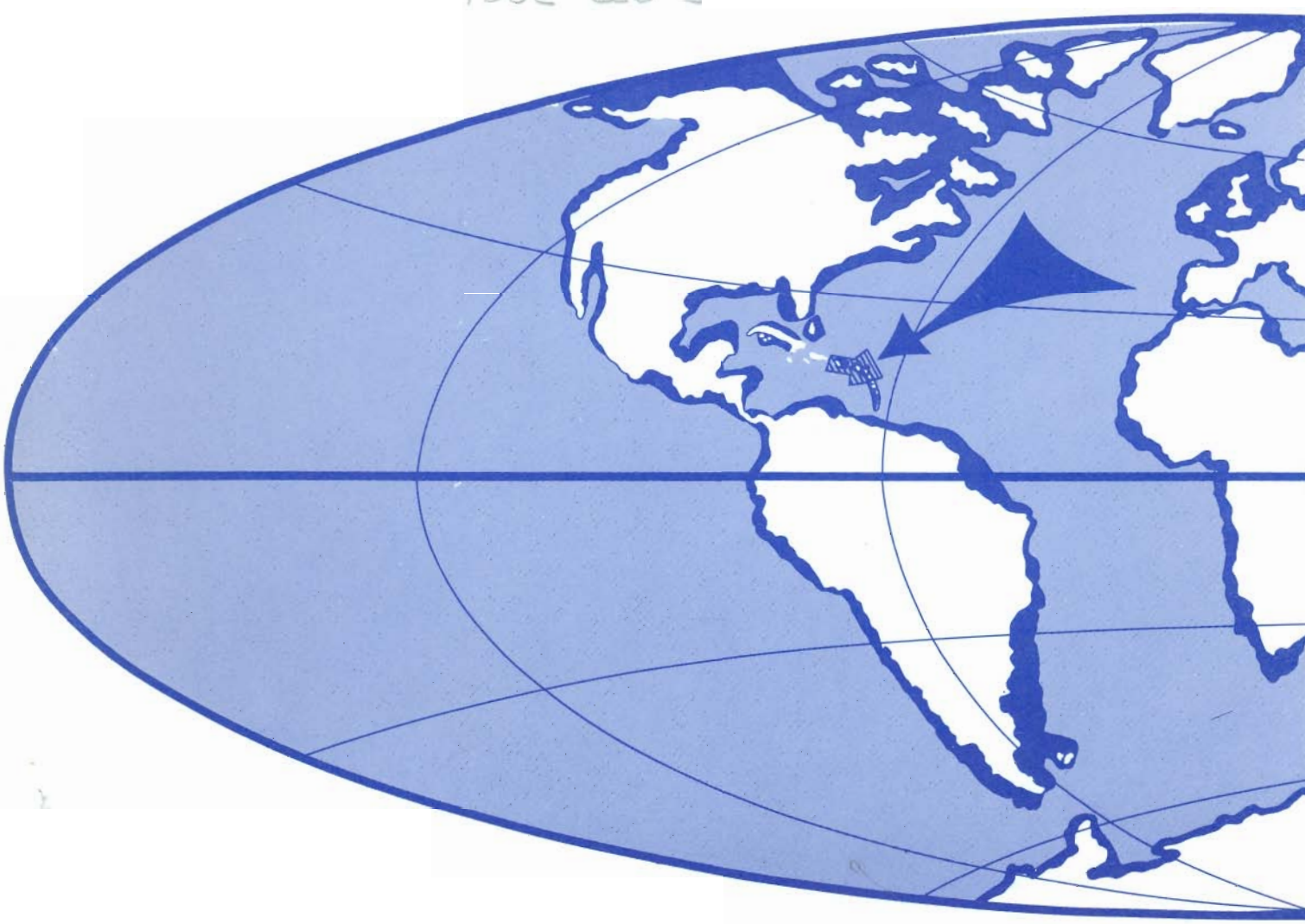
# Acoustic Reflection Profiles

# EASTERN GREATER ANTILLES

IDOE LEG 3



INTERNATIONAL DECADE OF OCEAN EXPLORATION

U. S. GEOLOGICAL SURVEY

USGS-GD-72-004
PB-207-596

INTERNATIONAL DECADE OF OCEAN EXPLORATION

U.S. GEOLOGICAL SURVEY

LEG 3, 1971 CRUISE, UNITEDGEO I

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# ACOUSTIC-REFLECTION PROFILES

# EASTERN GREATER ANTILLES

USGS-GD-72-004

1972

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## INTRODUCTION

As part of a cooperative marine research program designated the Internataional Decade of Ocean Exploration (IDOE), the United States Geological Survey is participating in an investigation of the geologic framework and resource potential of continental margins and small ocean basins in the Gulf of Mexico, Caribbean Sea, and west African continental shelf areas. These studies are funded through the National Science Foundation. Legs 1 and 2, completed June 22 and July 8, respectively, were concerned with subbottom features of the Bay of Campeche and with the tectonic framework of the continental margin east of the Yucatan Peninsula. Leg 3, described in this report was conducted in the Antilles region of the northeastern Caribbean between July 17 and August 4, 1971.

This report presents the unedited records of the approximately 5840 km of acoustic reflection profiling made during Leg 3 (fig. 1). Magnetic and gravity data were collected also but are being reported elsewhere in conjunction with the results of the study.

## SCIENTIFIC PARTY

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## SHIP SCHEDULE

A total of 19 days was spent at sea in the eastern Greater Antilles during Leg 3 which began at San Juan, Puerto Rico, on July 17, 1971 and ended at St. Thomas, Virgin Islands, on August 4, 1971. Subbottom acoustic profiles were obtained over about 5840 km of track line in the project area. These records were made at an average ship's speed of 8.3 knots. One dredging station was occupied and three sonobuoy refraction profiles made.

Departure from San Juan was approximately 36 hours later than scheduled due to delays in filling out ship's crew list and loading ship's stores. The work schedule was as follows:

| | | |
|---|---|---|
| Day 198 | (17 July 1971) | Departed San Juan. Began work in Mona Passage and Muertos Trough area. |
| Day 202 | (21 July 1971) | Began work around Anegada Trough. |
| Day 203 | (22 July 1971) | In St. Thomas (0730-1100) to pick up Dr. John Albers, Associate Chief Geologist, U.S. Geological Survey. |
| Day 205 | (24 July 1971) | Returned to St. Thomas (0930-1300) to debark Dr. Albers. Resumed work in Anegada Trough. |
| Day 207 | (26 July 1971) | Began Puerto Rico Trench crossings. |
| Day 213 | (1 August 1971) | Began work on northern part of Aves Swell. |
| Day 216 | (4 August 1971) | Terminated work off St. Thomas, picked up freight shipment there, and made for San Juan for generator repairs. |
| Day 217 - 219 | (5-7 August 1971) | In port San Juan replacing generator unit and briefing the on-coming Leg 4 crew. |

## OBJECTIVES OF INVESTIGATION

Scientific objectives of this cruise leg were: (1) to investigate the zone of juncture between the south flank of the Antillean ridge and the north edgeof the Venezuelan Basin along the depressed Muertos Trough; (2) to examine structural deformation in the Anegada Trough where the Greater Antilles are joined by the Lesser Antilles and Aves Swell; and (3) to study the northeastern sector of the Puerto Rico Trench where predicted relative plate motion should be transitional between westward underthrusting of the Lesser Antilles and east-west strike-slip motion north of the Greater Antilles.

## GEOLOGIC SETTING

The eastern margin of the Caribbean lithosphere plate is marked by a zone of intermediate-depth earthquakes lying beneath the eastern Greater Antilles and curving southeastward along the Lesser Antilles arc (Sykes and Ewing, 1965). Exterior to the islands, the Puerto Rico trench is a strong topographic depression north of Puerto Rico but diminishes in relief southeastward as it follows the curve of the Antilles and disappears topographically near latitude 15°N. The pronounced gravity minimum associated with this feature, however, continues across the island of Barbados toward the South American continent. Evidence from first-motion earthquake studies (Molnar and Sykes, 1969) and from acoustic-reflection profiles (Chase and Bunce, 1969) suggests that the Atlantic sea floor is being thrust beneath the Lesser Antilles in a west-dipping zone of subduction.

The principal positive features in the northeastern Caribbean are the ridges of the Greater Antilles, the Lesser Antilles, and the Aves

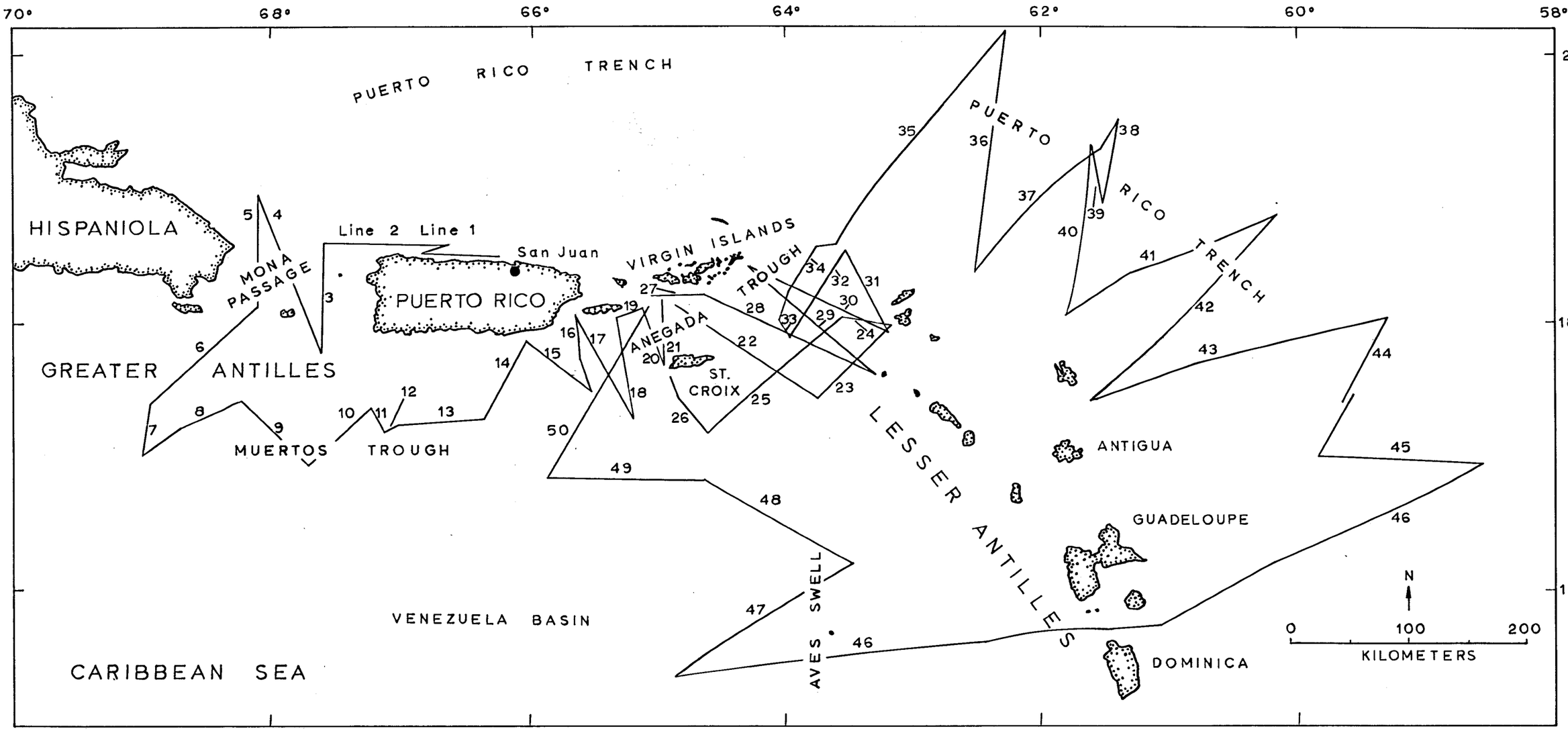


Figure 1.--Index map showing locations of major structural features and track lines in the eastern Greater Antilles.

Swell. These structures are complicated by the separation from the Greater Antilles of the St. Croix ridge, and the division of the Lesser Antilles into inner and outer arcs. A narrow gap, the Anegada Trough, separates all of these features in the area of their convergence.

In the region south of the ridge of the Greater Antilles, seismic reflectors in the Venezuelan Basin, possibly as young as Oligocene in age, are depressed into a monoclinal feature called Muertos Trough (Martin and Garrison, 1971). Beneath this trough is the junction of Caribbean crust and Antillean structure. The junction has been described as a major strike-slip fault (Hess and Maxwell, 1953).

## PRELIMINARY RESULTS

In the vicinity of Mona Passage and the Muertos Trough, about 986 km of geophysical track was run in order to examine the structural pattern of the Antillean ridge crest where it is cut by Mona Passage and to determine the structure of the Muertos Trough. The acoustic-reflection profiles that crossed Mona Passage (lines 3, 4, and 5) indicate widespread tensional faulting south of the ridge crest, whereas north of the crest the strata are relatively undisturbed. The profiles that crossed the Muertos Trough (lines 6-14) indicate that acoustic reflectors belonging to the Venezuela Basin continue northward beneath the Antillean ridge structure for a distance of at least 18 km with little or no internal deformation. Superficially at least, the overlap of ridge structure on depressed ocean floor resembles the structural relationships east of the Lesser Antilles where acoustic reflection profiles suggest that Atlantic crust is being thrust westward under the island arc (Chase and Bunce, 1969). Lines 35 to 46 of this report cross the latter area.

In the Anegada Trough area, about 1620 km of track was run to examine the interrelations of the principal positive features that converge in that region. The acoustic-reflection profiles show the great complexity of this region and indicate possible major faulting along the north flank of the St. Croix ridge. Thus, the Virgin Islands Basin to the north of St. Croix Island may be a down-dropped block. Normal faulting also appears to play a major role in the separation of the Lesser Antilles from the eastern tip of the Greater Antilles, but the faults are relatively short and discontinuous. As a whole, the region appears to be affected principally by tensional forces. Sediment thickness in the Virgin Islands Basin ranged from none at the northeastern end to almost 2 km in the central portion.

In the eastern segment of the Puerto Rico Trench (lines 35 through the eastern half of 46), approximately 2070 km of geophysical track was made as a series of near-normal crossings of the trench. Topographic relief across the trench axis diminishes markedly with the gradual disappearance of the outer ridge on the Atlantic floor to the north.

The entire central section of the trench (between 17° and 19°N) is barren of turbidite deposits, but both to the north and to the south of this section the trench axis contains up to 1.1 seconds of horizontally stratified material. The continuation of oceanic reflectors for several kilometers beneath the outer toe of the Antillean structure, as described by Chase and Bunce (1969), was seen in almost every crossing of 19°N. In the vicinity of 17°N, Atlantic sea-floor reflectors were recorded beneath the island-arc terrace as much as 52 km west of the trench axis.

