

PREFACE

A second, highly successful phase of drilling was completed on September 23, 1999 as part of the Hawaii Scientific Drilling Project. Planning for the project began in 1986, and in 1993 a pilot hole was drilled near Hilo, Hawaii. The pilot hole penetrated through Mauna Loa and Mauna Kea lavas to a total depth of 1,060 m below sea level with core recovery over 90%. The pilot hole project demonstrated that drilling a deep, continuously cored hole on the flank of a Hawaiian volcano was possible technologically and productive scientifically. A dedicated crew of on-site geologists laid the groundwork for future science research by taking on the enormous task of processing and logging the drill core in near real-time. A summary of this work can be found on the World Wide Web at http://expet.gps.caltech.edu/Hawaii_project.html. The results of geochemical, petrological, geomagnetic, and volcanological research on the pilot hole core were published in the May 1996 special issue of JGR. The success of the most recent drilling exercise was critically dependent on the experience gained from the pilot hole project.

The second phase of drilling began on March 15, 1999 and continued until September 23. A total depth of 3,097.8 m (10,163.6 ft) below sea level was reached, and core recovery was ~95%, exceeding project goals. As with the pilot hole, a full-time science crew worked on-site to define lithologic units and make detailed core descriptions that will serve as a framework for future research. Within about three weeks of being pulled out of the ground, every core piece had been washed, labeled, photographed, scanned, and logged. Daily progress reports on drilling and logging advances, including core scans and photographs were posted on the HSDP Web site at <http://icdp.gfz-potsdam.de/html/hawaii/news.html>. Drilling will begin again in 2001 to deepen the existing hole, with a target of 4.5 km, and a possibility of reaching ~6 km.

This four-volume set provides a summary of on-site core descriptions and includes some of the preliminary analyses made by HSDP researchers. It is our hope that these data will serve as a guide for further research and provide a common background for the many different groups working on the drill core. We have also included a set of CD-ROM data with every set of books. Disc 1 is essentially identical to the printed volumes, except that it also includes archive box photographs and selected drill site photographs that give a flavor of what life was like for the crew in Hawaii. The summarizing lithologic column is a good place to begin navigating through the CD as it contains links to core logs, archive box photos, and detailed information on lithologic units. The original idea behind including a CD version of the core log book was to make color images of the core available without going to the great expense of printing thousands of color copies. To this end, the core logs are provided in portable document format so color versions can be printed by individuals as is necessary for specific needs. Disc 2 contains high-resolution core scan images that show details of the slabbed core surface that are not observable in the box photographs (Disc 1).

There is an enormous amount of information in this book and CD set, and it has taken me several months to get it all organized and printed. However, most of the work was already done by the time I started compiling everything, and many people have contributed to producing this document. A full-time staff of core loggers and many volunteers worked on-site from February 1999 to November 1999. Volunteers and staff were coordinated by a core logging manager who trained new loggers, maintained the HSDP database, interfaced with the drilling crews, and generally made sure things ran smoothly at the drill site. Angie Roach spent several months getting the site set up before drilling began and managed the logging team from March until August. Angie's attention to detail set the example for the careful checking and cross-checking of data done by the HSDP science crew. When Angie left, I took over the position as core logging manager until late October when we completed core logging. Fran Coloma, Les Wallace, Dave Whilldin, Georgina Doughty, and I were at the drill site almost every day trying to keep up with the seemingly endless stream of core, and between the five of us (and Angie), washed, marked, boxed, slabbed, scanned, and logged most of the core. We also had the help of numerous volunteers whose names and logging initials are listed on page 1. Core logging procedures were based on the pilot hole work, and Mike Baker, who logged almost all of the pilot hole core, helped us get set up at the beginning and trained most of the full-time core loggers. Mike Garcia, the chief core logger, oversaw all scientific activities at the drill site and checked every single core log for consistency and accuracy. Mike's expertise on Hawaiian volcanism and his experience with the pilot hole project were invaluable. Even more importantly, his enthusiasm for teaching and his willingness to engage in geologic discussions kept our spirits up at the drill site, even when we felt overwhelmed with the amount of work ahead of us. After Mike Garcia had checked all the core logs, Ed Stolper re-checked them all, clearing up any lingering problems from spelling mistakes to debates on rock classification and interpretation of the stratigraphic section. Ronald Conze and Frank Krysiak developed the HSDP database and designed the layout of the core log pages. With a 12-hour time difference between Potsdam and Hawaii, they spent many late nights working with us to get data updates posted to the Web site and troubleshoot problems that arose during the course of the project.

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