# CRUISE REPORT

SHIP UTILIZATION DATA

UNOLS Rev.

| | | |
|---|---|---|
| SHIP NAME R/V CONRAD | OPERATING INST. L-DGO | |
| CRUISE (LEG) NO. 27-06 | DATES Jul 8-28, 1986 | |
| AREA OF OPERATIONS: Central Indian Ocean | PORT CALLS: PLACE / DATES | |
| | Colombo, SriLanka / Jul 5-8, 86 | |
| | Colombo, SriLanka / Jul28-Aug.3 | |
| DAYS AT SEA 20 | DAYS IN PORT 3 | |

PARTICIPATING PERSONNEL

| CODE | NAME | TITLE | AFFILIATION |
|---|---|---|---|
| 1. | Weissel, Jeffrey K. | Ch. Sci. | LDGO |
| 2. | Hobart, Michael | Scientist | LDGO |
| 3. | Cowie, Patience A. | Scientist | LDGO |
| 4. | Forsyth, Donald | Scientist | LDGO |

(over)

Use Reverse If Additional Space Required.

WAS RESEARCH CONDUCTED IN FOREIGN WATERS? _____ COUNTRY: _____

PRIMARY PROJECTS (those which govern the principal operations, area and movements of the ship)

| PROJECT TITLE AND PRINCIPAL INVESTIGATOR | SPONSORING ACTIVITY | GRANT OR CONTRACT NUMBER | PARTICIPATING PERSONNEL (AS CODED ABOVE) |
|---|---|---|---|
| J. Weissel | NSF | OCE 85-11980 | |
| DISCIPLINE Marine Geology | | | |

ANCILLARY PROJECTS (which are accomplished on a not-to-interfere basis and contribute to the overall effectiveness of the cruise)

| PROJECT TITLE AND PRINCIPAL INVESTIGATOR | SPONSORING ACTIVITY | GRANT OR CONTRACT NUMBER | PARTICIPATING PERSONNEL (AS CODED ABOVE) |
|---|---|---|---|
| | | | |

SIGNATURE J. Weissel DATE 3-26-87

CHIEF SCIENTIST

TOTAL SCIENTISTS 10 TOTAL TECHNICIANS 8

TOTAL GRAD STUDENTS 1 TOTAL STUDENTS/OBSERVERS _____

ATTACH PAGE SIZE CRUISE TRACK

COST ALLOCATION DATA

| DAYS CHARGED | AGENCY OR ACTIVITY CHARGED | GRANT OR CONTRACT NO. |
|---|---|---|
| 23 | National Science Foundation | OCE-83-16163<br>5-24992 |

SIGNATURE _____ DATE 31 Mar 87

Institution Official

| NAME | TITLE | AFFILLIATION |
|---|---|---|
| 5. Joffe, Samuel W. | Scientist | Stanford Univ. |
| 6. Louden, Keith E. | Scientist | Dalhousie, Univ. |
| 7. Savrda, Jiri | Scientist | Univ. of Texas |
| 8. Scrutton, Roger A. | Scientist | Univ. of Edinburgh |
| 9. Weiland, Charles | Scientist | Brown Univ. |
| 10. Zuber, Maria T. | Scientist | NASA |
| 11. Burk, Lyman , T.M. | Tech. | Oceano Instr. |
| 12. Hamilton, Neil | Tech. | Dalhousie Univ. |
| 13. Leger, Gregory | Tech. | |
| 14. Smith, James | Science Officer | LDGO |
| 15. Caplan, David | Tech. | LDGO |
| 16. Robinson, Frank | Tech. | LDGO |
| 17. Qali, Ropate | Tech. | LDGO |
| 18. Iltsche, Martin | Tech. | LDGO |

CRUISE REPORT RC27-06
COLOMBO - COLOMBO

8 July - 28 July, 1986

Participating Personnel

J. K. Weissel, Chief Scientist
D. W. Forsyth, Co-Chief Scientist
J. A. Smith, Science Officer
M. A Hobart, Scientist
W. Van Steveninck, Technician
R. A. Scrutton, Scientist
K. E. Louden, Scientist
G. T. Leger, Technician
N. F. Hamilton, Technician
P. A. Cowie, Watchstander
M. T. Zuber, Watchstander
S. W. Joffe, Watchstander
C. M. Weiland, Watchstander
J. Savrda, Watchstander
L. Monakhov, Watchstander
L. Burk, Technician
F. Robinson, Technician
D. Caplan, Technician
R. Qali Maiwiriwiri, Technician
M. Iltzsche, Engineer
J. DiBernardo, Technician

Cruise Narrative

Leg 2706 of R/V ROBERT D. CONRAD departed Colombo at 1100 (local) on 08 July 1986, and returned to Colombo at 0830 (local) on 28 July 1986. An outline of the ship's track is shown in Figure 1. The principal objectives for the leg were to measure crustal thickness and heat flow variations associated with the prominent region of intraplate compression in the Central Indian Ocean Basin south of Sri Lanka. Although watch-standing duties commenced at 1600 hours (local) on 08 July, deployment of the single-channel streamer, waterguns, and magnetometer was delayed until GMT 0500 on 09 July.

