

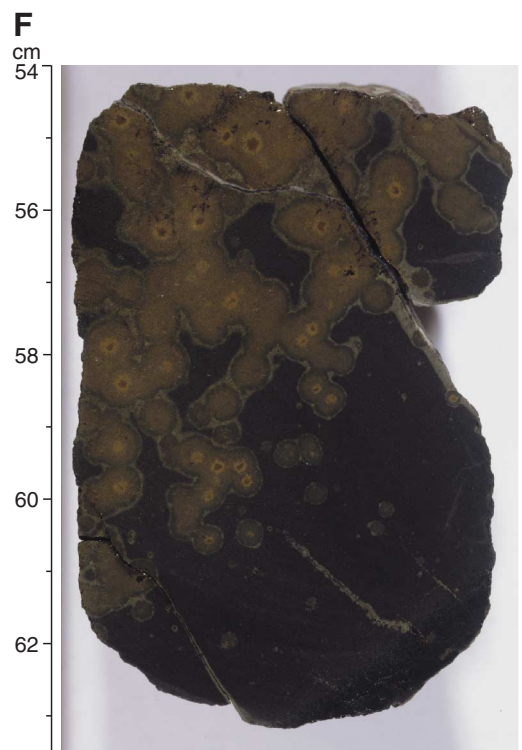
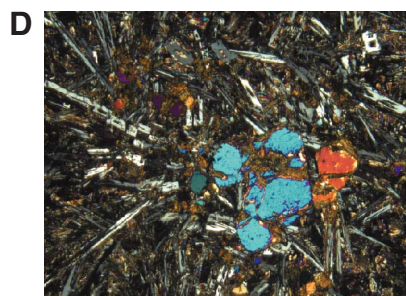
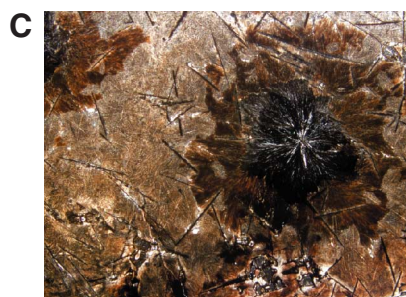
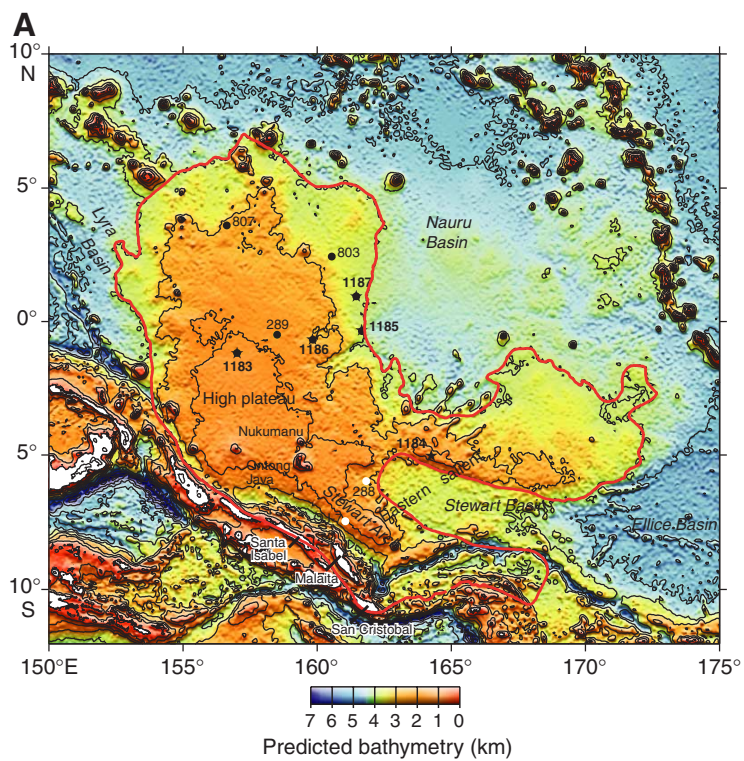


