INDEX

Abaco fracture zone, 28
Acmite, pyroxene components, 1044
Acoustic impedance, basement, 1581
Age, effect of on mineral assemblages, 1570
determination, Site 105, calcite, strontium isotope
ratios, 1174
of calcites, 1173
basement, paleontological evidence, 815
Sites 417 and 418, 897
crust formation, Hole 418A, 1172
basalt, chemical composition as compared to, 1261
Age-depth constancy hypothesis, 1501
Aging of basaltic layer of the sea floor, 1159
crust, alteration, 1577
oceanic crust, 1563
Agrading neomorphism, defined, 756
Alkali metals, decrease downhole, Hole 417A, basalt,
1087, 1092
basalt, 1171, 1175
Hole 395A, basalt, 1088
Hole 417D, basalt, 1088
Alteration, apophyllite, basalt, 1232
basalt, 1021, 1299, 1131, 1137
budget of, 1326
chemical balance of, 1285
clinopyroxene, 1224
glass, 1137, 1279
groundmass, 1300, 1305
Hole 417A, 65, 947, 1087
low-temperature, 1231
minerals, 1185
near-vein, 1229
phenocrysts, 1278, 1280, 1299, 1305
pillow lavas, 1274
margins, 1301
plagioclase, 1224
Site 417, 1185, 1275
volcanic glass, 1223, 1278
chemical balance of, 1310
decrease downhole, Holes 417A and 417D, 93
depth of, 1279, 1281, 1583
glassy margins, 1307
Hole 417A, basalt, 93
Holes 417A and 417D, basalt, 988, 1104
intensity of, 1299
low-temperature sea water, 1261
oxygen isotope studies, basalt, 1153
Hole 417A, basalt, 93
processes, Holes 417A and 417B, differences in the
nature of, 1260
minor elements and, 1513
temperatures of, 1132
product, calcite, as an, 1304
chlorite, as an, 1302
products of basalt, mineralogy and geochemistry,
1273
sequence, 1305, 1309
Altered basalt
aluminum, 1325
barium, 1323
boron, 1323
calcium, 1322
chemistry of, 1319
chromium, 1323
clay minerals from, 1257
copper, 1323
iron, 1325
lithium, 1323
magnesium, 1323
mineral assemblage, 1219
nickel, 1323
opaque mineralogy of, 1407
oxidation of iron in, 1325
potassium, 1320
silicon, 1325
sodium, 1323
strontium, 1324
titanium, 1325
vanadium, 1324
yttrium, 1324
zirconium, 1324
rocks, bulk mineralogy, 1258
Alternating field (AF) demagnetization, 1372
Aluminum, altered basalts, 1325
Analcime, 65, 68
basalt alteration, 1221
formation of, 1232
oceanic basalt, 1569
Analcite, 1309
basalt, secondary mineral, 1245
Analytical methods, Hole 417D, basalt, 939, 988,
1055, 1064, 1087, 1137, 1243
Angiosperm evolution, 903
Anisotropy, Mid-Atlantic Ridge, 686
oceanic crust, 676, 686
Antilles Outer Ridge, 28, 30
Aphyric zones, Hole 417A, pillow basalt, 1012
Apophyllite, alteration of, 1221, 1232
oceanic basalt, 1569
Asthenospheric upwelling, 968
Atterberg limits, 1453
Authorship, responsibilities for, 11
Average sedimentation rate, North Atlantic Ocean,
871
Pacific Ocean, 871
Azores plume, 982
ARM intensity, basalt, 1394
Background and objectives, Legs 51 to 53, 5
Site 417, 25
Site 418, 353
Barite crystals, Hole 418A, 363
Barium, altered basalts, 1323
oceanic crust, 1574
Basal enrichment in iron, magnesium, and potassium, 1519
Basalt, alkali metals, 1171, 1175
decrease downhole, Hole 417A, 1087, 1092
Hole 395A, 1088
Hole 417D, 1088
alteration, 1021, 1131, 1137, 1299
apophyllite, 1232
clinopyroxene, 1224
Hole 417A, 93, 947, 1087
Holes 417A and 417D, 1104
Holes 417D and 418A, 988
mineralogy, Hole 417A, 65
oxygen isotope studies, 1153
Hole 417A, 93
plagioclase, 1224
Site 417, 1185
ARM intensity, 1394
budget of alteration, 1326
calcite values, Site 417, 1183
vein formation in, 1183
calcite–quartz veinlet, 1229
carbon isotope composition, 1149
carbonate in, 1186
celadonite in, 1186, 1203
chalcopyrite, occurrence of in, 1436
chemical analyses, analytical methods, 390, 939, 988, 1055, 1087, 1137, 1185, 1243
Hole 418A, 10, 1021
Holes 417A and 417D, 977, 1099, 1001
carbonate correction, Hole 418A, 988, 1021
Site 417, 76
glass and whole-rock analyses compared, 965
Leg 46, 998
major elements, 1224
Site 417, 76
composition, 947
Site 417, 93
variation downhole, 953
data, 1224
gradients, Mid-Atlantic Ridge, 967
stratigraphy, Hole 417D, 947, 962
Hole 418A, 963
Sites 417 and 418, 939, 955
variation, Holes 417D and 418A, 994
Site 418, 391, 395
Site 417, 76
chemistry of altered, 1285, 1319
chlorite in, 1186
chromite, occurrence of in, 1433
clay minerals, vein and, vesicles filling in, 1185, 1300
Hole 417A, 1202
compressional wave velocities, 1457
crack anisotropy, 1482
distribution, 1481
features, 1481
crystal fractionation, Holes 417D and 418A, 985, 1557
crystallization sequences, Holes 417D and 418A, 1040
Curie temperatures, 87
D/H ratios, 1178
density-porosity relationships, 1469
dikes, 74, 92, 372, 380, 395, 947, 965
downhole geophysical logging results, Hole 417D, 708
electrical resistivity, 1458
electron microprobe analyses, Holes 417A and 417D, 1002
microprobe analyses, 1055, 1099, 1243
eruptive stratigraphy, Hole 417D, 947
Hole 418A, 949