At GMT 0230 on July 10 we arrived at 1°S, 81°23'E, the centre point of the planned bottom-navigated heat flow and digital single-channel seismic survey that occupied the next four days. After taking piston core 65 near the central point, we deployed and surveyed-in the expendable bottom transponders from Oceano Instruments. However, we quickly found that the glass spheres on two of the transponders had shattered during shipment, and another transponder failed on its way to the sea floor.

Despite these setbacks, we obtained good bottom-navigation service from the minimum configuration of three transponders shown in Figure 2.

Digital heat flow profile 1 commenced at 1830 hours on 10 July. A total of eight measurements were obtained along a N-S profile (Table 1 and Figure 2). At 0630 on 11 July we began a digital single-channel seismic survey with the objective of mapping the seismic stratigraphy and deformational structures in the vicinity of the bottom transponder net while GPS navigation was available. The survey ended at 1800 on 11 July.

Digital heatflow profile 2 (Table 1 and Figure 2) began at 1845 hours on 11 July and was completed at 1000 on 12 July. Piston core 66 was obtained from near the southern end of this heat flow profile. Digital heat flow profile 3 (Table 1 and Figure 2) began at 1430 on 12 July and was completed at 1500 on 13 July. After hit J on this profile, the ship was positioned near the southern end of profile 2, and hits K-V were taken to extend profile 2 further to the south (Figure 2). At this point we returned to the centre of the transponder net and turned the transponders off. Heat flow profile 4 started at 1830 on 13 July and was terminated at 0030 14 July after four hits at the southern end of profile 2 (Table 1 and Figure 2). Note that profile 4 data were obtained using dead reckoning navigation. At 0330 on 14 July the geophysical gear was streamed and we steamed south to the location of OBS refraction line 1 (Figure 1).

At 0900 on 15 July we reached 5°30'S, 80°20'E, the position of the first OBS drop site. The plan was to deploy the five instruments at intervals of 20 km while travelling west, then turn and shot a 100-km long line across the instruments with the large airgun array. All appeared well until the final drop site where we deployed a Dalhousie digital unit. That OBS appeared to fail on its way to the sea floor, probably due to a power supply problem. The airgun configuration used for OBS refraction line 1 and the other two lines is shown in Table 3. The two 1000 cu. in. chambers did not tow well and did some damage to their towing harnesses. The towing problems were fixed before the second OBS line. Digitally recorded near-vertical incidence single-channel seismic reflection data were obtained by deploying the seismic streamer along this refraction line, and the other two. Three sonobuoys were shot along refraction line 1, which was completed at 0430 on 16 July. Major problems developed during the OBS recovery phase. The time release mechanisms on OBS 1b and 1c failed to work and these instruments along with 1e, the digital unit, were lost on refraction line 1. The problem with the release mechanism was traced to a software bug that had been there for several years but had not surfaced until this leg when long deployment times were required. The problem was corrected and no further instruments were lost on RC2706.

At 0630 on 17 July the gear was streamed and we headed north for the location of heat flow profile 5. At 1830 on 17 July piston core 68 was obtained at 4°10'S, 79°50'E. At 2130 hours the heat flow profile 5

commenced (Table 1) and was completed at 1830 on 18 July. After steaming south to 4°50'S, 79°50'E, heat flow profile 6 began (Table 1). Initially, we had problems penetrating the bottom on heat flow profile 6, but after shifting south about 5 n.m. we obtained better bottom conditions. Heat flow profile 7 (Table 1) started at 0915 on 19 July and was completed at 2100 on 19 July.

We then prepared to shoot OBS refraction line 2 by dropping two instruments on a N-S profile. At 0600 20 July we commenced the shooting schedule (6000 cu. in. at 60 sec. shot interval) and finished line 2 at 1635 hours 20 July. Vertical incidence reflection data was again digitally recorded from the single-channel streamer, and three expendable sonobuoys were deployed along the refraction profile. Only the southern of the two OBS's was recovered at this stage, the other was left down to monitor microearthquake activity and to serve as the eastern instrument on the last OBS line. At 2150 20 July we headed north for the final two heat flow profiles.

At 0800 21 July we arrived at the northern end of heat flow line 8 (3°15'S, 70°50'E, Fig. 1). Here penetration problems were particularly acute, and we were forced to abandon work in the vicinity after obtaining only three measurements out of eight attempts at three sites (Table 1). At 2300 21 July we steamed south to 3°48'S to begin heat flow profile 11. Profile 11 began at 0210 22 July and ended at 2200 on the same day after 16 successful measurements (Table 1). Piston core 69 was then obtained from near the center of heat flow profile 11.

Following the last of the heat flow work, we steamed to the deployment site of the western OBS on the final OBS refraction profile (profile 3, Fig. 1) along 4°15'S. The instrument was launched at 1830 23 July, and we steamed to the western end of the refraction line. We turned at 2200 and commenced shooting OBS refraction profile 3, which was completed at 1830 24 July. Three expendable sonobuoys were deployed along refraction line 3, and near-vertical incidence reflection data was again obtained. Both OBS instruments were successfully recovered, and at 2300 24 July, we headed northwards for Colombo.