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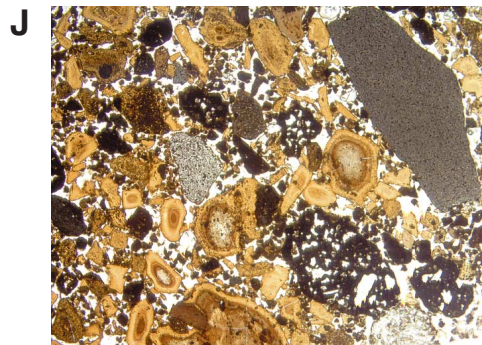
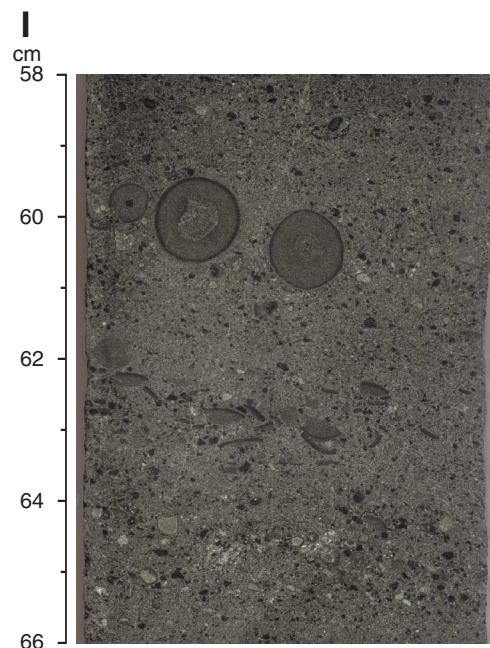
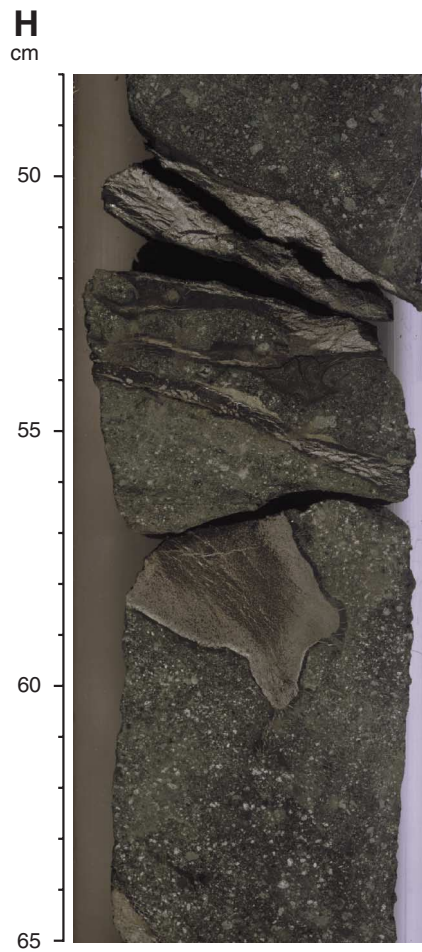
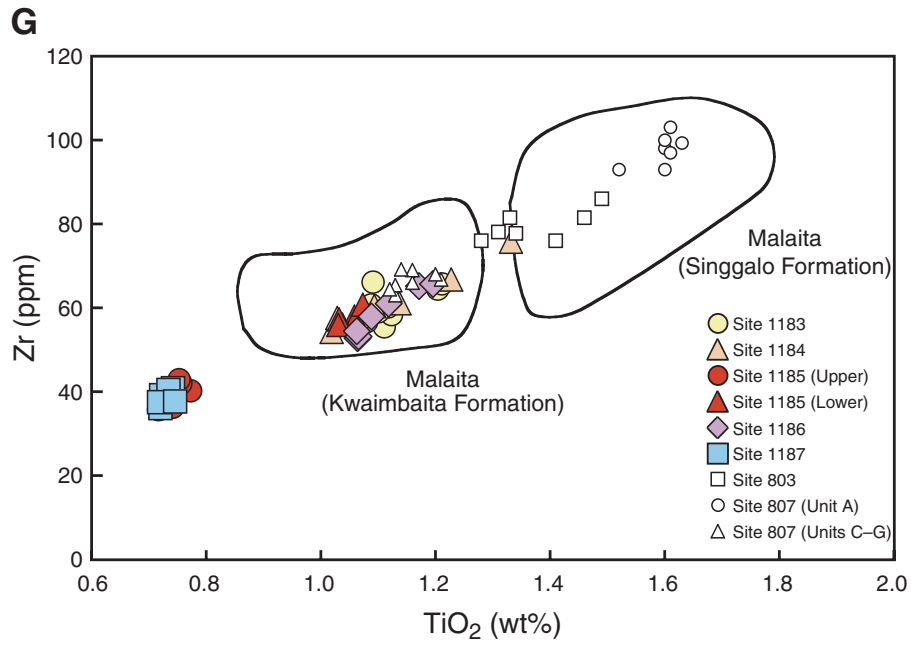
**BASEMENT DRILLING
OF THE
ONTONG JAVA PLATEAU
SITES 1183-1187**

**PROCEEDINGS OF THE
OCEAN DRILLING PROGRAM**

Prepared by the
OCEAN DRILLING PROGRAM, TEXAS A&M
UNIVERSITY
in cooperation with the
NATIONAL SCIENCE FOUNDATION
and
JOINT OCEANOGRAPHIC INSTITUTIONS, INC.



Frontispiece. Continued on next two pages.



Frontispiece (continued). [Caption on next page.](#)

Frontispiece (continued). (Figure shown on previous two pages.)

A. Predicted bathymetry (after Smith and Sandwell, 1997) of the Ontong Java Plateau (outlined in red) showing the locations of sites drilled during Leg 192 (stars). Previous Ocean Drilling Program (ODP) and Deep Sea Drilling Project drill sites that reached basement are marked by black dots. White dots mark Site 288, which did not reach basement but bottomed in Aptian limestone, and Site OJ-7, which was proposed for Leg 192 but not drilled. The bathymetric contour interval is 1000 m.

