., and Mezger, K., 2001, Calibration of the Lutetium-Hafnium Clock: Science, v. , p. 683–687.
Söderlund, U., Patchett, P.J., Vervoort, J.D., and Isachsen, C.E., 2004, The 176Lu decay constant determined by Lu-Hf and U-Pb isotope systematics of Precambrian mafic intrusions: Earth and Planetary Science Letters, v. 219, p. 311-324.
Vervoort, J.D., and Patchett, P.J., 1996, Behavior of hafnium and neodymium isotopes in the crust: constraints from Precambrian crustally derived granites: Geochimica et Cosmochimica Acta, v. 60, p. 3717-3723
Vervoort, J. D., and Blichert-Toft, J., 1999, Evolution of the depleted mantle: Hf isotope evidence from juvenile rocks through time: Geochimica et Cosmochimica Acta, v. 63, p. 533–556.
Vervoort, J.D., Patchett, P.J., Blichert-Toft, J., and Albarede, F., 1999, Relationships between Lu-Hf and Sm-Nd isotopic systems in the global sedimentary system: Earth and Planetary Science Letters, v. 168, p. 79-99.
Vervoort, J.D., Patchett, P.J., Soderlund, U., and Baker, M., 2004, Isotopic composition of Yb and the determination of Lu concentrations and Lu/Hf ratios by isotope dilution using MC-ICPMS: Geochemistry Geophysics Geosystems, v. 5, Q11002. (doi:10.1029/2004GC000721)
Vervoort, J.D., 2010, Hf analysis in zircon by LA-MC-ICPMS: Promise and pitfalls: Geological Society of America Abstracts with Programs, v. 42 (5), p. 667.
Wieser, M.E., 2006, Atomic weights of the elements 2005 (IUPAC Technical Report): Pure and Applied Chemistry, v. 78 (11), p. 2051–2066. doi:10.1351/pac200678112051
Woodhead, J., Hergt, J., Shelley, M., Eggins, S., and Kemp, R., 2004, Zircon Hf-isotope analysis with an excimer laser, depth profiling, ablation of complex geometries, and concomitant age estimation: Chemical Geology, v. 209, p. 121-135.
Woodhead, J.D., and Hergt, J.M., 2004, A preliminary appraisal of seven natural zircon reference materials for in situ Hf isotope determination: Geostandards and Geoanalytical Research, v. 29 (2), p. 183-195.

Table B. Hf isotopic data from the Chugach-Prince William terrane, Alaska.

Sample	(^{176}Yb + ^{176}Lu) / ^{176}Hf (%)	Volts Hf	^{176}Hf/^{177}Hf	± (1σ)	^{176}Lu/^{177}Hf	^{176}Hf/ ^{177}Hf (t)	ε Hf (0)	ε Hf (0) ± (1σ)	ε Hf (t)	Age (Ma)
Sample 11CD-60, Ghost Rocks Fm (57.43846, -152.73250)										
11CD-60PC-86	19.4	2.2	0.282165	0.000035	0.001063	0.282158	-21.9	1.3	-13.9	371
11CD-60PC-12	22.8	2.6	0.282413	0.000044	0.001667	0.282398	-13.1	1.6	-3.2	472
11CD-60PC-50	18.6	2.4	0.282184	0.000035	0.001049	0.282173	-21.2	1.2	-9.1	563
11CD-60PC-26	36.0	2.1	0.281811	0.000040	0.001924	0.281788	-34.4	1.4	-21.1	637
11CD-60PC-07	7.4	2.8	0.282135	0.000045	0.000551	0.282128	-23.0	1.6	-8.9	644
11CD-60PC-23	19.3	2.2	0.282248	0.000036	0.001348	0.282231	-19.0	1.3	-4.7	667
11CD-60PC-02	24.1	2.4	0.282477	0.000039	0.001197	0.282461	-10.9	1.4	4.5	714
11CD-60PC-77	31.7	2.0	0.282235	0.000046	0.001594	0.282205	-19.5	1.6	1.9	1003
11CD-60PC-13	10.9	2.4	0.282201	0.000040	0.000610	0.282189	-20.6	1.4	2.2	1038
11CD-60PC-88	16.4	1.4	0.282102	0.000059	0.000778	0.282087	-24.2	2.1	-1.3	1046
11CD-60PC-59	12.1	1.7	0.281933	0.000051	0.000777	0.281914	-30.1	1.8	-2.6	1258
11CD-60PC-46	13.5	2.0	0.282226	0.000034	0.000786	0.282207	-19.8	1.2	8.1	1270
11CD-60PC-04	31.5	2.1	0.282031	0.000047	0.001948	0.281982	-26.7	1.7	1.7	1342
11CD-60PC-98	9.2	2.0	0.282092	0.000051	0.000611	0.282076	-24.5	1.8	5.4	1354
11CD-60PC-29	10.4	2.2	0.281881	0.000045	0.000722	0.281861	-32.0	1.6	-0.6	1426
11CD-60PC-90	28.5	1.1	0.282291	0.000071	0.001819	0.282241	-17.5	2.5	13.9	1473
11CD-60PC-63	15.4	2.3	0.282130	0.000048	0.000856	0.282105	-23.2	1.7	10.0	1512
11CD-60PC-09	14.0	2.3	0.281964	0.000039	0.000852	0.281940	-29.0	1.4	4.3	1521
11CD-60PC-76	14.8	1.8	0.281831	0.000069	0.000782	0.281807	-33.7	2.5	2.4	1642