The eastern margin of the Venezuela Basin, at its junction with the Aves Swell, was surveyed in greater detail than originally planned, because several dredge stations planned for the earlier part of Leg 3 were cancelled due to sea conditions and about 48 hours of extra time became available. The last few lines were modified to give two additional trench crossings, an extra line was carried south of Aves Island, and new lines were run near the Aves Swell.

Published acoustic-reflection profiles from the Venezuela Basin show a zone of strong reflectors (Horizon B"), which normally represent acoustic basement at a two-way travel time distance about 0.8 sec below the sea floor (Ewing and others, 1967). In recent deep-sea drillings, this zone was identified as basalt and dolerite of Coniacian age (Edgar and others, 1971b). Previous reflection profile data have yielded a mere indication that layered material may be present below B" (Edgar and others, 1971a), but the profiles from Leg 3 (lines 46-50) show a zone of prominent sub-B" reflectors in the northeast corner of the Venezuela Basin. The interval between Horizon B" and the zone of deeper reflectors is representing a two-way travel time that varies from 0.4 to 0.6 sec, thinning northwestward off the flank of Aves Swell.

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## OPERATIONAL DATA

### Navigation

A satellite navigation system, supplemented by radar, was used for positioning. The satellite system consisted of an ITT 4007 AB satellite navigation receiver, a DEC PDP-8L computer, and an ITT Teletypewriter. In a 48-hour test, while at the dock in San Juan harbor, 15 satellite fixes were within about 70 m (230 ft) of a plotted average; 10 were within about 45 m (150 ft) of the average position. Precision of satellite fixes while underway was estimated at about 180 m (600 ft).

The radar system was a Decca RM 329, with 25 kw of power and a range up to about 65 m (40 mi). A 9-foot wave-guide antenna giving a beam width of less than 1° at the half-power points provided high azimuth resolution. Accuracy of radar fixes was subject to many variables, but the average positioning error was estimated at 0.5 nautical mile, or about 925 m (3000 ft.). Plotting was done on bottom-contour charts 703 and 704 of the U.S. Navy's Hydrographic Office.

Times for navigation and scientific records were referred to Greenwich Mean Time (Z), and days are numbered consecutively from the first day of the year. Time signals broadcast by WWV were used to set and standardize scientific clocks throughout the ship.

### Acoustic-reflection System

The acoustic-reflection profiles were obtained using a sparker system consisting of separate, van-mounted, self-contained 160-and 120-kilojoule units triggered from a single source. Total usable power was about 220 kilojoules. The triggered discharge of large capacitors through 6 twin-electrode "ladders" trailed behind the ship created sparks that produced the low-frequency acoustic pulses. These pulses

were reflected from the sea bottom and from subbottom surfaces and were received and preamplified by a 100-hydrophone streamer. They were then selectively filtered (mainly in the 15 to 125 hz range) and were recorded graphically on a Raytheon recorder. An Ampex CP 100 7-channel recorder was used to put the data on magnetic tape for later playback at different filter settings and for record enhancement. The sparker ladders were trailed about 70 m behind the navigation antenna; the center of the hydrostreamer was at about 180 m.

Organization of profile records.--The subbottom acoustic profiles in this report are presented in numerical order at approximately 1/5th scale. Some have been printed in reverse in order to facilitate comparison of structural and sedimentary features from profile to profile. Profiles through Mona Passage are organized to be viewed generally westward (south on the left side), those along the Anegada Trough are viewed to the east and northeast except lines 23 and 25; those along the Puerto Rico Trench are viewed northwestward, as are lines 23, 25, 32, 34, and 50; the remainder are viewed generally northward. The start and end of each line are indicated. Days are numbered consecutively from day one of the year 1971; time marks are every hour. The records in this report were made between days 198 and 216 (July 17 to August 4). Hour marks shown on the profiles are GMT and correspond to those on the detailed track chart (plate 1) and on the location-depth printout (Table 1).

The subbottom profiles were made mainly at a 4-second firing rate and 4-second sweep with the exception of line 27, which was run at 1-second firing rate and 1-second sweep, and of line 9 and parts of lines 8, 10, and 47, which were run at 6-second firing rate and 6-second sweep. Only 19 of the 50 lines were run at a single power setting. Line 27 was run entirely at 40 kj, lines 2, 15, 16, 19, 30 and 31 at 80 kj, lines 11 and 34 at 120 kj, and lines 8, 9, 13, 38, 39, 45 and 47 to 50 at 160 kj. Parts of the remaining lines were run at power settings of 40, 80, 120, and 160 kj. The filter band pass was 76/16 and 76/20 for lines 1 - 46 and mainly 47/20 for lines 47 - 50 but with intervals of 76/20.

The vertical scale shown on the acoustic profiles is two-way travel time. The profiles range widely in vertical exaggeration but average about 10:1.

## Depth Recorder

A 3.5 khz Edo acoustic-reflection system was used as an echosounder and shallow-penetration subbottom profiler. Twelve transducers were mounted into a well that was built into the ship's hull. These transducers emitted a pulse signal programmed by a Gifft graphic recorder. The pulse was reflected at the ocean bottom and provided uncorrected

water depths in seconds (two-way travel time). These water depths, in seconds, were transcribed at quarter-hour intervals and, in conjunction with navigation fixes, were computer-processed using corrections from Matthew's tables. Computer output was printed at one-hour intervals and includes the position of each station, the observed depth in seconds (two-way travel time), and the corrected depth in meters (Table 1).

Table 1.--Positions and depths expressed in two-way travel time and corrected meters along lines of Leg 3, Greater Antilles, 1971

| LINE | DAY | TIME (Z) | LATITUDE (NORTH) | LONGITUDE (WEST) | DEPTH (SEC) | DEPTH (M) |
|---|---|---|---|---|---|---|
| 1 | 198 | 2000 | 18.5109 | 66.2777 | 0.110 | 83 |
| 1 | 198 | 2100 | 18.5168 | 66.3960 | 0.160 | 121 |
| 1 | 198 | 2200 | 18.5225 | 66.5283 | 0.289 | 219 |
| 1 | 198 | 2300 | 18.5264 | 66.6668 | 0.603 | 454 |
| 1 | 199 | 0000 | 18.5282 | 66.8111 | 0.430 | 325 |
| 1 | 199 | 0100 | 18.5706 | 66.7305 | 1.050 | 783 |
| 1 | 199 | 0200 | 18.5989 | 66.6417 | 1.482 | 1104 |
| 1 | 199 | 0300 | 18.5936 | 66.8025 | 1.282 | 955 |
| 2 | 199 | 0400 | 18.5874 | 66.9642 | 1.055 | 786 |
| 2 | 199 | 0500 | 18.5901 | 67.1249 | 0.335 | 253 |
| 2 | 199 | 0600 | 18.5965 | 67.2849 | 0.608 | 458 |
| 2 | 199 | 0700 | 18.6029 | 67.4450 | 3.720 | 2779 |
| 2 | 199 | 0800 | 18.6111 | 67.5582 | 3.120 | 2327 |
| 3 | 199 | 0900 | 18.5215 | 67.5961 | 2.640 | 1967 |
| 3 | 199 | 1000 | 18.3757 | 67.6004 | 1.010 | 753 |
| 3 | 199 | 1100 | 18.2212 | 67.6076 | 0.660 | 495 |
| 3 | 199 | 1200 | 18.0585 | 67.6084 | 1.270 | 946 |
| 3 | 199 | 1300 | 17.9059 | 67.6033 | 2.050 | 1527 |
| 4 | 199 | 1400 | 17.8344 | 67.6266 | 2.240 | 1669 |
| 4 | 199 | 1500 | 17.9674 | 67.6867 | 1.520 | 1132 |
| 4 | 199 | 1600 | 18.1075 | 67.7485 | 1.110 | 827 |
| 4 | 199 | 1700 | 18.2602 | 67.8229 | 0.653 | 490 |
| 4 | 199 | 1800 | 18.4109 | 67.8848 | 0.652 | 489 |
| 4 | 199 | 1900 | 18.5615 | 67.9468 | 0.381 | 288 |
| 4 | 199 | 2000 | 18.7077 | 67.9976 | 0.652 | 489 |
| 4 | 199 | 2100 | 18.8511 | 68.0471 | 1.105 | 824 |
| 5 | 199 | 2200 | 18.9833 | 68.0967 | 3.000 | 2238 |
| 5 | 199 | 2300 | 18.8465 | 68.0938 | 1.070 | 798 |
| 5 | 200 | 0000 | 18.7043 | 68.0895 | 0.570 | 430 |
| 5 | 200 | 0100 | 18.5633 | 68.0911 | 0.230 | 174 |
| 5 | 200 | 0200 | 18.4237 | 68.0946 | 0.430 | 325 |
| 5 | 200 | 0300 | 18.2854 | 68.1000 | 0.950 | 709 |
| 5 | 200 | 0400 | 18.1453 | 68.0999 | 2.110 | 1572 |
| 6 | 200 | 0500 | 18.0565 | 68.2002 | 2.962 | 2209 |
| 6 | 200 | 0600 | 17.9709 | 68.3128 | 3.000 | 2238 |
| 6 | 200 | 0700 | 17.8854 | 68.4255 | 2.389 | 1780 |
| 6 | 200 | 0800 | 17.7872 | 68.5343 | 2.700 | 2012 |
| 6 | 200 | 0900 | 17.6904 | 68.6482 | 2.945 | 2196 |
| 6 | 200 | 1000 | 17.5904 | 68.7609 | 4.010 | 2999 |

I.D.O.E. '71 LEG 3 - ANTILLES

| LINE | DAY | TIME (Z) | LATITUDE (NORTH) | LONGITUDE (WEST) | DEPTH (SEC) | DEPTH (M) |
|---|---|---|---|---|---|---|
| 6 | 200 | 1100 | 17.4821 | 68.8674 | 4.930 | 3741 |
| 7 | 200 | 1200 | 17.3636 | 68.9462 | 6.030 | 4521 |
| 7 | 200 | 1300 | 17.2200 | 68.9658 | 7.325 | 5492 |
| 7 | 200 | 1400 | 17.0801 | 68.9898 | 6.910 | 5181 |
| 8 | 200 | 1500 | 17.0934 | 68.9097 | 6.950 | 5211 |
| 8 | 200 | 1600 | 17.1677 | 68.8061 | 7.290 | 5466 |
| 8 | 200 | 1700 | 17.2410 | 68.7066 | 7.250 | 5436 |
| 8 | 200 | 1800 | 17.2948 | 68.5797 | 6.790 | 5091 |
| 8 | 200 | 1900 | 17.3376 | 68.4789 | 6.700 | 5023 |
| 8 | 200 | 2000 | 17.3749 | 68.3981 | 5.300 | 3973 |
| 8 | 200 | 2100 | 17.4112 | 68.3166 | 5.190 | 3891 |
| 8 | 200 | 2200 | 17.4446 | 68.2328 | 5.085 | 3812 |
| 9 | 200 | 2300 | 17.3850 | 68.1680 | 5.170 | 3876 |
| 9 | 201 | 0000 | 17.3163 | 68.1053 | 5.700 | 4273 |
| 9 | 201 | 0100 | 17.2483 | 68.0404 | 6.490 | 4866 |
| 9 | 201 | 0200 | 17.1817 | 67.9713 | 7.220 | 5413 |
| 9 | 201 | 0300 | 17.1210 | 67.9019 | 6.800 | 5098 |
| 9 | 201 | 0400 | 17.0613 | 67.8324 | 6.550 | 4911 |
| 9 | 201 | 0500 | 17.0019 | 67.7622 | 6.580 | 4933 |
| 10 | 201 | 0600 | 16.9820 | 67.6871 | 6.620 | 4963 |
| 10 | 201 | 0700 | 17.0508 | 67.6039 | 6.680 | 5008 |
| 10 | 201 | 0800 | 17.1195 | 67.5206 | 6.760 | 5068 |
| 10 | 201 | 0900 | 17.1883 | 67.4354 | 6.790 | 5091 |
| 10 | 201 | 1000 | 17.2526 | 67.3601 | 6.805 | 5102 |
| 10 | 201 | 1100 | 17.3203 | 67.2981 | 6.450 | 4836 |
| 11 | 201 | 1200 | 17.3908 | 67.2383 | 5.650 | 4236 |
| 11 | 201 | 1300 | 17.3160 | 67.1923 | 6.790 | 5091 |
| 11 | 201 | 1400 | 17.2364 | 67.1475 | 6.730 | 5046 |
| 12 | 201 | 1500 | 17.2331 | 67.0783 | 6.740 | 5053 |
| 13 | 201 | 1600 | 17.2650 | 66.9919 | 6.740 | 5053 |
| 13 | 201 | 1700 | 17.2726 | 66.8960 | 6.735 | 5049 |
| 13 | 201 | 1800 | 17.2800 | 66.8002 | 6.710 | 5031 |
| 13 | 201 | 1900 | 17.2875 | 66.7045 | 6.670 | 5001 |
| 13 | 201 | 2000 | 17.2936 | 66.6011 | 6.700 | 5023 |
| 13 | 201 | 2100 | 17.2996 | 66.5014 | 6.700 | 5023 |
| 13 | 201 | 2200 | 17.3078 | 66.3942 | 6.680 | 5008 |

I.D.O.E. '71 LEG 3 - ANTILLES

| LINE | DAY | TIME (Z) | LATITUDE (NORTH) | LONGITUDE (WEST) | DEPTH (SEC) | DEPTH (M) |
|---|---|---|---|---|---|---|
| 14 | 202 | 0000 | 17.5064 | 66.2443 | 4.750 | 3561 |
| 14 | 202 | 0100 | 17.6402 | 66.1710 | 2.600 | 1937 |
| 14 | 202 | 0200 | 17.7734 | 66.0960 | 1.020 | 760 |
| 15 | 202 | 0300 | 17.8729 | 66.0110 | 1.520 | 1132 |
| 15 | 202 | 0400 | 17.7852 | 65.8930 | 0.425 | 322 |
| 15 | 202 | 0500 | 17.6996 | 65.7772 | 2.170 | 1617 |
| 15 | 202 | 0600 | 17.6139 | 65.6615 | 1.700 | 1266 |
| 15 | 202 | 0700 | 17.5274 | 65.5518 | 3.210 | 2395 |
| 16 | 202 | 0800 | 17.6062 | 65.5609 | 2.320 | 1728 |
| 16 | 202 | 0900 | 17.7469 | 65.6075 | 2.910 | 2170 |
| 16 | 202 | 1000 | 17.8847 | 65.6190 | 1.840 | 1371 |
| 16 | 202 | 1100 | 18.0316 | 65.6418 | 1.150 | 857 |
| 17 | 202 | 1200 | 18.0074 | 65.6015 | 1.960 | 1460 |
| 17 | 202 | 1300 | 17.8892 | 65.5300 | 3.350 | 2500 |
| 17 | 202 | 1400 | 17.7605 | 65.4621 | 0.340 | 257 |
| 17 | 202 | 1500 | 17.6343 | 65.3964 | 2.280 | 1699 |
| 17 | 202 | 1600 | 17.5129 | 65.3319 | 3.050 | 2275 |
| 17 | 202 | 1700 | 17.3972 | 65.2595 | 5.100 | 3824 |
| 18 | 202 | 1800 | 17.3200 | 65.1922 | 5.780 | 4333 |
| 18 | 202 | 1900 | 17.4641 | 65.2256 | 4.200 | 3144 |
| 18 | 202 | 2000 | 17.6056 | 65.2584 | 2.360 | 1758 |
| 18 | 202 | 2100 | 17.7427 | 65.2793 | 2.630 | 1959 |
| 18 | 202 | 2200 | 17.8798 | 65.3003 | 5.280 | 3958 |
| 18 | 202 | 2300 | 18.0146 | 65.3188 | 2.900 | 2162 |
| 19 | 203 | 0000 | 18.0922 | 65.2432 | 0.890 | 664 |
| 20 | 203 | 0100 | 18.1063 | 65.1301 | 1.230 | 916 |
| 20 | 203 | 0200 | 17.9992 | 65.0770 | 4.920 | 3731 |
| 20 | 203 | 0300 | 17.8870 | 65.0289 | 5.950 | 4461 |
| 20 | 203 | 0400 | 17.7692 | 64.9869 | 1.210 | 901 |
| 21 | 203 | 0500 | 17.7494 | 64.9562 | 1.540 | 1147 |
| 21 | 203 | 0600 | 17.8689 | 64.9597 | 5.960 | 4468 |
| 21 | 203 | 0700 | 17.9894 | 64.9631 | 5.800 | 4348 |
| 21 | 203 | 0800 | 18.1099 | 64.9665 | 3.800 | 2839 |
| 22 | 204 | 0000 | 18.0824 | 64.7628 | 3.350 | 2500 |
| 22 | 204 | 0100 | 18.0211 | 64.6649 | 4.530 | 3396 |
| 22 | 204 | 0200 | 17.9554 | 64.5621 | 2.470 | 1840 |

