Wilson, D.S., Teagle, D.A.H., Acton, G.D., et al. 2003
Proceedings of the Ocean Drilling Program, Initial Reports Volume 206

4. Data Report: Site Survey Results from Cruise EW9903[1]

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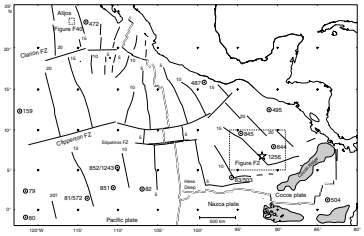
INTRODUCTION

Cruise EW9903 of the *Maurice Ewing* sailed from Panama to San Diego in March and April 1999, with goals of determining the structure of oceanic crust formed at superfast spreading rates and conducting site survey work in support of Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES) proposal 522. Three survey grids were collected in the Guatemala Basin at sites formed at spreading rates >200 mm/yr (Wilson, 1996), and one grid was collected in the Alijos Rocks area west of Baja California (Figs. F1, F2). This report presents basic data bathymetry, magnetics, and gravity data for all of the grids and migrated multichannel seismic reflection (MCS) sections for the Guatemala Basin sites. Seismic refraction results will be reported separately (Harding et al., unpubl. data).

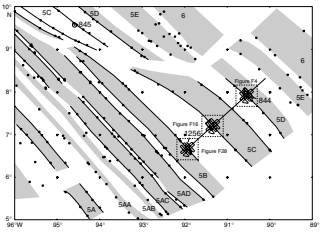
METHODS

For bathymetry, magnetics, and gravity data, processing was limited to routine shipboard reduction and editing. Track spacing for all MCS grids is 5 km. MCS acquisition used a 10-air gun, 49.4-L array shooting at 37.5-m spacing to a 480-channel, 6-km streamer. MCS processing includes filtering to pass 5–40 Hz, stacking to 80-fold at 6.25-m midpoint spacing, time migration using a finite-difference algorithm with a velocity model based on refraction results, and time-dependent gain to correct for geometric spreading and attenuation. For further details, refer to Hallenborg et al. (in press).

F1. Eastern Pacific location map, p. 7.



F2. Magnetic anomaly isochrons and MCS track map for grids 1–3, p. 8.



[1]Wilson, D.S., Hallenborg, E., Harding, A.J., and Kent, G.M., 2003. Data report: Site survey results from cruise EW9903. *In* Wilson, D.S., Teagle, D.A.H., Acton, G.D., et al. (Eds.), *Proc. ODP, Init. Repts.,* 206, 1–49 [CD-ROM]. Available from: Ocean Drilling Program, Texas A&M University, College Station TX 77845-9547, USA.

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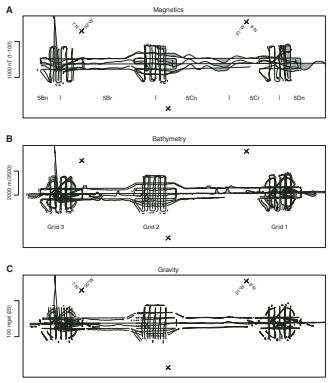
RESULTS

For the Guatemala Basin grids, an overview of the underway geophysics is presented in Figure F3. For grid 1 (data bank site GUATB-01), which includes Ocean Drilling Program (ODP) Site 844, Figures F4, F5, F6, and F7 show survey data in map view and Figures F8, F9, F10, F11, F12, F13, F14, and F15 show seismic sections. For grid 2 (data bank site GUATB-02), Figures F16, F17, F18, and F19 show survey data in map view and Figures F20, F21, F22, F23, F24, F25, F26, and F27 show seismic sections. For grid 3 (data bank site GUATB-03), which includes Site 1256, Figures F28, F29, F30, and F31 show survey data in map view and Figures F32, F33, F34, F35, F36, F37, F38, and F39 show seismic sections. For grid 4 (data bank site ALIJOS-01), Figures F40, F41, F42, and F43 show survey data in map view.

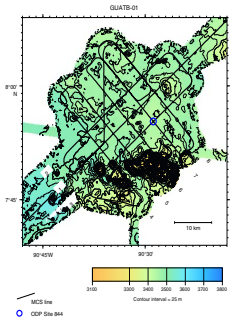
ACKNOWLEDGMENTS

This research used samples and data provided by the Ocean Drilling Program (ODP). The ODP is sponsored by the U.S. National Science Foundation (NSF) and participating countries under management of Joint Oceanographic Institutions (JOI), Inc. Funding for this research was provided by U.S. NSF under grants OCE 98-11948, OCE 98-12612, and OCE 01-37184.

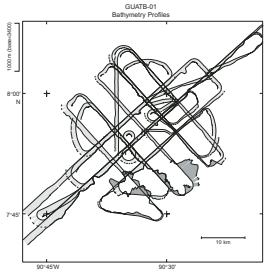
F3. Underway geophysics plotted perpendicular to track line, p. 9.



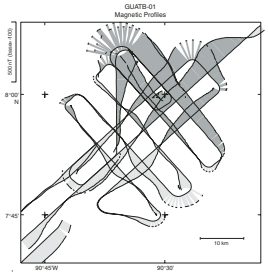
F4. Grid 1 contour and MCS track map, p. 10.



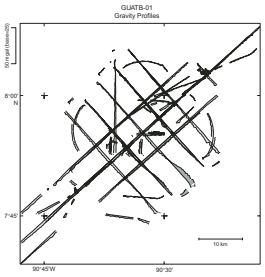
F5. Bathymetry profile map for grid 1, p. 11.



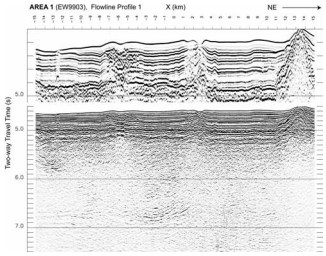
F6. Magnetic profile map for grid 1, p. 12.



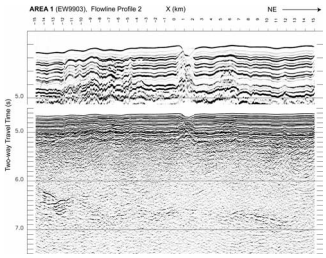
F7. Gravity profile map for grid 1, p. 13.



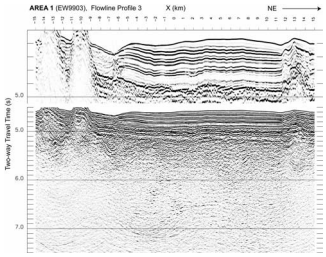
F8. Migrated MCS section for line 1, grid 1, p. 14.



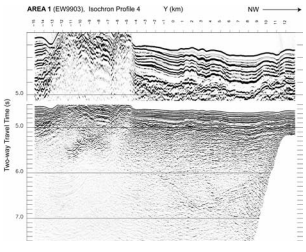
F9. Migrated MCS section for line 2, grid 1, p. 15.



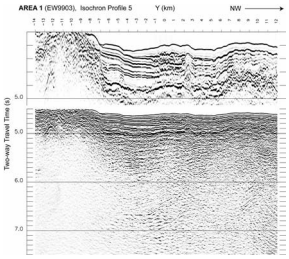
F10. Migrated MCS section for line 3, grid 1, p. 16.



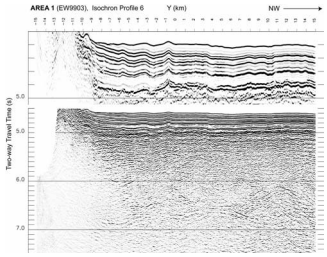
F11. Migrated MCS section for line 4, grid 1, p. 17.



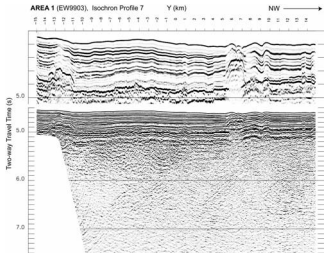
F12. Migrated MCS section for line 5, grid 1, p. 18.



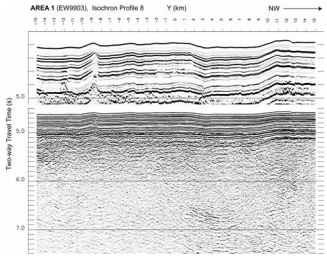
F13. Migrated MCS section for line 6, grid 1, p. 19.



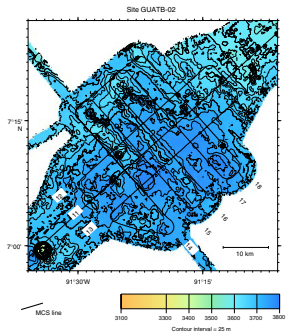
F14. Migrated MCS section for line 7, grid 1, p. 20.



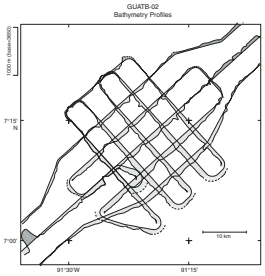
F15. Migrated MCS section for line 8, grid 1, p. 21.



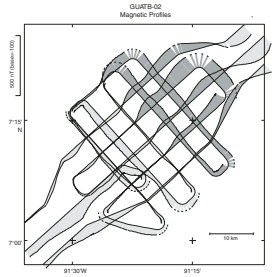
F16. Grid 2 contour MCS track map, p. 22.



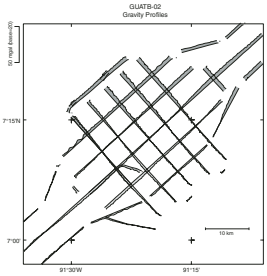
F17. Bathymetry profile map for grid 2, p. 23.

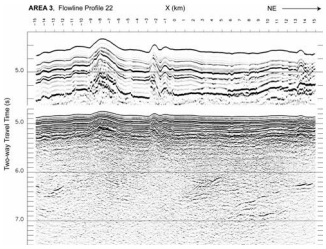


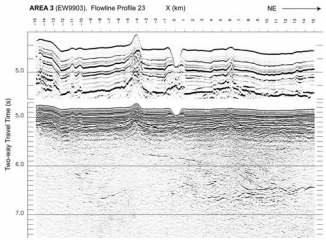
F18. Magnetic profile map for grid 2, p. 24.

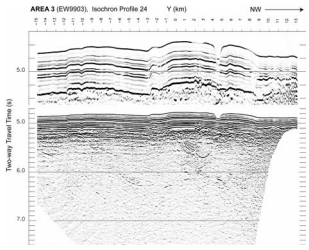


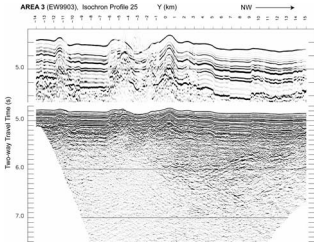
F19. Gravity profile map for grid 2, p. 25.