At 0500 26 July, almost exactly on the equator, the ship was stopped and we received a visit from His Royal Majesty Neptunus Rex and His court.

At 1821 27 July, all underway gear was brought aboard ship and the lab watch was discontinued pending our arrival in Colombo.

## Evaluation of Cruise

The most impressive results were the heat flow and single-channel seismics, which were available for inspection aboard ship. The new streamer of French manufacture is a considerable improvement over past single-channel streamers aboard L-DGO vessels. One worry is the lack of

a back-up which would be needed in case of accident or malfunction. Of 114 penetrations at 11 heat flow stations we obtained 91 useful measurements. These figures attest to the professionalism of L-DGO's heat flow personnel. The core wire is of poor quality. It strains too easily under load and then will not rewind correctly back on to the reel. We had some disappointments with the OBS experiments with the loss of three instruments on refraction line 1. However, we did obtain data from two instruments per line, which is the minimum configuration for useful results. Likewise, the loss of three out of six bottom transponders was a blow to the bottom-navigated heat flow survey. However, we were able to complete the work required with the minimum configuration of three transponders.

Jeffrey K. Weissel
Chief Scientist

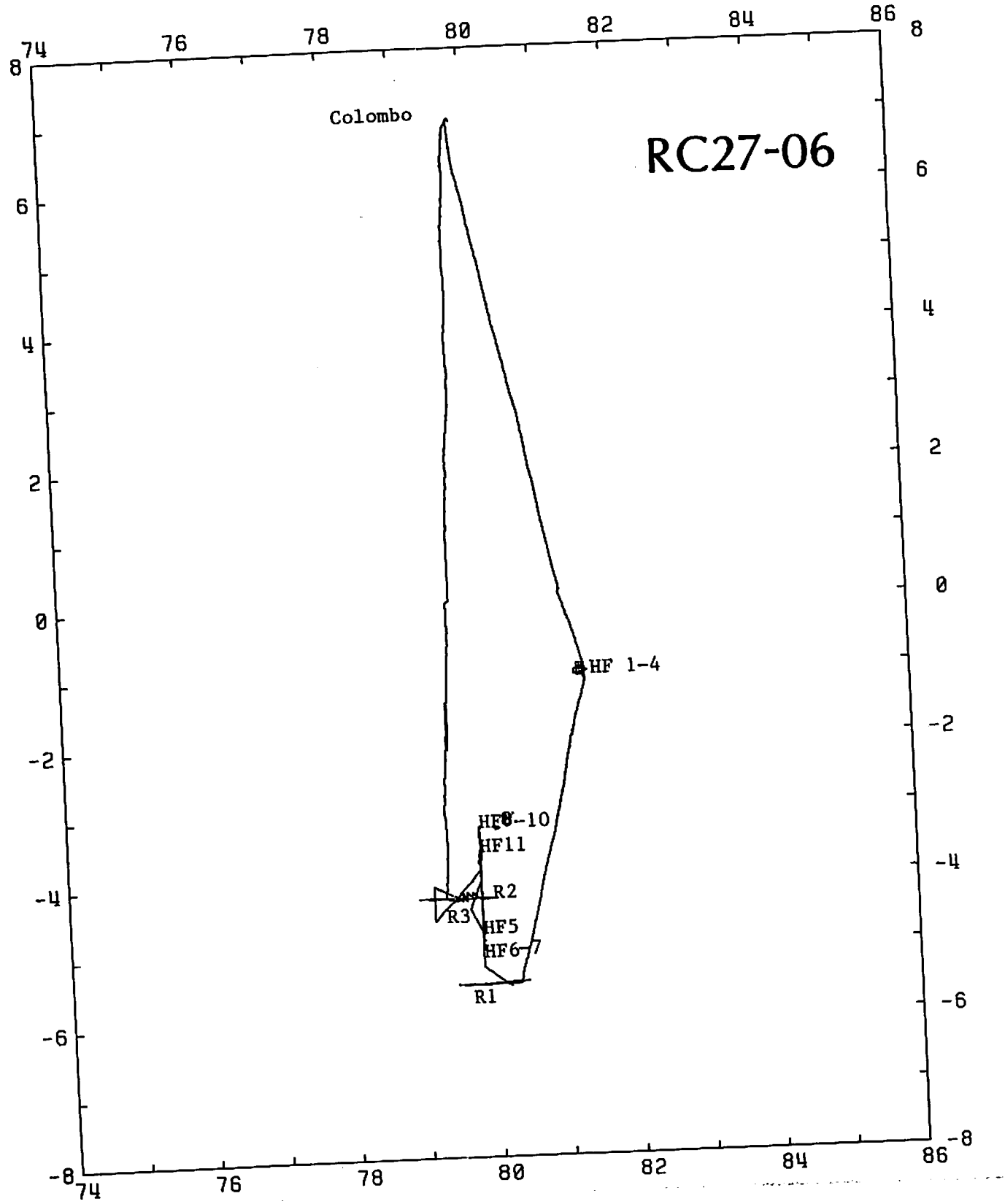


Fig. 1. Shiptrack for RC27-06 in the Central Indian Ocean. HF= heat flow station, R= OBS refraction profile.

