5. NINETYEAST RIDGE UNDERWAY GEOPHYSICS[1]

Shipboard Scientific Party[2]

NAVIGATION AND EQUIPMENT

The navigation and equipment used for the Ninetyeast Ridge underway geophysics are the same as described in "Broken Ridge Underway Geophysics" chapter, this volume.

TRANSIT TO SITE 756

JOIDES Resolution departed Broken Ridge Site 755 at 0141 hr on 25 May (Julian Day [JD] 144) 1988. (All times reported in this chapter are Universal Coordinated Time, which is equivalent to Greenwich Mean Time.) Continuous magnetic recordings (Fig. 1) and bathymetric recordings (Fig. 2) were made on the transit to Site 756 on Ninetyeast Ridge. Although the magnetic record is of good quality, the bathymetric record of the bottom is not clear and was often lost as a result of the high level of noise at the ship's speed of about 12 kt.

SITE 756

The site was surveyed in September 1986 as part of *Robert D. Conrad* Cruise 2708 (RC2708). *Conrad* and *JOIDES Resolution* tracks and the proposed and drilled locations of Site 756 are shown on a bathymetric chart of the area in Figure 3; the navigation data are given in Table 1. A seismic profile of part of a survey grid with the proposed location (shotpoint 13920) of Site 756 is shown in Figure 4.

The bathymetry at Site 756 is rugged. One seamount in the area of the site survey lies at water depths shallower than 800 m whereas the sediment bench on which the site is located is some 800 m deeper. Several northeast-trending faults were observed on the site survey. Consequently, the predrilling survey by *JOIDES Resolution* was designed to cross these faults with a dip line and to include a strike line down the bench at the proposed site location.

We approached the proposed site on a heading of 301° along a dip line (Fig. 3). The seismic gear was deployed at 1100 hr on 27 May (JD 146), and the survey was conducted at a speed of 7 kt. The drilling location was moved about 500 m west-northwest from the proposed location because a small fault offsets some of the deeper sedimentary reflectors. Our attempt to drop a beacon as we crossed the chosen site location at 1438 hr failed. The ship continued the seismic survey for another 35 min before returning to the site to commence drilling. A second attempt to drop the beacon also failed. The beacon was finally dropped at 2150 hr while the pipe was being lowered.

A comparison of the navigation and seismic data from the RC2708 and *JOIDES Resolution* surveys indicates that there are no significant navigational discrepancies between the two surveys. The *JOIDES Resolution* seismic record across Site 756 is shown full size in backpocket Figure 5. The 3.5-kHz record between Holes 756B and 756C is shown in Figure 6. A composite

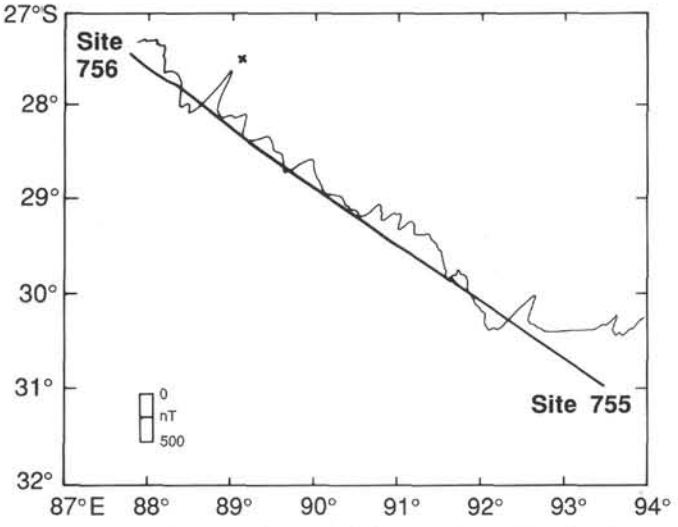

Figure 1. Magnetic record of the transit between Sites 755 and 756 plotted perpendicular to the track. Positive values are north of the track line.

diagram of the seismic data from the RC2708 site survey is shown in Figure 7.

The lithology predicted by the interpretation of the site-survey data (Newman and Sclater, 1988) and the lithology recovered by drilling Site 756 are generally in good agreement. A detailed discussion of the seismic stratigraphy at the site is in the "Seismic Stratigraphy" section, "Site 756" chapter (this volume).

TRANSIT TO SITE 757

JOIDES Resolution started the transit to Site 757 on central Ninetyeast Ridge at 0530 hr, 29 May (JD 150). The ship steamed northeast for approximately 7 hr in order to clear the ridge. The purpose of this maneuver was to record magnetic anomalies in the adjacent Wharton Basin. Magnetic anomalies in this area had not been measured previously, and they are important for understanding the movement along the Ninetyeast Transform Fault and providing additional definition of the relative motion between the Australian and Indian plates (see "Leg 121 Background and Objectives" chapter, this volume). The magnetic profile collected (Fig. 8) shows magnetic anomalies that are somewhat diminished in amplitude relative to others in this part of the Wharton Basin, and there is less skewness to the shape of the anomalies than expected for easterly striking magnetic lineations. These differences may indicate simply that the line of the profile is close to the trace of the Ninetyeast Transform Fault.

SITE 757

The area near Site 757 was surveyed in August 1986 as part of *Conrad* Cruise 2707 (RC2707). *Conrad* and *JOIDES Resolution* tracks and the proposed and drilled locations of Site 757 are shown on a bathymetric chart of the area in Figure 9. The navigation data are given in Table 1. A seismic profile from the

[1] Peirce, J., Weissel, J., et al., 1989. *Proc. ODP, Init. Repts.*, 121: College Station, TX (Ocean Drilling Program).

[2] Shipboard Scientific Party is as given in the list of Participants preceding the contents, with the addition of Jean-Yves Royer, Institute for Geophysics, University of Texas at Austin, 8701 Mopac Boulevard, Austin, TX 78759-8345.

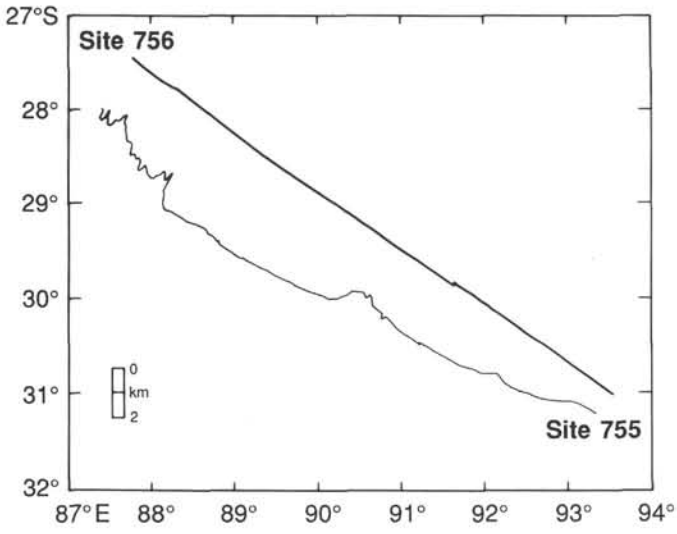

Figure 2. Bathymetric record of the transit between Sites 755 and 756 (3.5-kHz echo-sounding record). Depths are plotted perpendicular to and south of the track line.

site survey across proposed Site NER-2C is shown in Figure 10, and the complete seismic survey from RC2707 is shown in Figure 11.

JOIDES Resolution approached the site at a heading of 311°. The predrilling site survey was planned to have dip lines perpendicular to the structural grain inferred from the RC2707 survey. However, the uncertainty of this interpretation is considerable because the original survey grid is too coarse for unambiguous correlation of the complex and variable faults from line to line. Furthermore, mis-ties between seismic sections at line intersections indicate that some of the original survey lines have navigation errors of more than 1 km. The RC2707 dip lines across the site area were acquired between Global Positioning System (GPS) satellite windows, and their positions are considered less accurate than those of the *JOIDES Resolution* lines, which were acquired with GPS control. During the approach survey we were able to develop a better understanding of the area, and the primary direction of faulting is now interpreted as N21°E. Much of the faulting appears recent.

The seismic gear was streamed at 1215 hr, 31 May (JD 152). The ship slowed to about 6 kt for the seismic survey. The beacon was dropped on the strike line pass at 2109 hr, and the survey continued for another 40 min before the seismic gear was retrieved. The ship returned to the site to commence drilling.

The *JOIDES Resolution* seismic survey records are shown full size in backpocket Figure 12. The lithology predicted by the interpretation of the RC2707 site-survey data (Newman and Sclater, 1988) is in good agreement with the lithology recovered by drilling. A detailed discussion of the seismic stratigraphy of Site 757 is described in the "Seismic Stratigraphy" section, "Site 757" chapter (this volume).