11CD-60PC-74	22.0	2.4	0.281912	0.000041	0.001300	0.281872	-30.9	1.5	4.9	1652
11CD-60PC-39	20.9	2.2	0.281363	0.000033	0.001100	0.281327	-50.3	1.2	-12.8	1720
11CD-60PC-24	8.8	2.1	0.281804	0.000048	0.000518	0.281787	-34.7	1.7	4.1	1745
11CD-60PC-99	7.9	2.4	0.281384	0.000043	0.000437	0.281369	-49.5	1.5	-8.7	1836
11CD-60PC-01	3.8	2.3	0.281539	0.000042	0.000201	0.281531	-44.1	1.5	-1.0	1920
11CD-60PC-95	10.7	1.2	0.280946	0.000050	0.000738	0.280918	-65.0	1.8	-20.7	2008

11CD-60PC-17	2.8	2.2	0.281354	0.000041	0.000166	0.281348	-50.6	1.4	-4.9	2032
11CD-60PC-73	24.2	2.3	0.281625	0.000033	0.001535	0.281563	-41.0	1.2	4.7	2118
11CD-60PC-100	12.1	2.8	0.281341	0.000049	0.000732	0.281309	-51.0	1.7	0.2	2312
11CD-60PC-33	10.2	2.1	0.281056	0.000040	0.000564	0.281029	-61.1	1.4	-3.7	2571
11CD-60PC-94	15.2	2.3	0.281097	0.000037	0.000909	0.281049	-59.7	1.3	0.5	2721
11CD-60PC-20	6.1	2.0	0.281025	0.000040	0.000379	0.281004	-62.3	1.4	0.9	2805
11CD-60PC-92	11.7	1.9	0.280805	0.000039	0.000735	0.280765	-70.0	1.4	-6.6	2846
Sample 11HW-23, Orca Fm (60.5510, -148.4158)										
11HW-23-PC-77	5.8	2.4	0.282566	0.000044	0.000402	0.282563	-7.7	1.5	0.6	379
11HW-23-PC-29	26.2	2.8	0.282356	0.000030	0.001524	0.282344	-15.2	1.1	-6.4	414
11HW-23-PC-63	35.1	3.2	0.282432	0.000032	0.001881	0.282417	-12.5	1.1	-3.6	423
11HW-23-PC-30	1.6	3.4	0.282313	0.000036	0.000087	0.282313	-16.7	1.3	-7.2	429
11HW-23-PC-13	14.1	2.6	0.282533	0.000041	0.001833	0.282517	-8.9	1.5	0.6	453
11HW-23-PC-95	13.4	2.4	0.282211	0.000035	0.000985	0.282202	-20.3	1.3	-9.5	500
11HW-23-PC-94	18.0	2.5	0.282751	0.000033	0.001217	0.282738	-1.2	1.2	11.0	566
11HW-23-PC-54	14.4	3.2	0.282439	0.000035	0.001053	0.282426	-12.3	1.2	1.4	630
11HW-23-PC-67	17.0	3.6	0.282339	0.000031	0.001079	0.282325	-15.8	1.1	-0.6	702
11HW-23-PC-05	29.1	2.5	0.282555	0.000040	0.002244	0.282520	-8.1	1.4	9.1	826
11HW-23-PC-39	4.9	3.0	0.282265	0.000034	0.000276	0.282260	-18.4	1.2	4.6	1033
11HW-23-PC-08	4.5	3.4	0.282150	0.000037	0.000273	0.282145	-22.4	1.3	1.2	1062
11HW-23-PC-60	22.9	2.2	0.282240	0.000032	0.001292	0.282212	-19.3	1.1	5.7	1156
11HW-23-PC-88	10.1	3.8	0.282098	0.000035	0.000498	0.282087	-24.3	1.2	1.3	1160
11HW-23-PC-02	23.9	2.7	0.281840	0.000041	0.001355	0.281805	-33.4	1.5	-4.2	1355
11HW-23-PC-69	11.3	3.0	0.282188	0.000032	0.000657	0.282171	-21.1	1.1	9.0	1366
11HW-23-PC-74	18.0	3.8	0.282045	0.000031	0.001162	0.282014	-26.2	1.1	4.5	1412
11HW-23-PC-52	6.7	2.7	0.281938	0.000029	0.000432	0.281925	-30.0	1.0	3.9	1523
11HW-23-PC-27	0.6	2.8	0.281927	0.000036	0.000029	0.281926	-30.4	1.3	4.1	1534
11HW-23-PC-31	12.2	2.8	0.281449	0.000041	0.000645	0.281428	-47.2	1.4	-8.0	1773
11HW-23-PC-80	12.3	3.0	0.281554	0.000029	0.000793	0.281527	-43.5	1.0	-4.4	1776
11HW-23-PC-58	10.0	2.4	0.281560	0.000039	0.000551	0.281541	-43.3	1.4	-3.7	1788

11HW-23-PC-61	13.5	3.1	0.281657	0.000034	0.000766	0.281631	-39.9	1.2	-0.4	1789
11HW-23-PC-36	7.2	2.9	0.281616	0.000036	0.000400	0.281602	-41.3	1.3	0.0	1855
11HW-23-PC-44	14.3	2.4	0.281742	0.000040	0.000783	0.281714	-36.9	1.4	4.7	1885
11HW-23-PC-100	7.3	3.0	0.281045	0.000033	0.000386	0.281031	-61.5	1.2	-19.0	1906
11HW-23-PC-50	3.7	2.9	0.281148	0.000041	0.000220	0.281139	-57.9	1.4	-5.5	2326
11HW-23-PC-53	10.0	2.6	0.281107	0.000041	0.000541	0.281080	-59.4	1.4	-2.8	2533
11HW-23-PC-11	41.2	2.7	0.281192	0.000043	0.002173	0.281086	-56.3	1.5	-2.1	2550
11HW-23-PC-48	5.4	2.9	0.281171	0.000033	0.000327	0.281155	-57.1	1.2	2.2	2632
11HW-23-PC-15	7.5	2.7	0.280905	0.000038	0.000509	0.280877	-66.5	1.3	-0.6	2935
Sample 11SJO-34, Sitkalidak Fm (57.42846, -152.32520)										
11SJ034PC-13	20.2	3.6	0.282398	0.000026	0.001330	0.282389	-13.7	0.9	-6.2	351
11SJ034PC-10	8.5	2.9	0.282516	0.000024	0.000633	0.282512	-9.5	0.8	-1.8	353
11SJ034PC-47	15.4	3.6	0.282583	0.000031	0.001059	0.282576	-7.1	1.1	0.8	370