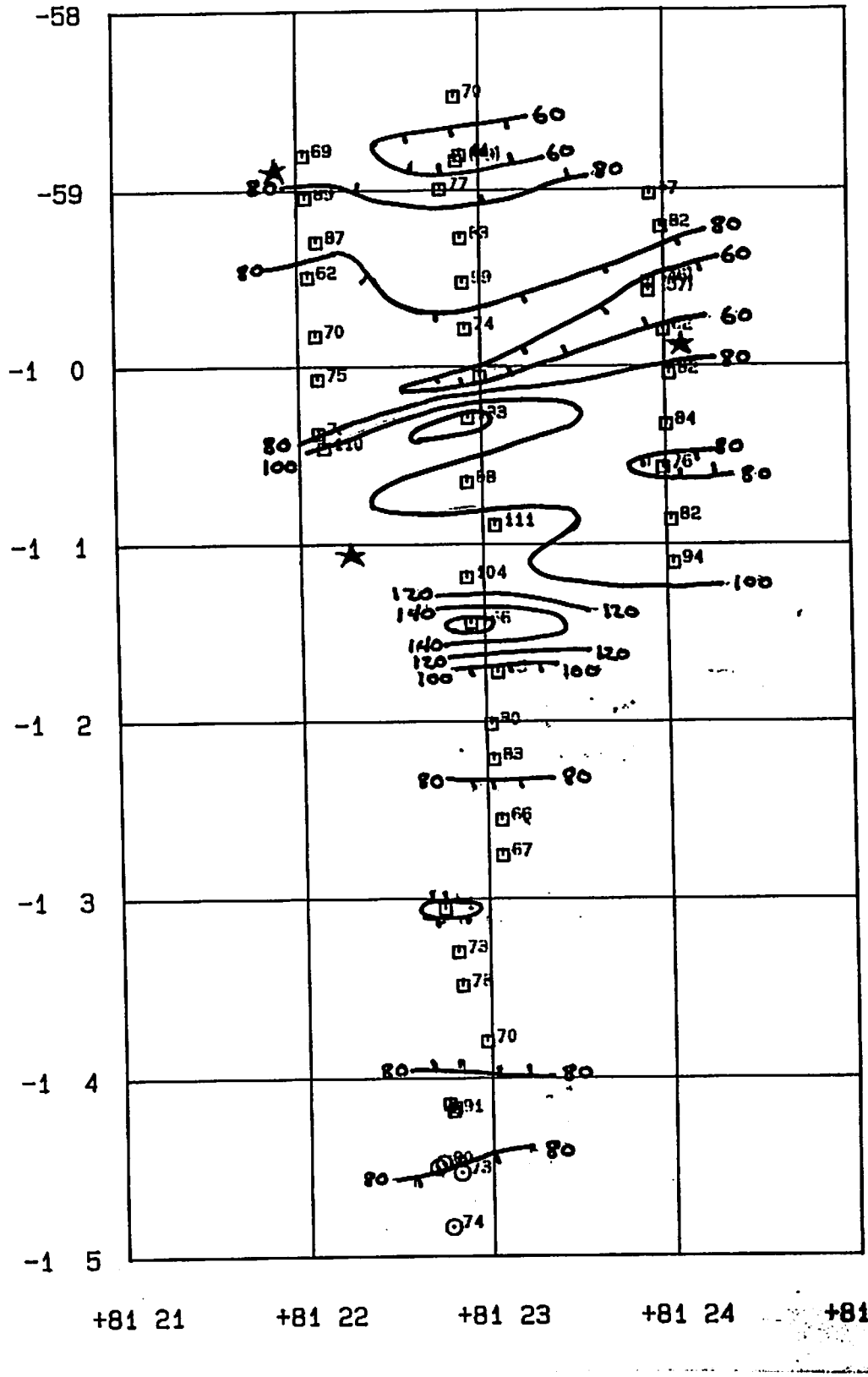


Fig. 2. Bottom-navigated heat flow in the ODP site survey area. Heat flow is contoured in units of 20 $mWm^{-2}$. Transponders are located by stars.