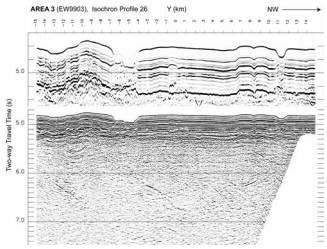


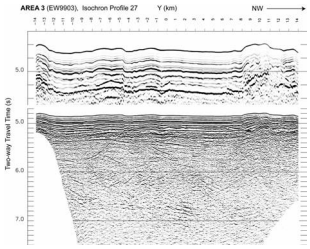


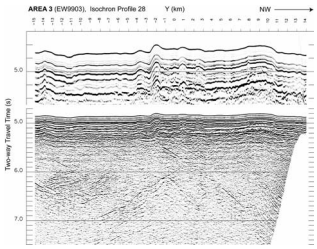


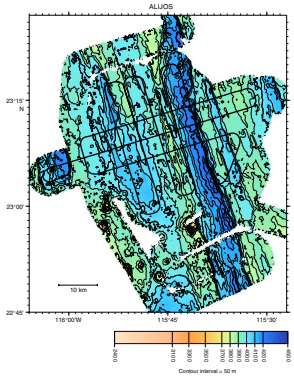


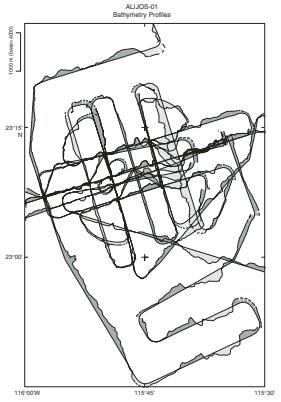


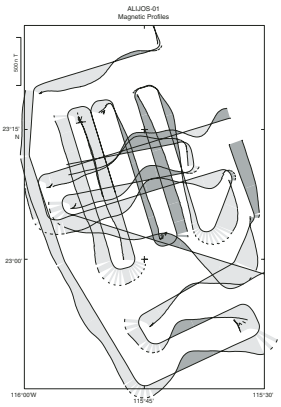


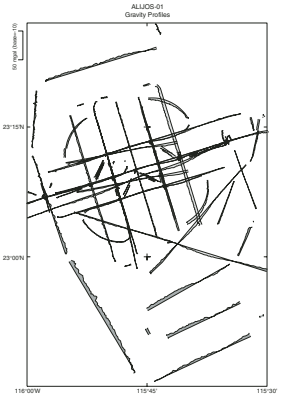












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Wilson, D.S., 1996. Fastest known spreading on the Miocene Cocos-Pacific plate boundary. *Geophys. Res. Lett.*, 23:3003–3006.

Figure F1. Eastern Pacific location map showing seafloor age (in Ma), selected DSDP and ODP sites, and positions of Figures F2, p. 8, and F40, p. 46. FZ = fracture zone.

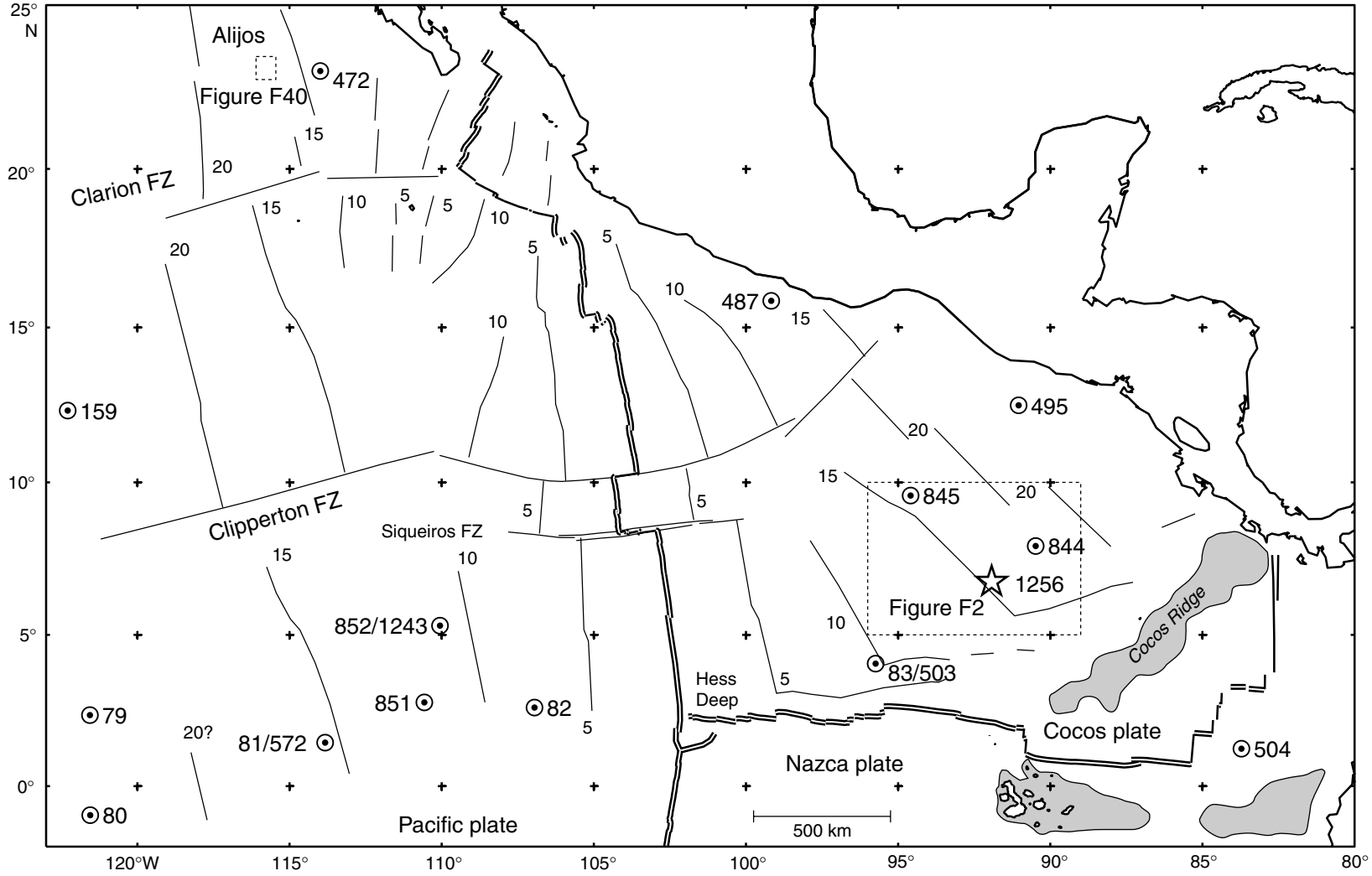


Figure F2. Magnetic anomaly isochrons and multichannel seismic (MCS) track map for Guatemala Basin grids 1–3 (data bank Sites GUATB-01 to GUATB-03). Anomaly ages: 5A = ~12 Ma, 5B = ~15 Ma, 5D = ~17 Ma. (See Figs. **F4,** p. 10, **F5,** p. 11, **F6,** p. 12, **F7,** p. 13, **F16,** p. 22, **F17,** p. 23, **F18,** p. 24, **F19,** p. 25, **F28,** p. 34, **F29,** p. 35, **F30,** p. 36, and **F31,** p. 37.)

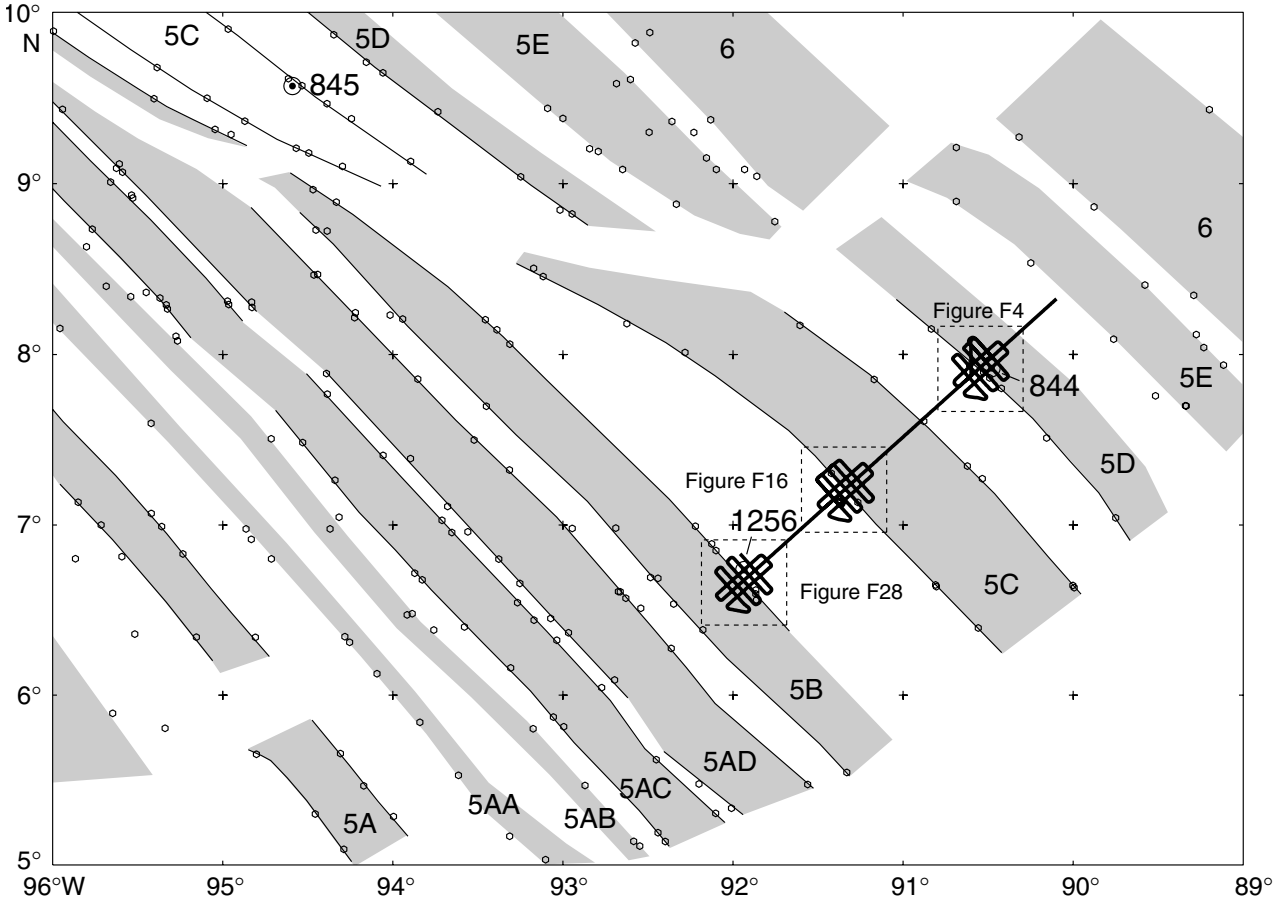


Figure F3. Underway geophysics plotted perpendicular to track line for the Guatemala Basin sites. **A.** Magnetic anomaly, with negative anomaly (normal polarity) shaded and identifications labeled. **B.** Center-beam bathymetry. **C.** Free-air gravity anomaly.