B. Close-up photograph of a pillow margin from Site 1187 (interval 192-1187A-11R-1, 46–77 cm), showing an Fe oxyhydroxide-stained spherulitic region parallel to the glassy rim.

C. Photomicrograph showing elongate altered olivine crystals and spherulitic plagioclase crystals in a pillow margin from Site 1185 (Sample 192-1185B-4R-1, 142–144 cm). Field of view = 5.5 mm; plane-polarized light.

D. Unaltered olivine phenocrysts in basalt from a pillow center from Site 1187 (Sample 192-1187A-6R-6, 105–107 cm). Field of view = 2.8 mm; crossed polars.

E. Sprays of plagioclase and augite crystals in a massive flow interior from Site 1186 (Sample 192-1186A-34R-2, 143–146 cm). Field of view = 2.8 mm; crossed polars.

F. Close-up photograph of a spherulitic, high-Mg basalt pillow margin from Site 1185 (interval 192-1185B-3R-1, 54–63 cm). The glassy rim of the pillow is at the lower right.

G. Zr vs. TiO₂ for basement rocks recovered at all Leg 192 sites and ODP Sites 803 and 807 (Mahoney et al., 1993). The fields for the Kwaimbaita Formation and the overlying Singgalo Formation on Malaita (Tejada et al., 1996, 2001) are shown for comparison.

H. Close-up photograph of wood fragments in lithic vitric tuff near the base of Subunit IIE at Site 1184 (interval 192-1184A-45R-7, 48–65 cm).

I. Close-up photograph of accretionary lapilli, both whole (round) and fragmented, in gray lithic vitric tuff, Subunit IIA at Site 1184 (interval 192-1184A-14R-1, 58–66 cm).

J. Photomicrograph showing a wide range of lithic and vitric clast types present in a lithic vitric tuff from Subunit IID at Site 1184 (Sample 192-1184A-31R-7, 40–43 cm). The clasts include glass shards (light brown), basalt (gray), and tachylite (dark brown). Plane-polarized light.

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Volume 192

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Covering Leg 192 of the cruises of the Drilling Vessel *JOIDES Resolution*

Apra Harbor, Guam, to Apra Harbor, Guam

Sites 1183–1187

8 September–7 November 2000

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VOLUME GRAPHIC DESIGNER

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The bulk of the shipboard-collected data from this leg is available on the World Wide Web and is accessible at www-odp.tamu.edu/database. If you cannot access this site or need additional data, please contact the ODP Data Librarian, Ocean Drilling Program, Texas A&M University, College Station TX 77845-9547, USA (e-mail: database@odpemail.tamu.edu).

Supplemental data on the volume CD-ROM were provided by the authors and may not conform to ODP publication formats.

Some close-up photographs of very dark cores have been tonally enhanced to better illustrate particular features of interest.

A site map showing the drilling locations for this leg and maps showing the drilling locations of all Ocean Drilling Program (ODP) and Deep Sea Drilling Project (DSDP) drilling sites are available on the volume CD-ROM in PDF format. These maps were produced using Generic Mapping Tools (GMT) of Paul Wessel and Walter H.F. Smith (gmt.soest.hawaii.edu).

Cover image is of close-up of interval 192-1185B-4R-1, 103–111 cm, by ODP Photographer Shannon Center. See Figure **F51**, p. 78, in the “Site 1185” chapter for a full description.

FOREWORD

BY JOINT OCEANOGRAPHIC INSTITUTIONS, INC.

This volume presents scientific and engineering results from the Ocean Drilling Program (ODP). These results address the scientific and technical goals of the program, which are focused on the study of the dynamics of Earth's interior and environment, the evolution of oceanic crust, and the fluctuations of climate. In addition, study of the Earth's deep biosphere is an emergent research objective.

ODP, an international partnership of scientists and research institutions from 22 countries, operates the drillship *JOIDES Resolution*. This state-of-the-art research vessel contains eight levels of laboratories and other scientific facilities required for carrying out the program's objectives.

The management of ODP involves a partnership of scientists and governments. International oversight and coordination are provided by the ODP Council, which is made up of representatives from the member countries. Overall scientific and management guidance is provided by representatives from the Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES).

Joint Oceanographic Institutions, Inc. (JOI), a nonprofit consortium of 15 U.S. oceanographic institutions, serves as the National Science Foundation's prime contractor for ODP. JOI implements scientific objectives, plans, and recommendations of the JOIDES committees through major subcontracts to Texas A&M University (TAMU) for science operations and to Lamont-Doherty Earth Observatory (LDEO) of Columbia University for geochemical and geophysical well-logging services.

JOI, TAMU, and LDEO have worked together successfully for many years to manage the Ocean Drilling Program. We look forward to many exciting discoveries and continued international collaboration as we further our scientific mission, especially the planning for the future of ocean drilling beyond 2003.

Steven R. Bohlen

President of the Joint Oceanographic Institutions and Executive Director of the Ocean Drilling Programs
Washington, D.C.