11SJ034PC-05	9.9	3.5	0.282370	0.000036	0.000578	0.282365	-14.7	1.3	-4.7	457
11SJ034PC-15	17.8	4.1	0.281988	0.000033	0.001057	0.281978	-28.2	1.2	-17.3	503
11SJO-34Y-12	3.0	1.7	0.281712	0.000054	0.000155	0.281710	-38.0	1.9	-25.7	553
11SJ034PC-37	16.7	2.9	0.282476	0.000031	0.001055	0.282464	-10.9	1.1	2.4	618
11SJ034PC-06	15.5	3.6	0.282251	0.000033	0.000966	0.282233	-18.9	1.2	2.3	975
11SJ034PC-23	10.5	3.9	0.282348	0.000027	0.000646	0.282335	-15.5	0.9	6.4	997
11SJ034PC-29	7.1	4.2	0.282220	0.000028	0.000433	0.282212	-20.0	1.0	2.4	1011
11SJ034PC-31	3.1	3.9	0.282291	0.000033	0.000171	0.282287	-17.5	1.2	6.0	1052
11SJ034PC-03	28.9	2.7	0.282272	0.000038	0.001723	0.282237	-18.2	1.3	4.6	1068
11SJ034PC-43	41.1	2.4	0.282372	0.000041	0.002535	0.282318	-14.6	1.5	8.6	1120
11SJ034PC-46	10.9	4.1	0.282138	0.000031	0.000646	0.282124	-22.9	1.1	2.8	1167
11SJ034PC-11	10.6	3.3	0.281869	0.000038	0.000603	0.281851	-32.4	1.3	2.9	1597
11SJ034PC-25	13.6	3.8	0.282043	0.000038	0.000812	0.282018	-26.2	1.3	9.2	1611
11SJ034PC-07	18.1	2.9	0.281540	0.000031	0.001187	0.281502	-44.0	1.1	-6.7	1719
11SJ034PC-14	10.8	3.0	0.281798	0.000030	0.000723	0.281773	-34.9	1.1	4.9	1804
11SJ034PC-53	7.0	3.1	0.281408	0.000032	0.000406	0.281394	-48.7	1.1	-7.9	1833
11SJ034PC-33	11.6	3.8	0.281432	0.000034	0.000727	0.281405	-47.8	1.2	-4.6	1955

11SJ034PC-50	1.3	3.5	0.281383	0.000030	0.000142	0.281378	-49.6	1.1	-4.8	1988
11SJ034PC-35	4.7	3.9	0.281484	0.000027	0.000287	0.281473	-46.0	0.9	-1.2	2001
11SJ034PC-28	5.7	2.4	0.280969	0.000041	0.000302	0.280958	-64.2	1.5	-19.0	2024
11SJ034PC-27	18.9	3.0	0.281336	0.000040	0.001196	0.281284	-51.2	1.4	-0.6	2317
11SJO-34Y-31	13.5	2.0	0.281237	0.000038	0.000798	0.281200	-54.7	1.4	-1.5	2405
11SJ034PC-04	10.4	3.4	0.281125	0.000027	0.000594	0.281096	-58.7	1.0	-0.4	2609
Sample JG10-25, Yakutat Fm (59.91939, -139.57452)										
JG1025-20	19.4	2.6	0.282884	0.000040	0.001182	0.282883	3.5	1.4	4.8	60
JG1025-06	22.7	3.2	0.282855	0.000037	0.001350	0.282853	2.5	1.3	3.8	63
JG1025-53	31.5	3.1	0.281993	0.000039	0.002000	0.281991	-28.0	1.4	-26.5	70
JG1025-98	18.2	3.3	0.282260	0.000026	0.001031	0.282259	-18.6	0.9	-17.0	74
JG1025-49	13.2	3.6	0.282990	0.000026	0.000851	0.282989	7.3	0.9	9.0	80
JG1025-68	24.5	3.7	0.282385	0.000032	0.001529	0.282382	-14.2	1.1	-12.3	86
JG1025-45	25.6	3.2	0.282956	0.000027	0.001444	0.282953	6.0	1.0	7.9	89
JG1025-54	6.0	3.6	0.282379	0.000030	0.000428	0.282378	-14.4	1.1	-12.3	93
JG1025-30	12.1	3.1	0.282766	0.000030	0.000728	0.282765	-0.7	1.1	1.4	97
JG1025-27	24.1	3.2	0.282211	0.000036	0.001458	0.282208	-20.3	1.3	-18.0	109
JG1025-14	19.1	3.2	0.283019	0.000032	0.001093	0.283016	8.3	1.1	11.3	142
JG1025-32	14.7	3.1	0.283033	0.000029	0.001022	0.283030	8.8	1.0	11.9	147
JG1025-17	16.2	3.3	0.282916	0.000029	0.001019	0.282913	4.6	1.0	8.0	154
JG1025-07	16.7	2.9	0.282721	0.000033	0.001035	0.282718	-2.3	1.2	1.3	164
JG1025-39	13.4	2.8	0.282940	0.000024	0.000789	0.282937	5.5	0.9	9.3	175
JG1025-05	21.4	3.1	0.282903	0.000036	0.001310	0.282899	4.2	1.3	7.9	176
JG1025-97	48.6	2.7	0.282907	0.000035	0.002983	0.282897	4.3	1.2	8.0	182
JG1025-44	10.0	3.4	0.282894	0.000034	0.000593	0.282892	3.8	1.2	7.9	187
JG1025-22	20.5	2.9	0.282985	0.000030	0.001203	0.282980	7.1	1.1	11.2	192
JG1025-96	11.6	3.4	0.282984	0.000033	0.000730	0.282981	7.0	1.2	11.3	198
JG 10-25PC-76	29.8	2.4	0.282920	0.000043	0.002074	0.282911	4.8	1.5	9.9	245
JG1025-21	28.2	2.2	0.282441	0.000048	0.001570	0.282433	-12.2	1.7	-7.0	246
JG1025-09	20.0	3.8	0.282577	0.000045	0.001269	0.282569	-7.3	1.6	0.6	371

JG1025-50	12.2	1.9	0.282418	0.000031	0.000749	0.282412	-13.0	1.1	-3.1	455
JG 10-25PC-51	19.0	2.9	0.282180	0.000030	0.001038	0.282160	-21.4	1.1	1.3	1047
JG 10-25PC-53	19.7	3.4	0.282215	0.000035	0.001075	0.282192	-20.1	1.2	5.2	1166
JG1025-16	41.1	3.0	0.282058	0.000034	0.002349	0.281997	-25.7	1.2	2.9	1369