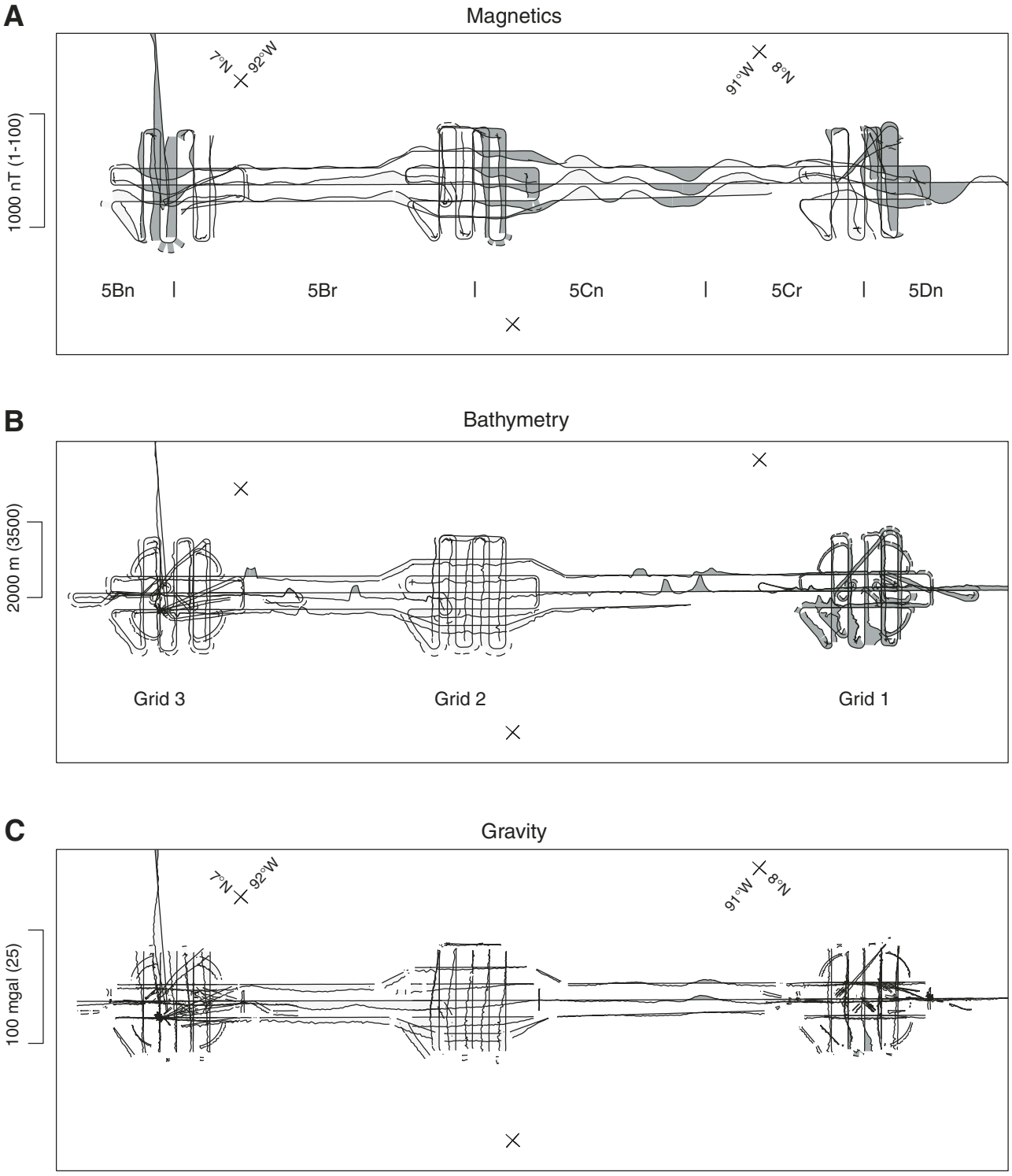


Figure F4. Multibeam bathymetry contour map and multichannel seismic (MCS) track map for grid 1 (data bank Site GUATB-01). Seismic lines 1–8 are numbered to locate Figures **F8,** p. 14, **F9,** p. 15, **F10,** p. 16, **F11,** p. 17, **F12,** p. 18, **F13,** p. 19, **F14,** p. 20, and **F15,** p. 21.

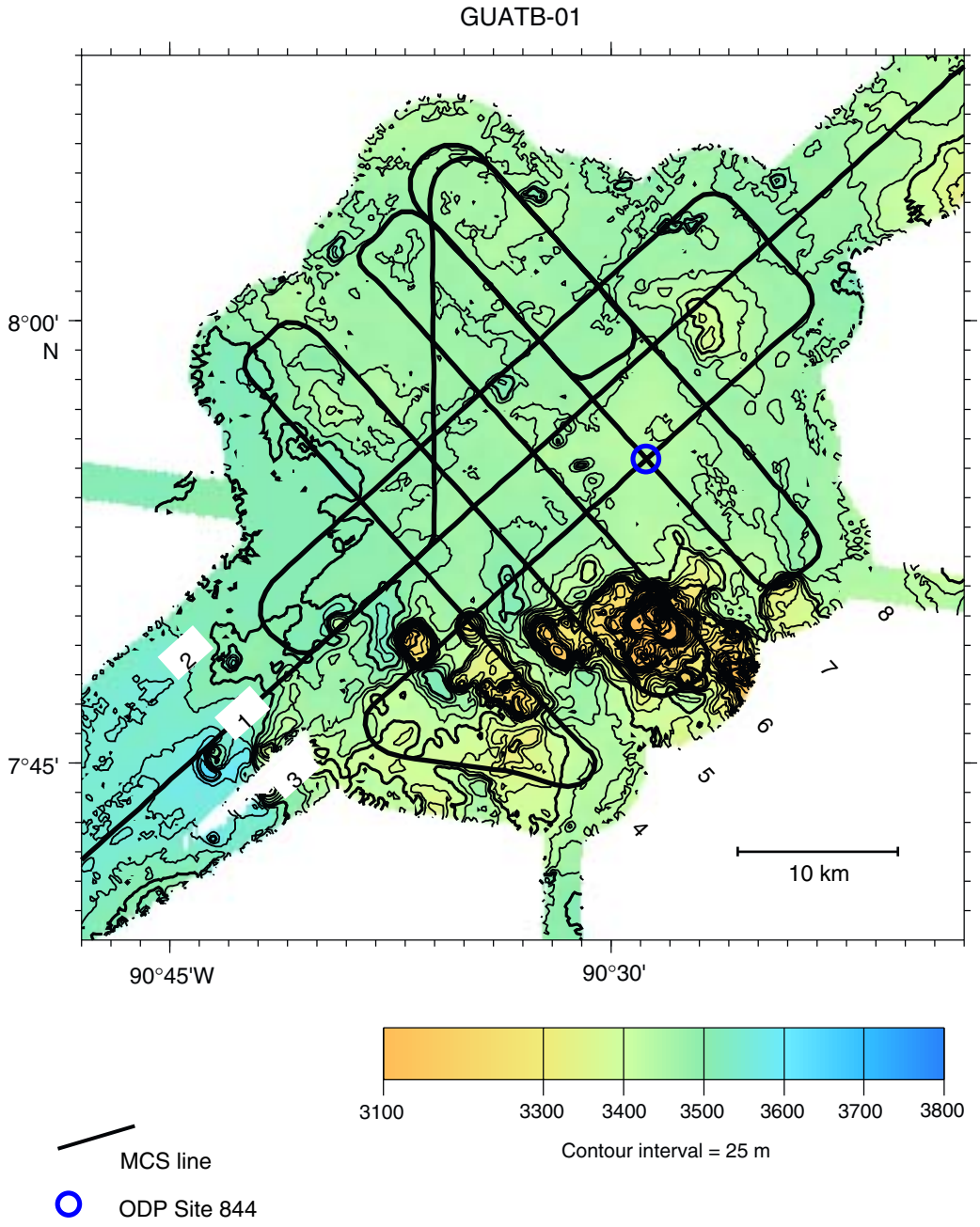


Figure F5. Bathymetry profile map for grid 1 (data bank Site GUATB-01). Depths <3400 m are shaded.

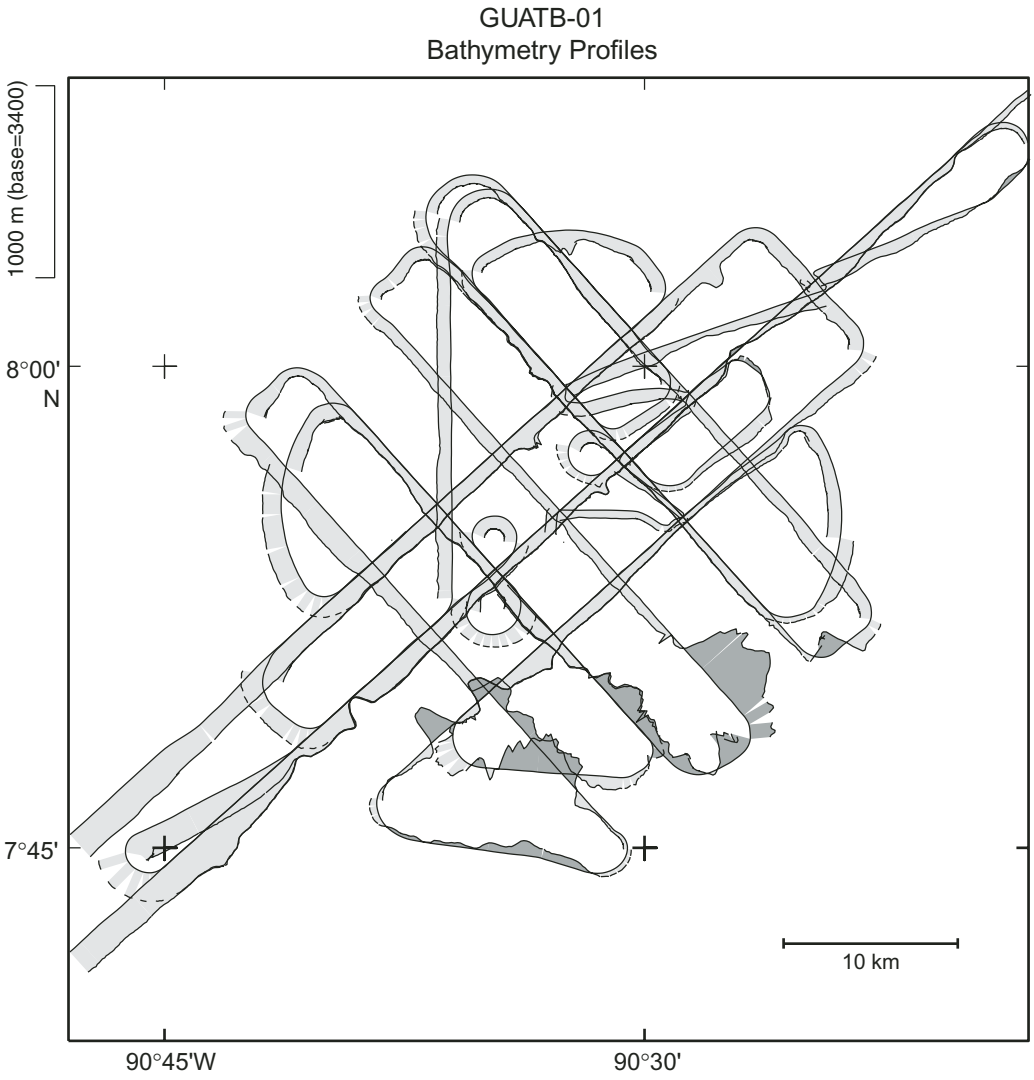


Figure F6. Magnetic profile map for grid 1 (data bank Site GUATB-01). Anomalies less than –100 nT, approximately corresponding to normal polarity, are shaded.

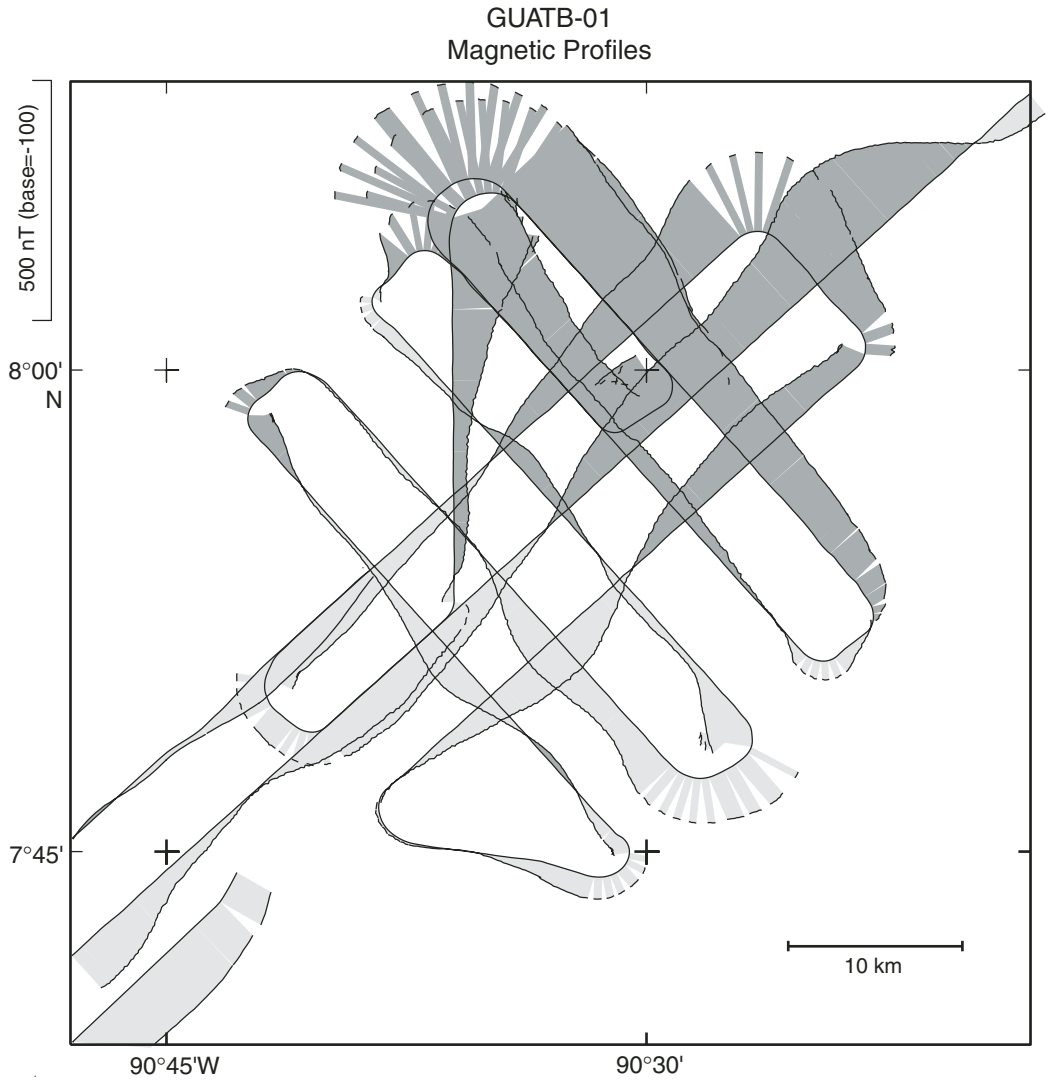


Figure F7. Gravity profile map for grid 1 (data bank Site GUATB-01). Anomalies >25 mgal are shaded.