I.D.O.E. '71 LEG 3 - ANTILLES

| LINE | DAY | TIME (Z) | LATITUDE (NORTH) | LONGITUDE (WEST) | DEPTH (SEC) | DEPTH (M) |
|---|---|---|---|---|---|---|
| 22 | 204 | 0300 | 17.8897 | 64.4594 | 2.380 | 1773 |
| 22 | 204 | 0400 | 17.8284 | 64.3575 | 1.620 | 1207 |
| 22 | 204 | 0500 | 17.7683 | 64.2559 | 2.050 | 1527 |
| 22 | 204 | 0600 | 17.7083 | 64.1542 | 0.950 | 709 |
| 22 | 204 | 0700 | 17.6473 | 64.0523 | 0.790 | 590 |
| 22 | 204 | 0800 | 17.5840 | 63.9498 | 0.650 | 488 |
| 22 | 204 | 0900 | 17.5169 | 63.8484 | 0.520 | 393 |
| 22 | 204 | 1000 | 17.4707 | 63.7477 | 0.320 | 242 |
| 22 | 204 | 1100 | 17.5552 | 63.6563 | 0.420 | 318 |
| 22 | 204 | 1200 | 17.6420 | 63.5662 | 0.635 | 477 |
| 22 | 204 | 1300 | 17.7316 | 63.4775 | 0.550 | 415 |
| 22 | 204 | 1400 | 17.8205 | 63.3862 | 1.450 | 1080 |
| 22 | 204 | 1500 | 17.9084 | 63.2870 | 1.455 | 1084 |
| 24 | 204 | 1600 | 17.9963 | 63.1878 | 0.820 | 612 |
| 24 | 204 | 1700 | 18.0227 | 63.3085 | 1.350 | 1006 |
| 24 | 204 | 1800 | 18.0431 | 63.4252 | 1.380 | 1028 |
| 24 | 204 | 1900 | 18.0645 | 63.5445 | 1.210 | 901 |
| 25 | 204 | 2000 | 17.9721 | 63.6678 | 2.120 | 1579 |
| 25 | 204 | 2100 | 17.8758 | 63.7907 | 2.060 | 1535 |
| 25 | 204 | 2200 | 17.7783 | 63.9132 | 1.430 | 1065 |
| 25 | 204 | 2300 | 17.6807 | 64.0356 | 0.870 | 649 |
| 25 | 205 | 0000 | 17.5853 | 64.1548 | 2.650 | 1974 |
| 25 | 205 | 0100 | 17.4905 | 64.2730 | 4.255 | 3186 |
| 25 | 205 | 0200 | 17.3933 | 64.3863 | 4.595 | 3445 |
| 25 | 205 | 0300 | 17.2991 | 64.4994 | 4.775 | 3586 |
| 25 | 205 | 0400 | 17.2038 | 64.6075 | 5.230 | 3921 |
| 26 | 205 | 0500 | 17.3112 | 64.7056 | 4.980 | 3792 |
| 26 | 205 | 0600 | 17.4262 | 64.8034 | 3.750 | 2801 |
| 26 | 205 | 0700 | 17.5563 | 64.8796 | 1.470 | 1095 |
| 27 | 205 | 2000 | 18.2203 | 65.0297 | 0.055 | 41 |
| 27 | 205 | 2100 | 18.2265 | 64.8813 | 0.055 | 41 |
| 27 | 205 | 2200 | 18.2291 | 64.7303 | 0.065 | 49 |
| 28 | 205 | 2300 | 18.2065 | 64.6015 | 2.150 | 1602 |
| 28 | 206 | 0000 | 18.1449 | 64.4674 | 1.400 | 1043 |
| 28 | 206 | 0100 | 18.0891 | 64.3313 | 3.870 | 2892 |
| 28 | 206 | 0200 | 18.0315 | 64.1966 | 3.760 | 2809 |
| 28 | 206 | 0300 | 17.9679 | 64.0654 | 3.640 | 2719 |
| 28 | 206 | 0400 | 17.9042 | 63.9375 | 1.520 | 1132 |
| 28 | 206 | 0500 | 17.8438 | 63.7944 | 1.970 | 1468 |

I.D.O.E. '71 LEG 3 - ANTILLES

| LINE | DAY | TIME (Z) | LATITUDE (NORTH) | LONGITUDE (WEST) | DEPTH (SEC) | DEPTH (M) |
|---|---|---|---|---|---|---|
| 28 | 206 | 0600 | 17.7835 | 63.6513 | 2.090 | 1557 |
| 28 | 206 | 0700 | 17.7238 | 63.5109 | 0.110 | 83 |
| 28 | 206 | 0800 | 17.6655 | 63.3751 | 0.110 | 83 |
| 29 | 206 | 0900 | 17.6762 | 63.3465 | 0.840 | 627 |
| 29 | 206 | 1000 | 17.7747 | 63.4745 | 1.220 | 909 |
| 29 | 206 | 1100 | 17.8727 | 63.5943 | 1.930 | 1438 |
| 29 | 206 | 1200 | 17.9698 | 63.7163 | 2.195 | 1635 |
| 29 | 206 | 1300 | 18.0653 | 63.8421 | 1.830 | 1363 |
| 29 | 206 | 1400 | 18.1610 | 63.9660 | 2.050 | 1527 |
| 29 | 206 | 1500 | 18.2584 | 64.0849 | 2.470 | 1840 |
| 29 | 206 | 1600 | 18.3626 | 64.2062 | 1.600 | 1192 |
| 30 | 206 | 1700 | 18.4376 | 64.2749 | 1.660 | 1237 |
| 30 | 206 | 1800 | 18.3759 | 64.1486 | 1.340 | 998 |
| 30 | 206 | 1900 | 18.3162 | 64.0199 | 2.050 | 1527 |
| 30 | 206 | 2000 | 18.2559 | 63.8908 | 1.200 | 894 |
| 30 | 206 | 2100 | 18.1936 | 63.7602 | 1.380 | 1028 |
| 30 | 206 | 2200 | 18.1360 | 63.6348 | 0.920 | 686 |
| 30 | 206 | 2300 | 18.0796 | 63.5107 | 1.010 | 753 |
| 30 | 207 | 0000 | 18.0252 | 63.3826 | 1.400 | 1043 |
| 30 | 207 | 0100 | 17.9721 | 63.2515 | 1.290 | 961 |
| 31 | 207 | 0200 | 18.0582 | 63.2625 | 1.020 | 760 |
| 31 | 207 | 0300 | 18.1990 | 63.3362 | 0.570 | 430 |
| 31 | 207 | 0400 | 18.3332 | 63.4096 | 1.000 | 746 |
| 31 | 207 | 0500 | 18.4675 | 63.4830 | 1.070 | 798 |
| 32 | 207 | 0600 | 18.5097 | 63.5629 | 1.640 | 1222 |
| 32 | 207 | 0700 | 18.3815 | 63.6538 | 1.390 | 1035 |
| 32 | 207 | 0800 | 18.2533 | 63.7447 | 1.460 | 1088 |
| 32 | 207 | 0900 | 18.1250 | 63.8244 | 1.990 | 1483 |
| 32 | 207 | 1000 | 18.0003 | 63.9077 | 2.700 | 2012 |
| 33 | 207 | 1100 | 17.9535 | 63.9951 | 2.000 | 1490 |
| 34 | 207 | 1200 | 18.0673 | 64.0406 | 2.770 | 2064 |
| 34 | 207 | 1300 | 18.1738 | 64.0055 | 1.680 | 1251 |
| 34 | 207 | 1400 | 18.2864 | 63.9559 | 1.880 | 1401 |
| 34 | 207 | 1500 | 18.3810 | 63.8925 | 1.750 | 1304 |
| 34 | 207 | 1600 | 18.4813 | 63.8291 | 1.980 | 1475 |
| 35 | 207 | 2000 | 18.6396 | 63.5877 | 2.300 | 1714 |
| 35 | 207 | 2100 | 18.7412 | 63.5198 | 4.850 | 3661 |

I.D.O.E. '71 LEG 3 - ANTILLES

| LINE | DAY | TIME (Z) | LATITUDE (NORTH) | LONGITUDE (WEST) | DEPTH (SEC) | DEPTH (M) |
|---|---|---|---|---|---|---|
| 35 | 207 | 2200 | 18.8426 | 63.4518 | 8.050 | 6035 |
| 35 | 207 | 2300 | 18.9489 | 63.3746 | 7.460 | 5593 |
| 35 | 208 | 0000 | 19.0575 | 63.2907 | 7.870 | 5900 |
| 35 | 208 | 0100 | 19.1491 | 63.2031 | 7.390 | 5541 |
| 35 | 208 | 0200 | 19.2510 | 63.1156 | 8.400 | 6298 |
| 35 | 208 | 0300 | 19.3590 | 63.0144 | 8.310 | 6230 |
| 35 | 208 | 0400 | 19.4688 | 62.9164 | 8.800 | 6598 |
| 35 | 208 | 0500 | 19.5812 | 62.8232 | 9.680 | 7258 |
| 35 | 208 | 0600 | 19.6936 | 62.7301 | 8.980 | 6733 |
| 35 | 208 | 0700 | 19.8041 | 62.6316 | 8.500 | 6373 |
| 35 | 208 | 0800 | 19.9121 | 62.5261 | 6.950 | 5211 |
| 35 | 208 | 0900 | 20.0208 | 62.4245 | 7.460 | 5593 |
| 35 | 208 | 1000 | 20.1296 | 62.3236 | 7.350 | 5511 |
| 36 | 208 | 1100 | 20.0593 | 62.2997 | 7.380 | 5533 |
| 36 | 208 | 1200 | 19.9176 | 62.3133 | 7.500 | 5623 |
| 36 | 208 | 1300 | 19.7739 | 62.3323 | 7.820 | 5863 |
| 36 | 208 | 1400 | 19.6304 | 62.3546 | 8.150 | 6110 |
| 36 | 208 | 1500 | 19.4866 | 62.3712 | 9.630 | 7220 |
| 36 | 208 | 1600 | 19.3477 | 62.3943 | 9.390 | 7040 |
| 36 | 208 | 1700 | 19.2087 | 62.4174 | 8.500 | 6373 |
| 36 | 208 | 1800 | 19.0698 | 62.4405 | 8.900 | 6673 |
| 36 | 208 | 1900 | 18.9305 | 62.4566 | 8.100 | 6073 |
| 36 | 208 | 2000 | 18.7914 | 62.4727 | 7.450 | 5586 |
| 36 | 208 | 2100 | 18.6526 | 62.4946 | 7.090 | 5316 |
| 36 | 208 | 2200 | 18.5137 | 62.5164 | 5.000 | 3749 |
| 37 | 208 | 2300 | 18.4006 | 62.5230 | 1.340 | 998 |
| 37 | 209 | 0000 | 18.5227 | 62.4307 | 4.430 | 3320 |
| 37 | 209 | 0100 | 18.6447 | 62.3383 | 7.620 | 5713 |
| 37 | 209 | 0200 | 18.7574 | 62.2252 | 7.820 | 5863 |
| 37 | 209 | 0300 | 18.8592 | 62.1192 | 8.380 | 6283 |
| 37 | 209 | 0400 | 18.9539 | 62.0114 | 8.250 | 6185 |
| 37 | 209 | 0500 | 19.0486 | 61.9037 | 7.790 | 5840 |
| 37 | 209 | 0600 | 19.1406 | 61.7938 | 9.100 | 6823 |
| 37 | 209 | 0700 | 19.2273 | 61.6795 | 9.030 | 6770 |
| 37 | 209 | 0800 | 19.3215 | 61.5583 | 7.570 | 5676 |
| 37 | 209 | 0900 | 19.4267 | 61.4865 | 7.490 | 5616 |
| 38 | 209 | 1000 | 19.5345 | 61.4142 | 6.610 | 4956 |
| 38 | 209 | 1100 | 19.4032 | 61.4297 | 7.320 | 5488 |
| 38 | 209 | 1200 | 19.2517 | 61.4571 | 8.200 | 6148 |
| 38 | 209 | 1300 | 19.1047 | 61.4887 | 9.230 | 6920 |
| 38 | 209 | 1400 | 18.9606 | 61.5202 | 8.450 | 6335 |