JG1025-51	30.6	4.2	0.281903	0.000025	0.001745	0.281858	-31.2	0.9	-1.9	1374
JG 10-25PC-56	20.4	3.1	0.282125	0.000040	0.001340	0.282090	-23.3	1.4	6.4	1376
JG 10-25PC-65	39.3	4.7	0.281868	0.000034	0.002130	0.281812	-32.4	1.2	-3.4	1378
JG 10-25PC-04	30.0	3.6	0.281980	0.000027	0.001663	0.281937	-28.5	1.0	1.0	1378
JG 10-25PC-73	31.8	3.6	0.282035	0.000039	0.001888	0.281985	-26.5	1.4	2.8	1381
JG1025-79	32.7	4.9	0.281962	0.000027	0.001900	0.281912	-29.1	1.0	0.2	1381
JG 10-25PC-13	29.1	4.1	0.282013	0.000027	0.001623	0.281970	-27.3	1.0	2.3	1384
JG1025-01	53.7	4.3	0.281918	0.000035	0.003032	0.281838	-30.7	1.2	-2.3	1388
JG 10-25PC-57	26.3	2.8	0.281929	0.000029	0.001462	0.281890	-30.3	1.0	0.4	1425
JG 10-25PC-39	10.1	3.2	0.282012	0.000036	0.000590	0.281996	-27.3	1.3	4.4	1436
JG1025-38	11.4	3.0	0.282000	0.000030	0.000654	0.281982	-27.8	1.1	4.1	1444
JG 10-25PC-50	38.4	3.6	0.282034	0.000028	0.003052	0.281950	-26.6	1.0	3.2	1454
JG 10-25PC-72	30.2	3.4	0.282093	0.000037	0.001898	0.282040	-24.5	1.3	6.7	1467
JG 10-25PC-17	11.6	3.8	0.282107	0.000034	0.000699	0.282087	-24.0	1.2	8.6	1477
JG 10-25PC-02	20.6	3.1	0.282032	0.000025	0.001181	0.281999	-26.6	0.9	5.6	1483
JG 10-25PC-07	21.3	3.2	0.282070	0.000037	0.001436	0.282030	-25.3	1.3	6.8	1487
JG1025-10	13.6	4.0	0.282011	0.000031	0.000836	0.281987	-27.4	1.1	6.0	1520
JG 10-25PC-70	24.8	3.1	0.282012	0.000035	0.001752	0.281962	-27.3	1.2	5.1	1521
JG 10-25PC-61	14.9	3.4	0.281885	0.000030	0.000846	0.281861	-31.8	1.1	1.6	1523
JG1025-71	33.2	3.4	0.282094	0.000035	0.002012	0.282035	-24.4	1.3	8.3	1547
JG 10-25PC-33	37.1	3.4	0.281979	0.000027	0.002199	0.281914	-28.5	1.0	4.4	1564
JG 10-25PC-49	8.2	3.4	0.281928	0.000031	0.000554	0.281912	-30.3	1.1	5.3	1604
JG 10-25PC-64	35.6	3.0	0.281981	0.000047	0.002463	0.281905	-28.4	1.7	5.4	1618
JG1025-36	19.0	3.2	0.281996	0.000031	0.001104	0.281962	-27.9	1.1	7.8	1637
JG 10-25PC-25	14.0	2.2	0.281780	0.000055	0.000955	0.281750	-35.5	1.9	0.5	1647
JG 10-25PC-48	18.5	2.4	0.281924	0.000043	0.001436	0.281879	-30.4	1.5	5.5	1664
JG 10-25PC-30	10.4	2.6	0.281972	0.000057	0.000681	0.281951	-28.7	2.0	8.0	1664

JG1025-57	12.8	3.2	0.281874	0.000033	0.000750	0.281850	-32.2	1.2	4.8	1679
JG1025-04	43.4	4.1	0.281996	0.000029	0.002670	0.281910	-27.9	1.0	7.1	1686
JG1025-24	14.5	3.4	0.281760	0.000028	0.000840	0.281733	-36.2	1.0	0.9	1690
JG1025-92	28.8	3.5	0.281915	0.000034	0.001691	0.281861	-30.8	1.2	5.5	1691
JG 10-25PC-59	36.4	3.2	0.282015	0.000033	0.002419	0.281937	-27.2	1.2	8.2	1693
JG 10-25PC-10	19.9	3.7	0.281979	0.000029	0.001081	0.281944	-28.5	1.0	8.6	1701
JG 10-25PC-12	29.8	3.5	0.281779	0.000046	0.001827	0.281720	-35.6	1.6	0.7	1703
JG 10-25PC-75	10.4	4.3	0.281871	0.000031	0.000714	0.281848	-32.3	1.1	5.5	1712
JG 10-25PC-22	21.2	3.7	0.281821	0.000034	0.001213	0.281782	-34.1	1.2	3.1	1712
JG 10-25PC-09	14.7	2.7	0.281995	0.000051	0.000890	0.281966	-27.9	1.8	9.8	1716
JG 10-25PC-43	38.1	3.7	0.281925	0.000033	0.002195	0.281853	-30.4	1.2	6.2	1737
JG 10-25PC-32	22.7	3.1	0.281828	0.000035	0.001285	0.281785	-33.8	1.3	3.9	1739
JG 10-25PC-27	26.8	3.2	0.281729	0.000028	0.001547	0.281678	-37.3	1.0	0.3	1748
JG 10-25PC-29	39.5	2.7	0.281952	0.000038	0.002281	0.281877	-29.4	1.3	7.4	1750
JG 10-25PC-68	32.2	3.6	0.281689	0.000029	0.001929	0.281624	-38.8	1.0	-1.5	1756
JG 10-25PC-60	8.7	3.4	0.281765	0.000032	0.000697	0.281742	-36.1	1.1	2.8	1760
JG1025-25	10.6	2.5	0.281628	0.000043	0.000589	0.281609	-40.9	1.5	-1.6	1774
JG 10-25PC-14	8.3	2.9	0.281810	0.000050	0.000538	0.281791	-34.5	1.8	5.0	1777
JG 10-25PC-42	14.5	3.0	0.281731	0.000034	0.000805	0.281704	-37.3	1.2	1.9	1778
JG 10-25PC-15	19.6	3.3	0.281653	0.000038	0.001217	0.281612	-40.0	1.3	-1.3	1782
JG 10-25PC-74	19.1	3.7	0.281696	0.000029	0.001175	0.281656	-38.5	1.0	0.3	1785
JG 10-25PC-05	33.8	3.9	0.281620	0.000025	0.001945	0.281555	-41.2	0.9	-3.3	1785