TRANSIT TO SITE 758

JOIDES Resolution departed Site 757 earlier than planned at 1330 hr on 5 June (JD 157) because of a medical emergency. The transit to Site 758 was made by way of the Cocos Islands. Recording of bathymetric and magnetic data began immediately after leaving Site 757; continuous recordings were made on the transit, with a short interruption at the Cocos Islands. Magnetic and bathymetric records are shown in Figures 13 and 14.

SITE 758

The area near Site 758 was originally surveyed in June 1986 as part of *Conrad* Cruise 2705 (RC2705), using both Sea Beam bathymetry and digital single-channel seismic with a water gun source. The combined tracks for the two RC2705 lines in the area and the *JOIDES Resolution* survey (Table 1) are shown in Figure 15.

The bathymetric relief is more subdued than that at the sites farther south on Ninetyeast Ridge, but recent faulting is clearly evident on the seismic profiles (Fig. 16 and backpocket Fig. 17). In particular, the small highs at times 0422 and 0455 hr in backpocket Figure 17 define a small northward-striking feature that can be interpreted from the seismic data as compressional in origin. The northerly strike of the feature suggests that this may be a small pop-up structure related to strike-slip movement instead of movement on a reverse fault.

The predrilling site survey was done without GPS navigation because a critical satellite set just as the survey began. Further navigation complications arose from unexpected surface currents of about 2.5 kt from the east, which we measured for several days while on site. Therefore, our use of dead reckoning resulted in a less accurate positioning of the survey lines than on the previous site surveys of Leg 121.

The survey lines (Fig. 15) were oriented to be approximately normal to the northeast-southwest trend observed in the regional bathymetry. This same trend can be seen on the Sea Beam data from the RC2705 survey in the vicinity of 90°30′E.

The seismic gear was deployed at 2157 hr on 11 June (JD 163) as *JOIDES Resolution* approached the drilling area on a course of 316° and at a speed of 6.8 kt.

The survey was completed without dropping the beacon because of the navigational uncertainties. Once the seismic gear was retrieved, we returned to proposed Site NER-1C using our dead-reckoning position and bottom navigation, with the aid of the 3.5- and 12-kHz records. The location of Site 758 is about 500 m southeast of the crossing of two *JOIDES Resolution* seismic lines and about 1800 m southwest of the proposed location on the RC2705 seismic line (at time 1730, Fig. 16).

The interpretation of the seismic data is that the unconformity at 4.3 s at Site 758 (Fig. 16 and Fig. 56, "Site 758" chapter, this volume) correlates to the P unconformity of Curray et al. (1982), of Eocene age. However, foraminifer biostratigraphy suggests that nondeposition is a viable alternative to erosion of the Eocene sediments (see "Biostratigraphy" section, "Site 758" chapter). Below the unconformity, we drilled about 40 m of Paleocene and almost 200 m of Upper Cretaceous section (see "Lithostratigraphy and Sedimentology" and "Seismic Stratigraphy" sections, "Site 758" chapter).

TRANSIT FROM SITE 758 TO SUMATRA

JOIDES Resolution left Site 758 at 1900 hr on 24 June (JD 176) for the final destination of Leg 121—Singapore. Magnetic and bathymetric data were collected until the ship reached the Straits of Malacca.

REFERENCES

Curray, J. R., Emmel, F. J., Moore, D. G., and Raitt, R. W., 1982. Structure, tectonics and geological history of the northeastern Indian Ocean. *In* Nairn, A.E.M., and Stehli, F. G. (Eds.), *The Indian Ocean*: New York (Plenum), 399–450.

Newman, J. S., and Sclater, J. G., 1988. Site surveys of the central and southern Ninetyeast Ridge for the Ocean Drilling Program, Leg 121. *Tech. Rep. Univ. Tex. Austin Inst. Geophys.*, 74.

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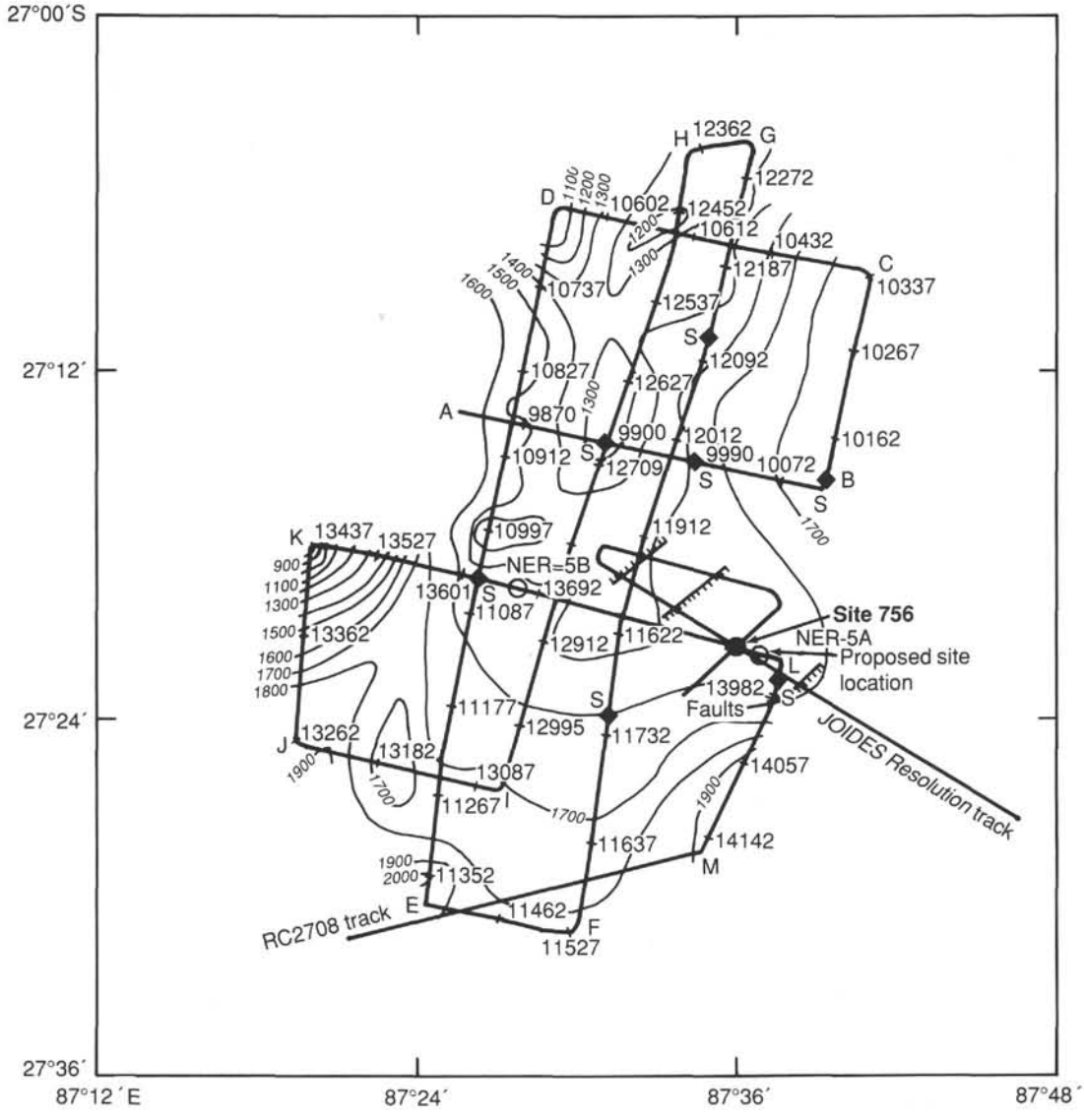

Figure 3. Bathymetric chart of the Site 756 operations area. Diamonds labeled *S* show RC2708 sonobuoy refraction survey locations. Bathymetric contour interval = 100 m.

Table 1. Summary of smoothed navigational data at Leg 121 Sites 756, 757, and 758.