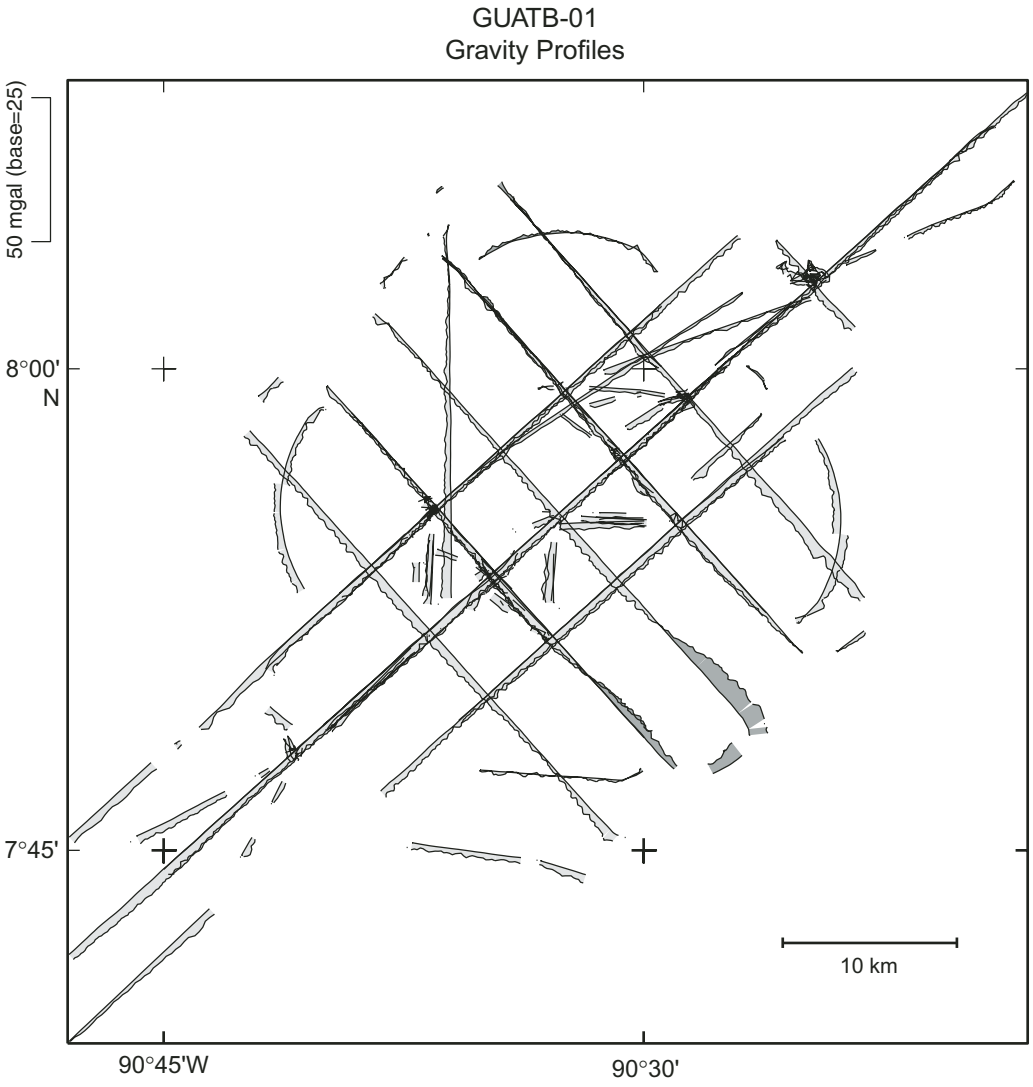


Figure F8. Migrated MCS section for line 1, grid 1. See Figure F4, p. 10, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northeast of the line 6 crossing.

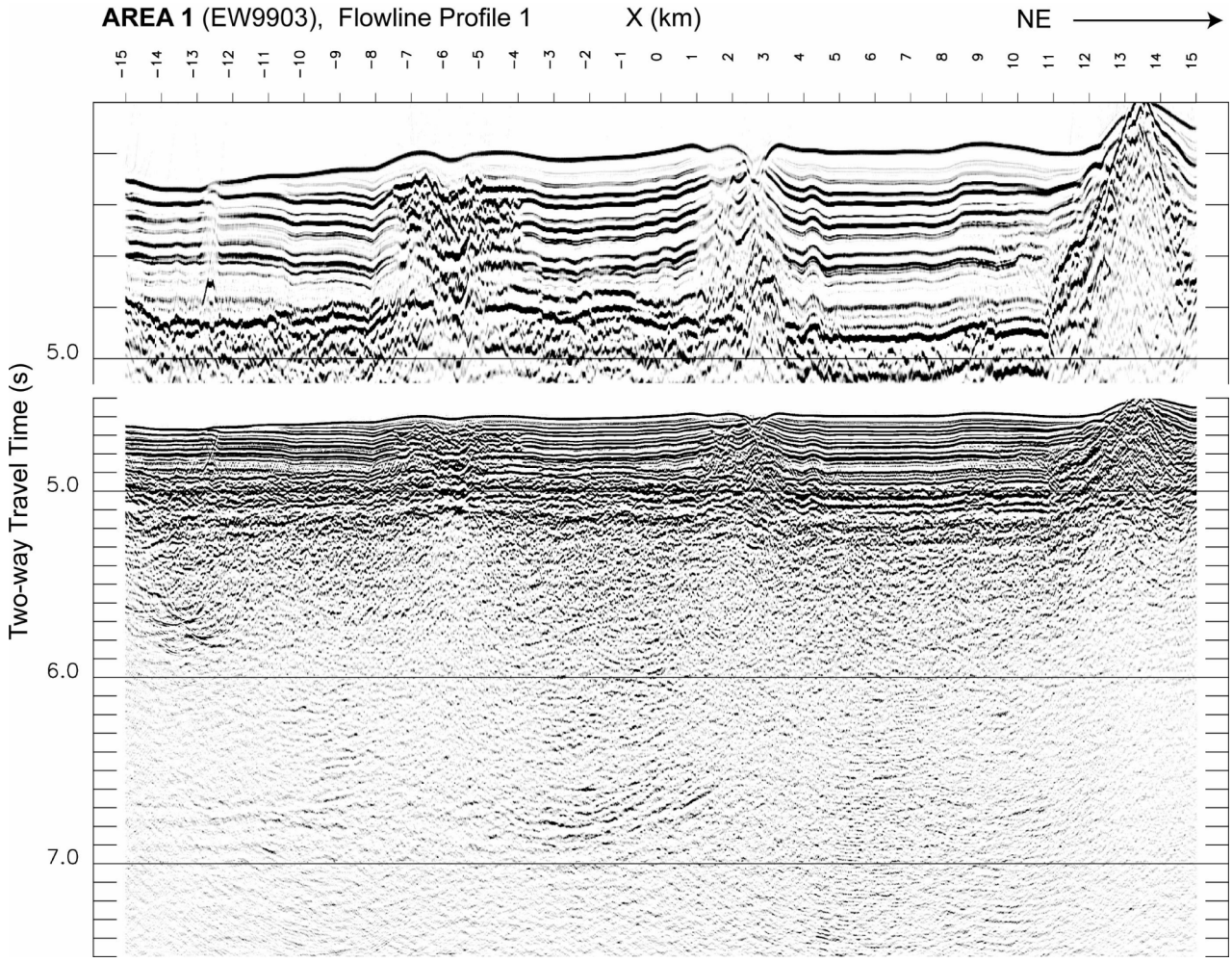


Figure F9. Migrated MCS section for line 2, grid 1. See Figure F4, p. 10, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northeast of the line 6 crossing.

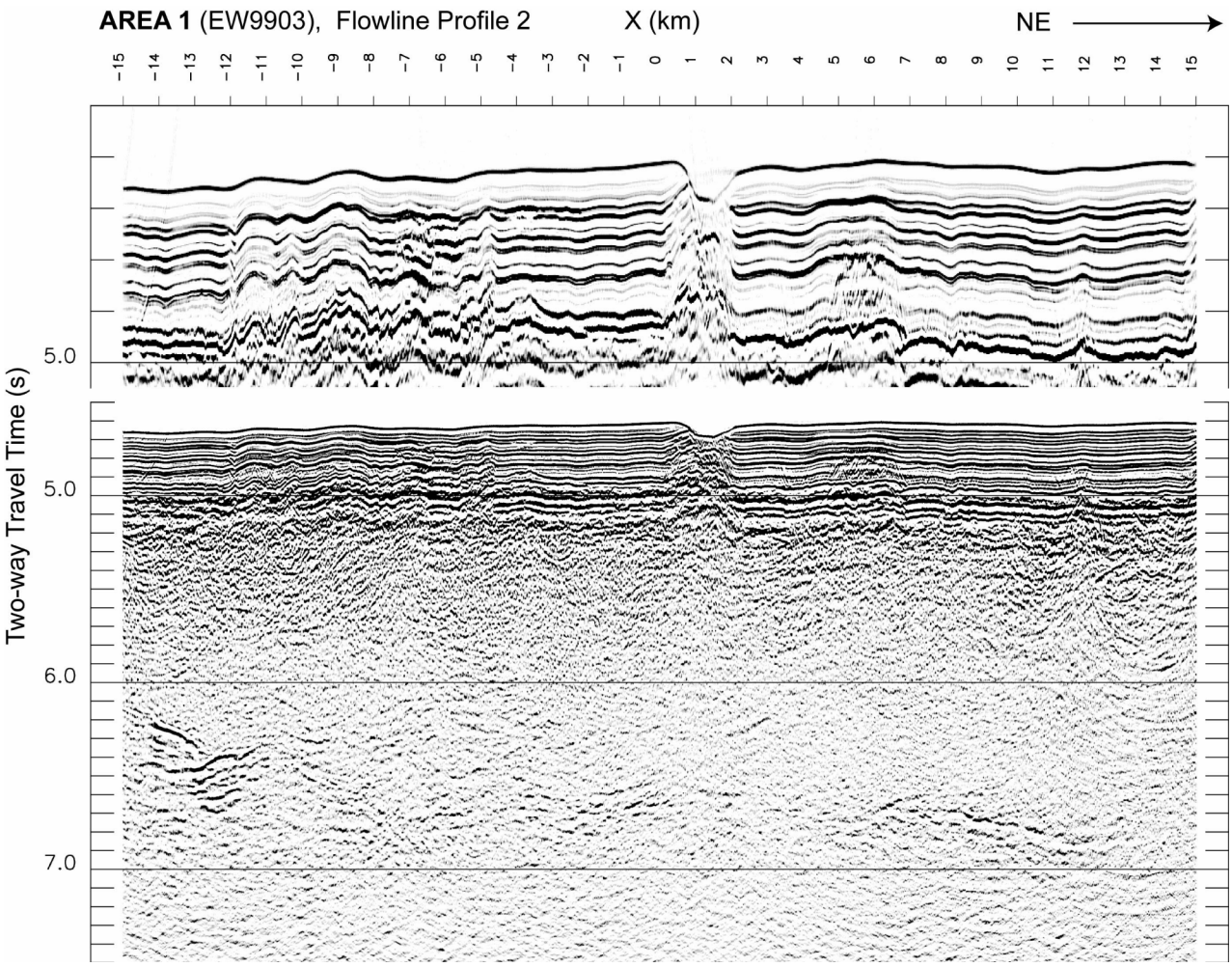


Figure F10. Migrated MCS section for line 3, grid 1. See Figure F4, p. 10, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northeast of the line 6 crossing. Site 844 is at +5 km.