JG 10-25PC-08	11.3	2.1	0.281597	0.000043	0.000748	0.281572	-42.0	1.5	-2.5	1793
JG 10-25PC-03	3.8	3.6	0.281633	0.000023	0.000215	0.281624	-40.7	0.8	8.3	2176
JG 10-25PC-46	19.0	3.1	0.281722	0.000035	0.001205	0.281670	-37.6	1.2	11.7	2256
JG 10-25PC-67	15.5	3.1	0.281056	0.000031	0.000959	0.281007	-61.1	1.1	-1.9	2683
Sample JG09-05, Kodiak Fm (57.83622, -152.35168)										
JG09-05-14	18.9	4.1	0.283075	0.000032	0.001264	0.283074	10.3	1.1	11.7	68
JG09-05-36	29.6	3.0	0.282992	0.000028	0.001829	0.282990	7.3	1.0	8.8	70
JG09-05-37	36.8	3.0	0.283013	0.000031	0.001818	0.283010	8.1	1.1	9.5	70

JG09-05-99	10.6	4.5	0.282940	0.000024	0.000647	0.282939	5.5	0.8	7.4	86
JG09-05-11	0.3	3.7	0.282233	0.000024	0.000013	0.282233	-19.5	0.8	-17.5	93
JG09-05-52	18.4	3.4	0.282951	0.000033	0.001374	0.282948	5.9	1.2	7.9	97
JG09-05-78	13.7	3.3	0.282907	0.000030	0.001094	0.282905	4.3	1.1	6.4	98
JG09-05-95	20.3	3.2	0.282620	0.000029	0.001233	0.282618	-5.8	1.0	-3.7	98
JG09-05-08	30.1	4.7	0.283050	0.000026	0.001935	0.283047	9.4	0.9	11.5	100
JG09-05-92	11.1	3.2	0.282699	0.000037	0.000798	0.282697	-3.1	1.3	-0.9	101
JG09-05-85	14.6	3.0	0.282893	0.000032	0.001001	0.282891	3.8	1.1	6.0	102
JG09-05-69	9.9	4.1	0.282888	0.000027	0.000738	0.282886	3.7	1.0	7.2	163
JG09-05-03	12.7	3.1	0.282984	0.000026	0.000900	0.282981	7.0	0.9	10.6	164
JG09-05-10	22.4	3.7	0.282957	0.000023	0.001641	0.282952	6.1	0.8	9.6	167
JG09-05-94	48.1	2.6	0.283016	0.000033	0.003685	0.283004	8.2	1.2	11.7	177
JG09-05-38	16.1	4.6	0.282953	0.000036	0.000980	0.282950	5.9	1.3	9.9	183
JG09-05-33	22.3	3.7	0.282569	0.000037	0.001458	0.282564	-7.6	1.3	-3.7	185
JG09-05-29	18.9	3.3	0.282639	0.000029	0.001247	0.282635	-5.2	1.0	-1.2	187
JG09-05-24	19.9	3.5	0.282714	0.000029	0.001510	0.282709	-2.5	1.0	1.7	198
JG09-05-89	11.9	3.3	0.282663	0.000026	0.000827	0.282660	-4.3	0.9	0.1	202
JG09-05-22	92.6	2.8	0.282947	0.000045	0.005889	0.282924	5.7	1.6	9.6	208
JG09-05-20	24.4	3.2	0.282527	0.000040	0.001499	0.282519	-9.1	1.4	-3.6	260
JG09-05-34	19.7	3.2	0.282899	0.000038	0.001272	0.282891	4.0	1.3	10.8	314
JG09-05-02	25.5	3.0	0.282476	0.000036	0.001683	0.282466	-10.9	1.3	-3.8	339
JG09-05-42	15.1	3.2	0.282374	0.000029	0.001049	0.282367	-14.5	1.0	-6.8	357
JG09-05-PCY32	12.3	2.8	0.282213	0.000037	0.000705	0.282208	-20.2	1.3	-12.2	369
JG09-05-55	20.4	3.4	0.282206	0.000035	0.001190	0.282198	-20.5	1.2	-12.5	371
JG09-05-58	17.3	3.1	0.282091	0.000035	0.001032	0.282084	-24.5	1.2	-16.5	372
JG09-05-70	5.4	4.1	0.282348	0.000033	0.000325	0.282346	-15.4	1.2	-6.2	420
JG09-05-93	34.5	3.2	0.282393	0.000031	0.002025	0.282372	-13.9	1.1	-2.2	557
JG09-05-48	13.0	3.2	0.282340	0.000033	0.000741	0.282326	-15.7	1.2	7.4	1053
JG09-05-PCY36	18.3	3.9	0.282016	0.000027	0.001103	0.281991	-27.2	1.0	-1.2	1199
JG09-05-PCY16	61.2	2.1	0.282322	0.000041	0.003143	0.282250	-16.4	1.5	8.1	1201
JG09-05-PCY40	17.1	3.6	0.282038	0.000026	0.000920	0.282017	-26.4	0.9	0.7	1241

JG09-05-63	28.7	3.7	0.282218	0.000027	0.001539	0.282180	-20.0	0.9	8.5	1332
JG09-05-47	12.9	4.1	0.281801	0.000035	0.000738	0.281782	-34.8	1.2	-4.3	1387
JG09-05-PCY05	17.1	2.8	0.281941	0.000028	0.001022	0.281914	-29.8	1.0	1.0	1414
JG09-05-PCY10	24.5	4.0	0.282024	0.000030	0.001427	0.281985	-26.9	1.0	4.0	1436
JG09-05-PCY27	13.4	4.2	0.281926	0.000029	0.000759	0.281904	-30.4	1.0	2.9	1513
JG09-05-PCY01	17.4	3.7	0.281908	0.000026	0.000976	0.281880	-31.0	0.9	2.3	1523
JG09-05-64	10.9	4.3	0.282007	0.000029	0.000710	0.281986	-27.5	1.0	7.4	1582
JG09-05-PCY33	9.6	4.0	0.281807	0.000026	0.000597	0.281787	-34.6	0.9	4.3	1754
JG09-05-PCY11	8.5	3.6	0.281534	0.000028	0.000489	0.281518	-44.2	1.0	-4.7	1779
JG09-05-32	16.1	3.6	0.281628	0.000029	0.000872	0.281599	-40.9	1.0	-1.7	1785
JG09-05-PCY12	16.4	4.2	0.281744	0.000030	0.000920	0.281712	-36.8	1.1	2.4	1787