Site	Type[a]	Julian day (1988)	Time (UTC)	Latitude	Longitude
756	GF	146	1035	27°29.026′S	87°48.967′E
	GF	146	1040	27°28.364′S	87°48.164′E
	GF	146	1045	27°27.686′S	87°47.362′E
	GF	146	1050	27°27.110′S	87°46.695′E
	GF	146	1055	27°26.743′S	87°46.229′E
	GF	146	1100	27°26.477′S	87°45.748′E
	GF	146	1105	27°26.182′S	87°45.216′E
	GF	146	1110	27°25.894′S	87°44.618′E
	GF	146	1115	27°25.594′S	87°44.007′E
	GF	146	1120	27°25.311′S	87°43.423′E
	GF	146	1125	27°25.038′S	87°42.843′E
	GF	146	1130	27°24.752′S	87°42.271′E
	GF	146	1135	27°24.460′S	87°41.698′E
	GF	146	1140	27°24.149′S	87°41.128′E
	GF	146	1145	27°23.830′S	87°40.559′E
	GF	146	1150	27°23.509′S	87°40.025′E
	GF	146	1155	27°23.205′S	87°39.497′E
	GF	146	1200	27°22.914′S	87°38.959′E
	GF	146	1205	27°22.627′S	87°38.410′E
	GF	146	1215	27°22.058′S	87°37.329′E
	GF	146	1220	27°21.772′S	87°36.787′E
	GF	146	1225	27°21.495′S	87°36.238′E
	GF	146	1230	27°21.204′S	87°35.689′E
	GF	146	1235	27°20.913′S	87°35.129′E
	GF	146	1240	27°20.630′S	87°34.565′E
	GF	146	1245	27°20.323′S	87°34.004′E
	GF	146	1250	27°20.012′S	87°33.439′E
	GF	146	1255	27°19.706′S	87°32.857′E
	GF	146	1300	27°19.403′S	87°32.269′E
	GF	146	1305	27°19.100′S	87°31.674′E
	GF	146	1310	27°18.803′S	87°31.094′E
	GF	146	1315	27°18.498′S	87°30.512′E
	GF	146	1320	27°18.052′S	87°30.366′E
	GF	146	1325	27°17.968′S	87°30.867′E
	GF	146	1330	27°18.037′S	87°31.450′E
	GF	146	1335	27°18.149′S	87°32.098′E
	GF	146	1340	27°18.295′S	87°32.756′E
	GF	146	1345	27°18.452′S	87°33.406′E
	GF	146	1350	27°18.615′S	87°34.037′E
	GF	146	1355	27°18.814′S	87°34.658′E
	GF	146	1400	27°19.043′S	87°35.275′E
	GF	146	1405	27°19.196′S	87°35.992′E
	GF	146	1410	27°19.331′S	87°36.711′E
	GF	146	1415	27°19.457′S	87°37.520′E
	GF	146	1420	27°19.889′S	87°37.584′E
	GF	146	1425	27°20.363′S	87°36.975′E
	GF	146	1430	27°20.717′S	87°36.600′E
	GF	146	1435	27°21.089′S	87°36.156′E
	GF	146	1440	27°21.436′S	87°35.735′E
	GF	146	1445	27°21.764′S	87°35.279′E
	GF	146	1450	27°22.042′S	87°34.866′E
	GF	146	1455	27°22.356′S	87°34.419′E
	GF	146	1500	27°22.748′S	87°34.094′E
	GF	146	1505	27°23.200′S	87°33.644′E
	GF	146	1510	27°23.764′S	87°32.995′E
	GF	146	1515	27°24.034′S	87°32.740′E
	GF	146	1520	27°24.195′S	87°32.657′E
	GF	146	1525	27°24.183′S	87°32.482′E
	GF	146	1530	27°23.528′S	87°33.106′E
	GF	146	1535	27°22.717′S	87°33.922′E
	GF	146	1540	27°22.135′S	87°34.812′E
	GF	146	1545	27°21.680′S	87°35.440′E
	GF	146	1550	27°21.311′S	87°35.827′E
	GF	146	1555	27°21.131′S	87°36.003′E
	GF	146	1600	27°21.092′S	87°35.948′E
	GF	146	1605	27°21.107′S	87°35.867′E
	GF	146	1615	27°20.870′S	87°35.803′E
	GF	146	1620	27°20.821′S	87°35.756′E
	GF	146	1630	27°20.860′S	87°35.750′E
	GF	146	1635	27°20.950′S	87°35.770′E
	GF	146	1645	27°21.118′S	87°35.812′E
	GF	146	1650	27°21.254′S	87°35.824′E
	GF	146	1700	27°21.215′S	87°35.825′E
	GF	146	1705	27°21.223′S	87°35.807′E
	GF	146	1715	27°21.358′S	87°35.647′E
	GF	146	1720	27°21.366′S	87°35.628′E
	GF	146	1725	27°21.310′S	87°35.660′E

Table 1 (continued).

Site	Type[a]	Julian day (1988)	Time (UTC)	Latitude	Longitude
757	GF	152	1205	17°10.246′S	88°23.219′E
	GF	152	1210	17°9.947′S	88°22.981′E
	GF	152	1211	17°9.886′S	88°22.946′E
	GF	152	1215	17°9.548′S	88°22.762′E
	GF	152	1220	17°9.135′S	88°22.297′E
	GF	152	1225	17°8.745′S	88°21.786′E
	GF	152	1226	17°8.668′S	88°21.677′E
	GF	152	1229	17°8.441′S	88°21.385′E
	GF	152	1230	17°8.375′S	88°21.298′E
	GF	152	1235	17°8.008′S	88°20.841′E
	GF	152	1240	17°7.633′S	88°20.408′E
	GF	152	1241	17°7.544′S	88°20.320′E
	GF	152	1245	17°7.241′S	88°19.990′E
	GF	152	1250	17°6.837′S	88°19.564′E
	GF	152	1255	17°6.434′S	88°19.127′E
	GF	152	1256	17°6.341′S	88°19.023′E
	GF	152	1300	17°6.035′S	88°18.681′E
	GF	152	1305	17°5.627′S	88°18.235′E
	GF	152	1308	17°5.373′S	88°17.945′E
	GF	152	1310	17°5.228′S	88°17.780′E
	GF	152	1311	17°5.136′S	88°17.669′E
	GF	152	1315	17°4.850′S	88°17.312′E
	GF	152	1320	17°4.477′S	88°16.842′E
	GF	152	1335	17°3.365′S	88°15.417′E
	GF	152	1340	17°2.991′S	88°14.933′E
	GF	152	1356	17°1.742′S	88°13.352′E
	GF	152	1400	17°1.471′S	88°12.980′E
	GF	152	1405	17°1.050′S	88°12.464′E
	GF	152	1410	17°0.679′S	88°12.017′E
	GF	152	1415	17°0.296′S	88°11.530′E
	GF	152	1420	16°59.875′S	88°11.026′E
	GF	152	1425	16°59.524′S	88°10.592′E
	GF	152	1430	16°59.137′S	88°10.129′E
	GF	152	1435	16°58.750′S	88°9.658′E
	GF	152	1440	16°58.339′S	88°9.218′E
	GF	152	1445	16°57.934′S	88°8.783′E
	GF	152	1450	16°57.524′S	88°8.366′E
	GF	152	1455	16°57.127′S	88°7.923′E
	GF	152	1500	16°56.791′S	88°7.454′E
	GF	152	1505	16°56.979′S	88°7.082′E
	GF	152	1510	16°57.238′S	88°6.868′E
	GF	152	1515	16°57.592′S	88°6.549′E
	GF	152	1520	16°58.000′S	88°6.605′E
	GF	152	1525	16°58.235′S	88°6.894′E
	GF	152	1530	16°58.508′S	88°7.277′E
	GF	152	1535	16°58.861′S	88°7.695′E
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	GF	152	1545	16°59.620′S	88°8.548′E
	GF	152	1550	17°0.041′S	88°9.019′E
	GF	152	1555	17°0.374′S	88°9.379′E
	GF	152	1600	17°0.738′S	88°9.831′E
	GF	152	1605	17°1.139′S	88°10.354′E
	GF	152	1610	17°1.435′S	88°10.756′E
	GF	152	1615	17°1.789′S	88°11.225′E
	GF	152	1620	17°2.149′S	88°11.682′E
	GF	152	1625	17°2.519′S	88°12.113′E
	GF	152	1630	17°2.893′S	88°12.556′E
	GF	152	1635	17°3.268′S	88°12.988′E
	GF	152	1640	17°3.643′S	88°13.406′E
	GF	152	1645	17°4.004′S	88°13.847′E
	GF	152	1650	17°4.419′S	88°14.351′E
	GF	152	1655	17°4.711′S	88°14.734′E
	GF	152	1700	17°5.057′S	88°15.190′E
	GF	152	1705	17°5.402′S	88°15.647′E
	GF	152	1711	17°5.884′S	88°16.258′E
	GF	152	1715	17°6.152′S	88°16.484′E
	GF	152	1720	17°6.774′S	88°16.162′E
	GF	152	1725	17°7.092′S	88°15.761′E
	GF	152	1730	17°6.641′S	88°15.205′E
	GF	152	1735	17°6.157′S	88°14.592′E
	GF	152	1740	17°5.897′S	88°14.221′E
	GF	152	1745	17°5.512′S	88°13.756′E
	GF	152	1750	17°5.075′S	88°13.201′E
	GF	152	1755	17°4.771′S	88°12.827′E
	GF	152	1800	17°4.410′S	88°12.352′E
	GF	152	1805	17°4.055′S	88°11.867′E
	GF	152	1810	17°3.686′S	88°11.387′E

Table 1 (continued).