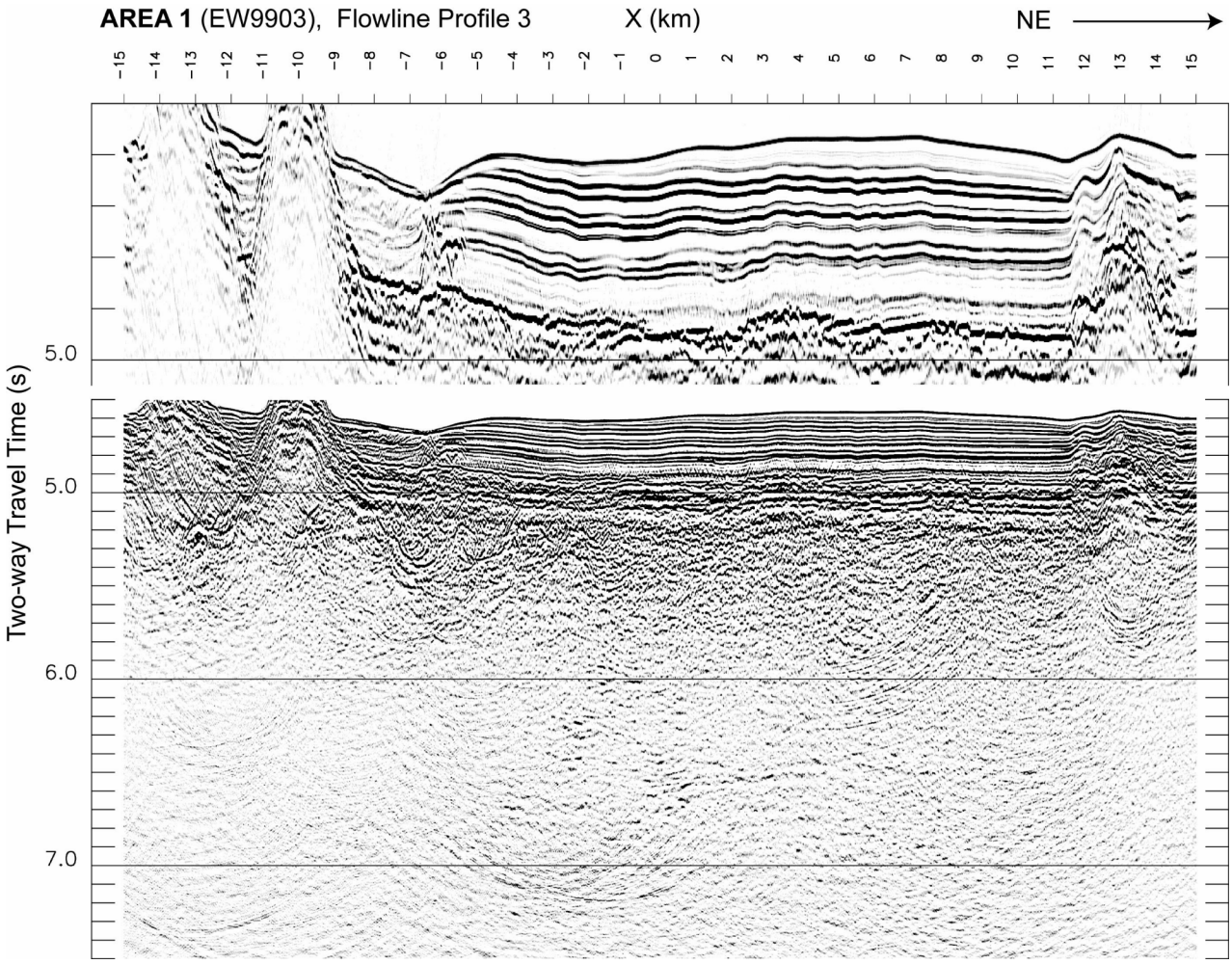


Figure F11. Migrated MCS section for line 4, grid 1. See Figure F4, p. 10, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northwest of the line 1 crossing.

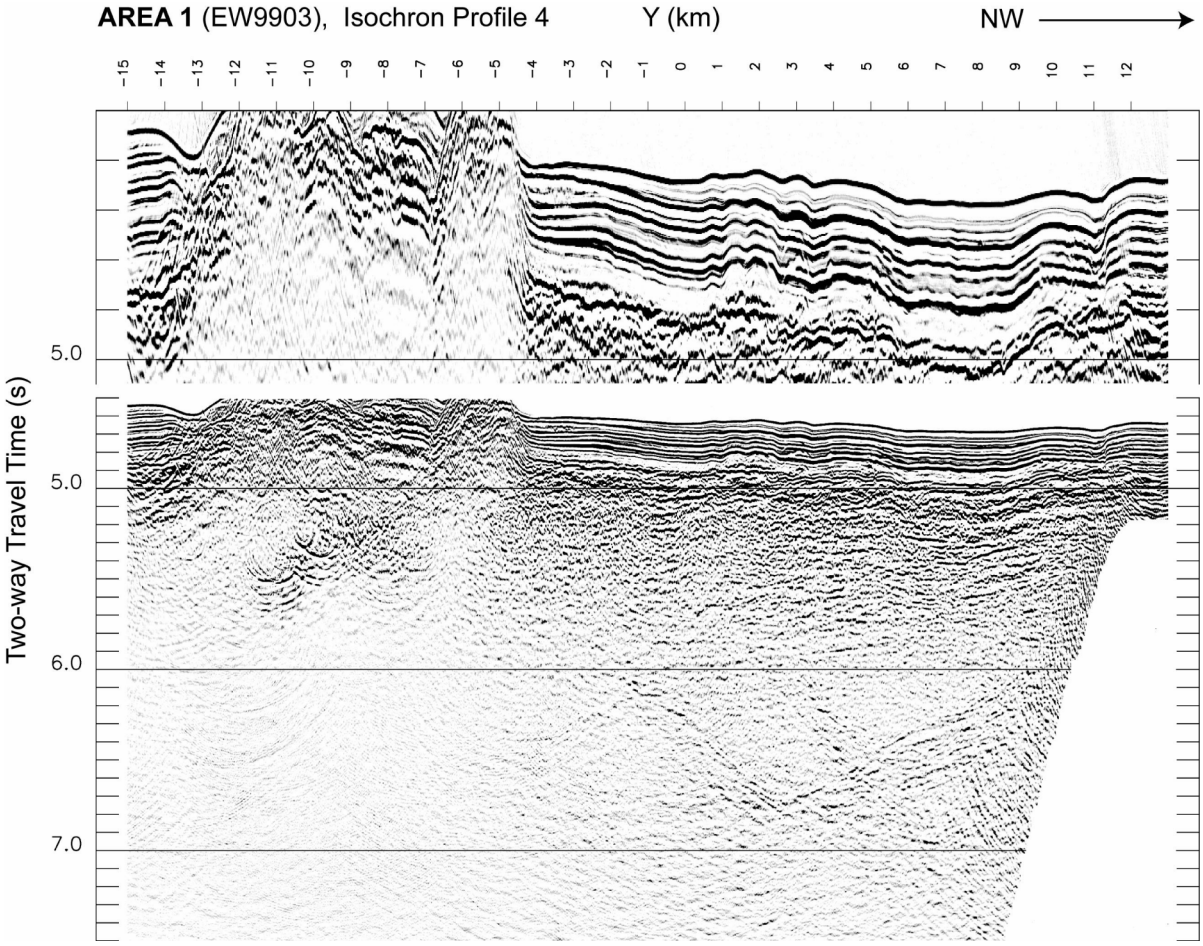


Figure F12. Migrated MCS section for line 5, grid 1. See Figure F4, p. 10, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northwest of the line 1 crossing.

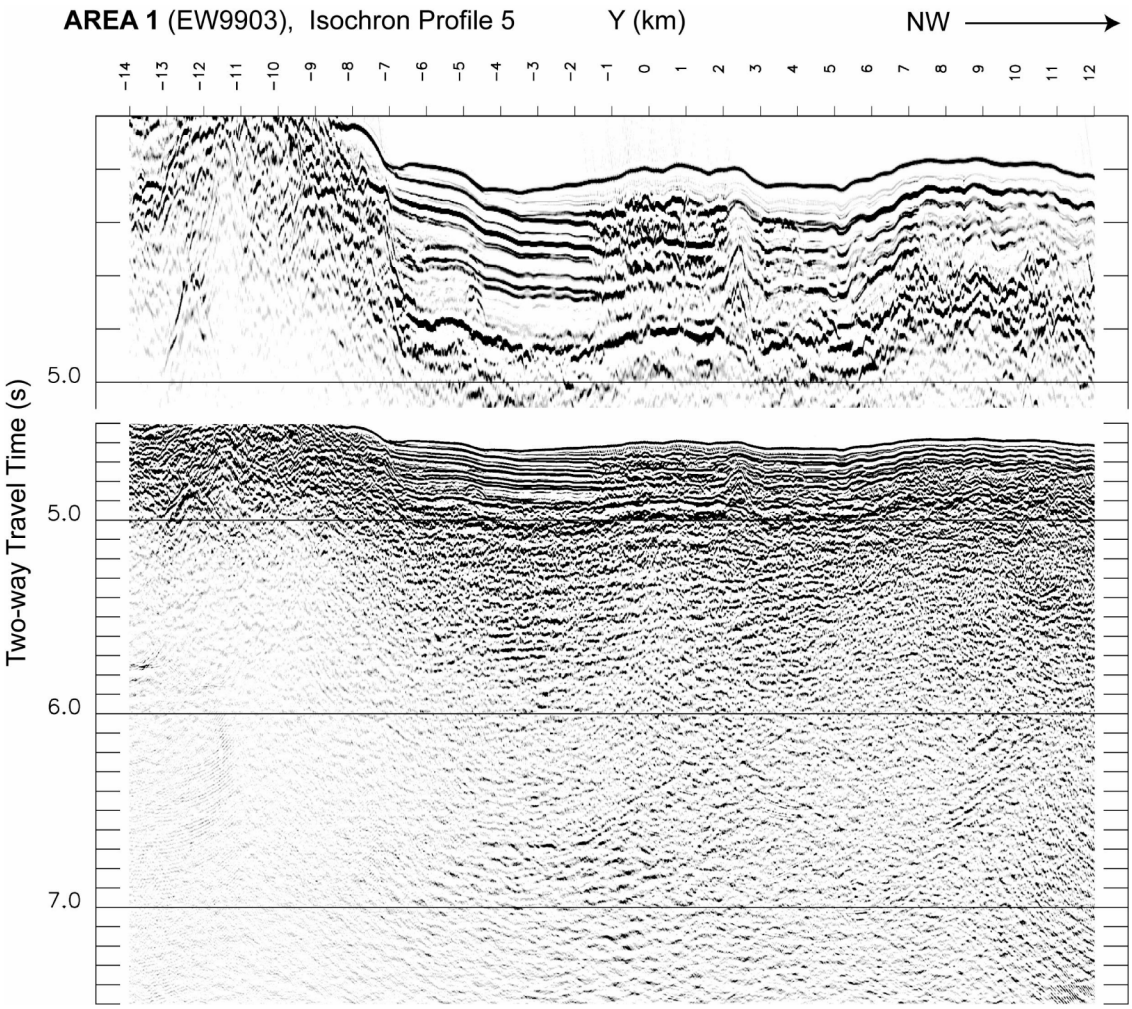


Figure F13. Migrated MCS section for line 6, grid 1. See Figure F4, p. 10, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northwest of the line 1 crossing.