# TABLE 1

| STATION | LATITUDE S | LONGITUDE E | DEPTH m | PEN m | Np | GRADIENT mK/m | K W/m-K | Q mW/m^2 | St. Dev. mW/m^2 | EVALUATION | UTM-X m | UTM-Y m |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DHF 1A | 0 58.81' | 81 22.04' | 4708 | 2.9 | 4 | 73 | .95 | 69 | 1 | 10 | 874860 | 9891469 |
| B | 0 59.05' | 81 22.05' | 4708 | 2.7 | 4 | 97 | .92 | 89 | 1 | 10 | 874888 | 9891036 |
| C | 0 59.30' | 81 22.11' | 4708 | 2.7 | 4 | 97 | .9 | 87 | 1 | 10 | 874996 | 9890579 |
| D | 0 59.50' | 81 22.06' | 4710 | 3.3 | 4 | 63 | .98 | 62 | 1 | 9 | 874902 | 9890203 |
| E | 0 59.83' | 81 22.10' | 4710 | 3.1 | 3 | 71 | .98 | 70 | 1 | 10 | 874976 | 9889590 |
| F | 1 00.08' | 81 22.11' | 4710 | 3 | 4 | 75 | .97 | 73 | 1 | 8 | 874990 | 9889127 |
| G | 1 00.39' | 81 22.11' | 4710 | 2.9 | 4 | 79 | .93 | 73 | 1 | 9 | 874987 | 9888558 |
| H | 1 00.47' | 81 22.14' | 4710 | 3.5 | 3 | 128 | .86 | 110 | 3 | 7 | 875041 | 9888403 |
| DHF 2A | 0 58.48' | 81 22.87' | 4708 | 3.5 | 5 | 68 | 1.02 | 70 | 1 | 10 | 876409 | 9892088 |
| B | 0 58.84' | 81 22.88' | 4708 | 2.6 | 3 | 103 | .87 | 89 | 26 | 5 | 876423 | 9891421 |
| C | 0 58.81' | 81 22.90' | 4708 | 4.4 | 5 | 42 | 1.05 | 44 | 1 | 7 | 876451 | 9891480 |
| D | 0 59.00' | 81 22.79' | 4708 | 3.3 | 4 | 78 | .99 | 77 | 1 | 10 | 876249 | 9891129 |
| E | 0 59.28' | 81 22.90' | 4708 | 3.1 | 3 | 85 | .98 | 83 | 1 | 8 | 876453 | 9890599 |
| F | 0 59.53' | 81 22.91' | 4708 | 2.3 | 3 | 117 | .85 | 99 | 1 | 8 | 876476 | 9890141 |
| G | 0 59.79' | 81 22.92' | 4708 | 3.1 | 3 | 76 | .98 | 74 | 1 | 8 | 876500 | 9889658 |
| H | 1 00.06' | 81 23.00' | 4708 | 3 | 3 | 61 | .97 | 59 | 1 | 8 | 876642 | 9889174 |
| I | 1 00.30' | 81 22.93' | 4708 | 2.6 | 2 | 157 | .85 | 133 | 2 | 6 | 876518 | 9888724 |
| J | 1 00.66' | 81 22.92' | 4708 | 3.4 | 3 | 100 | .88 | 88 | 1 | 8 | 876492 | 9888056 |
| K | 1 00.90' | 81 23.07' | 4708 | 2.8 | 2 | 131 | .85 | 111 | 2 | 6 | 876773 | 9887612 |
| L | 1 01.19' | 81 22.91' | 4708 | 2.8 | 2 | 122 | .85 | 104 | 2 | 6 | 876467 | 9887085 |
| M | 1 01.45' | 81 22.93' | 4708 | 2.4 | 2 | 198 | .84 | 166 | 2 | 6 | 876516 | 9886593 |
| DHF 3A | 0 59.03' | 81 23.93' | 4708 | 3.2 | 4 | 101 | .86 | 87 | 6 | 6 | 878368 | 9891068 |
| B | 0 59.22' | 81 23.99' | 4708 | 3.1 | 4 | 84 | .98 | 82 | 1 | 10 | 878492 | 9890712 |
| C | 0 59.53' | 81 23.92' | 4708 | 3.5 | 4 | 54 | .85 | 46 | 5 | 5 | 878359 | 9890143 |
| D | 0 59.58' | 81 23.92' | 4708 | 4.2 | 5 | 64 | .89 | 57 | 5 | 5 | 878353 | 9890053 |
| E | 0 59.80' | 81 24.00' | 4708 | 4.7 | 4 | 60 | 1.04 | 62 | 1 | 8 | 878494 | 9889649 |
| F | 1 00.05' | 81 24.03' | 4708 | 3.4 | 4 | 93 | .89 | 82 | 1 | 8 | 878563 | 9889178 |
| G | 1 00.34' | 81 24.01' | 4708 | 4 | 5 | 85 | .99 | 84 | 1 | 10 | 878511 | 9888650 |
| H | 1 00.58' | 81 23.99' | 4709 | 3 | 4 | 78 | .97 | 76 | 1 | 10 | 878497 | 9888206 |
| I | 1 00.87' | 81 24.03' | 4708 | 3.5 | 4 | 81 | 1.01 | 82 | 1 | 8 | 878548 | 9887669 |
| J | 1 01.11' | 81 24.04' | 4708 | 3.1 | 4 | 110 | .85 | 94 | 1 | 8 | 878582 | 9887227 |
| K | 1 01.73' | 81 23.07' | 4708 | 3.1 | 5 | 97 | .98 | 95 | 1 | 10 | 876765 | 9886085 |
| L | 1 02.02' | 81 23.03' | 4708 | 3.1 | 4 | 82 | .98 | 80 | 1 | 10 | 876697 | 9885551 |
| M | 1 02.22' | 81 23.04' | 4708 | 3.1 | 5 | 85 | .98 | 83 | 1 | 8 | 876731 | 9885185 |
| N | 1 02.56' | 81 23.08' | 4693 | 5 | 4 | 73 | .91 | 66 | 1 | 8 | 876792 | 9884554 |
| O | 1 02.76' | 81 23.08' | 4694 | 4.6 | 5 | 73 | .91 | 67 | 1 | 9 | 876785 | 9884173 |
| P | 1 03.06' | 81 22.76' | 4658 | 4.9 | 5 | 89 | .91 | 81 | 1 | 9 | 876187 | 9883637 |
| Q | 1 03.30' | 81 22.83' | 4632 | 4.6 | 5 | 80 | .91 | 73 | 1 | 10 | 876324 | 9883186 |
| R | 1 03.49' | 81 22.85' | 4624 | 4.7 | 4 | 86 | .91 | 78 | 1 | 8 | 876349 | 9882835 |
| S | 1 03.80' | 81 22.98' | 4620 | 4.6 | 5 | 77 | .91 | 70 | 1 | 10 | 876588 | 9882272 |
| T | 1 04.17' | 81 22.80' | 4643 | 0 | 0 | 0 | .91 | 0 | 0 | 0 | 876270 | 9881588 |
| U | 1 04.15' | 81 22.77' | 4643 | 0 | 0 | 0 | .91 | 0 | 0 | 0 | 876205 | 9881623 |
| U | 1 04.19' | 81 22.79' | 4643 | 1.8 | 3 | 97 | .94 | 91 | 3 | 6 | 876238 | 9881536 |
| DHF 4A | 1 04.50' | 81 22.70' | 4690 | 4.6 | 5 | 88 | .91 | 80 | 1 | 9 | 876070 | 9880970 |
| B | 1 04.48' | 81 22.73' | 4722 | 5.1 | 5 | 87 | .91 | 80 | 1 | 9 | 876141 | 9881014 |
| C | 1 04.53' | 81 22.83' | 4722 | 5.1 | 5 | 80 | .91 | 73 | 1 | 9 | 876319 | 9880920 |
| D | 1 04.84' | 81 22.78' | 4723 | 5.2 | 5 | 82 | .91 | 74 | 1 | 9 | 876228 | 9880350 |