I.D.O.E. '71 LEG 3 - ANTILLES

| LINE | DAY | TIME (Z) | LATITUDE (NORTH) | LONGITUDE (WEST) | DEPTH (SEC) | DEPTH (M) |
|---|---|---|---|---|---|---|
| 39 | 209 | 1500 | 18.9637 | 61.5529 | 8.200 | 6148 |
| 39 | 209 | 1600 | 19.0991 | 61.5788 | 9.380 | 7033 |
| 39 | 209 | 1700 | 19.2345 | 61.6047 | 8.380 | 6283 |
| 40 | 209 | 1800 | 19.2414 | 61.6308 | 8.550 | 6410 |
| 40 | 209 | 1900 | 19.0954 | 61.6489 | 9.100 | 6823 |
| 40 | 209 | 2000 | 18.9495 | 61.6669 | 7.600 | 5698 |
| 40 | 209 | 2100 | 18.8035 | 61.6850 | 7.820 | 5863 |
| 40 | 209 | 2200 | 18.6576 | 61.7030 | 7.950 | 5960 |
| 40 | 209 | 2300 | 18.5133 | 61.7231 | 7.660 | 5743 |
| 40 | 210 | 0000 | 18.3745 | 61.7500 | 7.000 | 5248 |
| 40 | 210 | 0100 | 18.2337 | 61.7808 | 6.230 | 4671 |
| 40 | 210 | 0200 | 18.0904 | 61.8170 | 5.210 | 3906 |
| 41 | 210 | 0300 | 18.1080 | 61.7680 | 5.000 | 3749 |
| 41 | 210 | 0400 | 18.1790 | 61.6549 | 5.430 | 4071 |
| 41 | 210 | 0500 | 18.2501 | 61.5418 | 6.920 | 5188 |
| 41 | 210 | 0600 | 18.3211 | 61.4287 | 7.250 | 5436 |
| 41 | 210 | 0700 | 18.3922 | 61.3157 | 7.100 | 5323 |
| 41 | 210 | 0800 | 18.4378 | 61.1873 | 7.500 | 5623 |
| 41 | 210 | 0900 | 18.4833 | 61.0590 | 7.470 | 5601 |
| 41 | 210 | 1000 | 18.5289 | 60.9307 | 7.980 | 5983 |
| 41 | 210 | 1100 | 18.5745 | 60.8024 | 8.570 | 6425 |
| 41 | 210 | 1200 | 18.6201 | 60.6741 | 9.250 | 6935 |
| 41 | 210 | 1300 | 18.6711 | 60.5467 | 8.720 | 6538 |
| 41 | 210 | 1400 | 18.7226 | 60.4192 | 8.280 | 6208 |
| 41 | 210 | 1500 | 18.7754 | 60.2932 | 7.950 | 5960 |
| 41 | 210 | 1600 | 18.8282 | 60.1672 | 8.000 | 5998 |
| 41 | 210 | 1700 | 18.7943 | 60.2078 | 8.000 | 5998 |
| 42 | 210 | 1800 | 18.7040 | 60.2953 | 8.200 | 6148 |
| 42 | 210 | 1900 | 18.5914 | 60.4011 | 8.600 | 6448 |
| 42 | 210 | 2000 | 18.4786 | 60.5057 | 8.910 | 6680 |
| 42 | 210 | 2100 | 18.3656 | 60.6080 | 8.140 | 6103 |
| 42 | 210 | 2200 | 18.2523 | 60.7121 | 7.870 | 5900 |
| 42 | 210 | 2300 | 18.1443 | 60.8216 | 7.730 | 5796 |
| 42 | 211 | 0000 | 18.0366 | 60.9319 | 7.090 | 5316 |
| 42 | 211 | 0100 | 17.9297 | 61.0447 | 6.270 | 4701 |
| 42 | 211 | 0200 | 17.8271 | 61.1669 | 6.080 | 4558 |
| 42 | 211 | 0300 | 17.7248 | 61.2900 | 5.370 | 4026 |
| 42 | 211 | 0400 | 17.6226 | 61.4131 | 5.360 | 4018 |
| 42 | 211 | 0500 | 17.5203 | 61.5361 | 3.900 | 2915 |
| 42 | 211 | 0600 | 17.4680 | 61.5614 | 3.000 | 2238 |

I.D.O.E. '71 LEG 3 - ANTILLES

| LINE | DAY | TIME (Z) | LATITUDE (NORTH) | LONGITUDE (WEST) | DEPTH (SEC) | DEPTH (M) |
|---|---|---|---|---|---|---|
| 43 | 211 | 0800 | 17.5273 | 61.3682 | 5.400 | 4048 |
| 43 | 211 | 0900 | 17.5692 | 61.2422 | 4.490 | 3366 |
| 43 | 211 | 1000 | 17.6112 | 61.1240 | 5.790 | 4341 |
| 43 | 211 | 1100 | 17.6531 | 61.0092 | 6.300 | 4723 |
| 43 | 211 | 1200 | 17.6953 | 60.8909 | 6.210 | 4656 |
| 43 | 211 | 1300 | 17.7319 | 60.7611 | 6.720 | 5038 |
| 43 | 211 | 1400 | 17.7612 | 60.6322 | 7.040 | 5278 |
| 43 | 211 | 1500 | 17.7917 | 60.5013 | 7.470 | 5601 |
| 43 | 211 | 1600 | 17.8267 | 60.3626 | 7.700 | 5773 |
| 43 | 211 | 1700 | 17.8617 | 60.2238 | 8.150 | 6110 |
| 43 | 211 | 1800 | 17.8967 | 60.0850 | 8.790 | 6590 |
| 43 | 211 | 1900 | 17.9317 | 59.9463 | 8.470 | 6350 |
| 43 | 211 | 2000 | 17.9616 | 59.8021 | 8.050 | 6035 |
| 43 | 211 | 2100 | 17.9916 | 59.6562 | 7.770 | 5826 |
| 43 | 211 | 2200 | 18.0224 | 59.5071 | 7.560 | 5668 |
| 43 | 211 | 2300 | 18.0532 | 59.3579 | 7.580 | 5683 |
| 44 | 212 | 0000 | 17.9892 | 59.3705 | 7.660 | 5743 |
| 44 | 212 | 0100 | 17.8637 | 59.4361 | 7.820 | 5863 |
| 44 | 212 | 0200 | 17.7341 | 59.5078 | 7.950 | 5960 |
| 44 | 212 | 0300 | 17.6045 | 59.5795 | 8.070 | 6050 |
| 44 | 212 | 0400 | 17.4749 | 59.6511 | 8.320 | 6238 |
| 44 | 212 | 0800 | 17.4510 | 59.6028 | 8.100 | 6073 |
| 44 | 212 | 0900 | 17.3255 | 59.6821 | 7.850 | 5885 |
| 44 | 212 | 1000 | 17.2000 | 59.7613 | 7.530 | 5646 |
| 44 | 212 | 1100 | 17.0772 | 59.8355 | 6.680 | 5008 |
| 45 | 212 | 1200 | 17.0262 | 59.7788 | 6.850 | 5136 |
| 45 | 212 | 1300 | 17.0221 | 59.6366 | 7.780 | 5833 |
| 45 | 212 | 1400 | 17.0164 | 59.4920 | 7.250 | 5436 |
| 45 | 212 | 1500 | 17.0117 | 59.3479 | 7.500 | 5623 |
| 45 | 212 | 1600 | 17.0049 | 59.2024 | 7.780 | 5833 |
| 45 | 212 | 1700 | 16.9972 | 59.0564 | 7.840 | 5878 |
| 45 | 212 | 1800 | 16.9897 | 58.9105 | 7.820 | 5863 |
| 45 | 212 | 1900 | 16.9829 | 58.7646 | 7.130 | 5346 |
| 45 | 212 | 2000 | 16.9749 | 58.6270 | 7.640 | 5728 |
| 46 | 212 | 2100 | 16.9216 | 58.6630 | 7.780 | 5833 |
| 46 | 212 | 2200 | 16.8495 | 58.8001 | 7.260 | 5443 |
| 46 | 212 | 2300 | 16.7803 | 58.9425 | 7.660 | 5743 |
| 46 | 213 | 0000 | 16.7118 | 59.0859 | 7.270 | 5451 |
| 46 | 213 | 0100 | 16.6470 | 59.2278 | 6.980 | 5233 |
| 46 | 213 | 0200 | 16.5821 | 59.3697 | 7.870 | 5900 |
| 46 | 213 | 0300 | 16.5173 | 59.5116 | 7.760 | 5818 |

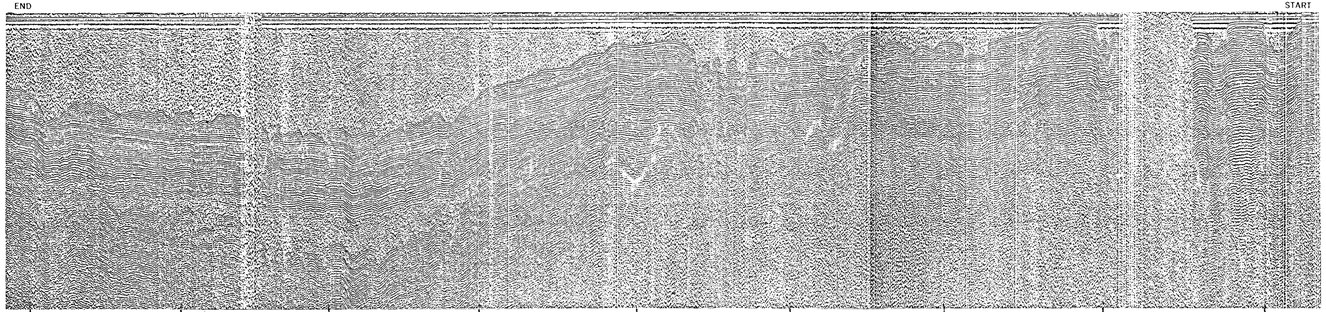
I.O.O.E. '71 LEG 3 - ANTILLES

| LINE | DAY | TIME (Z) | LATITUDE (NORTH) | LONGITUDE (WEST) | DEPTH (SEC) | DEPTH (M) |
|---|---|---|---|---|---|---|
| 46 | 213 | 0400 | 16.4585 | 59.6534 | 7.580 | 5683 |
| 46 | 213 | 0500 | 16.3997 | 59.7952 | 7.900 | 5923 |
| 46 | 213 | 0600 | 16.3365 | 59.9404 | 6.530 | 4896 |
| 46 | 213 | 0700 | 16.2800 | 60.0776 | 6.590 | 4941 |
| 46 | 213 | 0800 | 16.2205 | 60.2132 | 6.470 | 4851 |
| 46 | 213 | 0900 | 16.1542 | 60.3454 | 6.150 | 4611 |
| 46 | 213 | 1000 | 16.0844 | 60.4767 | 5.780 | 4333 |
| 46 | 213 | 1100 | 16.0114 | 60.6071 | 2.260 | 1684 |
| 46 | 213 | 1200 | 15.9398 | 60.7399 | 1.470 | 1095 |
| 46 | 213 | 1300 | 15.8692 | 60.8750 | 1.910 | 1423 |
| 46 | 213 | 1400 | 15.7989 | 61.0122 | 1.510 | 1125 |
| 46 | 213 | 1500 | 15.7562 | 61.1611 | 0.810 | 604 |
| 46 | 213 | 1600 | 15.7529 | 61.3313 | 0.930 | 694 |
| 46 | 213 | 1700 | 15.7496 | 61.5016 | 1.200 | 894 |
| 46 | 213 | 1800 | 15.7480 | 61.6126 | 1.550 | 1155 |
| 46 | 213 | 1900 | 15.7458 | 61.7350 | 2.340 | 1743 |
| 46 | 213 | 2000 | 15.7419 | 61.9127 | 1.710 | 1274 |
| 46 | 213 | 2100 | 15.7028 | 62.0936 | 2.170 | 1617 |
| 46 | 213 | 2200 | 15.6623 | 62.2693 | 2.610 | 1945 |
| 46 | 213 | 2300 | 15.6383 | 62.4273 | 2.690 | 2004 |
| 46 | 214 | 0000 | 15.6228 | 62.5687 | 3.280 | 2447 |
| 46 | 214 | 0100 | 15.6126 | 62.7106 | 2.820 | 2102 |
| 46 | 214 | 0200 | 15.6020 | 62.8530 | 2.840 | 2117 |
| 46 | 214 | 0300 | 15.5893 | 62.9925 | 2.700 | 2012 |
| 46 | 214 | 0400 | 15.5762 | 63.1314 | 3.130 | 2335 |
| 46 | 214 | 0500 | 15.5631 | 63.2702 | 2.640 | 1967 |
| 46 | 214 | 0600 | 15.5501 | 63.4091 | 2.610 | 1945 |
| 46 | 214 | 0700 | 15.5339 | 63.5499 | 1.700 | 1266 |
| 46 | 214 | 0800 | 15.5208 | 63.6950 | 1.930 | 1438 |
| 46 | 214 | 0900 | 15.5002 | 63.8370 | 2.690 | 2004 |
| 46 | 214 | 1000 | 15.4813 | 63.9774 | 2.180 | 1624 |
| 46 | 214 | 1100 | 15.4623 | 64.1178 | 4.370 | 3274 |
| 46 | 214 | 1200 | 15.4434 | 64.2583 | 4.800 | 3611 |
| 46 | 214 | 1300 | 15.4269 | 64.3989 | 5.060 | 3794 |
| 46 | 214 | 1400 | 15.4109 | 64.5413 | 5.200 | 3898 |
| 46 | 214 | 1500 | 15.3949 | 64.6837 | 5.200 | 3898 |
| 46 | 214 | 1600 | 15.3790 | 64.8261 | 5.500 | 4123 |
| 47 | 214 | 1700 | 15.4254 | 64.8064 | 5.480 | 4108 |
| 47 | 214 | 1800 | 15.4919 | 64.7191 | 5.400 | 4048 |
| 47 | 214 | 1900 | 15.5413 | 64.6227 | 5.310 | 3981 |
| 47 | 214 | 2000 | 15.6201 | 64.4954 | 5.110 | 3831 |
| 47 | 214 | 2100 | 15.6988 | 64.3681 | 4.810 | 3621 |
| 47 | 214 | 2200 | 15.7783 | 64.2411 | 4.620 | 3464 |