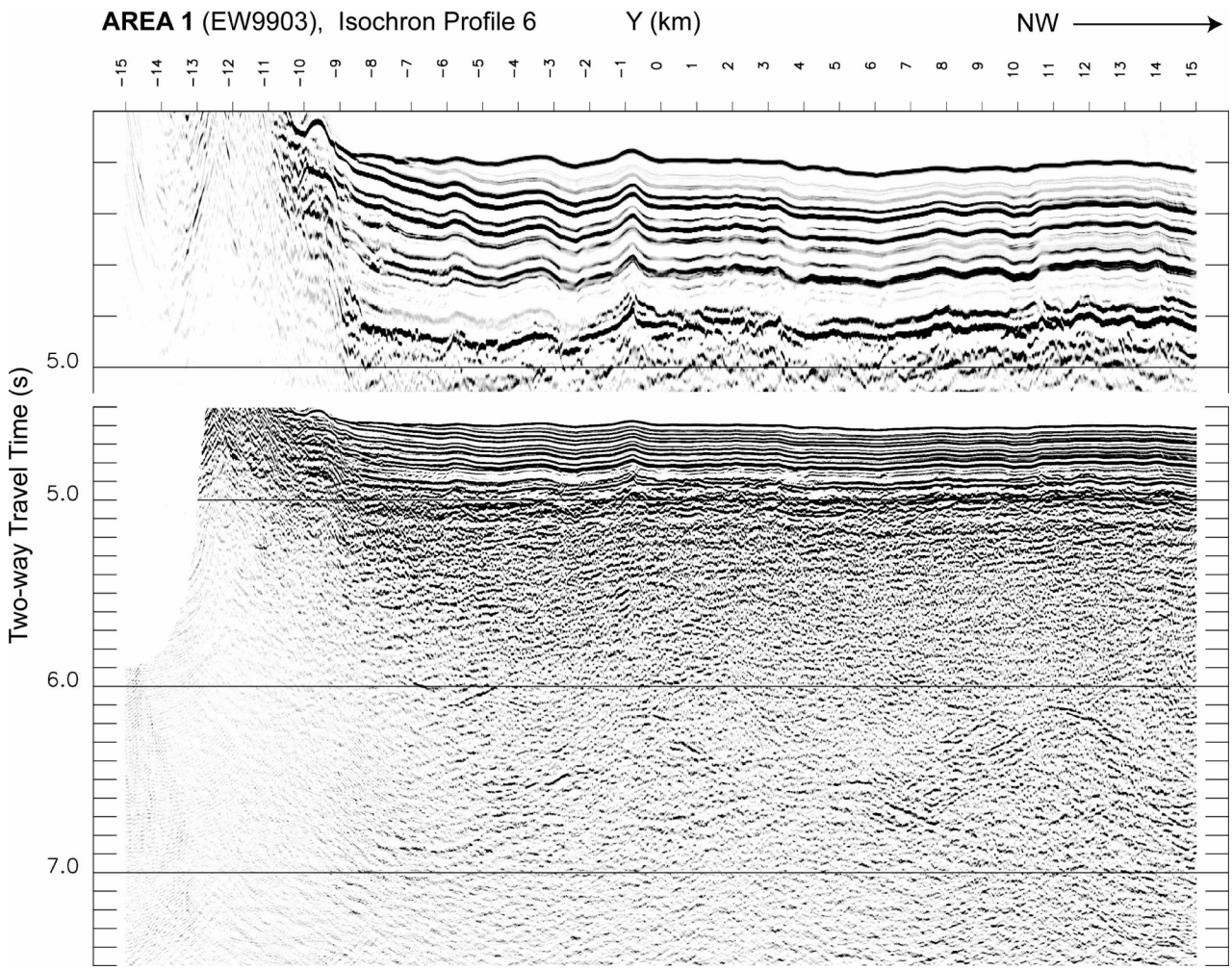


Figure F14. Migrated MCS section for line 7 grid 1. See Figure F4, p. 10, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northwest of the line 1 crossing. Site 844 is at –5 km.

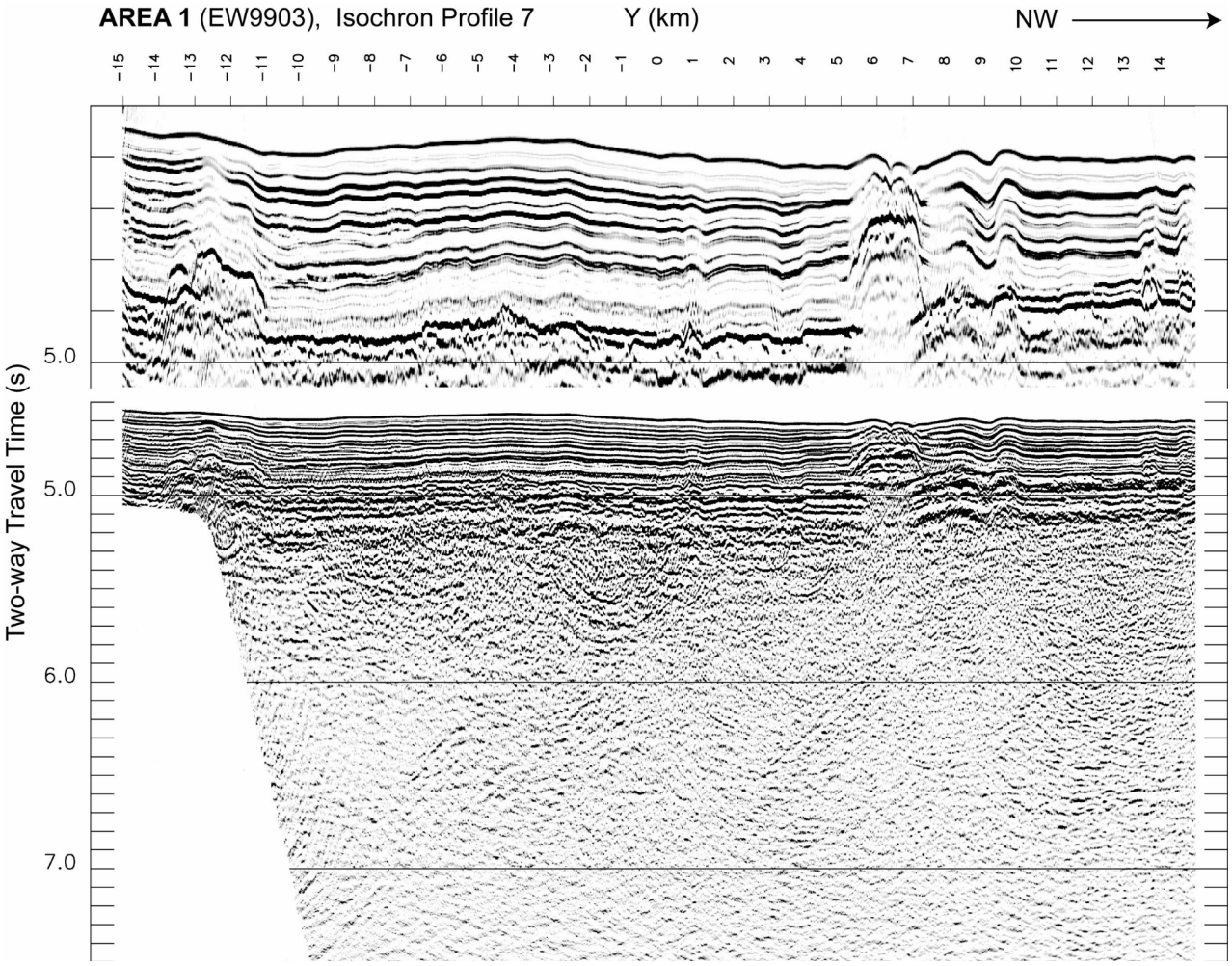


Figure F15. Migrated MCS section for line 8, grid 1. See Figure F4, p. 10, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northwest of the line 1 crossing.

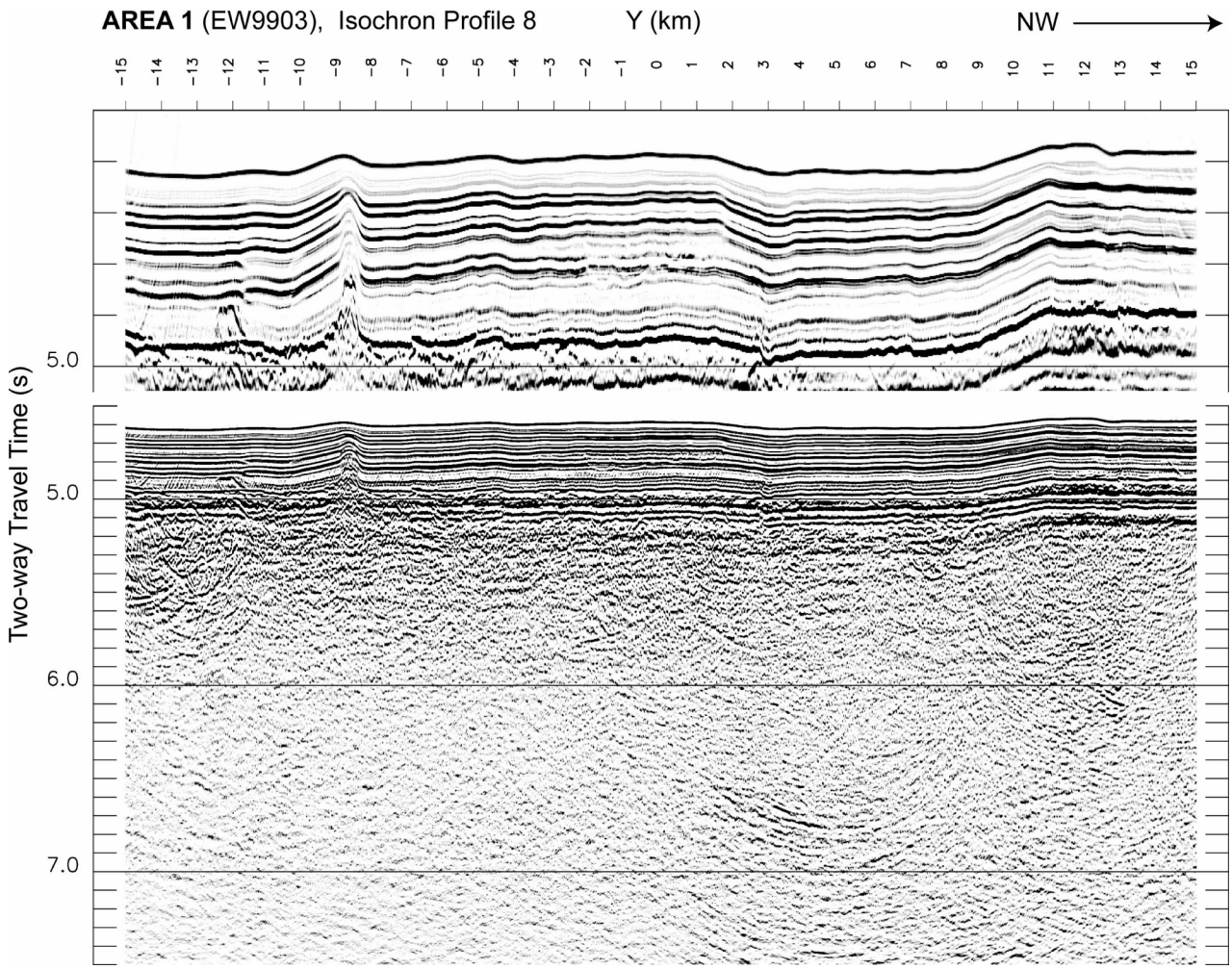


Figure F16. Multibeam bathymetry contour map and multichannel seismic (MCS) track map for grid 2 (data bank Site GUATB-02). Seismic lines 11–18 are numbered to locate Figures **F20,** p. 26, **F21,** p. 27, **F22,** p. 28, **F23,** p. 29, **F24,** p. 30, **F25,** p. 31, **F26,** p. 32, and **F27,** p. 33.