Site	Type[a]	Julian day (1988)	Time (UTC)	Latitude	Longitude
	GF	152	1815	17°3.303′S	88°10.927′E
	GF	152	1820	17°2.920′S	88°10.460′E
	GF	152	1825	17°2.525′S	88°9.998′E
	GF	152	1830	17°2.135′S	88°9.541′E
	GF	152	1835	17°1.748′S	88°9.071′E
	GF	152	1840	17°1.354′S	88°8.615′E
	GF	152	1845	17°0.982′S	88°8.130′E
	GF	152	1850	17°0.594′S	88°7.677′E
	GF	152	1855	17°0.199′S	88°7.205′E
	GF	152	1900	16°59.784′S	88°6.729′E
	GF	152	1905	16°59.399′S	88°6.277′E
	GF	152	1910	16°59.014′S	88°5.804′E
	GF	152	1915	16°58.731′S	88°5.332′E
	GF	152	1920	16°59.059′S	88°4.988′E
	GF	152	1925	16°59.510′S	88°4.618′E
	GF	152	1930	17°0.003′S	88°4.238′E
	GF	152	1936	17°0.631′S	88°3.910′E
	GF	152	1940	17°0.856′S	88°4.153′E
	GF	152	1945	17°1.212′S	88°4.586′E
	GF	152	1950	17°1.534′S	88°5.015′E
	GF	152	1955	17°1.886′S	88°5.465′E
	GF	152	2000	17°2.239′S	88°5.905′E
	GF	152	2010	17°2.998′S	88°6.808′E
	GF	152	2015	17°3.400′S	88°7.301′E
	GF	152	2020	17°3.761′S	88°7.745′E
	GF	152	2025	17°4.151′S	88°8.200′E
	GF	152	2030	17°4.576′S	88°8.660′E
	GF	152	2035	17°4.874′S	88°9.097′E
	GF	152	2040	17°4.487′S	88°9.536′E
	GF	152	2045	17°3.975′S	88°9.827′E
	GF	152	2050	17°3.508′S	88°10.030′E
	GF	152	2055	17°2.977′S	88°10.252′E
	GF	152	2100	17°2.452′S	88°10.477′E
	GF	152	2105	17°1.903′S	88°10.683′E
	GF	152	2110	17°1.357′S	88°10.895′E
	GF	152	2115	17°0.772′S	88°11.131′E
	GF	152	2121	17°0.127′S	88°11.386′E
	GF	152	2125	16°59.762′S	88°11.536′E
	GF	152	2130	16°59.174′S	88°11.777′E
	GF	152	2135	16°58.714′S	88°11.974′E
	GF	152	2140	16°58.220′S	88°12.203′E
	GF	152	2145	16°57.722′S	88°12.439′E
	GF	152	2150	16°57.208′S	88°12.659′E
	GF	152	2155	16°56.729′S	88°12.866′E
	GF	152	2200	16°56.401′S	88°13.022′E
	GF	152	2205	16°56.160′S	88°13.109′E
	GF	152	2210	16°55.873′S	88°13.202′E
	GF	152	2220	16°56.716′S	88°12.564′E
	GF	152	2225	16°57.535′S	88°12.184′E
	GF	152	2230	16°58.474′S	88°11.776′E
	GF	152	2235	16°59.193′S	88°11.465′E
	GF	152	2240	17°0.001′S	88°11.121′E
	GF	152	2245	17°0.800′S	88°10.850′E
	GF	152	2251	17°1.262′S	88°10.735′E
	GF	152	2255	17°1.190′S	88°10.700′E
	GF	152	2305	17°1.149′S	88°10.772′E
758	DR	163	2154	5°11.507′N	90°32.427′E
	SF	163	2330	5°19.916′N	90°24.706′E
	DR	163	2337	5°20.503′N	90°24.206′E
	DR	163	2345	5°21.185′N	90°23.621′E
	DR	163	2351	5°21.677′N	90°23.169′E
	DR	164	0	5°22.418′N	90°22.486′E
	DR	164	15	5°23.658′N	90°21.327′E
	DR	164	25	5°24.476′N	90°20.555′E

Table 1 (continued).

Site	Type[a]	Julian day (1988)	Time (UTC)	Latitude	Longitude
	DR	164	29	5°25.027′N	90°19.916′E
	DR	164	35	5°25.515′N	90°19.447′E
	DR	164	47	5°26.518′N	90°18.506′E
	DR	164	55	5°27.221′N	90°17.924′E
	DR	164	100	5°27.666′N	90°18.113′E
	DR	164	115	5°28.320′N	90°19.247′E
	DR	164	120	5°27.970′N	90°19.599′E
	DR	164	127	5°27.427′N	90°20.141′E
	DR	164	135	5°26.833′N	90°20.755′E
	DR	164	145	5°26.094′N	90°21.514′E
	DR	164	150	5°25.749′N	90°21.871′E
	DR	164	205	5°24.611′N	90°23.045′E
	DR	164	210	5°24.267′N	90°23.405′E
	DR	164	225	5°22.891′N	90°25.181′E
	DR	164	231	5°22.397′N	90°25.652′E
	DR	164	240	5°21.586′N	90°25.696′E
	DR	164	247	5°21.001′N	90°25.358′E
	DR	164	255	5°20.434′N	90°24.798′E
	DR	164	305	5°19.763′N	90°24.112′E
	SF	164	404	5°22.772′N	90°18.406′E
	DR	164	421	5°24.146′N	90°17.033′E
	DR	164	430	5°24.409′N	90°16.365′E
	DR	164	435	5°23.985′N	90°16.414′E
	DR	164	441	5°23.491′N	90°16.876′E
	DR	164	450	5°22.831′N	90°17.470′E
	DR	164	455	5°22.435′N	90°17.811′E
	DR	164	501	5°21.888′N	90°18.260′E
	DR	164	510	5°21.367′N	90°18.898′E
	DR	164	515	5°21.541′N	90°19.407′E
	DR	164	521	5°22.063′N	90°19.970′E
	DR	164	530	5°22.675′N	90°20.627′E
	DR	164	535	5°23.045′N	90°21.017′E
	DR	164	555	5°24.524′N	90°22.538′E
	DR	164	601	5°25.040′N	90°23.066′E
	DR	164	610	5°25.640′N	90°23.687′E
	DR	164	615	5°26.006′N	90°24.065′E
	DR	164	621	5°26.523′N	90°24.598′E
	DR	164	630	5°27.115′N	90°25.214′E
	DR	164	635	5°27.477′N	90°25.589′E
	DR	164	642	5°27.655′N	90°26.393′E
	DR	164	648	5°28.059′N	90°26.813′E
	DR	164	656	5°28.383′N	90°27.160′E
	DR	164	705	5°28.785′N	90°27.553′E
	DR	164	712	5°29.210′N	90°27.781′E
	DR	164	720	5°29.015′N	90°27.187′E
	DR	164	725	5°28.651′N	90°26.813′E
	DR	164	732	5°28.141′N	90°26.279′E
	DR	164	740	5°27.539′N	90°25.669′E
	DR	164	745	5°27.172′N	90°25.285′E
	DR	164	752	5°26.663′N	90°24.763′E
	SF	164	746	5°26.608′N	90°24.671′E
	DR	164	756	5°25.928′N	90°23.968′E
	DR	164	802	5°25.503′N	90°23.527′E
	DR	164	806	5°25.226′N	90°23.237′E
	DR	164	814	5°24.679′N	90°22.657′E
	DR	164	822	5°24.128′N	90°22.072′E
	DR	164	826	5°23.848′N	90°21.785′E
	DR	164	830	5°23.741′N	90°21.665′E
	DR	164	836	5°23.031′N	90°21.197′E
	DR	164	840	5°23.031′N	90°21.197′E

[a] DR = dead reckoning; GF = GPS fix; SF = (transit) satellite fix.