units, 949, 974
experimental procedures, magnetic properties of, 1391
feldspar in, 1187
flow dynamics, post-eruptive, 1025
fluid permeability, 1458, 1473
fractional crystallization, 954, 979
crystal segregation, 1047
Hole 417D and 418A, 960
general characteristics, Holes 417D and 418A, 987
glass composition, Holes 417D and 418A, 1039
glassy inclusions, chemical analyses, analytical methods, Hole 417D, 1064
electron microprobe analyses, Hole 417D, 1064
granophyric textures, 1040
groundmass, 1070
Hole 417D, 941
Hole 418A, 373, 375, 376, 377, 378, 379, 380, 947
high-temperature reaction, 1177
hyaloclastic breccias, Hole 417A, 64
hydrogen isotopes, low-temperature alteration effect on, 1178
ilmenite, occurrence of in, 1432
initial susceptibility, 1394
ion microprobe analyses, 1055
iron oxidation, 1224
isotope-balance calculations, 1177
isotopic and mineralogical studies, 1243
composition, 1155
D13C of carbonates, 1154
D18C of carbonates, 1154
water content, 1154
Königsberger ratio, 1394
late-stage alteration of, 764
liquid fraction, 1557
lithologic stratigraphy, Hole 417D, 962
Hole 418A, 963
Sites 417 and 418, 939
units defined, Holes 417D and 418A, 940
low-pressure fractional crystallization, 970, 957
low-temperature alteration, 1021, 1033, 1072, 1156, 1177, 1185, 1219, 1231, 1243
magma mixing, 1107
variation, 985
crystal fractionation, 1106
settling, 998
flow differentiation, 998, 1033, 1107
magnetic properties, 1379, 1391, 1407
intensity, susceptibility, stability of magnetization, 1363
stratigraphy, Hole 417D, 962
Hole 418A, 963
Holes 417D and 418A, 941
Site 418, 394
Sites 417 and 418, 939
major-element analyses, Holes 417A and 417D, 1104
Hole 417D, 989
Holes 417A and 417D, 979, 1001
Hole 418A, 991, 1087
chemistry, FAMOUS area of the Mid-Atlantic Ridge, 1009
marcasite, occurrence of in, 1436
microtectonic data, 1491
Mid-Atlantic Ridge, 987
mineral chemistry, clinopyroxene, 1041
electron microprobe analyses of, 1040
olivine, 1040
plagioclase, 1041
spinel, 1040
mineralogy, Holes 417D and 418A, 988, 1266
minerals, electron probe microanalyses of, 977
minor element analyses, 1087
normative composition, Holes 417D and 418A, 996
Site 417, 76
oxygen isotope composition, 1149
isotopes, low-temperature alteration, effect on, 1177
palagonite, glass, 1243
paleomagnetic results, 1337, 1351
paleomagnetics, Hole 418A, 381
paleomagnetism and magnetic properties of, 86, 1363
pentlandite, occurrence of in, 1435
permeability of fresh, 1475
petrogenesis, Holes 417A and 417D, 1109
petrographic types, Holes 417A and 417D, 1099
petrography, Hole 417D, 941, 1127
Hole 418A, 947, 1025
petrology, 92
phase chemistry, Holes 417A and 417D, 1007
phenocryst morphology, Holes 417D and 418A, 1043
redistribution, Hole 418A, 1033
phenocryst-liquid differentiation, post-eruptive, 1021
phenocrysts, clinopyroxene, 62, 379, 944, 947, 975, 979, 1070, 1101
glass inclusions, Holes 417D and 418A, 1040
modal analyses, Holes 417D and 418A, 984
morphology, Holes 417D and 418A, 1040
olivine, 62, 70, 373, 375, 377, 379, 941, 947, 975, 978, 1069
plagioclase, 62, 70, 373, 375, 377, 378, 379, 941, 947, 975, 978, 1069, 1101
chemical zonation of, 1055, 1107
composition, undercooling role in, 1056
glass inclusions, 965
major-elements analyses, 1055
spinel inclusions, 1044
physical properties, 1457
pillow basalt, petrography, Hole 418A, 1021
phenocryst zonation patterns, 1055
porosity of, 1457
potassium-argon age determinations, 1127, 1149
compared to paleontological age determinations, Hole 417D, 1127
pyrite, occurrence of in, 1435
pyrrhotite, occurrence of in, 1435
quartz, granophyric intergrowths of, 1041
rare-earth element abundances, Holes 417A and 417D, 1099
FAMOUS area, 967
geochemistry of, Ulwan volcano, New Britain, 1114
patterns, Holes 417A and 417D, 1107
elements, 1137, 1285
analyses, 991, 1114
effect of alteration, Holes 417A and 417D, 1105
Site 417, 1113
saturation magnetization, 1396
remanent magnetization, 1396
seawater-rock interaction, 1201
secondary alteration, Hole 418A, 1162
mineral, analcite, 1245
carbonate, 1243
hydrated iron oxide, 1243
potassium feldspar, 1224, 1243
saponite, 1244
mineralogy, 1186
silica-enrichment, Hole 418A, 1033
smectite and celadonite, near-vein zoning, 1229
smectite in, 1203
stable magnetic inclinations, Holes 417D and 418A, 955
structural features, Holes 417A and 417D, 74
sulfide, Hole 417D, 74
sulfur isotope composition, 1149
temperature gradient, Hole 417D, 708
of the alteration medium, D180 evidence, 1154
thermal conductivity, 1458
trace element analyses, 979, 990, 993, 1033, 1104
low-temperature alteration, 979
variation diagrams, Hole 418A, 954
transition metal abundances, Holes 417A and 417D, 1104
effect of alteration on, 1106
variation diagrams, Holes 417D and 418A, 961