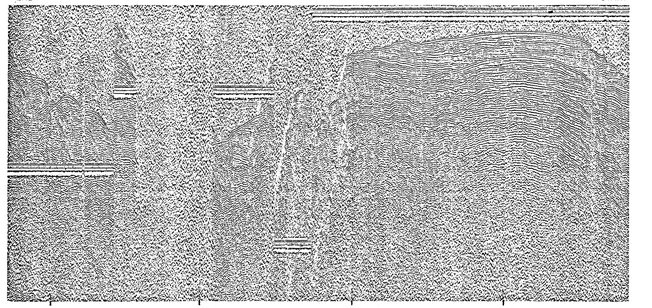
I.D.O.E. '71 LEG 3 - ANTILLES

| LINE | DAY | TIME (Z) | LATITUDE (NORTH) | LONGITUDE (WEST) | DEPTH (SEC) | DEPTH (M) |
|---|---|---|---|---|---|---|
| 47 | 214 | 2300 | 15.8544 | 64.1165 | 4.180 | 3129 |
| 47 | 215 | 0000 | 15.9144 | 64.0144 | 3.170 | 2365 |
| 47 | 215 | 0100 | 15.9915 | 63.8848 | 2.440 | 1818 |
| 47 | 215 | 0200 | 16.0695 | 63.7538 | 2.430 | 1810 |
| 47 | 215 | 0300 | 16.1474 | 63.6229 | 2.400 | 1788 |
| 48 | 215 | 0400 | 16.2275 | 63.4958 | 2.300 | 1714 |
| 48 | 215 | 0500 | 16.3026 | 63.6234 | 2.220 | 1654 |
| 48 | 215 | 0600 | 16.3747 | 63.7602 | 2.050 | 1527 |
| 48 | 215 | 0700 | 16.4459 | 63.8947 | 1.310 | 976 |
| 48 | 215 | 0800 | 16.5197 | 64.0292 | 3.400 | 2538 |
| 48 | 215 | 0900 | 16.5933 | 64.1664 | 4.320 | 3236 |
| 48 | 215 | 1000 | 16.6679 | 64.3018 | 4.630 | 3471 |
| 48 | 215 | 1100 | 16.7439 | 64.4342 | 4.940 | 3752 |
| 49 | 215 | 1200 | 16.8185 | 64.5689 | 5.180 | 3884 |
| 49 | 215 | 1300 | 16.8558 | 64.7175 | 5.260 | 3943 |
| 49 | 215 | 1400 | 16.8571 | 64.8753 | 5.400 | 4048 |
| 49 | 215 | 1500 | 16.8584 | 65.0328 | 5.770 | 4326 |
| 49 | 215 | 1600 | 16.8598 | 65.1903 | 6.020 | 4513 |
| 49 | 215 | 1700 | 16.8612 | 65.3478 | 6.100 | 4573 |
| 49 | 215 | 1800 | 16.8625 | 65.5053 | 6.150 | 4611 |
| 49 | 215 | 1900 | 16.8639 | 65.6628 | 6.130 | 4596 |
| 49 | 215 | 2000 | 16.8664 | 65.8217 | 6.080 | 4558 |
| 50 | 215 | 2100 | 16.9944 | 65.7869 | 6.240 | 4678 |
| 50 | 215 | 2200 | 17.1267 | 65.7133 | 6.360 | 4768 |
| 50 | 215 | 2300 | 17.2586 | 65.6238 | 6.230 | 4671 |
| 50 | 216 | 0000 | 17.3906 | 65.5343 | 5.160 | 3869 |
| 50 | 216 | 0100 | 17.5175 | 65.4537 | 2.950 | 2200 |
| 50 | 216 | 0200 | 17.6405 | 65.3800 | 2.220 | 1654 |
| 50 | 216 | 0300 | 17.7636 | 65.3062 | 2.650 | 1974 |
| 50 | 216 | 0400 | 17.8866 | 65.2324 | 5.350 | 4011 |
| 50 | 216 | 0500 | 18.0096 | 65.1585 | 3.700 | 2764 |

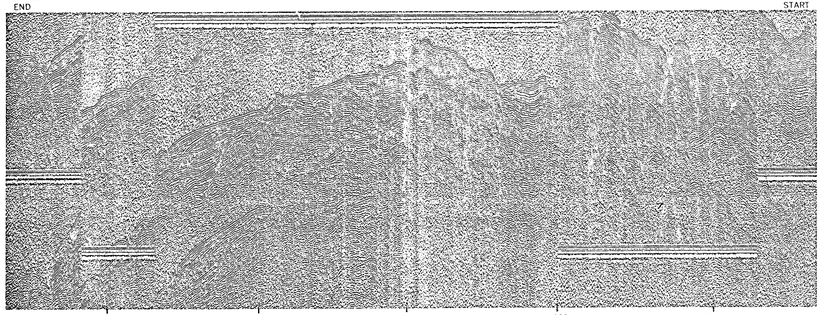
LINE 1



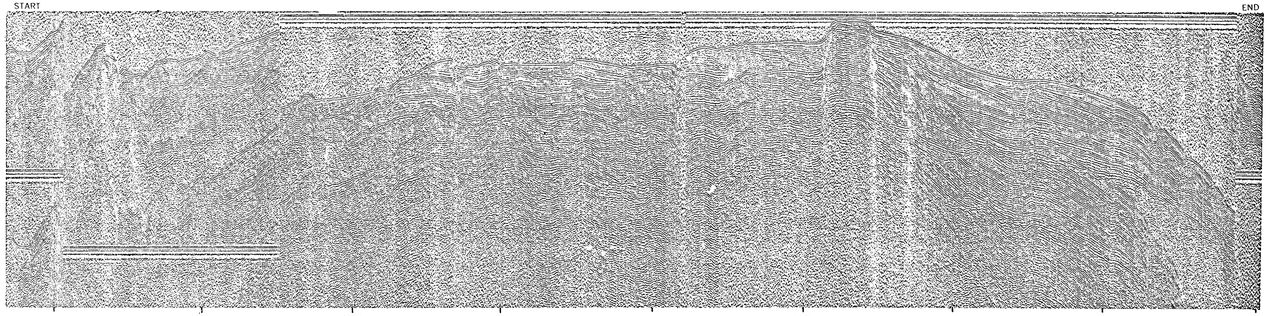

LINE 2

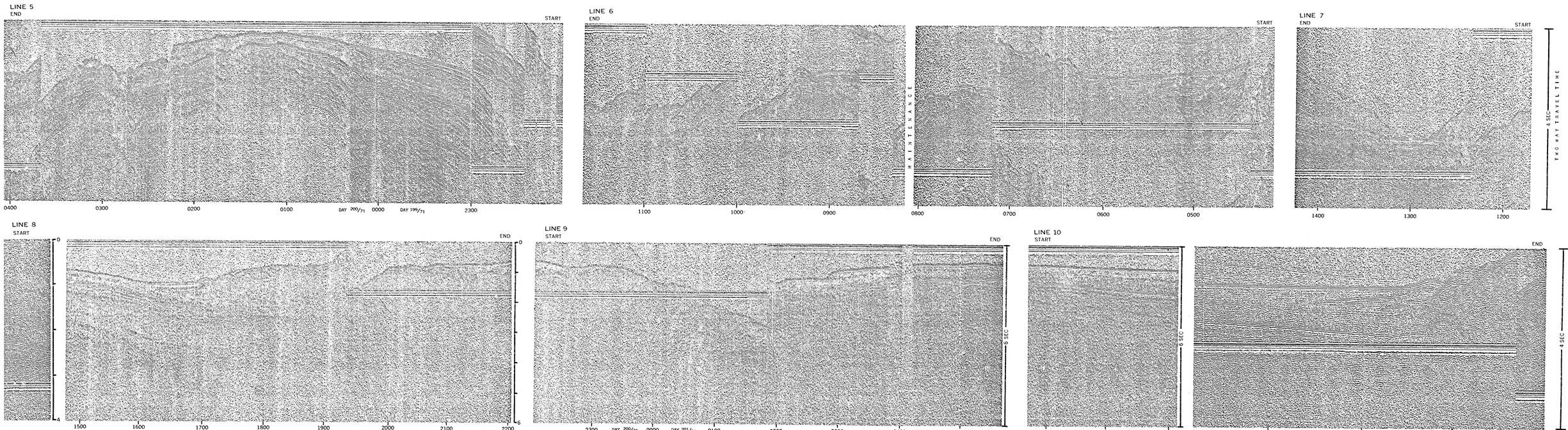


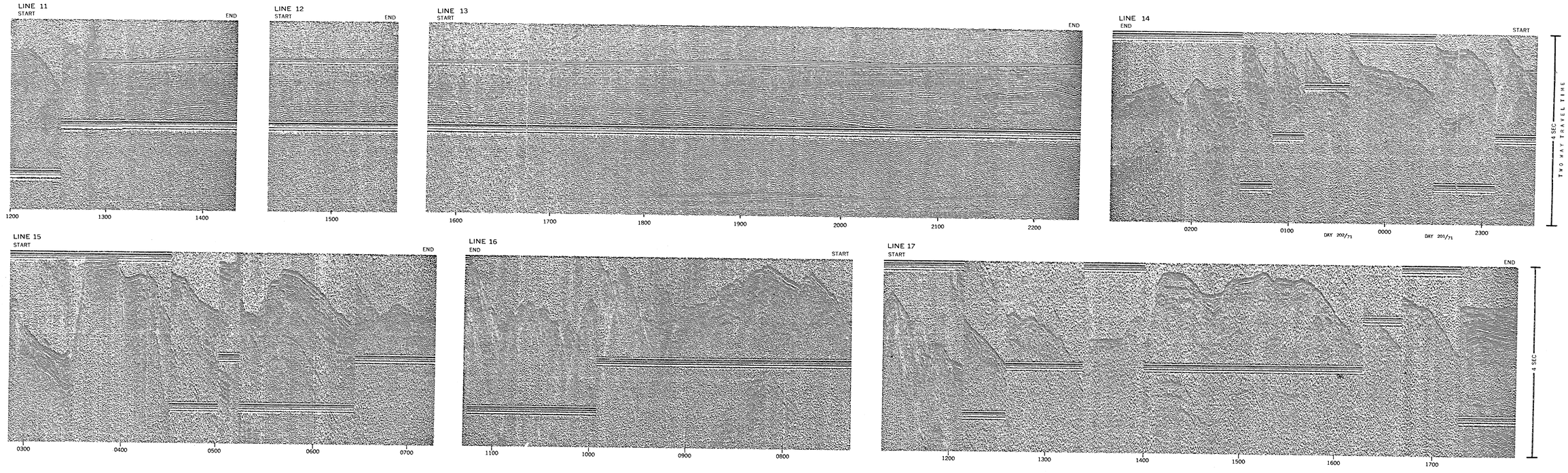

LINE 3

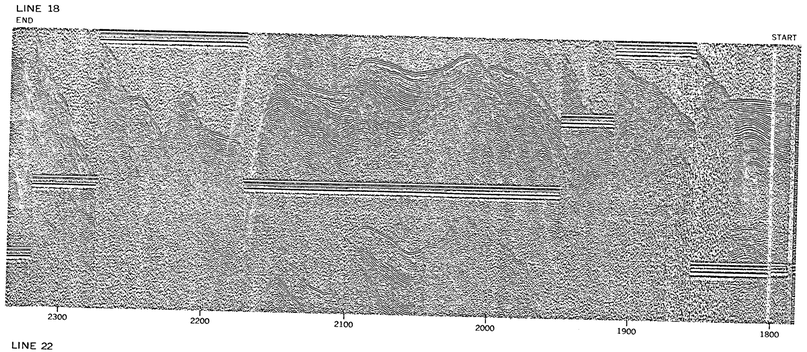


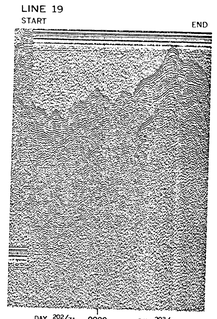

LINE 4

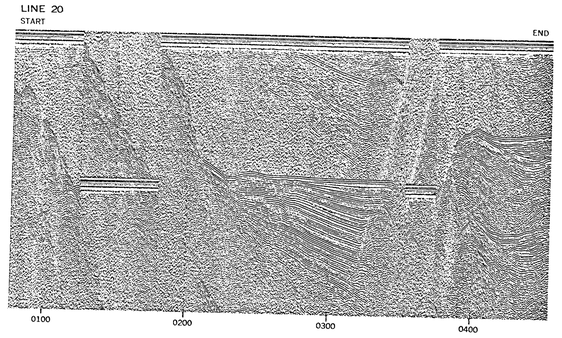


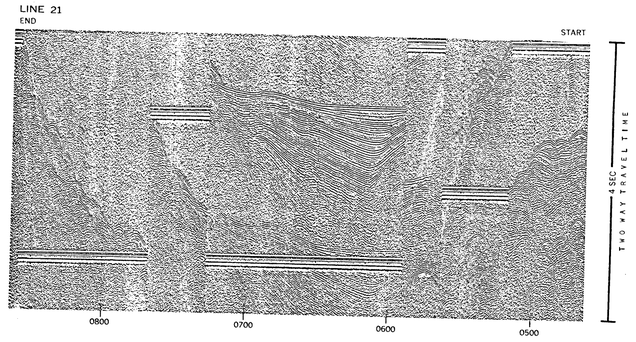

LINE 5
END
START
0400
0300
0200
0100
DAY 200/71
0000
DAY 199/71
2300
LINE 6
END
START
MAINTENANCE
1100
1000
0900
0800
0700
0600
0500
LINE 7
END
START
4 SEC
TWO WAY TRAVEL TIME
1400
1300
1200
LINE 8
START
END
0
4
6
1500
1600
1700
1800
1900
2000
2100
2200
LINE 9
START
END
6 SEC
2300
DAY 200/71
0000
DAY 201/71
0100
0200
0300
0400
0500
LINE 10
START
END
6 SEC
4 SEC
0600
0700
0800
0900
1000
1100
1200

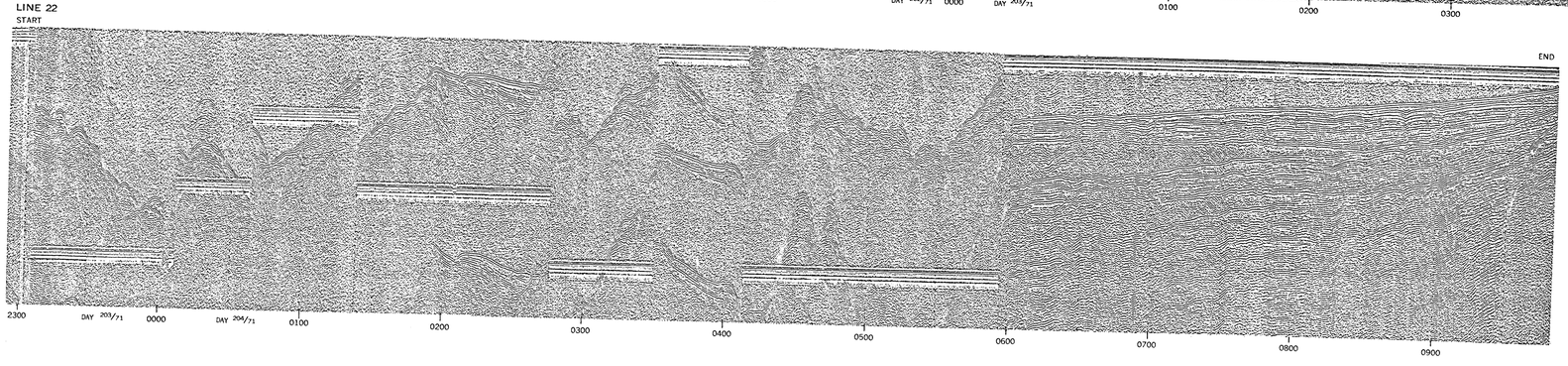

LINE 11
START
END
1200
1300
1400
LINE 12
START
END
1500
LINE 13
START
END
1600
1700
1800
1900
2000
2100
2200
LINE 14
END
START
0200
0100
DAY 202/71
0000
DAY 201/71
2300
TWO WAY TRAVEL TIME
4 SEC
LINE 15
START
END
0300
0400
0500
0600
0700
LINE 16
END
START
1100
1000
0900
0800
LINE 17
START
END
1200
1300
1400
1500
1600
1700
4 SEC