OCEAN DRILLING PROGRAM*

National Science Foundation
 4201 Wilson Boulevard
 Arlington VA 22230, USA
 Tel: (703) 306-1581; Fax: (703) 306-0390
 Web site: www.nsf.gov

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OCEAN DRILLING PROGRAM (ODP)

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ODP SCIENCE ADVISORY STRUCTURE (JOIDES)

JOIDES Office

University of Miami—RSMAS
4600 Rickenbacker Causeway
Miami FL 33149, USA

Tel: (305) 361-4668; Fax: (305) 361-4632

E-mail: joides@rsmas.miami.edu

Web site: joides.rsmas.miami.edu

ODP PROGRAM MANAGER

Joint Oceanographic Institutions, Inc.
1755 Massachusetts Avenue, NW, Suite 700
Washington DC 20036-2102, USA
Tel: (202) 232-3900; Fax: (202) 462-8754
E-mail: joi@brook.edu
Web site: www.joi-odp.org

ODP SCIENCE OPERATOR

Ocean Drilling Program
Texas A&M University
1000 Discovery Drive
College Station TX 77845-9547, USA
Tel: (979) 845-2673; Fax: (979) 845-4857
E-mail: odp@odpemail.tamu.edu
Web site: www-odp.tamu.edu

ODP LOGGING SERVICES

Borehole Research Group
Lamont-Doherty Earth Observatory
Columbia University
Route 9W
Palisades NY 10964, USA
Tel: (845) 365-8341; Fax: (845) 365-3182
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ODP SITE SURVEY DATA BANK

Lamont-Doherty Earth Observatory
Columbia University
Route 9W
Palisades NY 10964, USA
Tel: (845) 365-8542; Fax: (845) 365-8159
E-mail: odp@ldeo.columbia.edu
Web site: www.ldeo.columbia.edu/databank

LEG 192 PARTICIPANTS*

SHIPBOARD SCIENTIFIC PARTY

John J. Mahoney
Co-Chief Scientist

Department of Geology and Geophysics/SOEST
University of Hawaii at Manoa
1680 East-West Road
Honolulu HI 96822
USA

jmahoney@soest.hawaii.edu

J. Godfrey Fitton
Co-Chief Scientist

Department of Geology and Geophysics
University of Edinburgh
West Mains Road
Edinburgh EH9 3JW
United Kingdom

godfrey.fitton@glg.ed.ac.uk

Paul J. Wallace
Staff Scientist

Ocean Drilling Program
Texas A&M University
1000 Discovery Drive
College Station TX 77845-9547
USA

Present address (1 October 2001):
Department of Geological Sciences
1272 University of Oregon
Eugene OR 97403-1272
USA

pwallace@darkwing.uoregon.edu

Maria J. Antretter
Physical Properties Specialist

Institut für Allgemeine und
Angewandte Geophysik und Geophysikalisches
Observato
Ludwig-Maximilians-Universität München
Theresienstrasse 41/IV
80333 München
Germany

maria@geophysik.uni-muenchen.de

*Addresses at time of cruise, except where updated by the leg participants before publication.

Neil R. Banerjee**Metamorphic Petrologist**

School of Earth and Ocean Sciences
University of Victoria
PO Box 3055
Victoria BC V8W 3P6
Canada

Present address (20 August 2001):
Department of Earth and Atmospheric Sciences
University of Alberta
1-26 Earth Sciences Building
Edmonton AB T6G 2E3
Canada
banerjee@ualberta.ca

James A. Bergen**Paleontologist (nannofossils)**

Department of Geological Sciences
University of North Carolina
CB 3315, Mitchell Hall
Chapel Hill NC 27599-3315
USA
jabergen@flash.net

Graeme Cairns**Logging Staff Scientist**

Laboratoire de Mesures en Forage
ODP/NEB
ISTEEM cc 049
Université de Montpellier II
Place Eugène Bataillon
F-34095 Montpellier Cedex 5
France

Present address (20 August 2001):
Universite de Bretagne Occidentale, UMR 6538
IUEM, Place N. Copernic
29280 Plouzane
France
cairns@sdt.univ-brest.fr

Paterno R. Castillo**Igneous Petrologist**

Geosciences Research Division
Scripps Institution of Oceanography
University of California, San Diego
La Jolla CA 92093-0212
USA
pcastillo@ucsd.edu

Lynne M. Chambers

Igneous Petrologist

Department of Geology and Geophysics
University of Edinburgh
Grant Institute
West Mains Road
Edinburgh EH9 3JW
United Kingdom

lynne.chambers@glg.ed.ac.uk

William J. Chazey III

Inorganic Chemist

Department of Civil Engineering and Geological
Sciences
University of Notre Dame
156 Fitzpatrick Hall
Notre Dame IN 46556
USA

william.chazey.1@nd.edu

Millard F. Coffin

Geophysicist/JOIDES Logging Scientist

Institute for Geophysics
University of Texas at Austin
Building 600
4412 Spicewood Springs Road
Austin TX 78759-8500
USA

Present address (1 October 2001):