vein mineral formation in, 1170
velocity-density relationships, 1467
velocity-porosity relationships, 1467
water circulation effects on alteration, Hole 417A, 1035
weathering, 1201
zeolites in, 1187
$^{87}$Sr/$^{86}$Sr, 1137
Basalt-sea water interaction, 1245
Basaltic basement as a source of geomagnetic anomaly lineation, 1360
breccias, Hole 417A, 1274
Hole 417D, 1275
glass, alteration, 1137
chemical analyses, analytical methods, 1069
stratigraphy, Holes 417D and 418A, 957, 1069
chemical-stratigraphic units, 974
Cretaceous, 8, 753, 765
electron microprobe analyses, 1069
probe microanalyses of, 957, 973
fission track dating, experimental procedures, 1129
FAMOUS area of the Mid-Atlantic Ridge, 1107
Holes 417D and 418A, 957
isotopic composition, 1122
magnetic stratigraphy, Holes 417D and 418A, 960
major-element chemistry of, 973
mantle argon concentrations, 1123
potassium concentrations, 1124
rare-earth elements, 1122, 1137
radioactive argon-40 concentrations, 1123
uranium concentration, East Pacific Rise, 1129
and distribution, 1129
Mid-Atlantic Ridge, 1129
layer of the sea floor, aging of, 1159
magnas, 952
rocks, brittle deformation of, 1491
sequence, Hole 417A, 1274
Hole 417D, 1275
Basement, acoustic impedance, 1581
composition of, 1595
density, 1581
lithology and physical properties, 1580
permeability, Hole 417D, 711
porosity, 711, 1581
resistivity, Hole 417D, downhole geophysical logging, 711
rocks, physical properties, 77, 92, 382
subsidence as a factor in depth reconstruction, 1501
velocity, 1581
Hole 417D, downhole geophysical logging, 711
Bathymetric chart, Sites 417 and 418, Site survey, 629
reconstruction, Central Atlantic Basin, 1501
Bathymetry, Early Cretaceous to Cenomanian, 1506
Hole 417D, 1505
Late Cretaceous, 1506
Late Jurassic, 1505
Tertiary, 1507
Benthic foraminifers, 796
Bermuda, Oligocene volcanism of, 28
Rise, 6, 28
Biostratigraphic conventions, Legs 51 to 53, 19
Biostratigraphy, Hole 417D, nanofossils, 815
Hole 418A, nanofossils, 815
Hole 418B, nanofossils, 815
Holes 418 and 418A, 363
Bioturbation, evidence for, 363
Black clay facies, 363
Hole 417D, 898
Hole 418, 898
Sea, comparison of sediment ages, with other DSDP sites, 1525
Blake fracture zone, 28
Nose, 797
Plateau, downslope transport of diatoms from, 851
Block, faulting, 1360
rotation, 1429
Blocking temperature, 1386
Borehole-compensated velocity (BHC) tool, 705
Boron, altered basalts, 1323
oceanic crust, 1574
Bottom-water temperature, upper Cretaceous, 763, 765
Breccia, 1539
zones, paleomagnetism, 1379
Brittle deformation of basaltic rocks, 1491
Broken pillow breccia, 1539
Brown smectites, composition of, 1269
Budget of alteration, basalt, 1326
Bulk mineralogy, altered rocks, 1258
sediments, X-ray analysis of, 721
rock compositions, 1310
Ca-Tschermak's component, pyroxene, 1044
Calcedony, 1188
Calcisphaerulidae, 847
Calcite, 1224, 1309
basalt alteration, 1220, 1304
Hole 418A, 1171
oxygen isotope analysis, Hole 418A, 1174
Sr isotope ratio age determination, 1172
strontium isotope ratios, age determination, Site 105, 1174
vein, calcite-quartz veinlet, near-vein alteration, Basalt, 1229
Calcites, age of, 1173
Calcium, altered basalts, 1322
Carbon isotope analysis, carbonate, oxygen, 1245
composition, basalt, 1149
Carbon-13 ratios, interpillow limestones, 764
Carbonate, basalt, secondary mineral, 1186, 1243
oxygen and carbon isotope analysis, 1245
compensation depth, 795, 827, 857, 1509
Leg 51, sediments, 731
composition, 1204
contents, sediments, gasometric determinations of, 721
minerals, oceanic basalt, 1569
occurrence, Hole 417A, Hole 418A, 1204
Carbonates, carbon-13 ratios, interpillow limestones, 764
isotopic composition of, Hole 417A, 1161
paleotemperatures of precipitation, 763
strontium exchange in, 1174
Caribbean, comparison of sediment ages to other DSDP sites, 1525
Celadonite, 1169, 1188
basalt alteration, 1219
secondary mineral, 1244
near-vein zoning, 1229
oceanic basalt, 1186, 1203, 1564
Central American isthmus, emergence of, 6
Atlantic Basin, bathymetric reconstruction, 1501
Central North Atlantic Sea, Aptian to Albian, 905
Cesium, crustal reservoir, 1175
oceanic crust, 1574
partition coefficients, 1175
Chabazite, 66
Chalcedony, 1221
in calcite vein, 1205
Chalcopyrite, 1070
basalt, 1435, 1436
Hole 418A, 1206
Chemical alteration, oceanic basement, 1253
analysis methods, 939, 977, 988, 1021, 1055, 1064, 1069, 1099, 1137, 1185, 1243, 1331
glass and whole-rock analyses compared, 965
Holes 417D and 418A, basaltic glass, 957
major elements, 1224
manganese oxide micronodules, 772
Chemical-stratigraphic units, basaltic glasses, 974
Chemistry, oceanic crust, 1571
basalt, 1319
sediments, Western Atlantic, 1515
Chert, thin-section descriptions, 48
Chiastozygus litterarius Zone, 824