JG09-05-PCY18	2.3	3.7	0.281860	0.000031	0.000187	0.281853	-32.7	1.1	7.4	1787
JG09-05-PCY09	10.3	3.1	0.281437	0.000030	0.000569	0.281417	-47.7	1.1	-7.8	1801
JG09-05-PCY17	18.6	3.3	0.281638	0.000044	0.001094	0.281600	-40.6	1.5	-1.1	1809
JG09-05-PCY39	10.4	2.7	0.281485	0.000039	0.000590	0.281464	-46.0	1.4	-5.3	1835
JG09-05-PCY25	7.9	3.2	0.281720	0.000030	0.000461	0.281703	-37.7	1.1	3.3	1840
JG09-05-PCY37	30.0	2.9	0.281810	0.000031	0.001467	0.281759	-34.5	1.1	5.4	1845
JG09-05-PCY03	9.7	3.4	0.281524	0.000034	0.000574	0.281504	-44.6	1.2	-3.6	1848
JG09-05-PCY07	21.6	3.7	0.281687	0.000026	0.001246	0.281643	-38.8	0.9	1.4	1849
JG09-05-PCY04	5.0	4.3	0.281506	0.000027	0.000306	0.281495	-45.2	0.9	-3.8	1852
JG09-05-PCY35	4.1	3.8	0.281430	0.000030	0.000287	0.281419	-47.9	1.1	-6.4	1857
JG09-05-54	11.6	3.1	0.281544	0.000022	0.000690	0.281519	-43.9	0.8	-2.4	1875
JG09-05-PCY15	5.6	4.4	0.281609	0.000030	0.000340	0.281597	-41.6	1.1	0.7	1893
JG09-05-07	8.6	3.4	0.281431	0.000033	0.000527	0.281412	-47.9	1.2	-5.5	1908
JG09-05-PCY22	10.4	3.5	0.281585	0.000038	0.000622	0.281563	-42.4	1.3	-0.0	1913
JG09-05-17	2.8	3.0	0.281406	0.000035	0.000140	0.281401	-48.8	1.2	-5.6	1918
JG09-05-65	12.5	3.5	0.281605	0.000033	0.000828	0.281575	-41.7	1.2	0.7	1928
JG09-05-41	4.8	3.8	0.281450	0.000031	0.000300	0.281439	-47.2	1.1	-4.0	1929
JG09-05-PCY31	20.1	3.3	0.281480	0.000038	0.001183	0.281435	-46.2	1.4	-2.7	1993
JG09-05-PCY06	10.4	3.9	0.281508	0.000031	0.000623	0.281484	-45.2	1.1	-0.9	1994
JG09-05-PCY21	11.0	3.6	0.281427	0.000035	0.000641	0.281402	-48.0	1.2	-3.8	1996

JG09-05-79	9.2	2.4	0.281447	0.000037	0.000555	0.281426	-47.3	1.3	-2.9	2000
JG09-05-PCY38	9.4	3.0	0.281377	0.000031	0.000547	0.281356	-49.8	1.1	-5.3	2002
JG09-05-88	14.2	2.8	0.281443	0.000033	0.000859	0.281410	-47.4	1.2	-3.1	2016
JG09-05-PCY41	10.8	3.2	0.281291	0.000030	0.000610	0.281264	-52.8	1.0	-1.8	2293
JG09-05-04	18.2	3.4	0.281311	0.000038	0.001267	0.281256	-52.1	1.3	-1.8	2306
JG09-05-PCY08	11.2	3.2	0.281199	0.000039	0.000640	0.281171	-56.1	1.4	-4.6	2318
JG09-05-PCY30	11.3	3.3	0.281201	0.000029	0.000665	0.281170	-56.0	1.0	-1.1	2470
JG09-05-PCY20	10.1	3.9	0.281221	0.000029	0.000608	0.281192	-55.3	1.0	0.9	2521
JG09-05-PCY02	8.7	3.3	0.281218	0.000029	0.000510	0.281193	-55.4	1.0	2.2	2575
JG09-05-PCY19	8.5	3.8	0.281208	0.000027	0.000496	0.281183	-55.8	0.9	2.5	2600
JG09-05-PCY14	6.2	3.6	0.281044	0.000033	0.000376	0.281025	-61.6	1.2	-0.6	2709
JG09-05-PCY23	11.9	3.3	0.280966	0.000029	0.000693	0.280929	-64.3	1.0	-3.4	2735
Sample NI12-04, Shumagin Fm (55.156140°, -160.017880°)										
NI12-04-105	14.8	3.4	0.282942	0.000038	0.001065	0.282941	5.6	1.4	7.1	70
NI12-04-50	19.6	3.2	0.282987	0.000027	0.001379	0.282985	7.2	0.9	8.7	73
NI12-04-112	9.8	3.4	0.283000	0.000030	0.000703	0.282999	7.6	1.0	9.2	73
NI12-04-26	13.4	3.3	0.282947	0.000027	0.000951	0.282946	5.7	1.0	7.3	73
NI12-04-97	9.8	3.6	0.283025	0.000031	0.000715	0.283024	8.5	1.1	10.1	74
NI12-04-11	12.1	3.5	0.283038	0.000030	0.000852	0.283037	9.0	1.1	10.6	74
NI12-04-17	30.8	3.6	0.283041	0.000037	0.001933	0.283038	9.0	1.3	10.9	89
NI12-04-93	34.0	3.4	0.283063	0.000036	0.002329	0.283059	9.8	1.3	11.7	89
NI12-04-117	17.3	3.1	0.282895	0.000039	0.001293	0.282893	3.9	1.4	5.8	91
NI12-04-83	17.5	4.5	0.283005	0.000021	0.001247	0.283003	7.8	0.8	9.8	94
NI12-04-40	18.7	3.4	0.282960	0.000027	0.001334	0.282958	6.2	0.9	8.3	97
NI12-04-24	18.3	3.2	0.283018	0.000033	0.001213	0.283015	8.2	1.2	11.4	149
NI12-04-77	6.9	4.8	0.282917	0.000024	0.000572	0.282916	4.7	0.8	8.0	150
NI12-04-78	22.4	3.4	0.282976	0.000036	0.001487	0.282971	6.8	1.3	10.2	160
NI12-04-35	19.2	3.8	0.282844	0.000030	0.001300	0.282840	2.1	1.1	5.7	168
NI12-04-53	42.3	4.0	0.282825	0.000027	0.002716	0.282817	1.4	1.0	4.9	170
NI12-04-74	21.7	3.6	0.282900	0.000026	0.001551	0.282895	4.1	0.9	7.8	173