| STATION | LATITUDE S | LONGITUDE E | DEPTH m | PEN m | Np | GRADIENT mK/m | K W/m-K | Q mW/m^2 | St. Dev. mW/m^2 | EVALUATION | UTM-X m | UTM-Y m |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DHF 5A | 4 11.97' | 79 50.34' | 4662 | 5.1 | 6 | 82 | .76 | 63 | 1 | 10 | 704124 | 9535581 |
| B | 4 12.68' | 79 50.08' | 4664 | 4.5 | 6 | 0 | .76 | 0 | 0 | 0 | 703639 | 9534273 |
| C | 4 12.37' | 79 50.08' | 4664 | 5.1 | 6 | 82 | .76 | 63 | 0 | 10 | 703641 | 9534845 |
| D | 4 13.97' | 79 50.09' | 4663 | 5 | 6 | 84 | .76 | 64 | 0 | 10 | 703652 | 9531896 |
| E | 4 14.42' | 79 49.83' | 4663 | 4.9 | 6 | 87 | .76 | 66 | 1 | 10 | 703169 | 9531067 |
| F | 4 15.10' | 79 50.14' | 4651 | 5 | 5 | 84 | .76 | 64 | 1 | 10 | 703740 | 9529813 |
| G | 4 15.41' | 79 49.82' | 4650 | 5 | 6 | 83 | .76 | 63 | 1 | 10 | 703146 | 9529243 |
| H | 4 16.19' | 79 50.05' | 4636 | 4.8 | 6 | 84 | .76 | 64 | 1 | 10 | 703568 | 9527804 |
| I | 4 16.46' | 79 50.23' | 4590 | 5.1 | 5 | 83 | .76 | 63 | 1 | 10 | 703900 | 9527305 |
| J | 4 16,92' | 79 49.92' | 4638 | 5.2 | 6 | 83 | .76 | 63 | 1 | 10 | 703325 | 9526459 |
| K | 4 17.41' | 79 50.04' | 4636 | 5 | 6 | 86 | .76 | 65 | 1 | 10 | 703545 | 9525555 |
| L | 4 17.93' | 79 50.14' | 4634 | 5.1 | 6 | 82 | .76 | 63 | 1 | 10 | 703727 | 9524596 |
| M | 4 18.43' | 79 50.04' | 4642 | 5.2 | 6 | 82 | .76 | 63 | 2 | 10 | 703540 | 9523675 |
| N | 4 18.87' | 79 50.26' | 4646 | 5.1 | 6 | 84 | .76 | 64 | 2 | 10 | 703945 | 9522863 |
| O | 4 19.64' | 79 49.99' | 4646 | 5 | 5 | 86 | .76 | 65 | 1 | 10 | 703442 | 9521445 |
| P | 4 20.02' | 79 49.94' | 4646 | 5.1 | 6 | 86 | .76 | 66 | 1 | 10 | 703348 | 9520745 |
| Q | 4 20.56' | 79 49.96' | 4648 | 5 | 6 | 85 | .76 | 65 | 1 | 10 | 703383 | 9519749 |
| R | 4 20.92' | 79 49.89' | 4648 | 4.9 | 6 | 85 | .76 | 65 | 0 | 10 | 703251 | 9519086 |
| DHF 6A | 4 50.01' | 79 50.08' | 5093 | 4.7 | 4 | 72 | .76 | 55 | 1 | 9 | 703466 | 9465466 |
| B | 4 50.45' | 79 49.73' | 5080 | 0 | 1 | 0 | .76 | 0 | 0 | 0 | 702816 | 9464657 |
| C | 4 50.40' | 79 49.69' | 5080 | 0 | 3 | 0 | .76 | 0 | 0 | 0 | 702742 | 9464749 |
| D | 4 49.70' | 79 49.91' | 5080 | 4.8 | 4 | 64 | .76 | 49 | 2 | 8 | 703153 | 9466038 |
| E | 4 51.50' | 79 50.44' | 5097 | 4.7 | 5 | 82 | .76 | 63 | 1 | 10 | 704124 | 9462718 |
| F | 4 51.75' | 79 50.23' | 5105 | 4.7 | 4 | 85 | .76 | 65 | 1 | 9 | 703734 | 9462258 |
| G | 4 52.31' | 79 49.96' | 5105 | 0 | 2 | 0 | .76 | 0 | 0 | 0 | 703232 | 9461227 |
| H | 4 52.37' | 79 49.97' | 5105 | 0 | 1 | 0 | .76 | 0 | 0 | 0 | 703250 | 9461116 |
| I | 4 52.42' | 79 50.00' | 5105 | 0 | 2 | 0 | .76 | 0 | 0 | 0 | 703306 | 9461024 |
| J | 4 52.78' | 79 50.44' | 5102 | 0 | 3 | 0 | .76 | 0 | 0 | 0 | 704117 | 9460358 |
| K | 4 52.72' | 79 50.58' | 5100 | 0 | 2 | 0 | .76 | 0 | 0 | 0 | 704376 | 9460468 |
| L | 4 52.67' | 79 50.71' | 5100 | 0 | 2 | 0 | .76 | 0 | 0 | 0 | 704617 | 9460560 |
| M | 4 53.24' | 79 50.05' | 5104 | 0 | 2 | 0 | .76 | 0 | 0 | 0 | 703394 | 9459512 |
| N | 4 53.20' | 79 50.07' | 5104 | 0 | 2 | 0 | .76 | 0 | 0 | 0 | 703431 | 9459586 |