Chlorite, as an alteration product, 1302
in basalt, 1186
oceanic basalt, 1568
Chromite, occurrence of in basalt, 1433
Chromium in altered basalts, 1323
Classopollis spinosus Sub-zone, 902
Clavatipollenites Zone, 899
Clay mineralogy, sediments, X-ray analysis of, 721
minerals, electron microprobe analyses of, 1203
Hole 417A, 1305
vein and vesicles filling in basalt, 1185, 1202, 1300
X-ray diffraction patterns, Holes 417A and 417D, 731
Clays, oxygen isotope analysis, 1245
Clinopyroxene, basalt, alteration of, 1224
mineral chemistry, 1041
phenocrysts, 979, 1070
Hole 417A, basalt phenocrysts, 62
Hole 417D, basalt phenocrysts, 941
Hole 418A, basalt phenocrysts, 379, 947, 975
Holes 417A and 417D, basalt phenocrysts, 1101
Compensated formation density (FDC) tool, 706
neutron porosity (CNL) tool, 706
Complexiopollis Zone, 900
Compressional wave velocities, 1585
basalts, 1457
velocity of basalt under pressure, 1461
Concentric structures in pillow lava, 1275
Cooling history on magnetic properties, effect of, 1401
rates, magnetic units, 1384
unit, defined, 977, 1383
Copper, altered basalts, 1323
Copper-rich sulfides, 1073
Core-handling, hard-rocks, 13
Correlation between sedimentary facies, DSDP sites, 1504
with lithology, Hole 417D, downhole geophysical logging, 711
Crack anisotropy, basalt, 1482
distribution, basalt, 1481
effect on fluid circulation, 1479
seismic velocity, 1479
formation permeability, 1479
seismic structure, 1479
features, basalt, 1481
orientation in Mid-Atlantic Ridge, 676
Cracks, evidence from resistivity data, 711
porosity data evidence, 709
Creeping transformation of rhodochrosite, 772
Cretaceous, basaltic glass, 8
black claystone, chemical characteristics of, 1519
mid-ocean ridge volcanism, 998
oceanic crust, 1379, 1535
palynology, 897
quiet zone, 28, 671, 1375
radiolarians, 791, 1579
Crustal construction, western Atlantic Ocean, 1540
evolution, 1508
permeability, 1484
reservoir, cesium, 1175
Crystal fractionation, variation, 1106
Holes 417D and 418A, 985
low-pressure, 6
segregation, 1047
settling, 998
Crystalline fraction, basalt, 1557
Crystallization sequences, Holes 417D and 418A, 1040
Curie temperature, 87, 1396, 1411
D/H ratios, basalt, 1178
Data analysis, oblique seismic experiment, 677
Density data errors, Hole 417D, 709
Density-porosity relationships, basalt, 1469
Depth of alteration, 1583
reconstruction, basement subsidence as a factor in, 1501
isostatic correction as a factor in, 1501
relief correction as a factor in, 1501
Diagenesis, Hole 417A, 775
Diagenetic pyrite, sulfur isotopes of, 1145
Diatom blooms in meromictic lacustrine systems, 906
Diatoms, 851
Dike injection zone, 1388
Dikes, 1540
  Hole 417D, basalt, 74
Dinoflagellate-cyst assemblages, 899
Dinoflagellates, 905
  ecology of, 906
Diopside, 1044
Dolerites, 1047
Dolomite, 1220
Dolomite-rhodochrosite lozenges, 360
Downhole conditions, 1585
  geophysical logging, basement resistivity, Hole 417D, 711
  velocity, Hole 417D, 711
  borehole compensated velocity (BHC) tool, 705
  caliper tool, 705
  compensated formation density (FDC) tool, 706
  neutron porosity (CNL) tool, 706
  correlation with lithology, Hole 417D, 711
  density data errors, Hole 417D, 709
  electrical resistivity (DIL) tool, 707
  high-resolution temperature (HRT) tool, 705
  Hole 396B, 705
  natural gamma ray (GR) tool, 705
  permeability, Hole 417D, 710
  porosity data errors, Hole 417D, 709
  results, Hole 417D, 708
  temperature data, Hole 417D, 711
  logging, Hole 417D, 1583
  variation of magnetic properties, 1383
  variations, Hole 418A, 1210
Downslope transport of diatoms from Blake Plateau, 851
  North American shelf, 851
Early Cretaceous paleolatitudes, North American plate, 87
  to Cenomanian bathymetry, 1506
  Eocene/middle Miocene, sedimentation rate, Hole 418A, 871
East Pacific Rise, basaltic glasses, uranium concentration in, 1129
Ecology of dinoflagellates, 906
Elasmobranchian hard parts, 857
Elateroplicites Zone, 902
Electrical resistivity, 1585
  basalt, 1458
  (DIL) tool, 707
Electron microprobe analyses, basalt, 974, 977, 1002, 1040, 1055, 1099, 1201, 1243
  clay minerals, 1203
  glass, 957, 973, 1064, 1069
  magnetic oxides, 1411
  olivine and smectite, 1223
Emplacement mode as a factor in magnetic properties, 1388
Energy dispersive detector, 974
Enstatite, 1044
Eruptive stratigraphy, Cretaceous oceanic crust, Western Atlantic, 1535, 1540
  Hole 417D, basalt, 947
  Hole 418A, basalt, 949
  Sites 417 and 418, 955
  unit, basalt, 949, 974
Eu anomaly, 991
Euxinic black claystones, 827
Evolution of alteration with depth, 1281
  palagonitization with time, 1282
Evolutionary changes in the composition of secondary minerals, 1260
Experimental procedures, basaltic glasses, fission track dating, 1129