NI12-04-72	68.5	2.8	0.282774	0.000035	0.004531	0.282759	-0.4	1.2	3.0	174
NI12-04-51	19.0	3.1	0.282882	0.000026	0.001258	0.282877	3.4	0.9	7.4	186
NI12-04-103	23.4	2.7	0.282964	0.000032	0.001798	0.282958	6.3	1.1	10.4	194
Sample NI12-11, Shumagin Fm (55.201560°,-160.042690°)										
NI12-11-44	14.5	3.2	0.282909	0.000035	0.000975	0.282908	4.4	1.2	5.9	72
NI12-11-01	15.6	2.9	0.282874	0.000039	0.000977	0.282872	3.1	1.4	4.7	72
NI12-11-29	9.0	3.2	0.282836	0.000030	0.000530	0.282835	1.8	1.1	3.4	73
NI12-11-97	14.3	3.3	0.283002	0.000029	0.000946	0.283001	7.7	1.0	9.3	74
NI12-11-39	10.6	3.2	0.282917	0.000022	0.000733	0.282916	4.7	0.8	6.3	75
NI12-11-31	12.6	3.5	0.282974	0.000028	0.001022	0.282972	6.7	1.0	8.4	80
NI12-11-35	10.4	3.2	0.282760	0.000029	0.000739	0.282759	-0.9	1.0	0.9	83
NI12-11-45	13.2	3.3	0.282877	0.000034	0.000891	0.282876	3.3	1.2	5.1	87
NI12-11-98	33.3	3.5	0.282838	0.000031	0.002292	0.282834	1.9	1.1	3.7	88
NI12-11-56	20.4	3.2	0.282901	0.000034	0.001430	0.282899	4.1	1.2	6.2	97
NI12-11-36	10.4	3.8	0.282972	0.000032	0.000750	0.282969	6.6	1.1	9.9	154
NI12-11-100	6.9	3.6	0.282862	0.000030	0.000431	0.282861	2.7	1.1	6.1	156
NI12-11-03	14.1	3.2	0.282632	0.000038	0.001044	0.282629	-5.4	1.3	-1.9	164
NI12-11-42	22.3	3.3	0.282801	0.000030	0.001553	0.282796	0.6	1.1	4.1	167
NI12-11-20	30.5	3.0	0.282795	0.000034	0.002077	0.282789	0.4	1.2	3.9	168
NI12-11-52	9.9	3.6	0.282884	0.000037	0.000881	0.282881	3.5	1.3	7.2	172
NI12-11-80	19.7	2.5	0.282910	0.000031	0.001445	0.282905	4.4	1.1	8.2	176
NI12-11-49	18.0	3.7	0.282853	0.000041	0.001259	0.282849	2.4	1.5	6.2	177
NI12-11-96	9.5	3.1	0.282917	0.000033	0.000530	0.282915	4.7	1.2	8.6	181
NI12-11-09	14.5	3.5	0.282829	0.000029	0.001028	0.282825	1.5	1.0	5.5	183
NI12-11-26	4.0	3.5	0.281240	0.000035	0.000200	0.281233	-54.6	1.2	-11.6	1918
NI12-11-48	2.5	3.4	0.280996	0.000029	0.000195	0.280986	-63.3	1.0	-0.9	2757
Sample NI12-14, Shumagin Fm (55.083130°,-159.939410°)										
NI12-14-41	15.0	2.7	0.283015	0.000038	0.000969	0.283013	8.1	1.3	9.7	71
NI12-14-68	18.6	2.9	0.282952	0.000035	0.001196	0.282950	5.9	1.2	7.4	72

NI12-14-32	15.5	2.7	0.283043	0.000030	0.001037	0.283042	9.1	1.1	10.7	72
NI12-14-31	13.1	2.6	0.283034	0.000028	0.000917	0.283033	8.8	1.0	10.4	73
NI12-14-48	16.6	2.4	0.282983	0.000036	0.001134	0.282981	7.0	1.3	8.6	73
NI12-14-109	15.5	2.7	0.282996	0.000033	0.001071	0.282994	7.5	1.2	9.0	74
NI12-14-39	19.2	2.6	0.283005	0.000032	0.001256	0.283004	7.8	1.1	9.4	74
NI12-14-98	18.7	2.6	0.282991	0.000027	0.001205	0.282990	7.3	1.0	8.9	74
NI12-14-112	13.5	2.8	0.283031	0.000031	0.000903	0.283029	8.7	1.1	10.3	76
NI12-14-59	16.2	2.6	0.282961	0.000031	0.001081	0.282960	6.2	1.1	7.9	77
NI12-14-03	26.7	2.4	0.283058	0.000042	0.001647	0.283055	9.7	1.5	11.5	88
NI12-14-47	11.5	2.9	0.282941	0.000036	0.000766	0.282939	5.5	1.3	9.0	158
NI12-14-102	8.3	3.2	0.282949	0.000033	0.000561	0.282947	5.8	1.2	9.2	158
NI12-14-14	19.5	2.6	0.282907	0.000033	0.001353	0.282903	4.3	1.2	7.8	164
NI12-14-50	19.3	2.4	0.282865	0.000034	0.001268	0.282861	2.8	1.2	6.3	165
NI12-14-55	16.0	2.7	0.282966	0.000036	0.001205	0.282962	6.4	1.3	10.1	172
NI12-14-113	80.3	1.8	0.282955	0.000047	0.004978	0.282938	6.0	1.7	9.4	178
NI12-14-100	43.6	2.0	0.282909	0.000037	0.002932	0.282899	4.4	1.3	8.2	185
NI12-14-37	20.2	4.3	0.283001	0.000029	0.001383	0.282996	7.6	1.0	11.6	187
NI12-14-94	12.4	2.5	0.283033	0.000037	0.000738	0.283030	8.8	1.3	12.9	189
NI12-14-05	15.5	2.8	0.282034	0.000038	0.000860	0.282010	-26.6	1.3	5.1	1445
NI12-14-73	5.1	3.0	0.281550	0.000030	0.000289	0.281540	-43.7	1.1	-3.9	1779
NI12-14-02	23.0	2.7	0.281644	0.000038	0.001310	0.281598	-40.3	1.3	-0.4	1843
NI12-14-103	7.9	2.6	0.281799	0.000039	0.000451	0.281783	-34.9	1.4	6.9	1872
Sample NI12-23, Shumagin Fm (55.228080°,-159.921130°)										
NI12-23-07	28.5	3.1	0.283108	0.000027	0.001870	0.283105	11.4	1.0	13.0	73