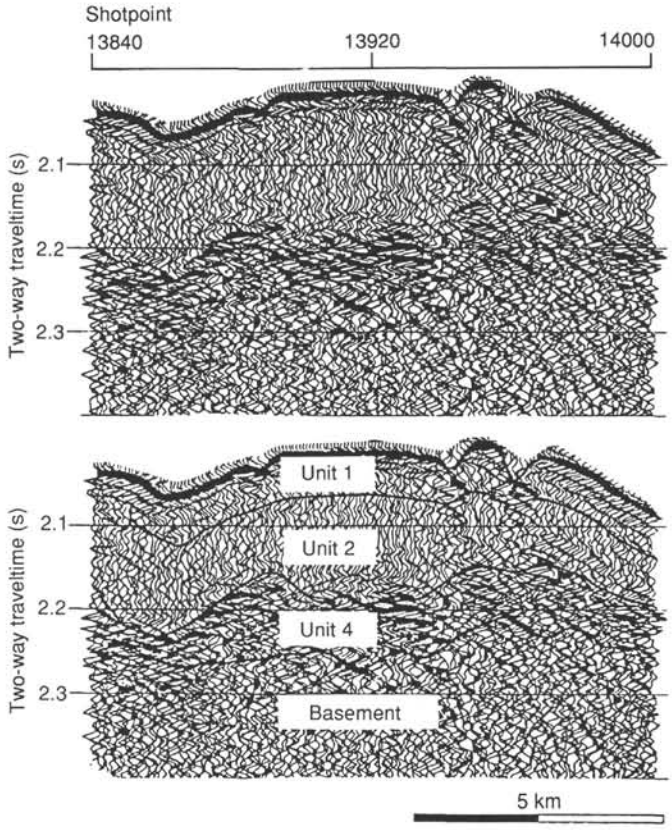

Figure 4. Seismic profile of a proposed location for Site 756 (Newman and Sclater, 1988). The seismic units are discussed in the "Seismic Stratigraphy" section of the "Site 756" chapter.

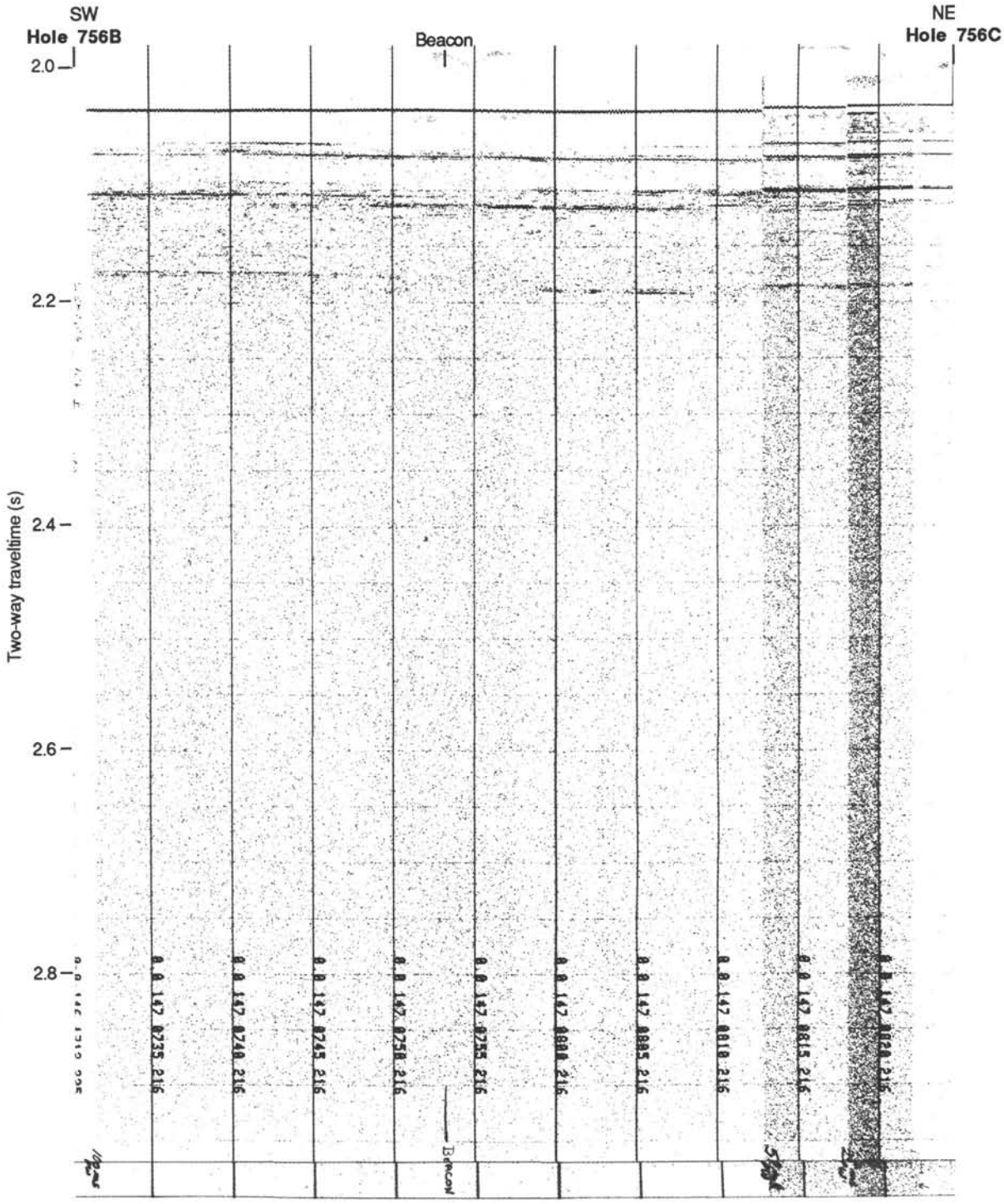

Figure 6. The 3.5-kHz record between Holes 756B and 756C. The beacon is also the location of Hole 756D. The length of the record is about 200 m, and the horizontal scale is not consistent across the record because the ship was moving in dynamic positioning mode.

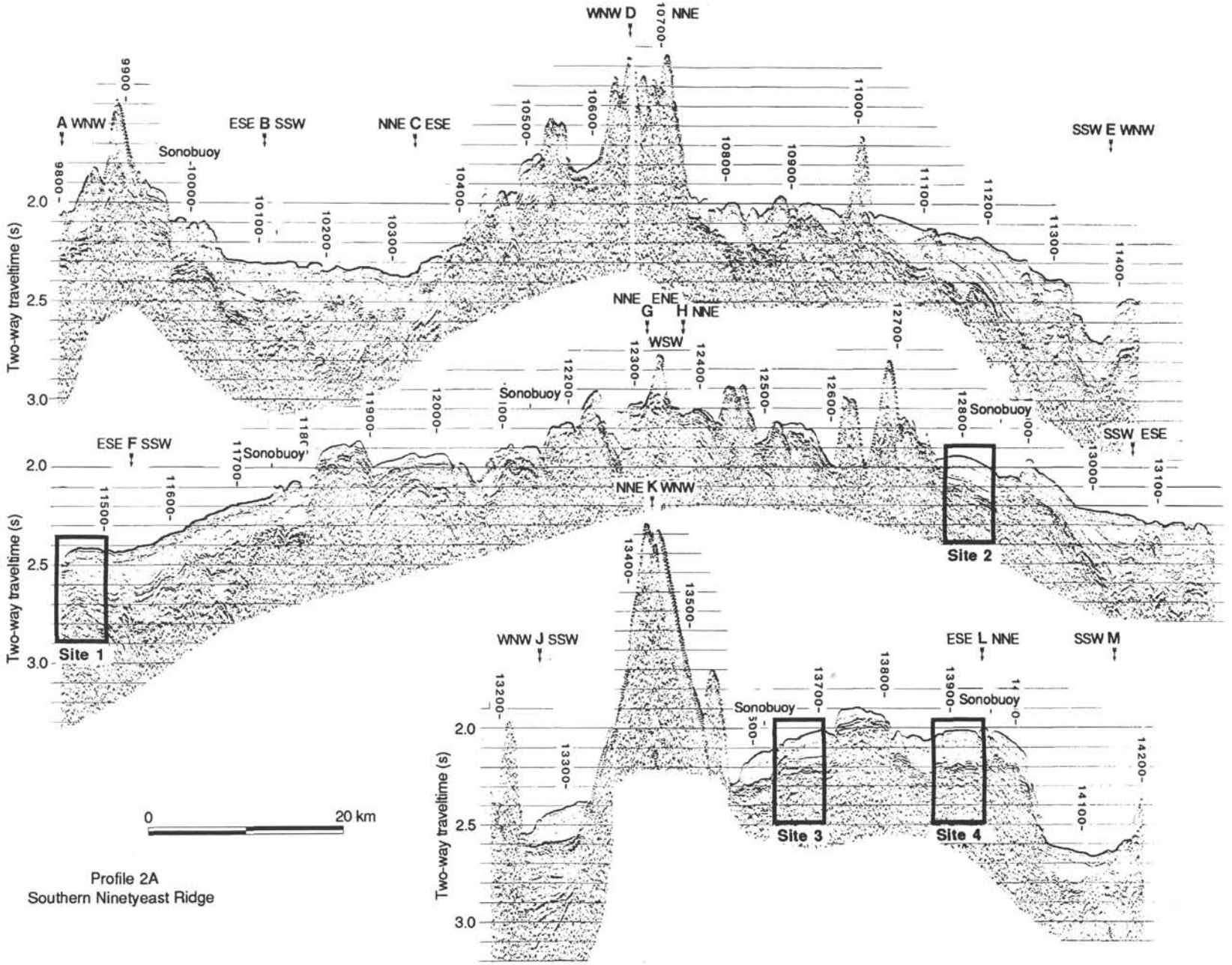

Figure 7. Composite profile of RC2708 seismic survey with shot numbers. Letters mark track turns. Suggested drilling sites are shown in boxes. Site 756 was drilled approximately 800 m from the Site 4 location proposed by Newman and Sclater (1988).