  magnetic properties of basalt, 1391
  rock magnetism, 1379
Faulting, block, 1360
Faults and fissure, FAMOUS area of the Mid-Atlantic Ridge, 676
Feldspar in basalt, 1187
Ferrosilite, 1044
Field intensity, 1391
Fission track age, magnetic anomaly M-0, 1129
  ages, corrected, 1132
  FAMOUS area of the Mid-Atlantic Ridge, 1132
  reliability compared to potassium-argon age determination, 1130
  thermally lowered, 1132
  dating, experimental procedures, basaltic glasses, 1129
  evidence, Holes 417D and 418A, formation age of the crust, 1132
Fissures, anisotropy, Mid-Atlantic Ridge, 686
  oceanic crustal Layer 2, 685
Floral province, Northern Gondwana Province, 904
  South American/African Province, 904
  Southern Laurasian Province, 904
Flow differentiation, basalt, magma variation, 998, 1107
  Hole 418A, 1033
  dynamics, post-eruptive, 1025
Fluid circulation, crack distribution, effect on, 1479
  permeability of oceanic basalts, 1473
Foraminifers, 797
  Hole 417D, 49
  Hole 418B, 365, 794
  Holes 367 and 370, 797
  Holes 417 and 417A, 791
  Holes 417A and 417B, 48
  Holes 418 and 418A, 363, 794
  Holes 417B and 417D, 791
  Systematics, 797
Fractional crystallization, 1557
  basalt, 954, 979
  crystal segregation, 1047
  Hole 417D and 418A, 960
  least-squares models of, 964
FAMOUS area, Mt. de Venus, 974
  Pluto, 974
  basaltic glasses, 1107
  fission track ages, 1132
  major-element chemistry, 1009
    rare earth element composition, 967
stable-isotope ratios, 762
structure grumeleuse, 758
Interstitial water studies, dissolved potassium, 748
sulfate, 748
Interstitial water chemistry, Hole 418A, 369
Hole 418B, 369
Site 417, 62
Ion microprobe analyses, basalt, 1055
Iron, 1325, 1519
hydroxides, 1223, 1309
occurrence of in basalt, 1436
oxidation, 1224
Isostatic correction as a factor in depth reconstruction, 1501
Isotope exchange reaction, 1177
Isotope-balance calculations, basalt, 1177
Isotopic and mineralogical studies, basalt, 1243
composition, basalt, 1155
carbonates, 1161
D13C of carbonates, 1154
D18O of carbonates, 1154
Hole 417D, basaltic glass, 1122
water content, basalt, 1154
J-anomaly, 28
J-anomaly Ridge, Site 384, 28
Jadeite, 1044
K-feldspar, 1569
Kerogen, 737
Königsberger ratio, 1351, 1394
Late-stage alteration of basalt, 764
Lateral velocity variations, oceanic crustal Layer 2, 684
Lattice constants, magnetic minerals, 1399
Layer 2, in situ, physical properties in, 1464, 1465
Layer 2/Layer 3 boundary, 1596
Leg 2, manganese nodules, 771
rhodocrosite, 771
Leg 37, basalt alteration, 1224
saponites in weathered basalt, 1204
Leg 46, basalt, chemical analyses, 998
Leg 51, basalts, magnetic characteristics, 1379
operational summary, 6
sediments, carbonate compensation depth, 731
stable isotope ratios, basalt, 1153
Leg 52, operational summary, 7
Leg 53, operational summary, 7
Legs 51 to 53, background and objectives, 5
biostratigraphic conventions, 19
explanatory notes, 11
geochemical measurements, 14
igneous rocks classification, 20
Interstitial water studies, 747
magnetic measurements, 14
physical properties, 13
sedimentologic analyses, 14
X-ray diffraction measurements, sediments, 14
fluorescence measurements, igneous rocks, 14
Limestones, Hole 417D, 1275
paleomagnetic measurements, 1429
Linear sea-floor, magnetic anomalies, 6
Lineated magnetic anomalies, 1402
Liquid fraction, basalt, 1557
limit, sediments, 1453
Listric fault, 381
Lithium, altered basalts, 1323
oceanic crust, 1574
Lithologic and magnetic units, 1356
stratigraphy, Hole 417D, basalt, 962
Hole 418A, basalt, 963
Sites 417 and 418, 939
units defined, Holes 417D and 418A, basalt, 940
Lithology, Cretaceous oceanic crust, 1535
Logging, Hole 396B, 1595
Long-wavelength, free-air gravity anomalies, 967
Low-partition coefficient elements, mid-ocean ridge basalt, (MORB), 1091
Low-pressure, crystal fractionation, 6, 957, 970
Low-temperature alteration, basalt, 979, 1021, 1185, 1231, 1243, 1261
Hole 418A, basalt, 1033, 1072, 1077
Holes 417A and 417D, basalt, 1156
Site 417, Site 418, basalt, 1219
Site 417, magnetic minerals, 87
reactions, basalt, 1177
M sequence of linear anomalies, 28
Macroscopic description, Hole 417D, interpillow limestone, 754
Magma, composition of, Hole 417D, 1067
batch, defined, 960
mixing, 1107
variation, 985
crystal fractionation, 1106
settling, 998
flow differentiation, 998, 1107
Hole 418A, 1033
Holes 417D and 418A, 954
Magmatic processes, 1088
Magnesium, altered basalts, 1323
and potassium, basal enrichment in iron, 1519
Magnetic anomaly M-0, 6, 8, 28, 394, 629, 753, 897, 987, 1099, 1127, 1370, 1402
fission track age, 1129
Hole 418A, 381
characteristics, Leg 51, basalts, general, 1379
grain-size range, 1382
hysteresis cycles, characteristics of, 1385
measurements, Legs 51 to 53, 14