Ocean Research Institute
University of Tokyo
1-15-1 Minamidai, Nakano-ku
Tokyo 164-8639
Japan

mcoffin@ori.u-tokyo.ac.jp

Marguerite M. Godard

Igneous Petrologist

Laboratoire de Tectonophysique–CNRS UMR
5568
Case 49
Institut des Sciences de la Terre, de l’Eau et de
l’Espace de Montpellier
Université de Montpellier II
Place Eugène Bataillon
F-34095 Montpellier Cedex 5
France

margot@dstu.univ-montp2.fr

Stuart A. Hall**Paleomagnetist**

Department of Geosciences
University of Houston
Houston TX 77204-5503
USA

sahgeo@uh.edu

José Honnorez**Metamorphic Petrologist**

EOST-Géologie
Université Louis Pasteur
1 rue Blessig
F-67084 Strasbourg
France

honnorez@illite.u-strasbg.fr

Stephanie P. Ingle**Igneous Petrologist**

Département des Sciences de la Terre et de
L'Environnement
Université Libre de Bruxelles
CP 160/02
Avenue F.D. Roosevelt, 50
B-1050 Brussels
Belgium

single@ulb.ac.be

Loren W. Kroenke**Physical Properties Specialist**

Hawaii Institute of Geophysics and Planetology/
SOEST

University of Hawaii at Manoa
1680 East-West Road, POST 808
Honolulu HI 96822
USA

kroenke@soest.hawaii.edu

Kenneth G. MacLeod**Stratigrapher**

Department of Geological Sciences
101 Geological Sciences Building
University of Missouri
Columbia MO 65211
USA

macleodk@missouri.edu

Hajime Naruse**Sedimentologist**

Department of Geology and Mineralogy
Faculty of Science
Kyoto University
Sakyo-ku Kitashirakawa Oiwakecho
Kyoto 606-8502
Japan

naruse@kueps.kyoto-u.ac.jp

Clive R. Neal
Igneous Petrologist

Department of Civil Engineering and Geological
Sciences
University of Notre Dame
156 Fitzpatrick Hall
Notre Dame IN 46556
USA
neal.1@nd.edu

James G. Ogg
Sedimentologist

Department of Earth and Atmospheric Sciences
Purdue University
CIVL Building 1397
West Lafayette IN 47907-1397
USA
jogg@purdue.edu

Peter Riisager
Paleomagnetist

Danish Lithosphere Centre
Øster Voldgade 10
DK-1350 Copenhagen
Denmark
pri@dlc.ku.dk

Takahashi Sano
Igneous Petrologist

College of Environment and Disaster Research
Fuji Tokoha University
Ohbuchi 325
Fuji 417-0801
Japan
sano@fuji-tokoha-u.ac.jp

Paul J. Sikora

Paleontologist (foraminifers)
Energy and Geoscience Institute
University of Utah
423 Wakara Way, Suite 300
Salt Lake City UT 84108
USA
psikora@egi.utah.edu

Wietze van der Werff
Sedimentologist

Department of Earth Sciences
University of Liverpool
Jane Herdman Building
Brownlow Street
Liverpool L69 3BX
United Kingdom
wietzevanderwerff@hotmail.com

Rosalind V. White
Igneous Petrologist
Department of Geology
University of Leicester
University Road
Leicester LE1 7RH
United Kingdom
rvw1@le.ac.uk

Xixi Zhao
Physical Properties Specialist
Center for Study of Imaging and Dynamics of
the Earth
Department of Earth Sciences
University of California, Santa Cruz
1156 High Street
Santa Cruz CA 95064
USA
xzhao@es.ucsc.edu

TRANSOCEAN SEDCO FOREX OFFICIALS**Tom Ribbens****Master of the Drilling Vessel**

Overseas Drilling Ltd.

707 Texas Avenue South, Suite 213D

College Station TX 77840-1917

USA

Scott Pederson**Drilling Superintendent**

Overseas Drilling Ltd.

707 Texas Avenue South, Suite 213D

College Station TX 77840-1917

USA

ODP SHIPBOARD PERSONNEL**Tyler Baird**

Marine Laboratory Specialist (Core)

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(Core, Paleomagnetism)

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Marine Laboratory Specialist (Core)

ODP PUBLICATIONS STAFF*

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CD-ROM CONTENTS: CHAPTERS

- 1. Leg 192 Summary**
Shipboard Scientific Party
- 2. Explanatory Notes**
Shipboard Scientific Party
- 3. Site 1183**
Shipboard Scientific Party
- 4. Site 1184**
Shipboard Scientific Party
- 5. Site 1185**
Shipboard Scientific Party
- 6. Site 1186**
Shipboard Scientific Party
- 7. Site 1187**
Shipboard Scientific Party

CD-ROM CONTENTS: CORE DESCRIPTIONS

Visual core descriptions (VCDs); smear slide data tables; sediment, igneous, and volcanoclastic thin section data tables; digital core images; and digital photomicrograph images are included in this section. ASCII versions of the smear slide data tables are also available (see [“ASCII Tables”](#)).