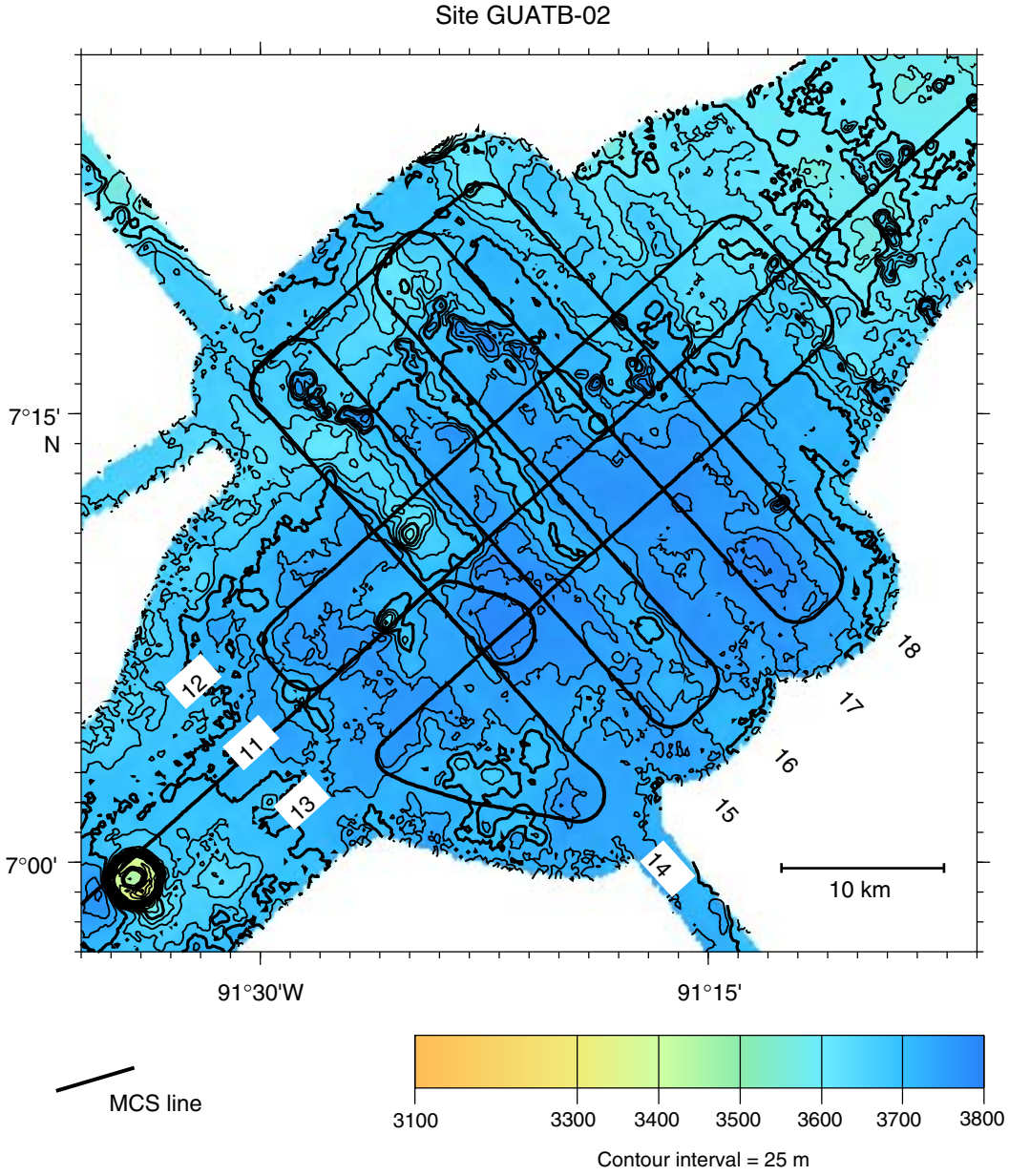


Figure F17. Bathymetry profile map for grid 2 (data bank Site GUATB-02). Depths <3650 m are shaded.

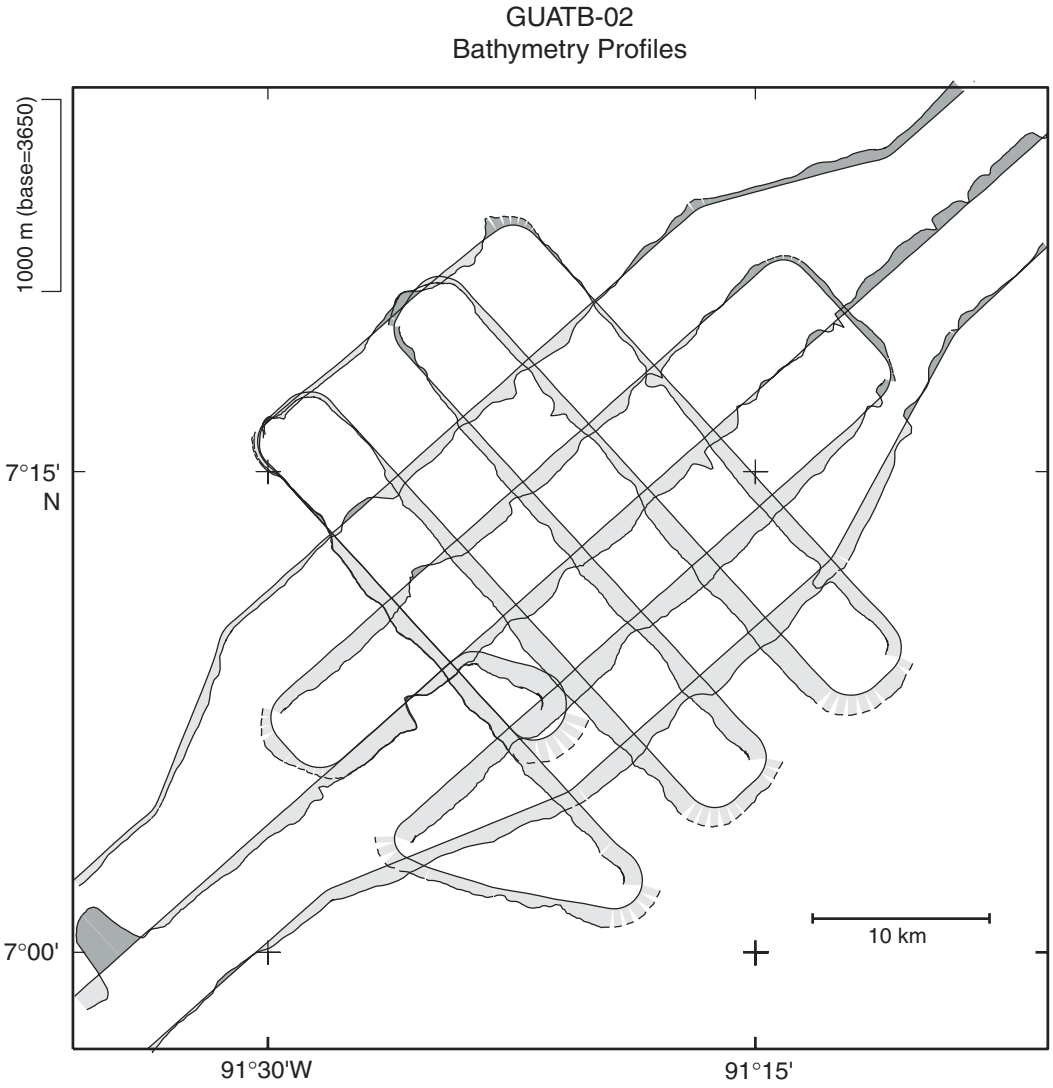


Figure F18. Magnetic profile map for grid 2 (data bank Site GUATB-02). Anomalies less than –100 nT, approximately corresponding to normal polarity, are shaded.

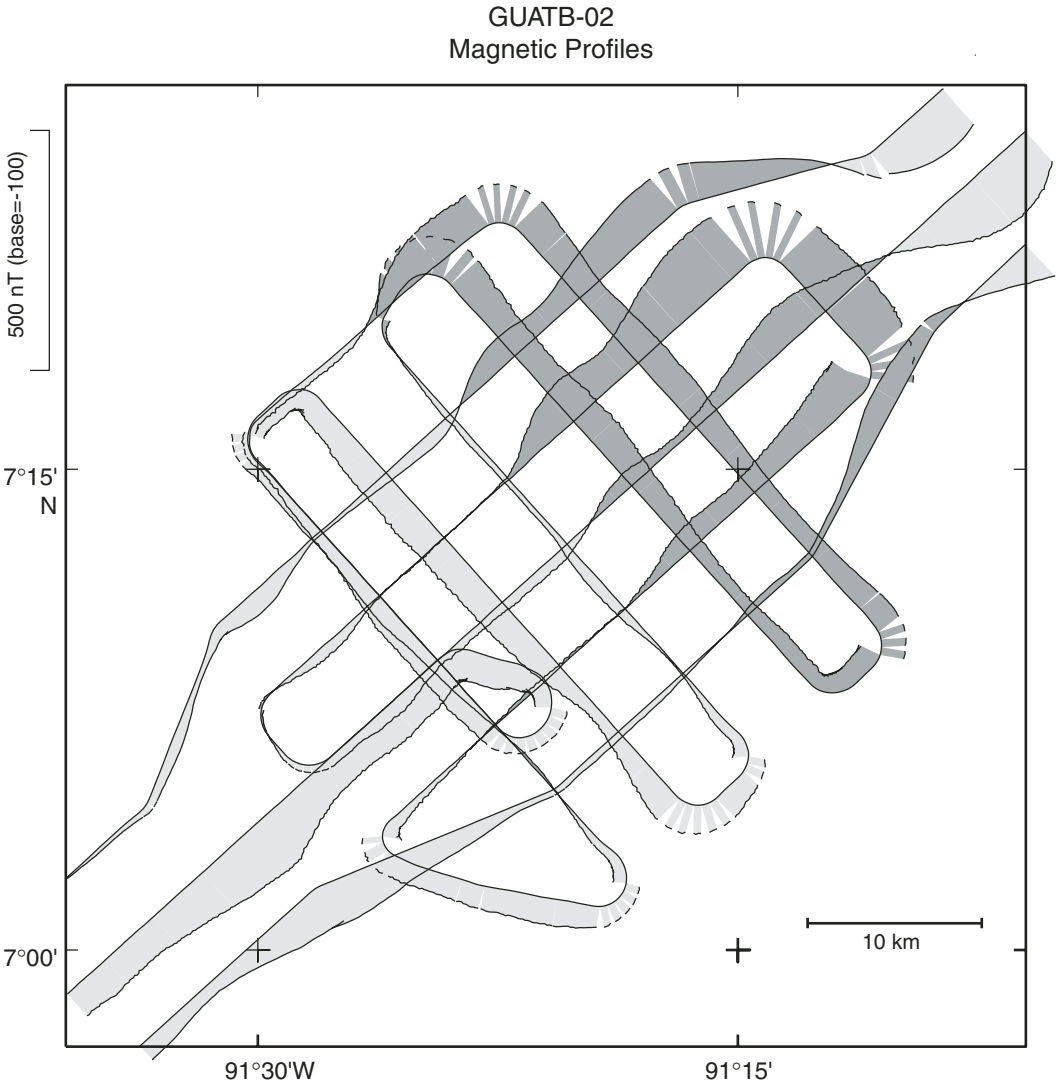


Figure F19. Gravity profile map for grid 2 (data bank Site GUATB-02). Anomalies >20 mgal are shaded.