minerals, changes of during thermomagnetic analysis, 1399
lattice constants, 1399
low-temperature alteration, 87
oxides, electron microprobe analysis, 1411
massive units, 1420
petrology of, Site 417, 1411
temperature of oxidation, 1354
properties, basalt, 1391
downhole variation of, 1383
effect of cooling history on, 1401
emplacement mode as a factor in, 1388
experimental procedures, 1391
Mineral assemblages, age, effect of on, 1570
altered basalt, 1219
carbon, 737
chemistry, clinopyroxene, 1041
electron microprobe analyses, 1040
olivine, 1040
plagioclase, 1041
spinel, 1040
Mineralogical studies, basalt, 1243
Mineralogy, alteration products of basalt, 1273
clay minerals from altered basalt, 1257
Holes 417D and 418A, basalt, 988
oceanic crust, 1563
Minerals, electron probe microanalyses of, 977
separated from fracture fillings, altered basalt, 1256
Minor-elements analyses, basalt, 1087
and the alteration process, 1573
Mobilization of manganese in siliceous sediments, 748
Mt. de Venus, FAMOUS area, 974
Pluto, FAMOUS area, 974
Nannofossils, biostratigraphy, Hole 417D, 815
Hole 418A, 815
Hole 418B, 815
Hole 418, 364
Hole 418B, 365
Site 417, 50, 823
Site 418, 827
species epithets, 823
zonation, Chiassozygus litterarius Zone, 824
Nares abyssal plain, turbidites, 28
Native copper, Hole 417A, 66, 1206
Natrolite, 65, 1222
Natural gamma ray (GR) tool, 705
remanent inclination, Hole 417A, 8
Hole 417D, 8
remanent intensity, basalt, Hole 417A, 8
Hole 417D, 8
Hole 418A, 11
remanent magnetization (NRM), implication for magnetic anomalies, 1370
intensity, basalts, 1393
Near vein alteration, basalt, 1229
zoning, 1229
New Britain, rare-earth element geochemistry of Ulwan volcano, 1114
Newfoundland fracture zone, 28
Ridge, 28
Nickel, 1323
Non-oxidative diagenesis, 1266
Normative composition, Holes 417D and 418A, basalt, 996
Site 417, basalt, 76
Northern Gondwana Floral Province, 904
NRM: see Natural Remanent Magnetization
Oblique seismic experiment, 1591
data analysis, 677
equipment and techniques, 676
Hole 417D, 40, 675, 705
tavel times, 679
Ocean-floor volcanology, 974
Oceanic basalts: see Basalt
Oceanic crust, anisotropy, 676, 686
    barium, 1574
    boron, 1574
    cesium, 1574
    chemistry, 1571
    hydrothermal alteration in, 6
    lithium, 1574
    metamorphism in, 6
    mineralogy, 1563
    nature of cracks in, 676
    void, 676
    rare earth elements (REE), 1573
    rubidium, 1574
    sea-water alteration in, 6
    strontium, 1574
    crustal Layer 2, 5, 93, 353, 675, 679, 987, 1001, 1105
    lateral velocity variations, 684
    pores, vugs, fissures, 685
    seismic velocities, 676
    Layer 2A, 5, 705, 940
    Layer 2B, 5
    Layer 2C, 28
    Layer 3, 5, 679
    Oligocene volcanism of Bermuda, 28
    Olivine, mineral chemistry, 1040
        phenocrysts, 1069
        electron probe analysis of, 1223
        Hole 417A, 62
        Hole 417D, 70, 941
        Hole 418A, 373, 375, 377, 379, 947, 975
        Opal in calcite vein, 1205
        Opaque mineralogy of altered basalt, 1407
        minerals, basalt, Holes 417D and 418A, 1431
        secondary, 1435
        Ophiolites, 1046
        Organic carbon, 737
        matter in Aptian to Cenomanian sediments, 737
        Orosphaerids, 795
        Oxidation of iron in altered basalts, 1325
        zones, Hole 418A, 1211
        Oxides, 1070
        oceanic basalt, 1569
        Oxygen and carbon isotope analysis, carbonate, 1245
        isotope analysis, clays, 1245
        composition, basalt, 1149
        geochemistry of the sea floor, 1159
        investigations, 1177
        low-temperature alteration studies, 93, 1153
        effect on, basalt, 1177
        values, Site 417, calcite veins, 1183
        Palagonite, 1223, 1243, 1567
        formation, 1143
        rare-earth elements, 1137
        Palagonitization, chemical balance of, 1281
        with time, evolution of, 1282
        Paleolatitude, Site 417A, 904
        Paleolatitudes, North American plate, Early Cretaceous, 87
        Paleomagnetic measurements, limestones, 1429
        record, 1359
        results, basalt, 1337
        Paleomagnetics, Hole 418A, basalt, 381
        basalts, 86, 1351
        Paleomagnetism, breccia zones, 1379
        sediments, Hole 417D, 60
        Site 417, 93
        Paleosecular field variation, 1384
        Palygorskite, 736
        Palynology, Cretaceous, 897
        paleoenvironment, 905
        Palynomorphs, Hole 417D, 899
        Hole 418B, 903
        systematics, 906
        Palynostratigraphic zonation, *Classopolis spinosus*
        Sub-zone, 902
        *Clavatipollenites Zone*, 899
        *Complexiopollis Zone*, 900
        *Elateroplicites Zone*, 902
        *Psilatricolporites Sub-zone*, 900
        *Retitricolpites georgensis Zone*, 900