| DHF 7A | 4 54.81' | 79 50.09' | 5090 | 5.1 | 6 | 81 | .76 | 61 | 1 | 10 | 703460 | 9456618 |
| B | 4 55.32' | 79 50.14' | 5092 | 5.1 | 6 | 79 | .76 | 60 | 1 | 10 | 703550 | 9455678 |
| C | 4 55.88' | 79 50.09' | 5094 | 5 | 6 | 84 | .76 | 64 | 0 | 10 | 703454 | 9454646 |
| D | 4 56.54' | 79 49.98' | 5090 | 5.1 | 6 | 83 | .76 | 63 | 1 | 10 | 703248 | 9453430 |
| E | 4 57.07' | 79 50.03' | 5078 | 4.9 | 6 | 83 | .76 | 63 | 1 | 10 | 703338 | 9452453 |
| F | 4 57.59' | 79 50.13' | 5070 | 5 | 6 | 84 | .76 | 64 | 0 | 10 | 703520 | 9451494 |
| G | 4 58.22' | 79 49.98' | 5100 | 4.8 | 6 | 85 | .76 | 65 | 1 | 10 | 703239 | 9450333 |
| H | 4 58.75' | 79 49.82' | 5106 | 5.2 | 6 | 77 | .76 | 59 | 2 | 10 | 702941 | 9449357 |
| I | 4 59.21' | 79 50.01' | 5108 | 0 | 1 | 0 | .76 | 0 | 0 | 0 | 703290 | 9448508 |
| J | 4 59.21' | 79 50.01' | 5108 | 0 | 3 | 0 | .76 | 0 | 0 | 0 | 703290 | 9448508 |
| K | 4 59.42' | 79 50.21' | 5108 | 4.5 | 4 | 82 | .76 | 62 | 2 | 6 | 703658 | 9448120 |
| DHF 8A | 3 15.01' | 79 50.01' | 4958 | 2.4 | 3 | 82 | .9 | 74 | 6 | 7 | 703731 | 9640570 |
| B | 3 15.54' | 79 50.05' | 4950 | 1.9 | 2 | 92 | .9 | 83 | 0 | 6 | 703803 | 9639593 |
| C | 3 16.11' | 79 49.88' | 4954 | 1.9 | 1 | 0 | .9 | 0 | 0 | 0 | 703487 | 9638543 |
| DHF 9A | 3 16.06' | 79 49.98' | 4950 | 0 | 1 | 0 | .9 | 0 | 0 | 0 | 703672 | 9638635 |
| B | 3 16.41' | 79 49.96' | 4958 | 0 | 2 | 0 | .9 | 0 | 0 | 0 | 703634 | 9637990 |
| C | 3 16.35' | 79 49.96' | 4958 | 1 | 2 | 80 | .9 | 72 | 0 | 6 | 703634 | 9638101 |
| DHF 10A | 3 18.92' | 79 49.95' | 4970 | 1 | 2 | 0 | .9 | 0 | 0 | 0 | 703607 | 9633364 |
| B | 3 18.82' | 79 50.00' | 4971 | 0 | 1 | 0 | .9 | 0 | 0 | 0 | 703700 | 9633548 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| C | 3 18.75' 79 50.02' | 4971 | 1 | 2 | 0 | .9 | 0 | 0 | 0 | 703737 | 9633677 |
| DHF 11A | 3 47.91' 79 50.18' | 4920 | | | 85 | .9 | 77 | 4 | 7 | 703927 | 9579929 |
| B | 3 48.37' 79 49.85' | 4876 | | | 74 | .9 | 67 | 4 | 7 | 703314 | 9579082 |
| C | 3 48.80' 79 50.01' | 4872 | | | 62 | .9 | 56 | 5 | 7 | 703608 | 9578289 |
| D | 3 49.16' 79 50.02' | 4868 | | | 67 | .9 | 60 | 6 | 7 | 703625 | 9577626 |
| E | 3 49.78' 79 50.03' | 4852 | | | 70 | .9 | 63 | 6 | 7 | 703642 | 9576483 |
| F | 3 50.42' 79 50.27' | 4821 | | | 81 | .9 | 73 | 9 | 7 | 704083 | 9575302 |
| G | 3 50.81' 79 49.97' | 4793 | | | 72 | .9 | 65 | 5 | 7 | 703526 | 9574585 |
| H | 3 51.37' 79 49.94' | 4777 | | | 69 | .9 | 62 | 3 | 7 | 703469 | 9573553 |
| I | 3 51.93' 79 50.03' | 4769 | | | 69 | .9 | 62 | 5 | 7 | 703633 | 9572520 |
| J | 3 52.36' 79 49.98' | 4776 | | | 92 | .9 | 83 | 5 | 7 | 703539 | 9571728 |
| K | 3 52.93' 79 49.93' | 4787 | | | 79 | .9 | 71 | 4 | 7 | 703444 | 9570677 |
| L | 3 53.50' 79 49.96' | 4800 | | | 78 | .9 | 70 | 5 | 7 | 703497 | 9569626 |
| M | 3 54.04' 79 50.08' | 4802 | | | 75 | .9 | 68 | 5 | 7 | 703717 | 9568631 |
| N | 3 54.61' 79 50.17' | 4795 | | | 75 | .9 | 68 | 5 | 7 | 703881 | 9567580 |
| O | 3 55.32' 79 50.00' | 4793 | | | 74 | .9 | 67 | 4 | 7 | 703564 | 9566272 |
| P | 3 55.62' 79 49.96' | 4767 | | | 88 | .9 | 79 | 4 | 7 | 703489 | 9565719 |