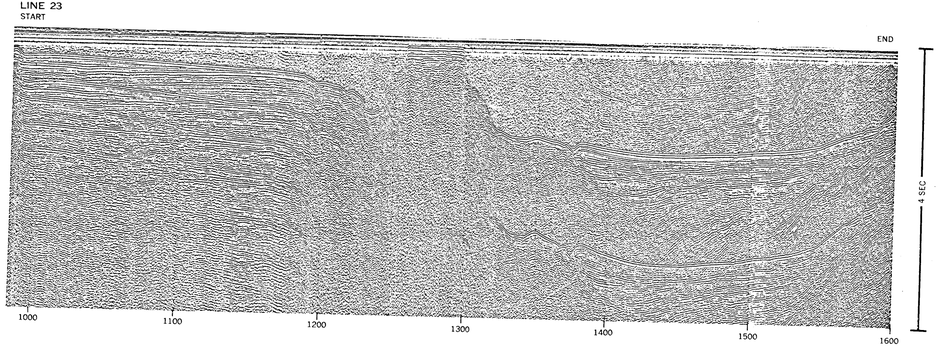

LINE 18
END
START
2300
2200
2100
2000
1900
1800


LINE 19
START
END
DAY 202/71
0000
DAY 203/71

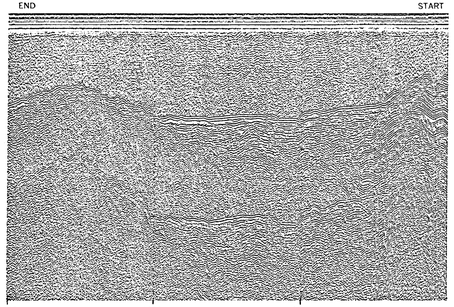

LINE 20
START
END
0100
0200
0300
0400


LINE 21
END
START
0800
0700
0600
0500
4 SEC
TWO WAY TRAVEL TIME

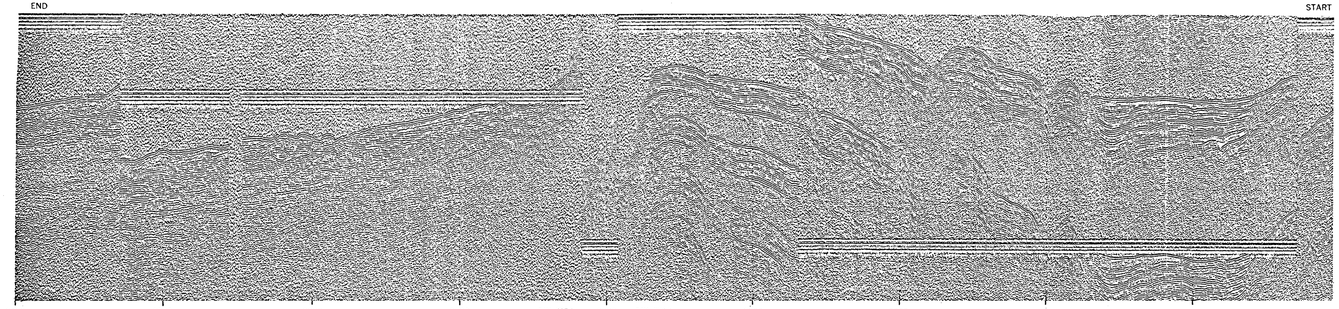

LINE 22
START
END
2300
DAY 203/71
0000
DAY 204/71
0100
0200
0300
0400
0500
0600
0700
0800
0900


LINE 23
START
END
1000
1100
1200
1300
1400
1500
1600
4 SEC

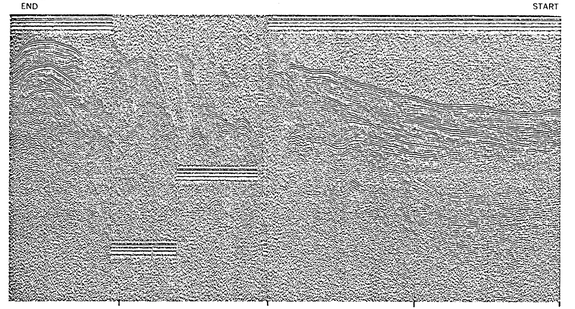
LINE 24



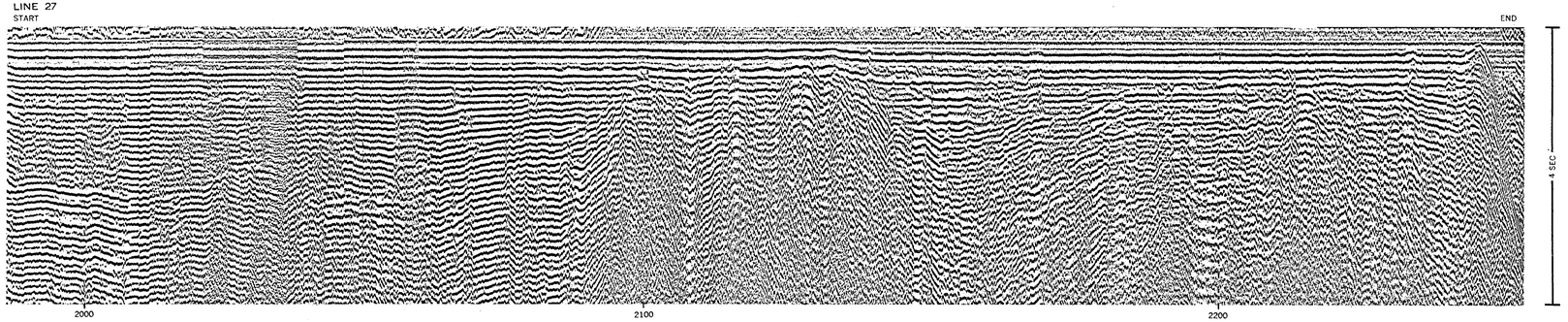

LINE 25



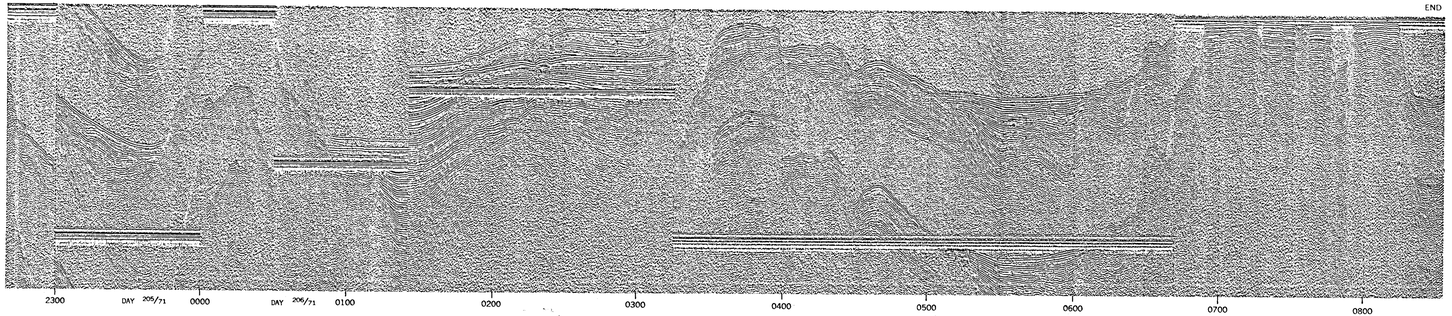

LINE 26



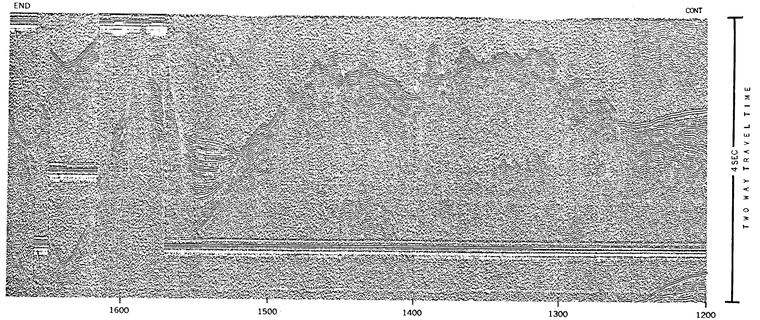

LINE 27



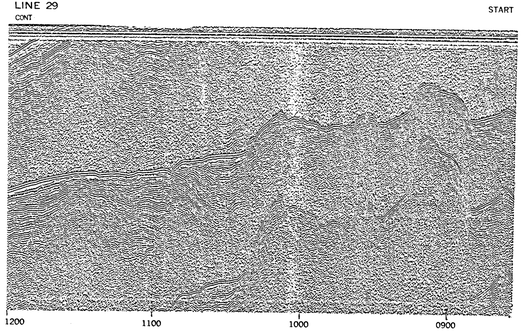
LINE 28



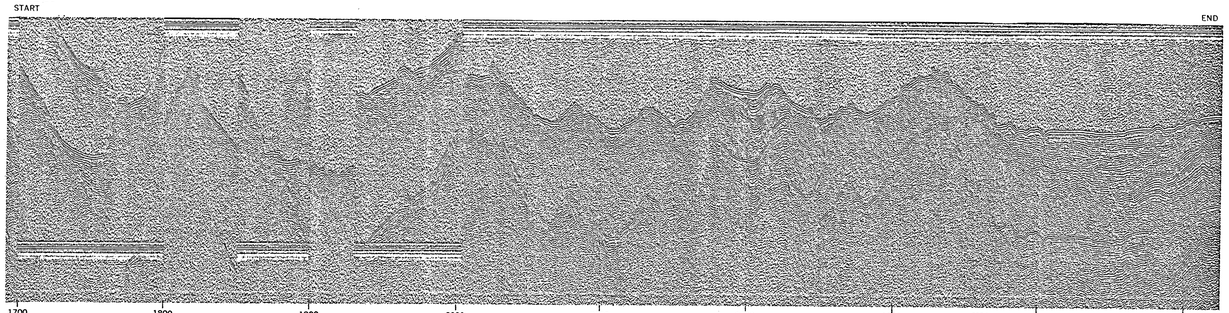

LINE 29



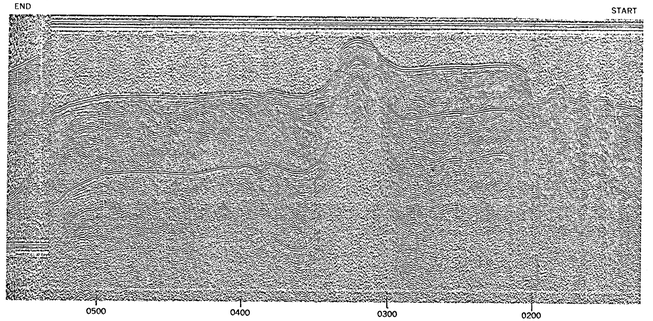

LINE 29

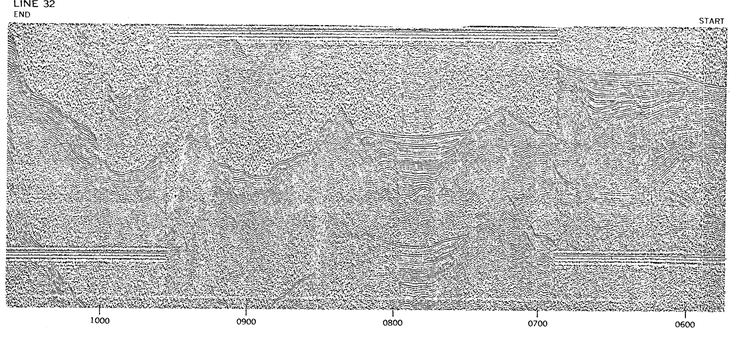


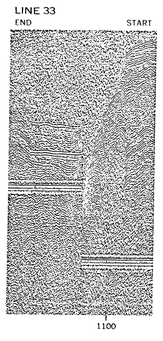

LINE 30

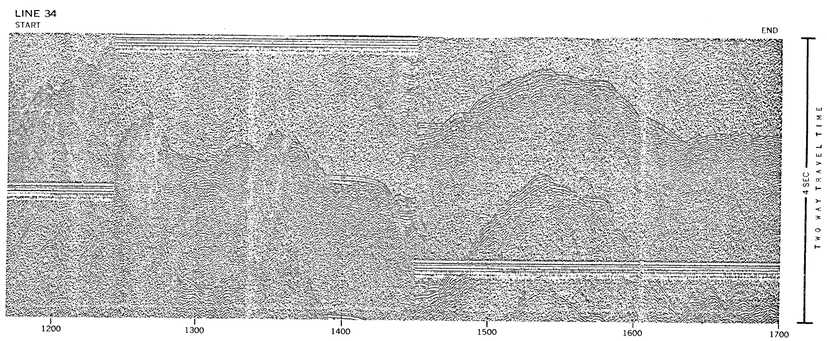


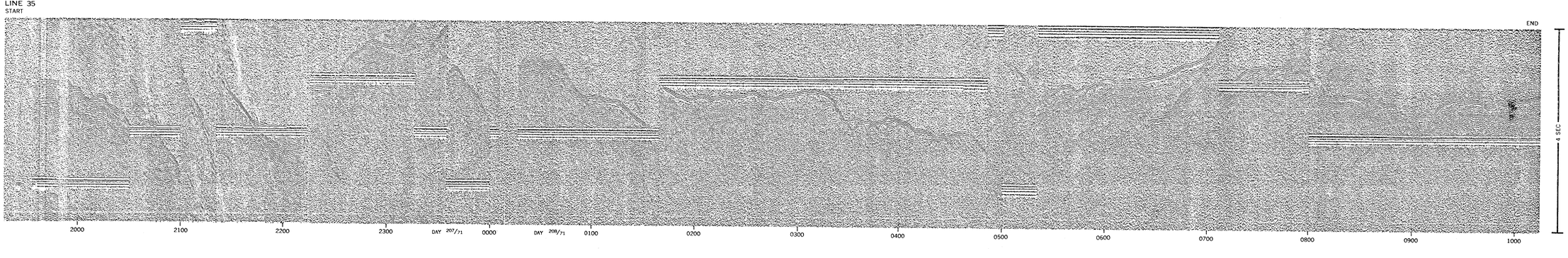

LINE 31



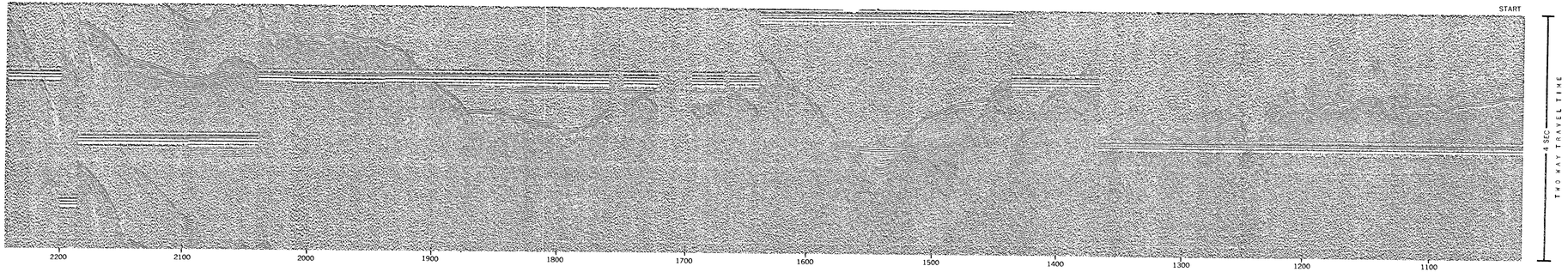