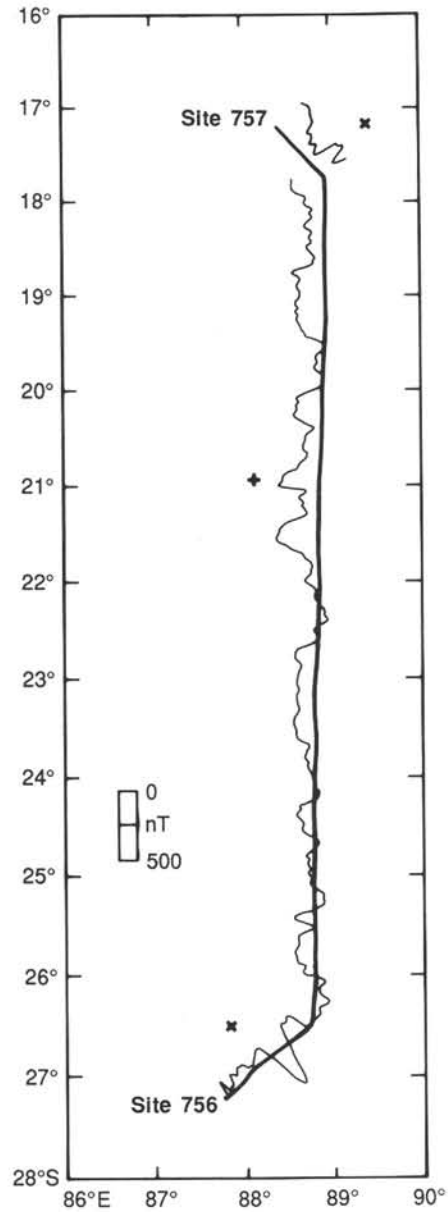

Figure 8. Magnetic record of the transit between Sites 756 and 757 plotted perpendicular to the track.

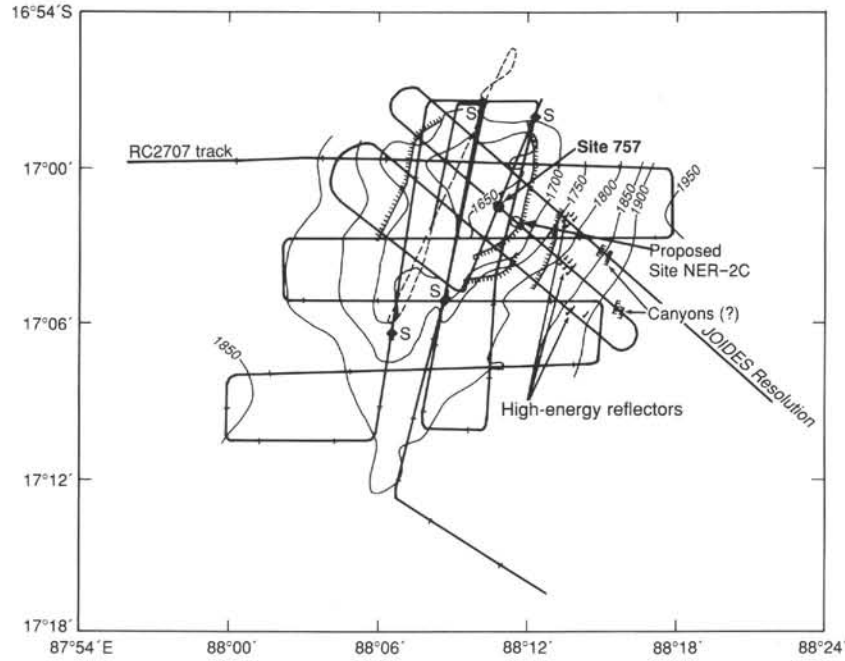

Figure 9. Bathymetric chart of the Site 757 operations area. Diamonds labeled *S* show RC2707 sonobuoy refraction survey locations. The proposed drilling location (at the crossing of RC2707 lines at shotpoints 2660 and 4720) shown is our best estimate of its true position, considering the navigational uncertainties discussed in the text. The RC2707 track lines are shown in their original position, but the bathymetric contours are drawn in consideration of the navigational uncertainties. Bathymetric contour interval = 50 m.

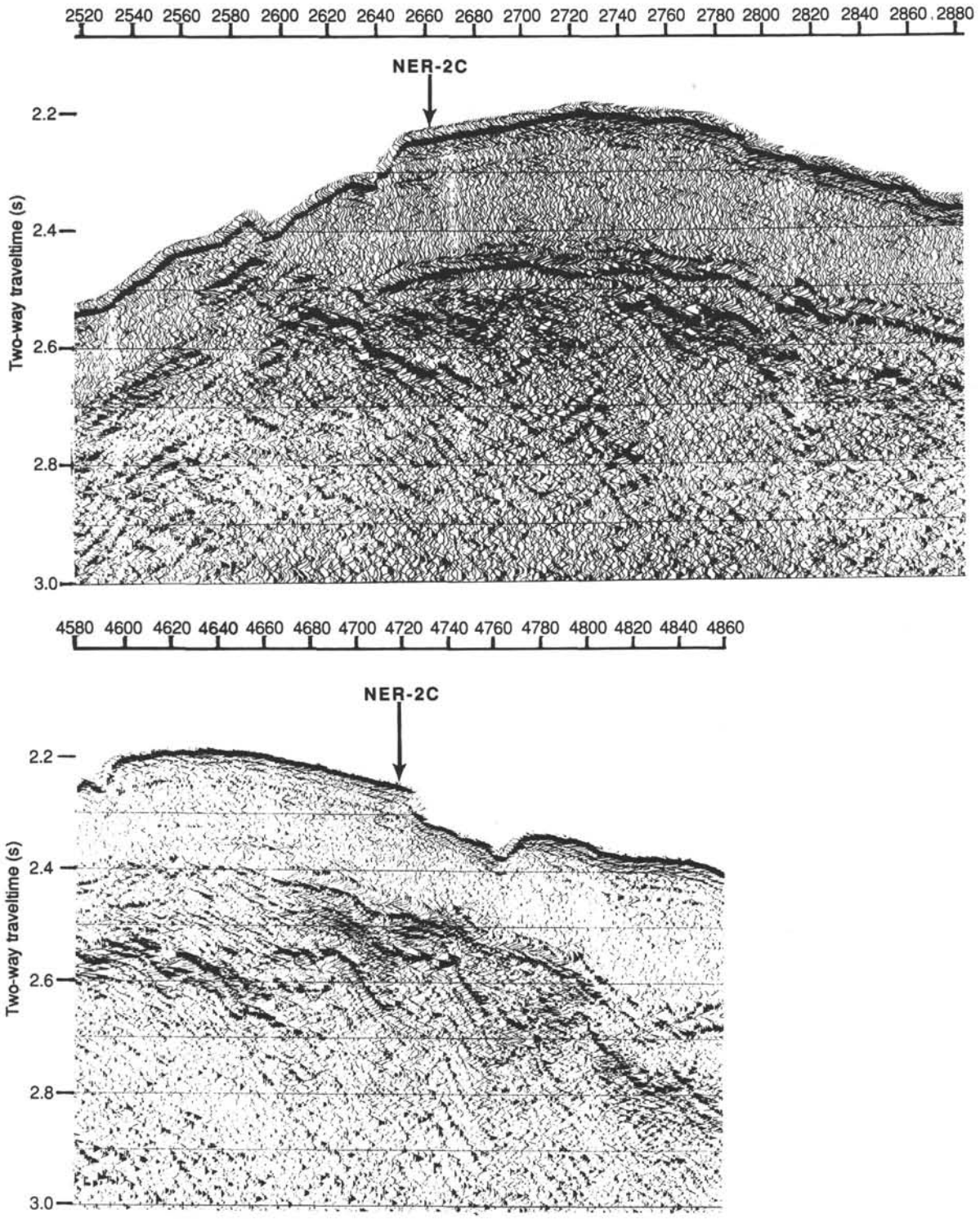

Figure 10. RC2707 seismic profiles across proposed Site NER-2C. Lines cross at shotpoints 2660 and 4720.