        *Tricopites minutus* Sub-zone, 900
        Partition coefficients, rubidium and cesium, 1175
        Pentlandite, occurrence of in basalt, 1435
        Permeability, basalts, 1458
        Hole 417D, downhole geophysical logging, 710
        igneous rocks, factors controlling, 1473
        Petrogenesis, Holes 417A and 417D, basalt, 1109
        Petrogenetic synthesis, Site 417, Site 418, 1557
        Petrographic types, Holes 417A and 417D, basalt, 1099
        Petrography, Hole 417D, basalt, 941, 978, 1127
        interpillow limestones, 755
        pillow basalt, glassy rims, 1122
        Hole 418A, basalt, 947, 978, 1025
        pillow basalt, 1021
        Petrology, basalt, 92
        magnetic oxides, 1411
        Phase chemistry, Holes 417A and 417D, basalt, 1007
        Phenocryst morphology, 1043
        redistribution, 1033, 1559
        zonation patterns, 1055
        Phenocryst-liquid differentiation, 1021
        Phenocrysts, alteration of, 1278, 1280, 1299, 1305
        clinopyroxene, 62, 379, 941, 947, 975, 979, 1070, 1101
        glass inclusions, 1040
        modal analyses, basalt, 984
        morphology, basalt, 1040
        olivine, 62, 70, 373, 375, 377, 379, 941, 947, 975, 978, 1069
        plagioclase, 62, 70, 373, 375, 378, 379, 941, 947, 975, 978, 1069, 1101
        chemical zonation of, 1055
        compositional zoning, 1107
        glass inclusions, 957, 965
major-elements analyses, 1055
spinel inclusions, 1044
Phillipsite, 66, 1222
Physical properties, basalts, Hole 417D, Hole 418A, 1457
basement lithology and, 1580
rocks, 382
Hole 418A, 11
Legs 51 to 53, 13
sediment, Site 418, 366, 394
sediments, Site 417, 51
seismic velocity, 1159
Site 417, 9, 93
Phytoplankton blooms, 905
Pigeonite, 1044
Pillow basalt, 1535
aphyric zones, 1012
compositional variation, 1009
glassy rims, 1122
Hole 417A, 64
petrography, 1021, 1039
phenocryst zonation patterns, 1055
core, 1277
alteration of the mesostasis in the, 1281
vesicles and veinlets in, 1278
lava, alteration of, 1274
composition of, 1274
concentric structures in, 1275
glassy zone, 1275
magnetic minerals of, 1425
pillow core, 1277
plagioclase phenocrysts, glassy inclusions in,
Hole 417D, 1063
pyroxene phenocrysts, glassy inclusions in,
Hole 417D, 1063
spherolitic zone, 1277
variolitic zone, 1275
Plagioclase, alteration of, 1224
mineral chemistry, 1041
phenocrysts, 62, 70, 373, 375, 377, 379, 941,
947, 975, 978, 1055, 1044, 1056, 1063, 1069,
1101, 1107
chemical zonation of, 1055
compositional zoning, 1107
glass inclusions, 957, 965
Plastic limits, sediments, 1453
Podocyrtis ampla Zone, 49
chalara Zone, 49, 364
mitra Zone, 49, 364, 791
Pollen Zone 1, 899, 903
II, 900, 904, 905
III, 900, 904
Pollen/dinoflagellate ratios in Mid-Atlantic Ridge sediments, 905
Polybaric melting experiments, 1557
Porosity, basement, 1581
data errors, 709
evidence, cracks, 709
of basalts, 1457
Post-eruptive basalt, flow dynamics, 1025
phenocryst-liquid differentiation, 1021
Potassium-argon age determinations, basalt, 1127, 1149
Potassium, altered basalts, 1320
basal enrichment in, 1519
concentrations, basaltic glasses, 1124
geochemical mass balance calculations, 1210
Potassium/rubidium and potassium/cesium ratios, 1175
Proto-celadonite, 1188, 1257, 1300, 1307
Psilatricolporites Sub-zone, 900
Pyrite, 1070, 1075
basalt alteration, 1149
nodules, 363, 374, 394, 898
occurrence of in basalt, 1206, 1435
sulfur isotopes of, 1145
Pyrolysis assay, 737
Pyroxene components, acmite, 1044
Ca-Tschermak's component, 1044
diopside, 1044
enstatite, 1044
ferrosilite, 1044
Hedenbergite, 1044
jadeite, 1044
phenocrysts, 1063
Pyrrhotite, 1070, 1073
occurrence of in basalt, 1435
Quartz, granophyric intergrowths of basalt, 1041
in calcite vein, 1205, 1221
Radiogenic 40 argon concentrations, basaltic glass, 1123
Radiolarians, Cretaceous, 791
Hole 417A, 49
Hole 417D, 49
Hole 418B, 365
Holes 418 and 418A, 364
middle Eocene, 791, 794
orosphaerid, 795
zonation, Podocyrtis ampla Zone, 49
chalara Zone, 49, 364
mitra Zone, 49, 364, 791
Thysycyrtis bromia Zone, 365
Rare-earth element abundances, Holes 417A and 417D, 1099
analyses, tholeiites, 1113
geochemistry of, Ulvan volcano, New Britain, 1114
patterns, Holes 417A and 417D, basalt, 1107
mid-ocean ridge basalts (MORB), 1108
elements, analyses, basalt, 1114
basalt, 967, 1137, 1285, 1573
basaltic glasses, 1137
effect of alteration, Holes 417A and 417D, 1105
palagonite, 1137
Site 417, basalt, 991, 1113
Rare-gas elemental abundance pattern, Hole 417D, 1122
studies, analytical methods, Hole 417D, 1122
Rb/Sr dating techniques, smectite, 1171
Recrystallization, interpillow limestones, 758
index, interpillow limestones, 758
Reflector horizon A, 28
Remanent magnetism, stable directions of, 1372
*Retitricolpites georgensis* Zone, 900