Site 1183

[Visual Core Descriptions](#) · [Smear Slides](#) · [Thin Sections](#)

Site 1184

[Visual Core Descriptions](#) · [Smear Slides](#) · [Thin Sections](#)

Site 1185

[Visual Core Descriptions](#) · [Smear Slides](#) · [Thin Sections](#)

Site 1186

[Visual Core Descriptions](#) · [Smear Slides](#) · [Thin Sections](#)

Site 1187

[Visual Core Descriptions](#) · [Smear Slides](#) · [Thin Sections](#)

CD-ROM CONTENTS: ASCII TABLES

This CD-ROM contains ASCII versions of coring summaries and selected biostratigraphy, chemistry, paleomagnetism, and physical properties **data tables** and all of the **smear slide data tables** presented under “Core Descriptions.” A complete listing of the ASCII data tables can be found on the next four pages.

You can access these data directly from the PDF files. Depending on your computer platform, the following information applies.

PC COMPUTERS

By default, clicking on a filename with a .TXT extension will launch the Notepad application. You can configure your computer’s operating system so that files on this CD with .TXT extensions automatically open in other software, such as Microsoft Excel. Follow these steps from the pull-down menu: Windows 95 and NT operating systems: View > Options > File Types; and Windows 98 systems: View > Folder Options > File Types.

MAC COMPUTERS

All table files with .TXT extensions will automatically open into Excel. If you do not have Excel installed on your computer, you may view these files through other spreadsheet or text-editor programs. Open the application of your choice, select File > Open, and open the ASCII file.

UNIX COMPUTERS

You can open files with .TXT extensions in any text editor or spreadsheet program, but not directly from PDF files.

Chapter 3
Chapter 4

Chapter 5
Chapter 6

Chapter 7
Smear slide data tables

Chapter 3, Site 1183

Table T1. Coring summary, Hole 1183A.

Table T2. Expanded coring summary, Hole 1183A.

Table T5. Depth-age summary of Cretaceous stages and Cenozoic epochs, Hole 1183A.

Table T6. Summary of depths and estimated duration of unconformities, Hole 1183A.

Table T7. List of Cenozoic planktonic foraminifer and calcareous nannofossil lowest, highest, and highest common occurrences, Hole 1183A.

Table T8. List of Cretaceous planktonic foraminifer and calcareous nannofossil highest, lowest, and lowest common occurrences, Hole 1183A.

Table T11. Geochemical data for whole-rock samples analyzed by shipboard ICP-AES, Hole 1183A.

Table T13. Characteristic remanent magnetization direction, natural remanent magnetization, median destructive field, magnetic susceptibility, and Koenigsberger ratio for selected basalt pieces.

Table T14. Index properties data, Hole 1183A.

Table T15. *P*-wave velocity measured using the contact probe system, Hole 1183A.

Table T16. Thermal conductivity values, Hole 1183A.

Chapter 4, Site 1184

Table T1. Coring summary, Hole 1184A.

Table T2. Expanded coring summary, Site 1184.

Table T5. List of planktonic foraminifer and calcareous nannofossil highest and lowest occurrences in Unit I, Hole 1184A.

Table T7. Whole-rock compositions of six fine-grained bulk samples, Hole 1184A.

Table T9. Index properties data, Hole 1184A.

Table T10. *P*-wave velocity measured using the contact probe system.

Table T11. Thermal conductivity values, Hole 1184.

Chapter 5, Site 1185

Table T1. Coring summary, Site 1185.

Table T2. Expanded coring summary, Site 1185.

Table T5. List of planktonic foraminifer and calcareous nannofossil highest and lowest occurrences in Unit I.

- Table T6.** Range chart showing middle to upper Eocene turnover in abyssal benthic foraminifer assemblages.
- Table T8.** Shipboard ICP-AES analyses and normative compositions of basalt samples, Site 1185.
- Table T9.** Characteristic remanent magnetization direction, natural remanent magnetization intensity, median destructive field, magnetic susceptibility, and Koenigsberger ratio for selected basalt pieces, Site 1185.
- Table T10.** Paleomagnetic units A1–A4 and B1–B18.
- Table T12.** Index properties data, Site 1185.
- Table T13.** *P*-wave velocity measured using the contact probe system, Site 1185.
- Table T14.** Thermal conductivity values, Site 1185.

Chapter 6, Site 1186

- Table T1.** Coring summary, Hole 1186A.
- Table T2.** Expanded coring summary, Site 1186.
- Table T5.** Summary of depths and estimated duration of unconformities, Hole 1186A.
- Table T6.** List of Cenozoic planktonic foraminifer and calcareous nannofossil highest occurrences and lowest occurrences, Hole 1186A.
- Table T7.** List of Cretaceous planktonic foraminifer and calcareous nannofossil highest and lowest occurrences, Hole 1186A.
- Table T8.** Geochemical data for whole-rock samples analyzed by shipboard ICP-AES, Hole 1186A.
- Table T9.** Characteristic remanent magnetic direction, natural remanent magnetization intensity, median destructive field, magnetic susceptibility, and Koenigsberger ratio for selected basalt pieces, Hole 1186A.
- Table T10.** Paleomagnetic Units I–VIII.
- Table T11.** Number of samples, mean inclination, and corresponding 95% confidence angle, precision parameter, paleolatitude (95% confidence interval), magnetic chron, and approximate age for selected sediment cores and all basalts, Hole 1186A.
- Table T12.** Index properties data, Site 1186.
- Table T13.** *P*-wave velocity measured using the Hamilton Frame, Hole 1186A.
- Table T14.** Thermal conductivity values, Site 1186.