LINE 32
END
START
1000
0900
0800
0700
0600


LINE 33
END
START
1100

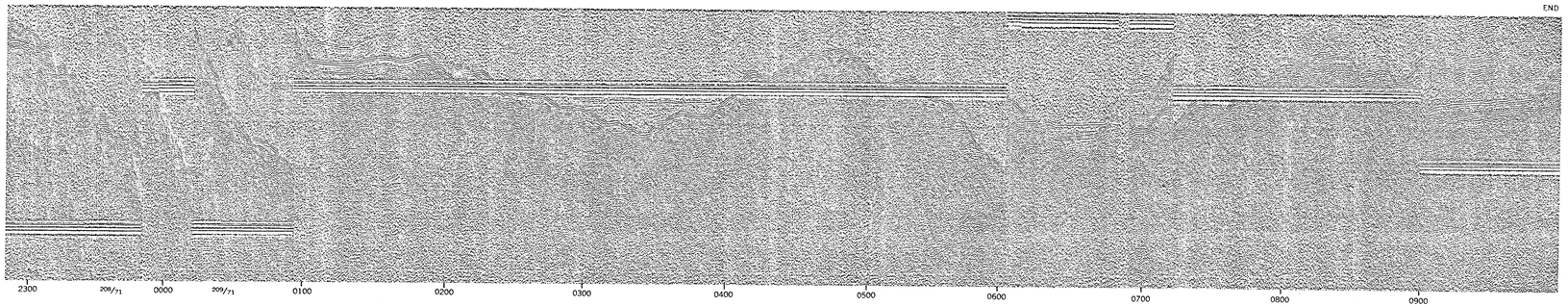

LINE 34
START
END
4 SEC
TWO WAY TRAVEL TIME
1200
1300
1400
1500
1600
1700


LINE 35
START
END
4 SEC
2000
2100
2200
2300
DAY 207/71
0000
DAY 208/71
0100
0200
0300
0400
0500
0600
0700
0800
0900
1000

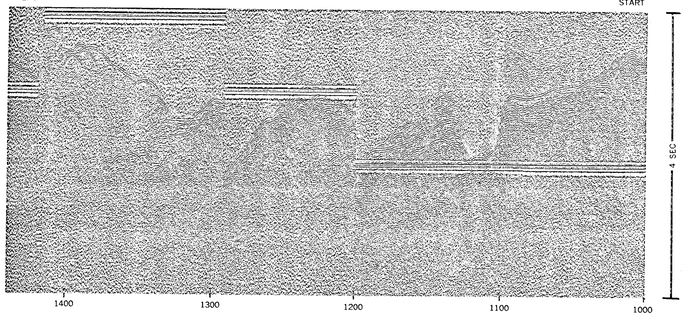
LINE 36




LINE 37



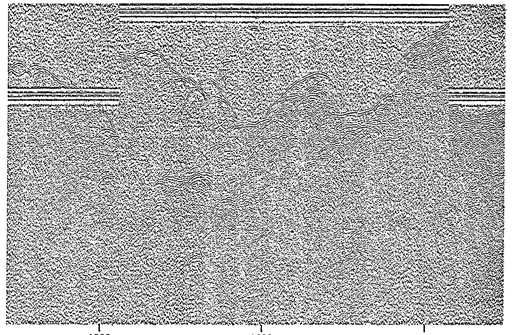

LINE 38



LINE 39

START

END

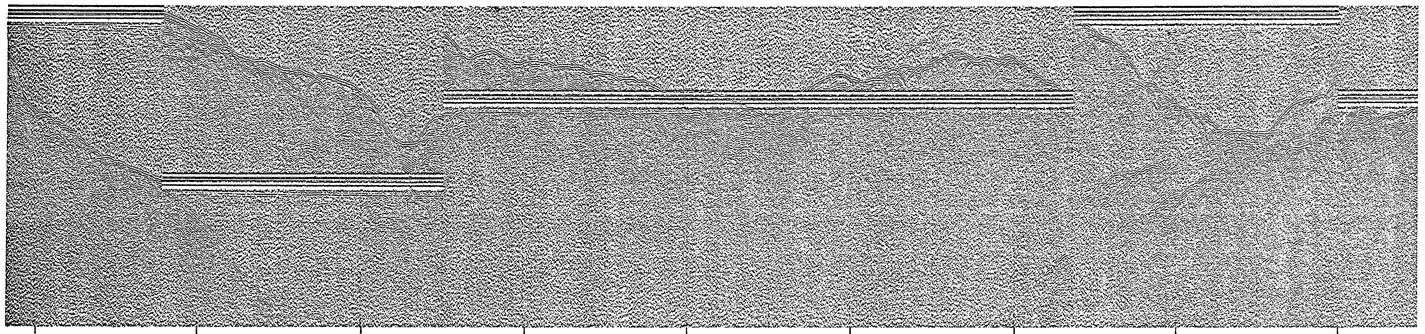


1500 1600 1700

LINE 40

END

START



4 SEC

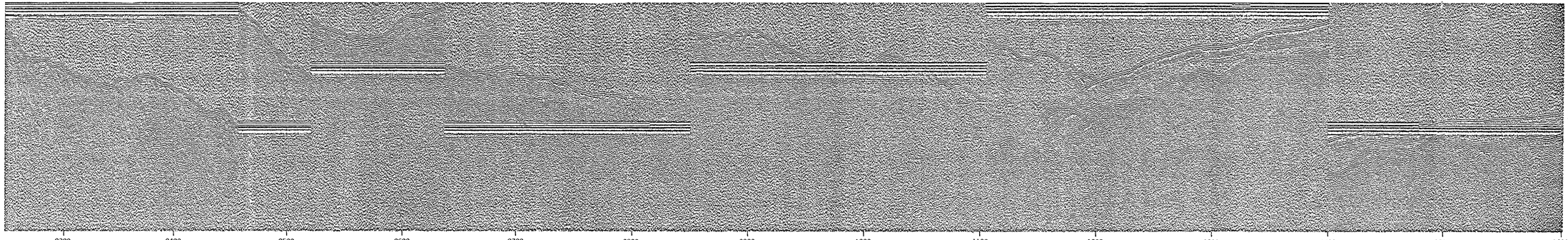
TWO WAY TRAVEL TIME

0200 0100 DAY 210/71 0000 DAY 209/71 2300 2200 2100 2000 1900 1800

LINE 41

START

END



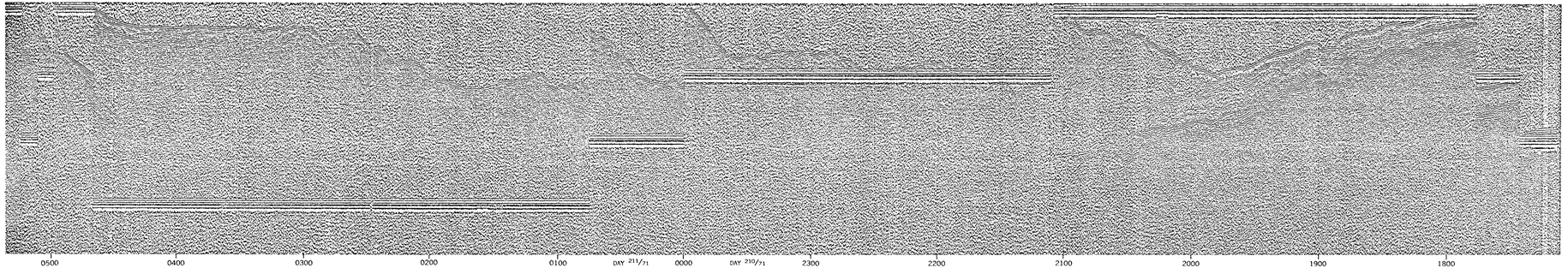
4 SEC

0300 0400 0500 0600 0700 0800 0900 1000 1100 1200 1300 1400 1500 1600

LINE 42

END

START



0

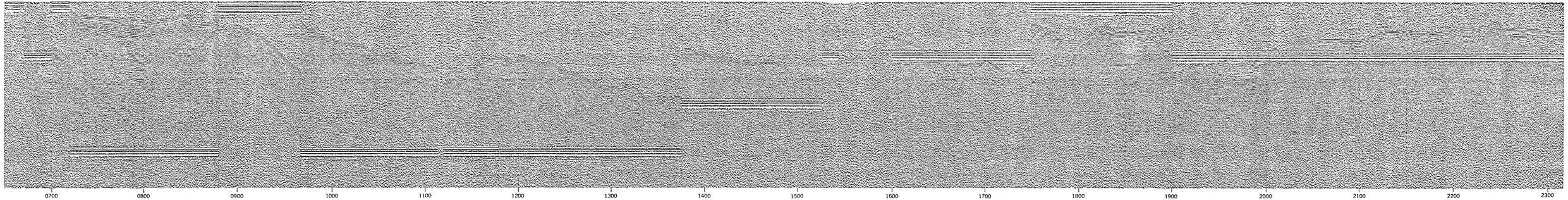
4 SEC

0500 0400 0300 0200 0100 DAY 211/71 0000 DAY 210/71 2300 2200 2100 2000 1900 1800

LINE 43

START

END

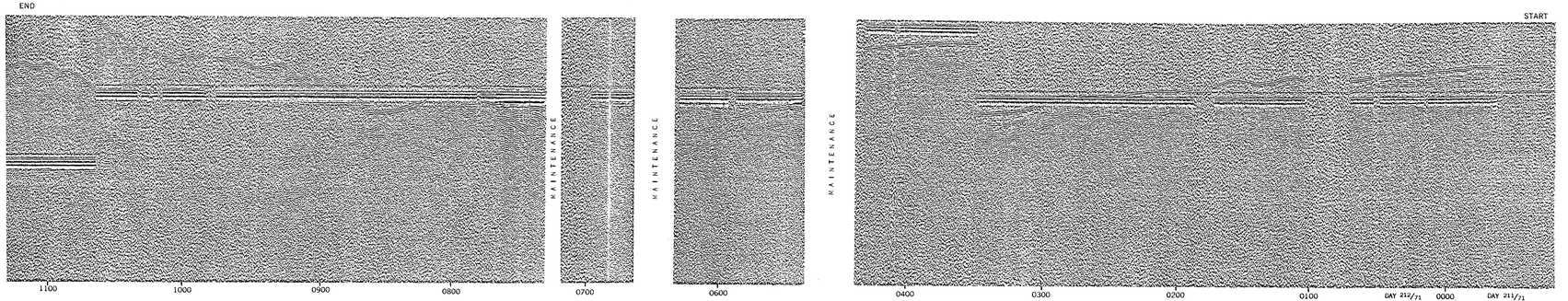


0

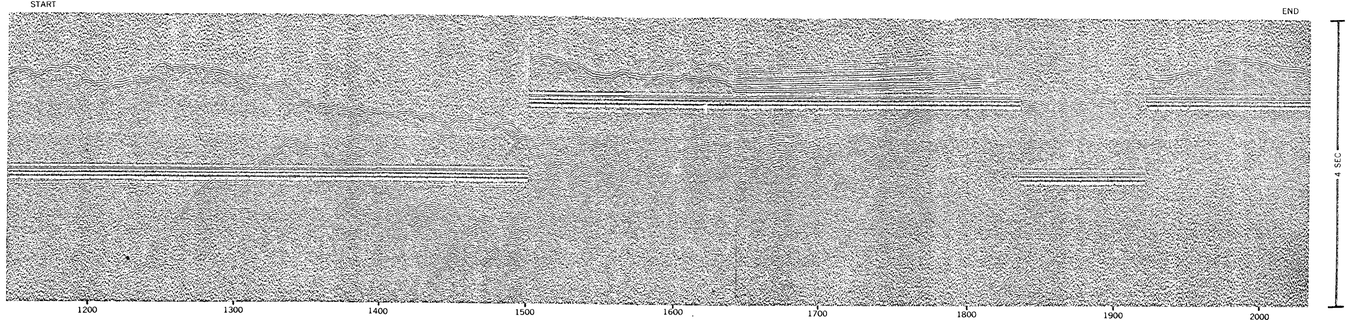