NI12-23-27	16.9	3.3	0.282924	0.000028	0.001228	0.282922	4.9	1.0	6.5	75
NI12-23-75	8.5	3.0	0.282875	0.000033	0.000598	0.282874	3.2	1.2	4.8	76
NI12-23-49	17.9	3.1	0.282951	0.000029	0.001095	0.282949	5.9	1.0	7.6	81
NI12-23-74	20.4	3.0	0.282914	0.000027	0.001374	0.282912	4.6	1.0	6.4	84
NI12-23-33	57.6	2.9	0.283114	0.000035	0.003189	0.283109	11.6	1.2	13.4	89
NI12-23-22	24.8	2.8	0.283004	0.000038	0.001749	0.283001	7.8	1.4	9.7	92

NI12-23-89	17.2	3.4	0.282705	0.000028	0.001081	0.282703	-2.8	1.0	-0.7	101
NI12-23-47	24.5	2.4	0.282721	0.000035	0.001439	0.282718	-2.3	1.2	0.1	112
NI12-23-06	6.9	3.4	0.282957	0.000029	0.000432	0.282956	6.1	1.0	9.4	152
NI12-23-60	36.4	3.4	0.282786	0.000037	0.002441	0.282779	0.1	1.3	3.3	159
NI12-23-83	15.5	3.2	0.282854	0.000027	0.001117	0.282851	2.4	1.0	5.9	162
NI12-23-41	8.9	3.8	0.282810	0.000027	0.000625	0.282808	0.9	1.0	4.4	163
NI12-23-97	16.3	3.1	0.282751	0.000032	0.001212	0.282747	-1.2	1.1	2.4	167
NI12-23-29	7.9	3.2	0.282852	0.000037	0.000548	0.282851	2.4	1.3	6.0	167
NI12-23-35	16.5	3.3	0.282949	0.000032	0.000918	0.282946	5.8	1.1	9.6	174
NI12-23-85	13.0	2.7	0.282980	0.000034	0.000941	0.282977	6.9	1.2	10.7	174
NI12-23-69	15.3	3.1	0.283008	0.000034	0.001094	0.283004	7.9	1.2	11.8	181
NI12-23-44	40.8	2.4	0.282583	0.000030	0.002624	0.282574	-7.1	1.1	-3.2	193
NI12-23-04	25.3	2.6	0.282536	0.000044	0.001743	0.282523	-8.8	1.6	-0.1	413
NI12-23-107	13.1	2.7	0.281409	0.000036	0.000736	0.281382	-48.7	1.3	-6.3	1918
NI12-23-106	14.1	3.0	0.281499	0.000036	0.000748	0.281470	-45.5	1.3	0.7	2085
Sample RB12-02, Orca Fm (60.00947, -149.32280)										
RB12-02-30	24.7	5.0	0.282772	0.000026	0.001454	0.282771	-0.4	0.9	0.9	62
RB12-02-70	24.7	3.2	0.282797	0.000036	0.001517	0.282795	0.4	1.3	1.8	63
RB12-02-17	17.4	3.4	0.282639	0.000028	0.001020	0.282638	-5.2	1.0	-3.8	65
RB12-02-63	11.8	4.4	0.282795	0.000031	0.000736	0.282794	0.3	1.1	1.8	66
RB12-02-47	6.7	4.1	0.282850	0.000034	0.000476	0.282850	2.3	1.2	3.8	67
RB12-02-66	12.8	3.6	0.282740	0.000038	0.000849	0.282739	-1.6	1.3	-0.1	69
RB12-02-87	5.8	3.5	0.282861	0.000035	0.000332	0.282861	2.7	1.2	4.2	69
RB12-02-14	22.3	4.8	0.282793	0.000032	0.001473	0.282791	0.3	1.1	1.8	70
RB12-02-80	17.6	3.9	0.282797	0.000031	0.001051	0.282796	0.4	1.1	2.0	72
RB12-02-27	24.7	5.1	0.282911	0.000030	0.001828	0.282909	4.5	1.0	6.0	74
RB12-02-18	17.7	3.5	0.282725	0.000037	0.001092	0.282723	-2.1	1.3	-0.5	76
Sample RB12-04, Orca Fm (59.97959, -149.29672)										
RB12-04-53	18.0	3.2	0.282768	0.000029	0.001077	0.282767	-0.6	1.0	0.8	65

RB12-04-26	8.4	3.3	0.282876	0.000027	0.000521	0.282876	3.2	1.0	4.8	70
RB12-04-06	12.3	3.4	0.282700	0.000038	0.000830	0.282699	-3.0	1.3	-1.5	70
RB12-04-78	10.5	3.4	0.282811	0.000031	0.000645	0.282811	0.9	1.1	2.5	71
RB12-04-25	14.0	3.3	0.282923	0.000029	0.000886	0.282922	4.9	1.0	6.5	73
RB12-04-52	15.4	3.1	0.282906	0.000040	0.001028	0.282905	4.3	1.4	5.9	73
RB12-04-07	24.1	3.2	0.282546	0.000031	0.001524	0.282544	-8.4	1.1	-6.9	73
RB12-04-28	60.2	2.8	0.282709	0.000040	0.003422	0.282704	-2.7	1.4	-1.2	74
RB12-04-02	14.5	3.3	0.282858	0.000033	0.000949	0.282857	2.6	1.2	4.2	74
RB12-04-33	11.1	3.0	0.283000	0.000027	0.000828	0.282999	7.6	1.0	9.4	82
RB12-04-77	16.7	3.6	0.282666	0.000030	0.001014	0.282654	-4.2	1.1	9.2	618
RB12-04-107	16.6	4.1	0.282265	0.000034	0.000992	0.282244	-18.4	1.2	5.2	1085
RB12-04-29	6.8	3.0	0.281716	0.000026	0.000410	0.281703	-37.8	0.9	0.6	1726
RB12-04-111	9.9	4.4	0.281328	0.000035	0.000571	0.281309	-51.5	1.2	-11.9	1788
RB12-04-109	12.6	3.1	0.281432	0.000030	0.000741	0.281402	-47.9	1.1	-2.0	2073
RB12-04-106	21.4	3.7	0.281567	0.000039	0.001198	0.281520	-43.1	1.4	2.3	2081
RB12-04-112	15.3	3.0	0.280858	0.000027	0.000863	0.280817	-68.1	0.9	-12.0	2538
RB12-04-102	9.9	3.4	0.281079	0.000031	0.000553	0.281051	-60.3	1.1	-2.3	2597