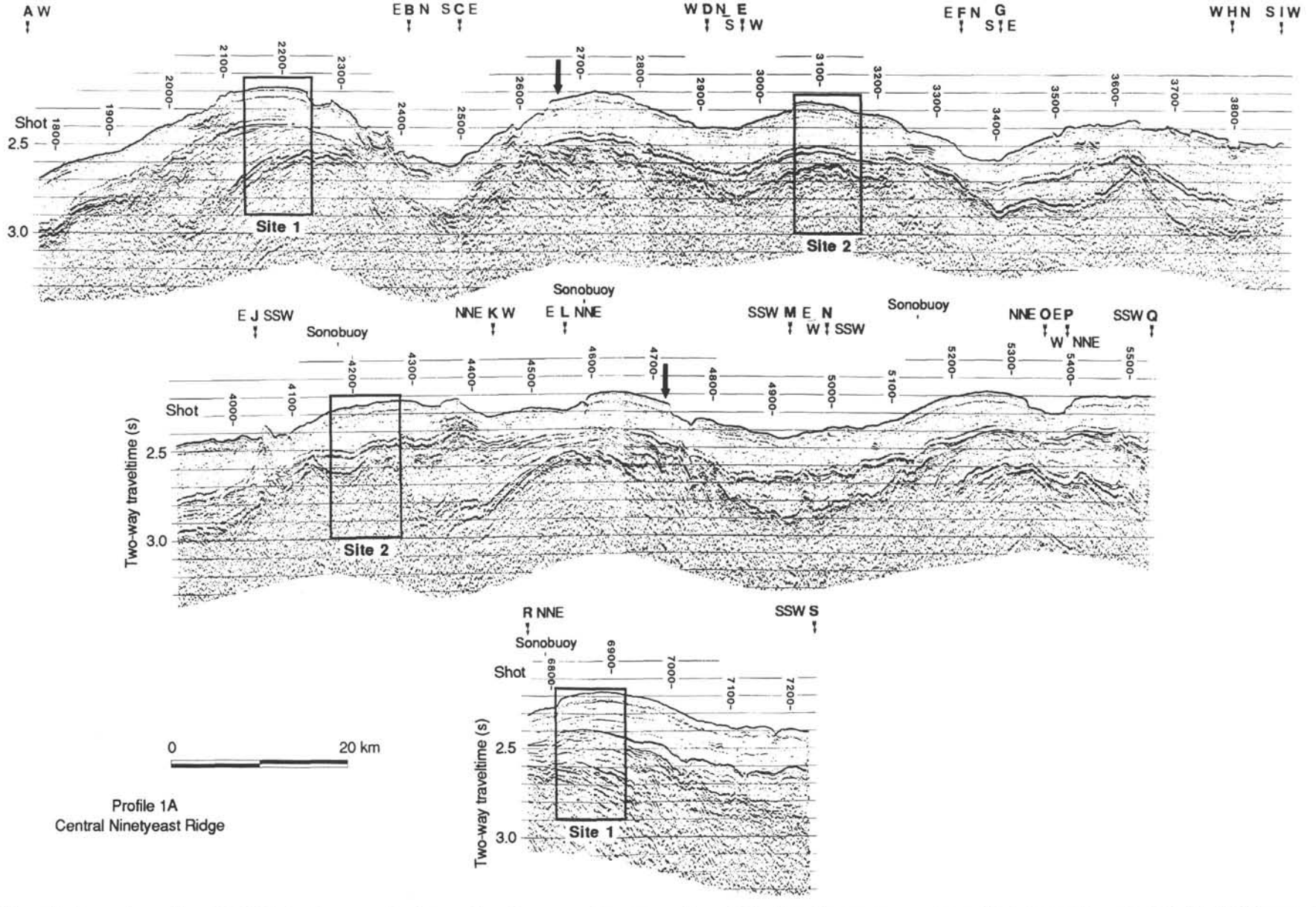

Figure 11. Composite profile of RC2707 seismic survey with shot numbers. Letters mark track turns. Suggested drilling sites are shown in boxes. The location of proposed Site NER-2C is marked with an arrow. Site 757 was drilled approximately 1500 m northwest of the proposed location. After Newman and Sclater (1988).

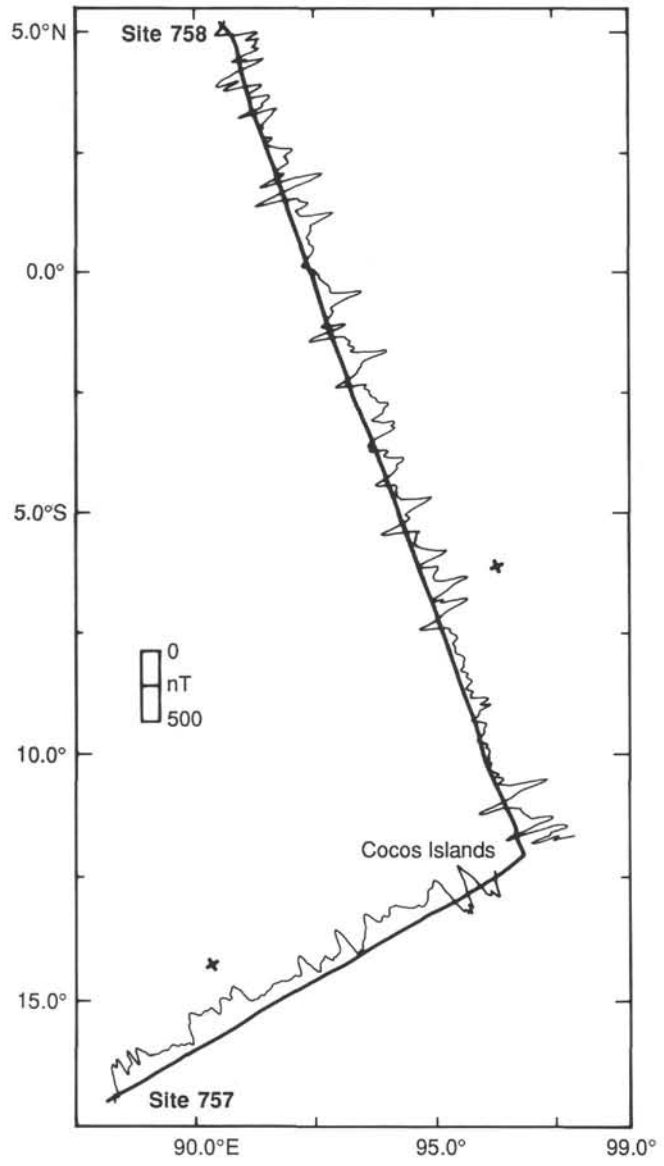

Figure 13. Magnetic record of the transit via Cocos Islands between Sites 757 and 758 plotted perpendicular to the track. Positive values are north of the track line.

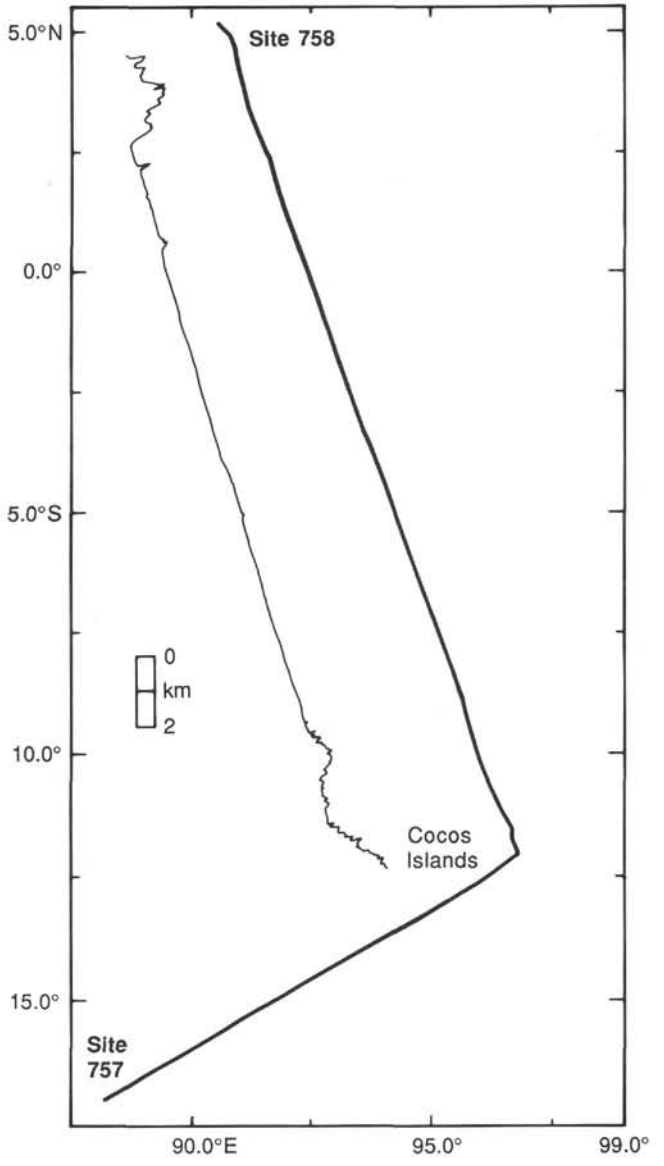

Figure 14. Bathymetric record of the transit via Cocos Islands between Sites 756 and 757 (3.5-kHz echo-sounding record). Depths are plotted perpendicular to and south of the track line.