Chapter 7, Site 1187

Table T1. Coring summary, Hole 1187A.

Table T2. Expanded coring summary, Hole 1187A.

Table T3. List of planktonic foraminifer and calcareous nannofossil occurrences and age assignments in sediments, Site 1187.

Table T5. Whole-rock compositions of basalt samples, Hole 1187A.

Table T6. Characteristic remanent magnetization direction, natural remanent magnetization intensity, median destructive field, magnetic susceptibility, and Koenigsberger ratio for selected basalt pieces.

Table T7. Index properties data, Hole 1187A.

Table T8. *P*-wave velocity measured using the contact probe system, Hole 1187A.

Table T9. Thermal conductivity values, Hole 1187A.

Smear Slide Data Tables

Site 1183 smear slide table.

Site 1184 smear slide table.

Site 1185 smear slide table.

Site 1186 smear slide table.

Site 1187 smear slide table.

CD-ROM CONTENTS: SUPPLEMENTARY MATERIAL

This CD-ROM contains author-prepared supplementary material that was prepared during Leg 192 but not cited in the *Initial Reports* volume. Supplementary material files must be viewed with appropriate software and are located in the SUPP_MAT directory. A complete listing of the files follows.

PIECE LOGS

These Excel 97/98 spreadsheet files contain the piece logs for Sites 1183, 1185, 1186, and 1187.

PIECELOG

PL_1183.XLS: Site 1183 log.

PL_1185A.XLS: Hole 1185A log.

PL_1185B.XLS: Hole 1185B log.

PL_1186.XLS: Site 1186 log.

PL_1187.XLS: Site 1187 log.

PHOTOMICROGRAPHS

The digital photomicrograph files are in PDF format. The logs are in Excel 97/98 format. The photomicrograph logs describe the photomicrographs listed below and the photomicrographs presented in the *Initial Reports* volume.

PHOTOMIC

IGPHOTO (Igneous photomicrographs)

IG_LOG.XLS: Igneous photomicrograph log
for Sites 1183–1187.

1184A043.PDF

1184A079.PDF

1184A149.PDF

1185A095.PDF

1185A096.PDF

1185A097.PDF

1185A098.PDF

1185A099.PDF

1185A100.PDF

1185A101.PDF

1185A102.PDF

1185A103.PDF

1185A104.PDF

1185A105.PDF

1185A106.PDF
1185A107.PDF
1185A108.PDF
1185A109.PDF
1185A110.PDF
1185A111.PDF
1185A112.PDF
1185A113.PDF
1185A114.PDF
1185A115.PDF
1185A116.PDF
1185A123.PDF
1185B180.PDF
1185B181.PDF
1185B182.PDF
1185B183.PDF
1185B195.PDF
1185B197.PDF
1185B198.PDF
1185B200.PDF
1185B205.PDF
1186A232.PDF
1186A234.PDF
1186A247.PDF
1187A238.PDF
1187A249.PDF
1187A250.PDF
1187A251.PDF
1187A257.PDF
1187A258.PDF

SEDPHOTO (Sedimentary photomicrographs)

1183A

1183_LOG.XLS: Hole 1183A sedimentary photomicrograph log.

1183S42.PDF
1183S43.PDF
1183S44.PDF
1183S45.PDF
1183S46.PDF
1183S47.PDF
1183S48.PDF
1183S49.PDF
1183S50.PDF
1183S51.PDF
1183S52.PDF
1183S53.PDF
1183S54.PDF
1183S55.PDF
1183S56.PDF
1183S57.PDF
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1183S60.PDF
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1183S62.PDF
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1183S65.PDF
1183S66.PDF
1183S67.PDF
1183S68.PDF

1183S69.PDF
1183S70.PDF
1183S71.PDF
1183S93.PDF
1183S94.PDF
1183S95.PDF
1183S96.PDF
1183S97.PDF
1183S98.PDF
1183S99.PDF
1183S100.PDF
1183S101.PDF
1183S102.PDF
1183S103.PDF
1183S104.PDF
1183S105.PDF
1183S107.PDF
1183S108.PDF
1183S109.PDF
1183S110.PDF
1183S111.PDF
1183S112.PDF
1183S113.PDF
1183S114.PDF
1183S115.PDF
1183S116.PDF
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1183S136.PDF
1183S137.PDF
1183S138.PDF
1183S139.PDF
1183S140.PDF
1183S141.PDF
1183S142.PDF
1183S143.PDF

1185A

1185_LOG.XLS: Hole 1185A sedimentary
photomicrograph log.

1185S6.PDF
1185S7.PDF
1185S8.PDF
1185S9.PDF
1185S10.PDF
1185S11.PDF

1185S12.PDF

1186A

1186_LOG.XLS: Hole 1186A sedimentary
photomicrograph log.

