

VOLUME 196 INITIAL REPORTS

**DEFORMATION AND FLUID FLOW PROCESSES
IN THE NANKAI TROUGH ACCRETIONARY PRISM:
LOGGING WHILE DRILLING AND ADVANCED CORKS**

SITES 808 AND 1173



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.

PROCEEDINGS OF THE OCEAN DRILLING PROGRAM

Volume 196

Initial Reports

Deformation and Fluid Flow Processes in the Nankai Trough
Accretionary Prism: Logging While Drilling and Advanced CORKs

Covering Leg 196 of the cruises of the Drilling Vessel *JOIDES Resolution*
Keelung, Taiwan, to Kochi, Japan

Sites 808 and 1173

2 May–1 July 2001

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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).

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 photograph is a bay of the Advanced CORK head, by ODP Photographer Shannon Center. See **"ACORK Borehole Hydrogeologic Observatories,"** p. 11, in the "Explanatory Notes" chapter for a technical 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 16 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

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No Core, A-CORK!

by Earl E. Davis

Who in the world let us get away
With a cruise without a core?
And a scientific party
With names on so few doors?

With a trip when all the eager techs
Would be without their tasks?
A trip when screens and packers
Replaced pipe out in the racks?

But those few souls who really care
About water in Earth's crannies and nooks,
We are grateful for this really big chance
To watch hydro-tectonics at work.

Our thinking began at a time long ago,
At the dawning of plate tectonics.
If faults were as weak as they seemingly were,
They required the help of hydraulics.

Much has been written in physics equations,
With some chemical reactions thrown in,
But ground-truth is needed to stop speculation;
Hard data is really quite thin.

So we came with our colleagues from over the sea
To drill in the most awful places,
Where earthquakes are plenty and holes must go deep
Into unstable subseafloor spaces.

But with an able drill crew and Pettigrew's tricks
We assembled CORKs more fantastic
Than ever before when we had to get core
And couldn't take time for A-antics.

The deepest we tried to stuff into the fault
Bounding continent and ocean.
Some thought we were trying to use the drill string
As a spike that would stop seismic motion.

But our goals were less grand, we just wanted to know
Why Earth's faults are so very slick.
So we've left all our gauges behind in the ground
To see if pore pressure's the trick.

We'll be back in a year, then let you all know
How things worked, and if we had luck
Learning secrets about Nankai's infamous fault.
For now, let's all hope it's well stuck.

CD-ROM CONTENTS: CHAPTERS

1. **Leg 196 Summary: Deformation and Fluid Flow Processes in the Nankai Trough Accretionary Prism: Logging While Drilling and Advanced CORKs**
Shipboard Scientific Party
2. **Explanatory Notes**
Shipboard Scientific Party
3. **Site 1173**
Shipboard Scientific Party
4. **Site 808**
Shipboard Scientific Party

CD-ROM CONTENTS: CORE DESCRIPTIONS

Visual core descriptions (VCDs), thin section data tables, digital core images, and photomicrographs are included in this section. VCDs and thin sections are combined into one PDF file.

Site 1173

[Visual Core Descriptions · Thin Sections](#)

CD-ROM CONTENTS: OVERSIZED FIGURES

Chapter 1, Leg 196 Summary

Figure F5. Composite seismic section through Leg 196 drill sites.

Figure F6. Site 1173 seismic, lithologic, and logging summary.

Figure F7. Site 808 seismic, lithologic, and logging summary.

CD-ROM CONTENTS: QUICKTIME MOVIES

These QuickTime movies may be viewed from within the respective chapter PDF file or opened directly from the MOVIES directory. QuickTime 5 software is provided on the CD-ROM but is available only for the Macintosh and Windows platforms. Please see **"QuickTime Software"** in README.PDF for information on installing the software. Please see **\QUIKTIME\README.TXT** for information on minimum system requirements. QuickTime and the QuickTime logo are trademarks used under license. The QuickTime logo is registered in the U.S. and other countries.

Chapter 3, Site 1173

Figure F34. Video of ACORK reentry.

Figure F35. Video of completed ACORK installation.

Chapter 4, Site 808

Figure F31. Video of ACORK fall.

Figure F32. Video of ACORK components lying on seafloor.

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 196 Site Map

ODP Map (Legs 100–196)

DSDP Map (Legs 1–96)

RELATED LEG DATA

DOWNHOLE LOGGING AND CORE DATA

A second CD-ROM is included with this volume. The “Log Data” CD contains Leg 196 raw and processed logging-while-drilling data. 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 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.

Core data 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, 174B, and 175. 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

196IR.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)	196_MAP.PDF (Leg 196 site map)	
	ODPMAP.PDF (ODP map, Legs 100 through 196)	
	DSDPMAP.PDF (DSDP map, Legs 1 through 96)	
VOLUME (Leg 196 <i>Initial Reports</i> volume)	CHAPTERS (Volume chapters)	IR196_01.PDF (Leg 196 Summary)
		IR196_02.PDF (Explanatory Notes)
		IR196_03.PDF (Site 1173)
		IR196_04.PDF (Site 808)
	CORES (Visual core descriptions, thin section data tables, digital core images, photomicrographs, and photomicrograph log)	COR_1173.PDF (Site 1173)
		IMAGES (PDF files of core images)
		PHOTOMIC (PDF files of photomicrographs)
	OVERSIZE (Large-format figures)	IR196_01 (Chapter 1 files)
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	INDEX.PDX (Acrobat file used to enable Acrobat Search of the 196 <i>Initial Reports</i>)	
ODPINDEX (Compiled Electronic Index of the <i>Proceedings of the Ocean Drilling Program</i>)	101NDX.PDF through 173NDX.PDF, 174BNDX.PDF, and 175NDX.PDF (Index files)	
	NDX.PDX (Acrobat file used to enable Acrobat Search of the Compiled Electronic Index)	
QUIKTIME (QuickTime 5.02 installation software and instructions for different platforms)	MAC	
	WINDOWS	
	README.TXT	