TABLE 2

| CORE | LATITUDE S | LONGITUDE E | DEPTH m | PEN m | Nk | K W/m-K | St. Dev. W/m-K |
|---|---|---|---|---|---|---|---|
| PC 65 1 | 01.16' | 81 24.00 | 4708 | 5.9 | 63 | 1.14 | .28 |
| PC 66 1 | 01.28' | 81 23.16 | 4709 | 4.4 | 42 | 1.09 | .28 |
| PC 67 1 | 03.38' | 81 22.57 | 4630 | 5.2 | 48 | .92 | .06 |
| PC 68 4 | 10.22' | 79 48.96 | 4650 | 5.9 | 56 | .76 | .02 |
| PC 69 3 | 51.74' | 79 49.86 | 4770 | 4.8 | 45 | .9 | .09 |

TABLE 3

R/V Robert D. Conrad

Cruise RC27-06
Colombo - Colombo
8 - 28 July, 1986

Airgun Array configuration:

Gun 1 : None

Gun 2 : ----------(145')----------540 cu.in.
5'
Gun 3 : ----------(130')----------640 cu.in.
5'
Gun 4 : ----------(115')--------760 cu.in.
5'
Gun 5 : ----------(100')-----1000 cu.in.

15'

Gun 6 : ----------(100')-----1000 cu.in.
5'
Gun 7 : ----------(115')--------825 cu.in.
5'
Gun 8 : ----------(130')----------700 cu.in.
5'
Gun 9 : ----------(145')----------585 cu.in.

Gun 10: None

Total array volume - 6050 cu.in.
Average shot pressure - 1800 psi.