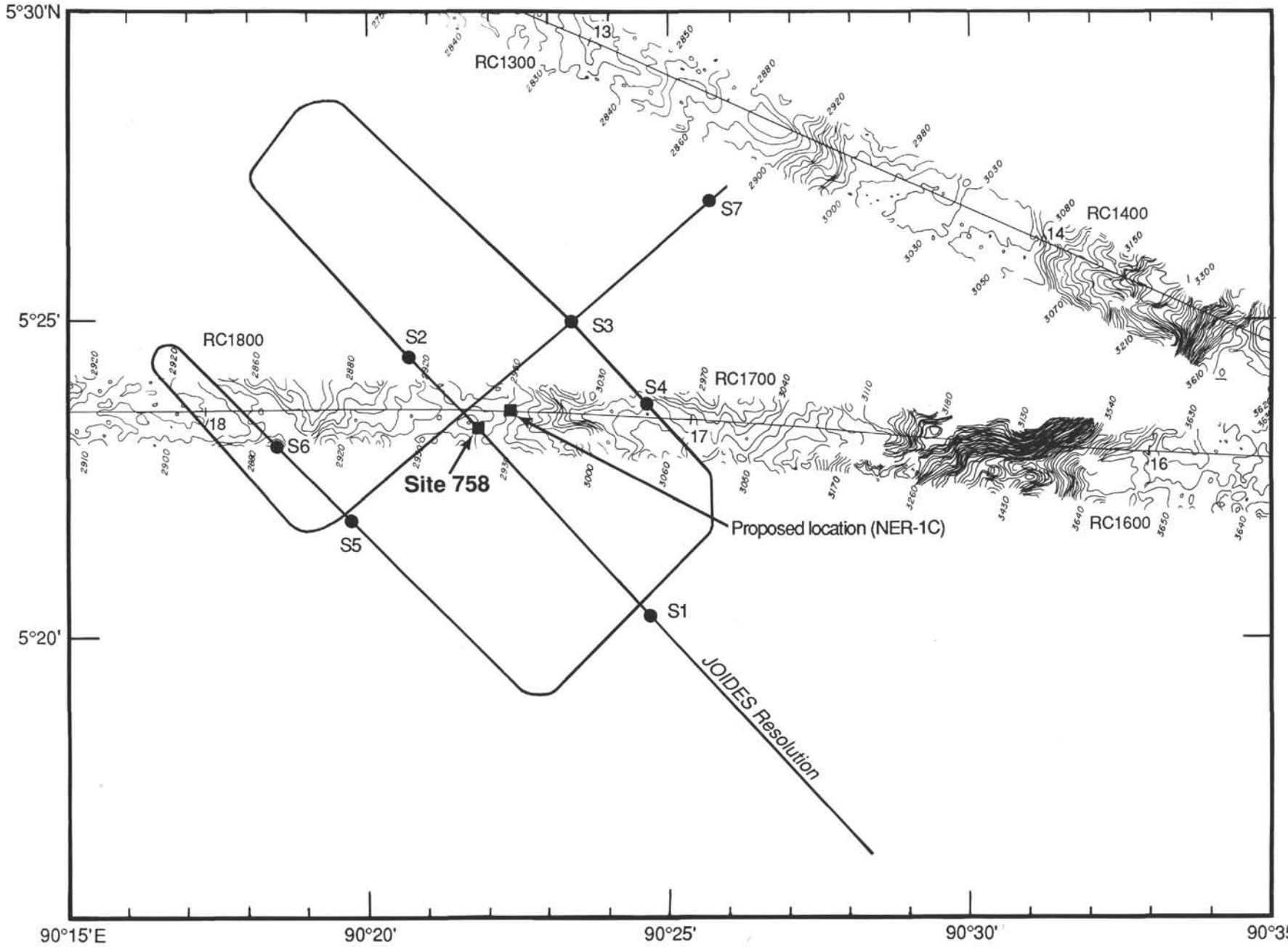

Figure 15. Tracks of the RC2705 survey and the *JOIDES Resolution* predrilling survey in the Site 758 area. Sea Beam bathymetry is shown along the RC2705 tracks. Transit satellite fixes are indicated by solid circles.

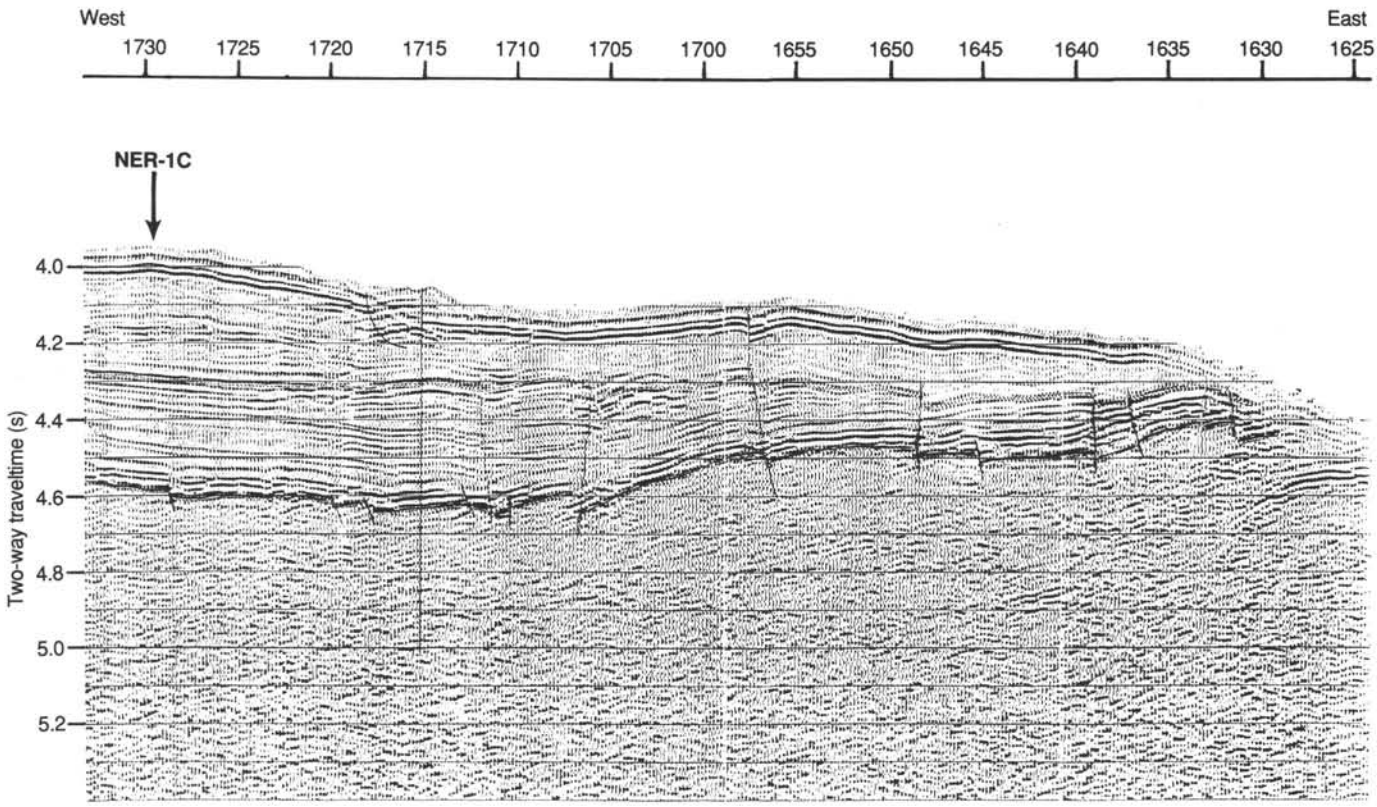

Figure 16. RC2705 seismic profile of a proposed location (Site NER-1C) for Site 758.