Rhodochrosite, chemical analyses of, 771, 772
creeping transformation of, 772
diagenesis, Hole 417A, 775
Hole 417A, 771
X-ray diffraction studies, 772
Rift valley, 1505
Rock compositions in, Layer 2, physical properties of, 1464
rubidium, experimental procedures, 1379
rubidium-strontium isochron techniques, 1169
Saponite, 1188
basalt, 1244
oceanic basalt, 1566
weathered basalt, 1204
saturation magnetization, 1396
remanent magnetization, 1396
Sea-water, Sr isotope, 1172
alteration in oceanic crust, 6
chemistry, model for, 1175
Seawater, thermally driven convection, 1169
sea-water-rock interaction, basalt, 1201
sedimentary structures, Hole 417D, 753
sedimentation, Hole 417A, 867
Hole 417B, 871
Hole 418A, 871
Hole 418B, 871
rate, early Eocene/middle Miocene, Hole 418A, 871
late Eocene/late Oligocene, Hole 418B, 871
Eocene/middle Miocene, Hole 418B, 871
Miocene/late Pliocene, Hole 418B, 871
Oligocene/middle Miocene, Hole 418B, 871
middle Eocene/middle Miocene, Hole 417A, 871
Miocene/late Miocene, Hole 417B, 871
rates, Site 417, 92
sedimentologic analyses, Legs 51 to 53, 14
sediments, carbonate compensation depth, Leg 51, 731
downhole geophysical logging results, Hole 417D, 708
gasometric determinations of carbonate contents, 721
geochemistry of, Site 417, 60
liquid limit, 1453
manganese in, 1519
paleomagnetism, 60
Site 417, 92
physical properties, 51
Site 418, 366, 394
sulfur isotopes of, 1145
temperature gradient, Hole 417B, 708
X-ray analysis of, bulk mineralogy, 721
clay mineralogy, 721
Seismic profiles, drilling results correlated with, Site 418, 393
reflection profile records, Sites 417 and 418, Site survey, 629
profiles, drilling results correlated with, Site 417, 89
profiling, near-bottom hydrophones, 671
sub-basement reflector, 672
in the deep ocean, 681
structure, crack distribution, effect on, 1479
velocities, oceanic crustal Layer 2, 676
Layer 3, 676, 683
velocity, physical properties, 1159
Shatsky Rise, 28
Shipboard measurement procedures, 13
Siliceous sediments, mobilization of manganese in, 748
Site data, Hole 417A, 24
Hole 417B, 24
Hole 417D, 25
Hole 418A, 351
Hole 418B, 353
survey, bathymetric chart, Sites 417 and 418, 629
geomagnetic anomaly profiles, Sites 417 and 418, 629
seismic reflection profile records, Sites 417 and 418, 629
sonobuoy, 30
Site 105, calcite, strontium isotope ratios, age determination, 1174
Site 137, manganese nodules, 771
rhodochrosite, 771
Site 384, J-anomaly ridge, 28
Site 417, alteration in basalts, 1275
background and objectives, 25
basalt, alteration of, 1185
calcite values, 1183
chemical analyses, 76
carbonate correction, 76
composition, 93
variation of, 76
normative composition, 76
paleomagnetism of, 86
rare-earth elements, 1113
basement rocks, 92
physical properties of, 77
calcite veins, oxygen values, 1183
Cretaceous oceanic crust, 1379
description of basalt, 1274
gapologic summaries, 7
ichthyloliths, 50
interstitial water chemistry, 62
magnetic minerals, low-temperature alteration, 87
oxides, petrology of, 1411
mineral carbon, 737
nannofossils, 50, 823
operations, 30
paleomagnetism, 93
physical properties, 9, 51, 93
sediment lithostratigraphy, 40
sedimentation rates, 92
sediments, 92
geochemistry of, 60
seismic reflection profiles, drilling results correlated with, 89

1611
metals, effect of alteration on, 1106
Triadolerites, 999
*Tricopites minutus* Sub-zone, 900
Trondhjemite, 1046
Turbidites, Hatteras abyssal plain, 28
Nares abyssal plain, 28
Sohm abyssal plain, 28
Two-Bit ridge, 28
Ulwan volcano, New Britain, 1114
Upper Cretaceous, bottom-water, temperature, 763, 765
Uranium concentration, East Pacific Rise, 1129
and distribution, 1129
concentrations, Mid-Atlantic Ridge, 1129
Vanadium, altered basalts, 1324
Variolitic zone, pillow lava, 1275
Velocity-density relationships, basalt, 1467
Velocity-porosity relationships, basalt, 1467
Vema Gap, 6, 28, 30
Vesicle filling types, 1204, 1300
compositional zonation, Hole 418A, 1204
segregation, 1279
Viscosity coefficient, 1379
Viscous remanent magnetization (VRM), 1370
Volcanic breccia, Hole 417A, 1201
native copper, Hole 417A, 1206
glass, alteration of, 1223
Vugs, fissures, oceanic crustal Layer 2, pores, 685
Water-rock ratios, 1266
Weathered basalt, saponites in, 1204
Weathering, chemical changes, 1207
sequence, 418A, 1211
in Hole 417A, 1211
X-ray analysis of, bulk mineralogy, sediments, 721
clay mineralogy, sediments, 721
diffraction measurements, sediments, Legs 51 to 53, 14
patterns, Holes 417A and 417D, 731
studies, manganese oxide micronodules, 772
rhodochrosite, 772
fluorescence measurements, igneous rocks, Legs 51 to 53, 14
Yttrium in altered basalts, 1324
Zeolites, 361, 362, 1309
formation of, 1232
oceanic basalt, 1569
Zirconium, altered basalts, 1324