4 SEC

0700 0800 0900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300

LINE 44



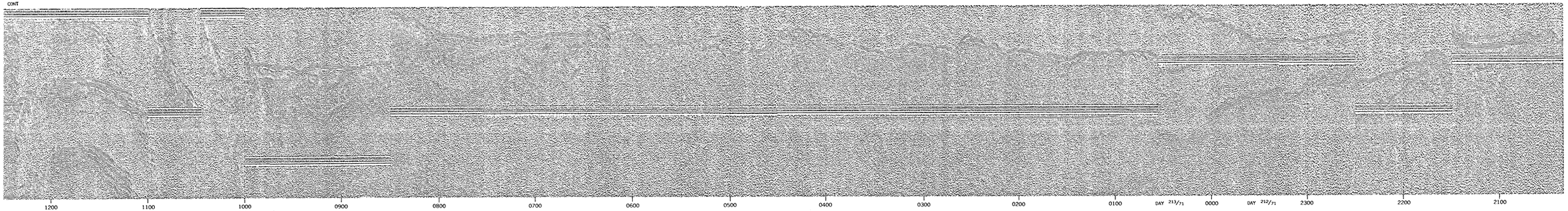

LINE 45



LINE 46

CONT

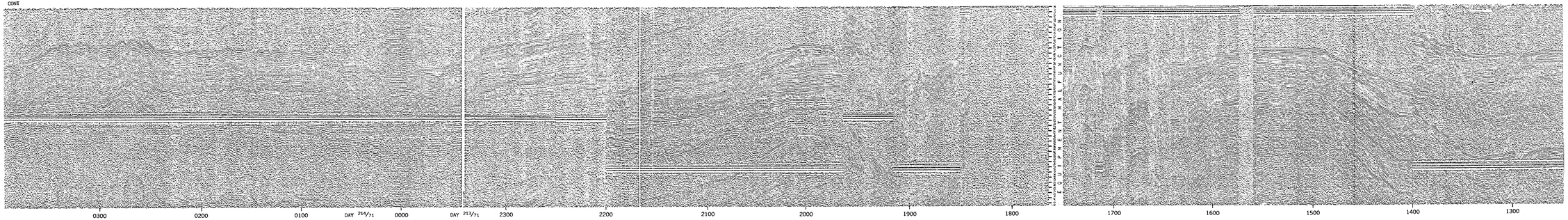
START




LINE 46

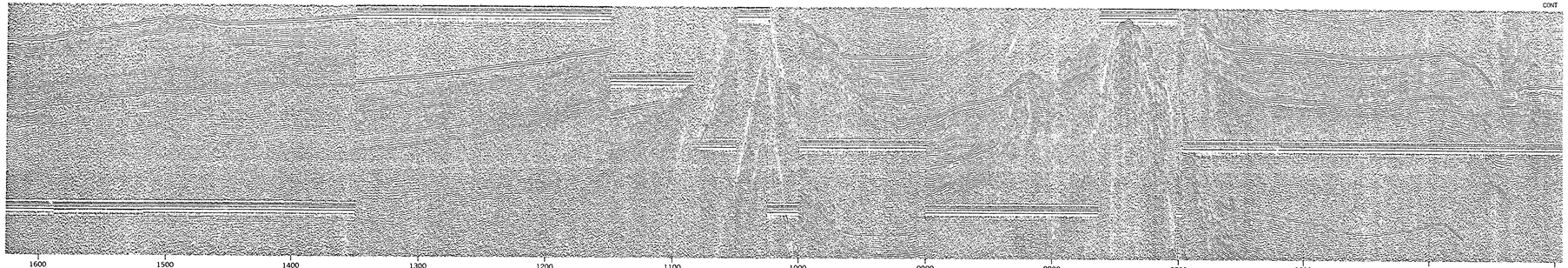
CONT

CONT



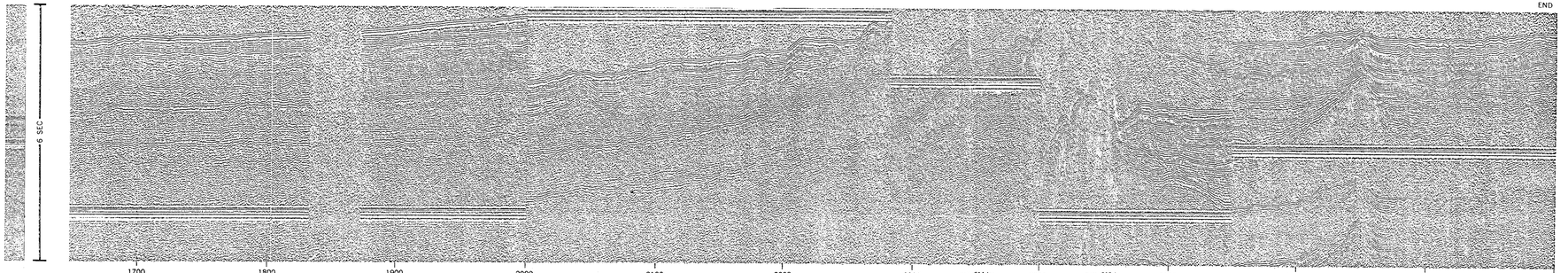
LINE 46

END




LINE 47

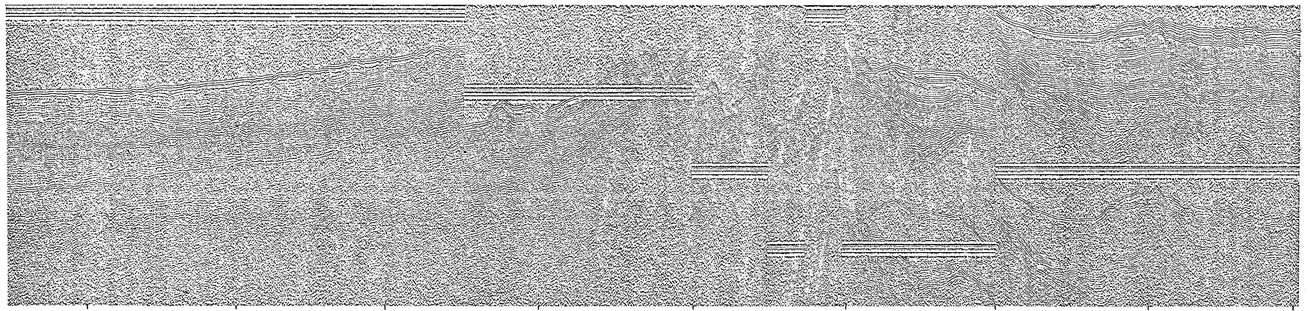
START



LINE 48

END

START

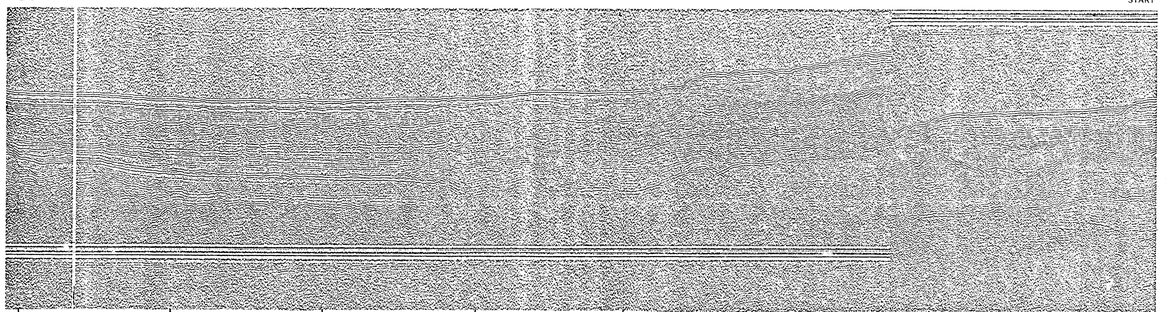


1200 1100 1000 0900 0800 0700 0600 0500 0400

LINE 49

END

START



4 SEC

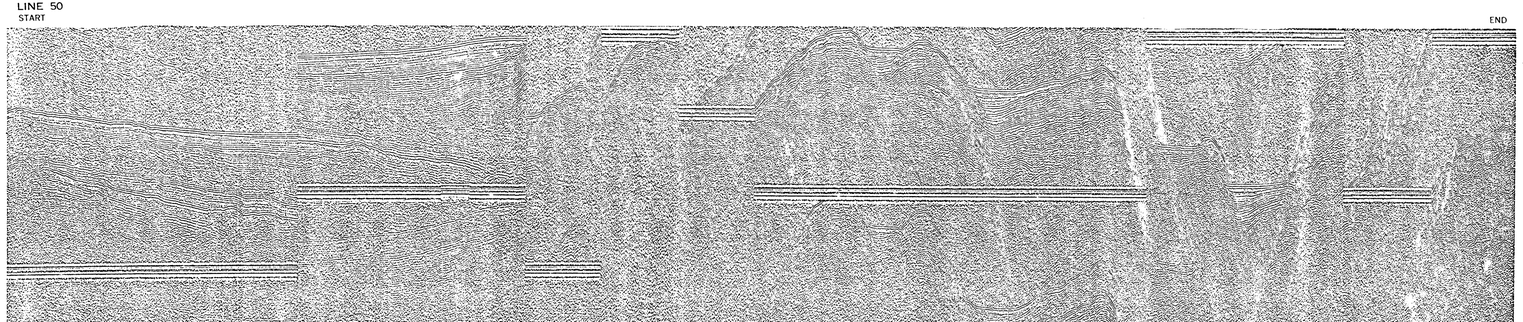
TWO WAY TRAVEL TIME

2000 1900 1800 1700 1600 1500 1400 1300

LINE 50

START

END

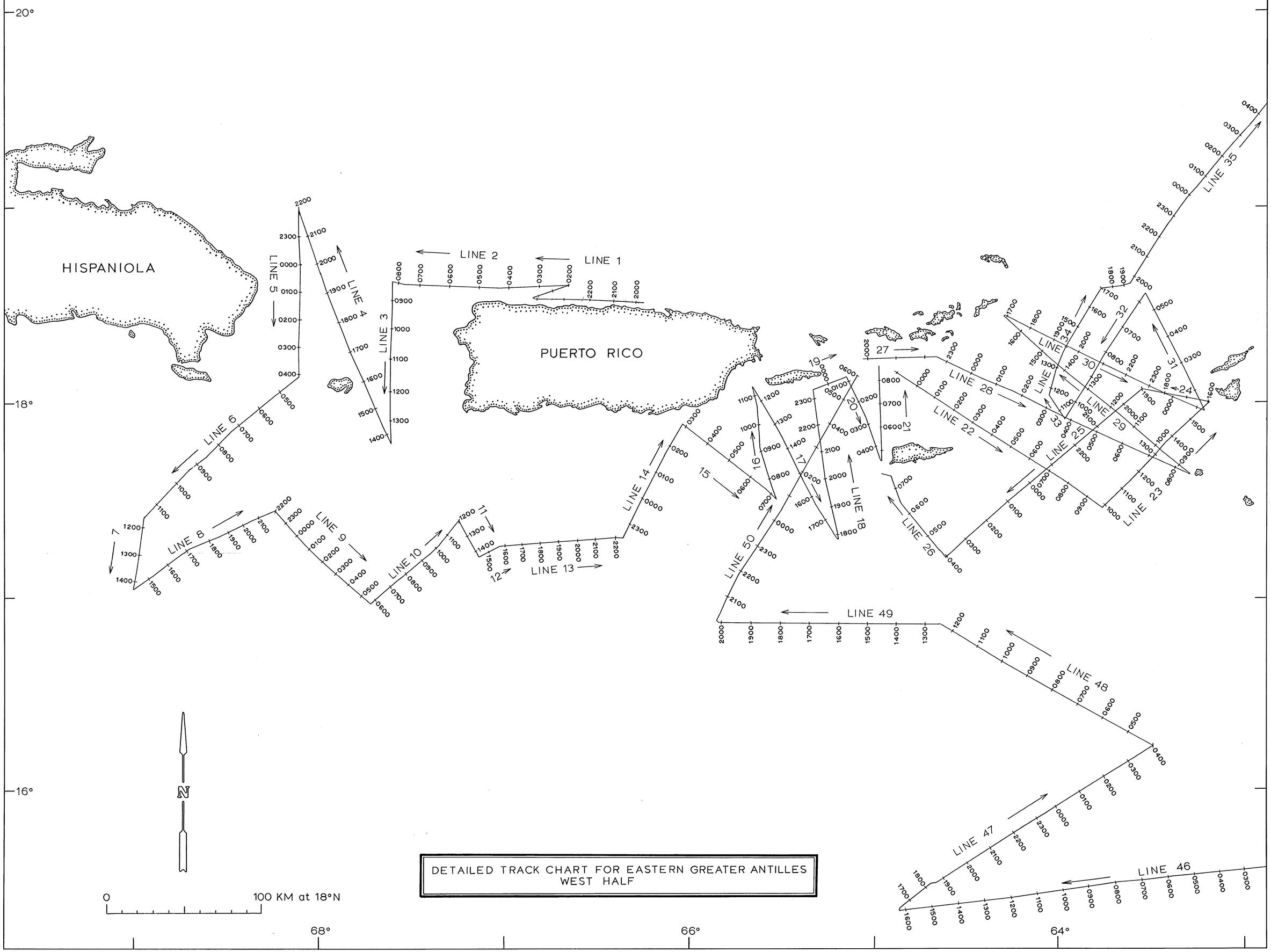


4 SEC

2100 2200 2300 DAY 215/71 0000 DAY 216/71 0100 0200 0300 0400 0500

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

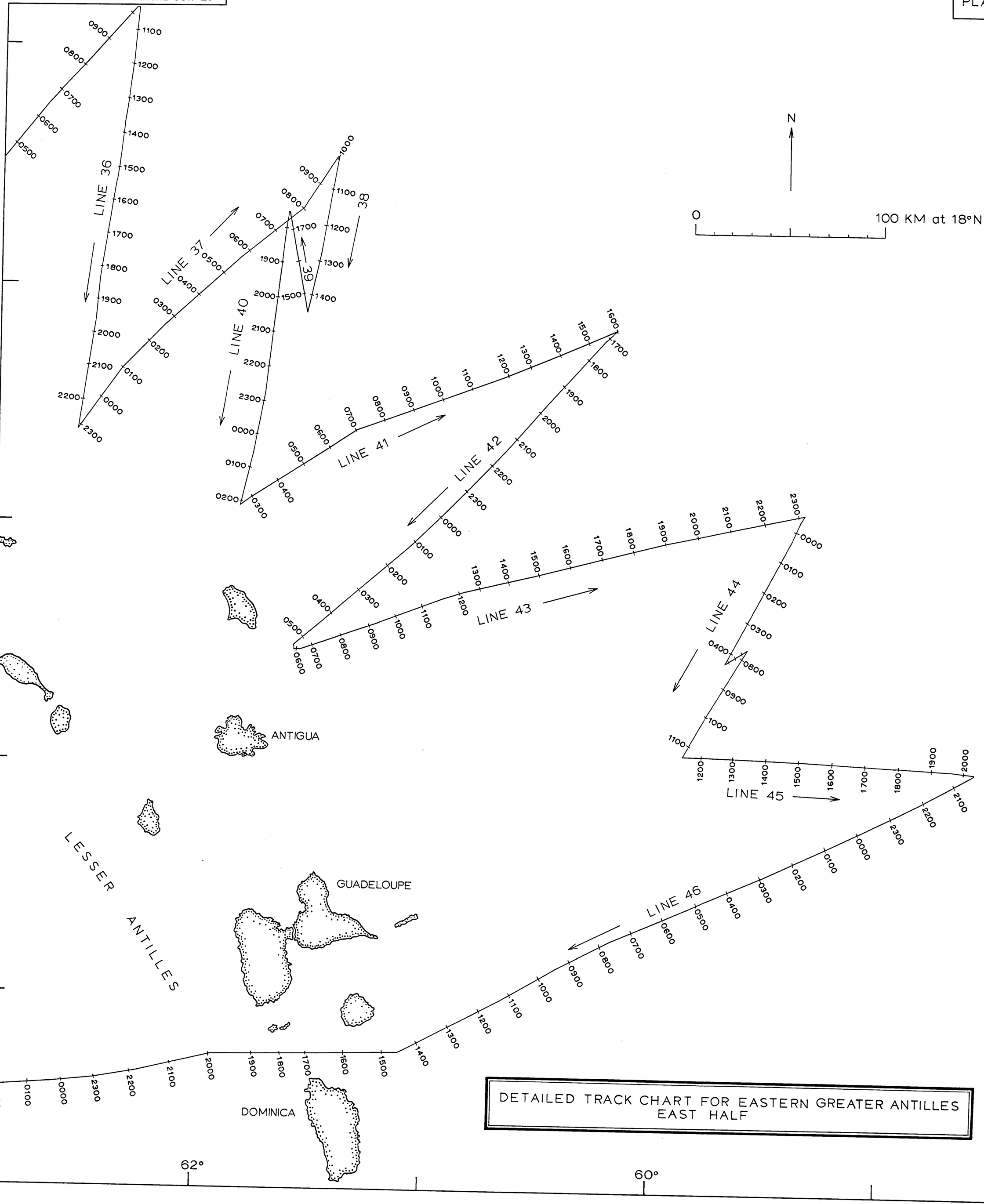
PLATE 1




DETAILED TRACK CHART FOR EASTERN GREATER ANTILLES
WEST HALF

DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

PLATE 2




DETAILED TRACK CHART FOR EASTERN GREATER ANTILLES
EAST HALF