CD-ROM CONTENTS: DRILLING LOCATION MAPS

A site map showing the drilling locations for this leg and maps showing the drilling locations of all Ocean Drilling Program (ODP) and Deep Sea Drilling Project (DSDP) drilling sites are available in PDF format.

ODP Leg 192 Site Map

ODP Map (Legs 100–192)

DSDP Map (Legs 1–96)

RELATED LEG DATA

DOWNHOLE LOGGING AND CORE DATA

A second CD-ROM is included with this volume. The "Log and Core Data" CD contains Leg 192 depth-shifted and processed downhole logging data and shipboard core logging data (color reflectance, gamma-ray attenuation bulk density, magnetic susceptibility, moisture and density, and natural gamma radiation). The downhole logging data are provided by the Borehole Research Group at the Lamont-Doherty Earth Observatory, Wireline Logging Operator for ODP.

Most of the logging and core data included on this CD are available on the World Wide Web at www.ldeo.columbia.edu/BRG/ODP. If you cannot access this site or want to order the CD, please contact the ODP Logging Services Operator at the Lamont-Doherty Earth Observatory, Columbia University, Route 9W, Palisades NY 10964, USA; Tel: (845) 365-8341; Fax: (845) 365-3182; E-mail: borehole@ldeo.columbia.edu.

The majority of the core data on the CD are available on the Web at www-odp.tamu.edu/database. If you cannot access the ODP database or need additional data, please contact: ODP Data Librarian, Ocean Drilling Program, Texas A&M University, 1000 Discovery Drive, College Station TX 77845-9547, USA; Tel: (979) 845-8495; Fax: (979) 458-1617; E-mail: database@odpemail.tamu.edu.

COMPILED ELECTRONIC INDEX

The Compiled Electronic Index of the *Proceedings of the Ocean Drilling Program* included on the volume CD-ROM contains individual indexes of Volumes 101–173 and 174B. The indexes are contained in the directory titled ODPINDEX and are named ###NDX.PDF (### = the leg number). These indexes can be searched individually or collectively.

CD-ROM DIRECTORY STRUCTURE

192IR.PDF

(Preliminary pages and table of contents)

README.PDF

(Information about the volume CD-ROM)

README.TXT

(Information about the volume CD-ROM in ASCII format)

ACROREAD

(Acrobat Reader 4.0.5 installation software and instructions for different platforms)

MAC

WINDOWS

UNIX

README.TXT

MAPS

(Drilling location maps)

192_MAP.PDF

(Leg 192 site map)

ODPMAP.PDF

(ODP map, Legs 100 through 192)

DSDPMAP.PDF

(DSDP map, Legs 1 through 96)

VOLUME

(Leg 192 *Initial Reports* volume)

CHAPTERS

(Volume chapters)

IR192_01.PDF (Leg 192 Summary)

IR192_02.PDF (Explanatory Notes)

IR192_03.PDF (Site 1183)

IR192_04.PDF (Site 1184)

IR192_05.PDF (Site 1185)

IR192_06.PDF (Site 1186)

IR192_07.PDF (Site 1187)

CORES

(Visual core descriptions, smear slide and thin section data tables, and digital photomicrograph and core images)

COR_1183.PDF (Site 1183)

COR_1184.PDF (Site 1184)

COR_1185.PDF (Site 1185)

COR_1186.PDF (Site 1186)

COR_1187.PDF (Site 1187)

IMAGES (PDF files of core images)

PHOTOMIC (PDF files of photomicrographs)

TABLES

(ASCII versions of coring summary, biostratigraphy, geochemistry, paleomagnetism, physical properties, and smear slide data tables)

IR192_03 (Site 1183 files)

IR192_04 (Site 1184 files)

IR192_05 (Site 1185 files)

IR192_06 (Site 1186 files)

IR192_07 (Site 1187 files)

S_SLIDES (Smear slides from Sites 1183 through 1187)

README.TXT

INDEX.PDX

(Acrobat file used to enable Acrobat Search of the Leg 192 *Initial Reports*)

(Continued on next page)

CD-ROM DIRECTORY STRUCTURE (CONTINUED)

SUPP_MAT (Supplementary Material)	PIECELOG (Site 1183, 1185, 1186, and 1187 piece logs)	PL_1183.XLS (Site 1183 log) PL_1185A.XLS (Hole 1185A log) PL_1185B.XLS (Hole 1185B log) PL_1186.XLS (Site 1186 log) PL_1187.XLS (Site 1187 log)
	PHOTOMIC (PDF files of additional photomicrographs and digital photomicrograph logs)	IGPHOTO (PDF files of igneous photomicrographs) SEDPHOTO (PDF files of sedimentary photomicrographs)
ODPINDEX (Compiled Electronic Index of the <i>Proceedings of the Ocean Drilling Program</i>)	101NDX.PDF through 173NDX.PDF and 174BNDX.PDF (Index files)	
	NDX.PDX (Acrobat file used to enable Acrobat Search of the Compiled Electronic Index)	