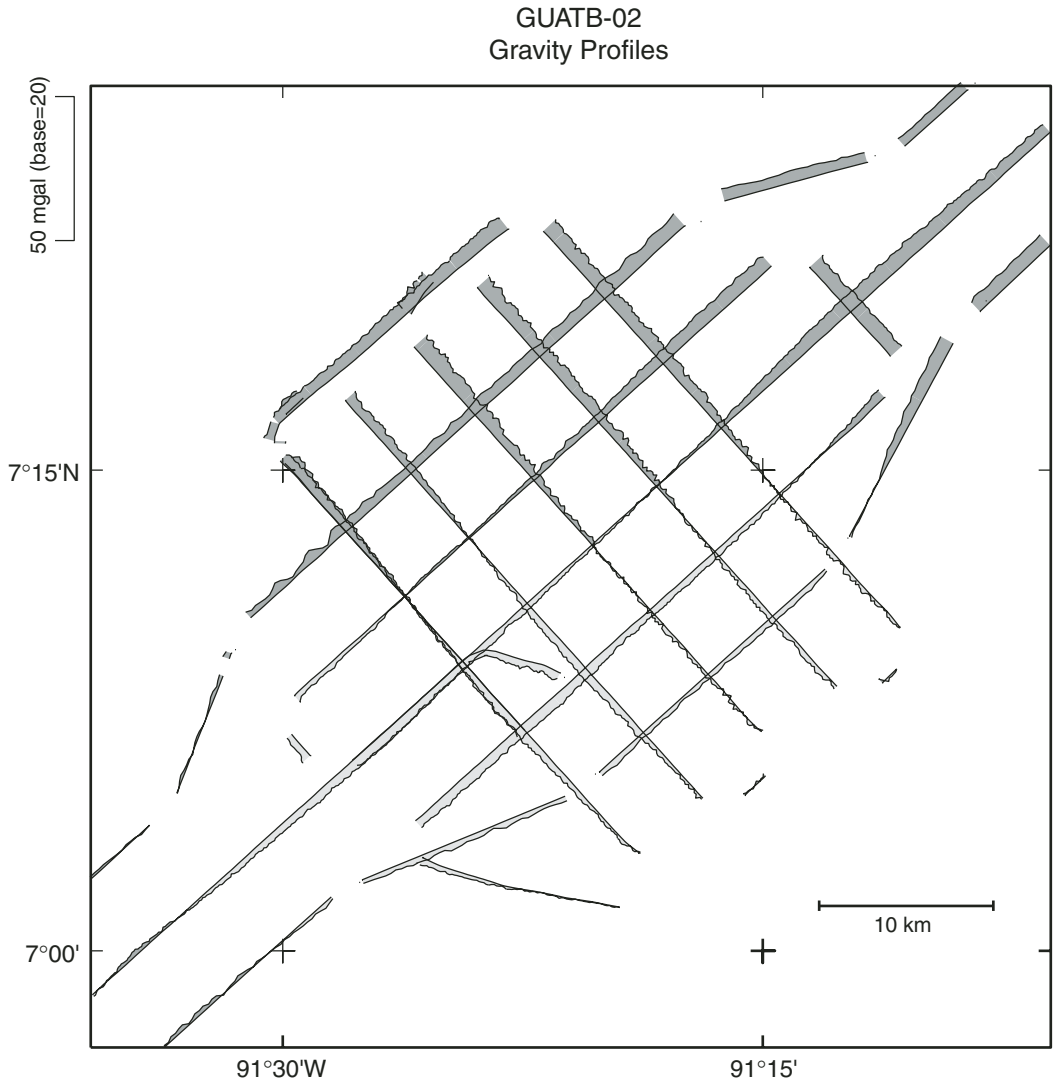


Figure F20. Migrated MCS section for line 11, grid 2. See Figure F16, p. 22, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northeast of the line 16 crossing.

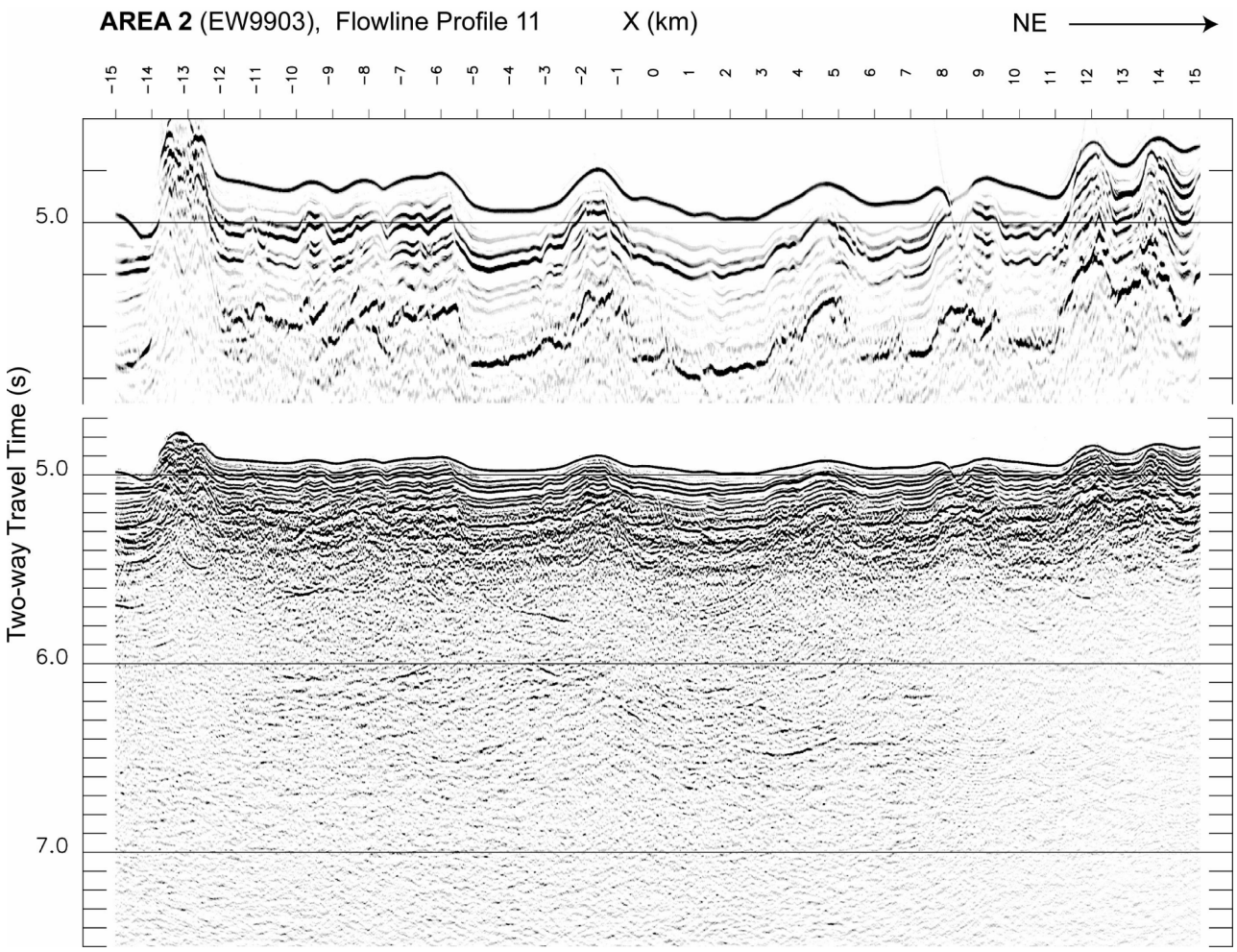


Figure F21. Migrated MCS section for line 12, grid 2. See Figure F16, p. 22, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northeast of the line 16 crossing.

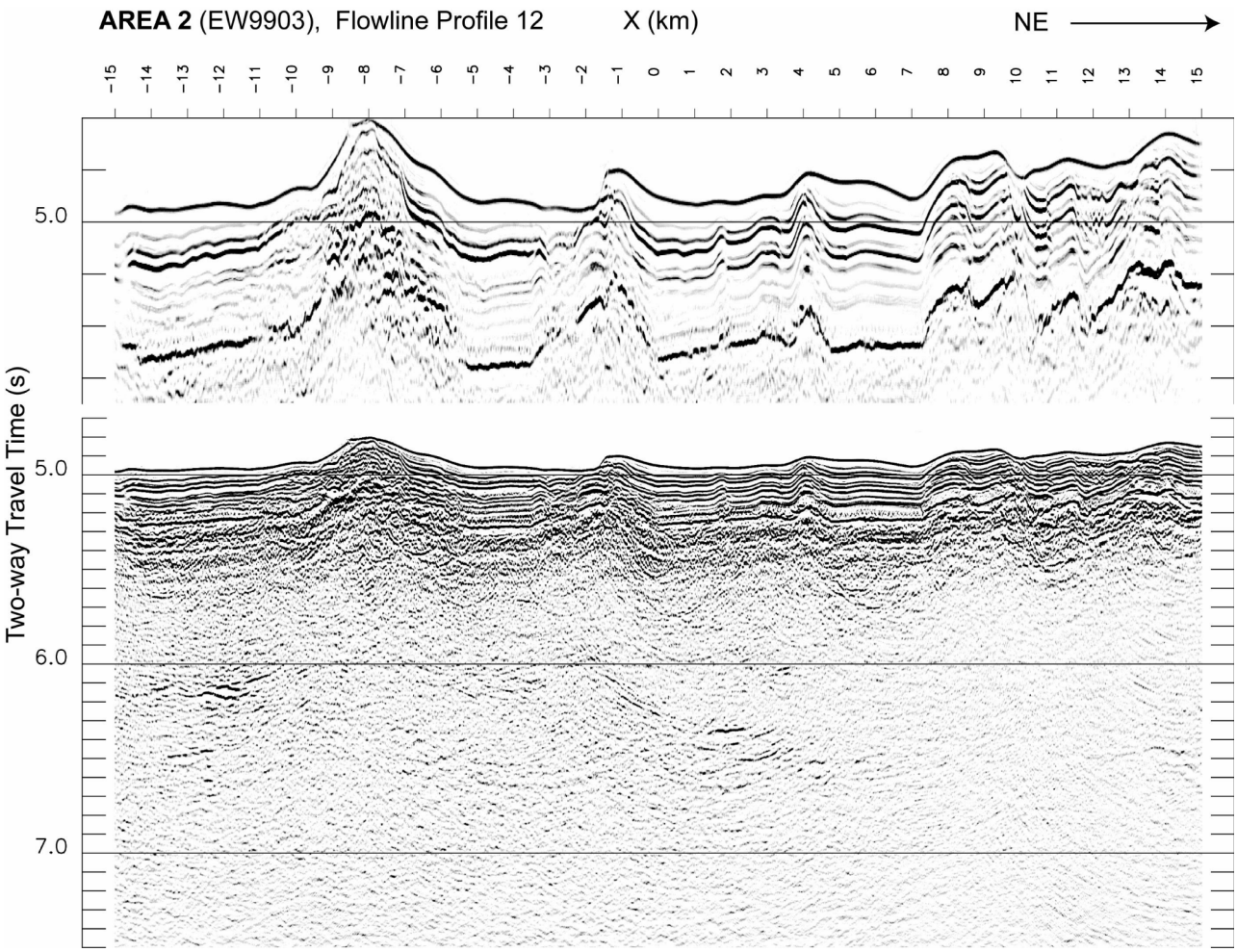


Figure F22. Migrated MCS section for line 13, grid 2. See Figure F16, p. 22, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northeast of the line 16 crossing.

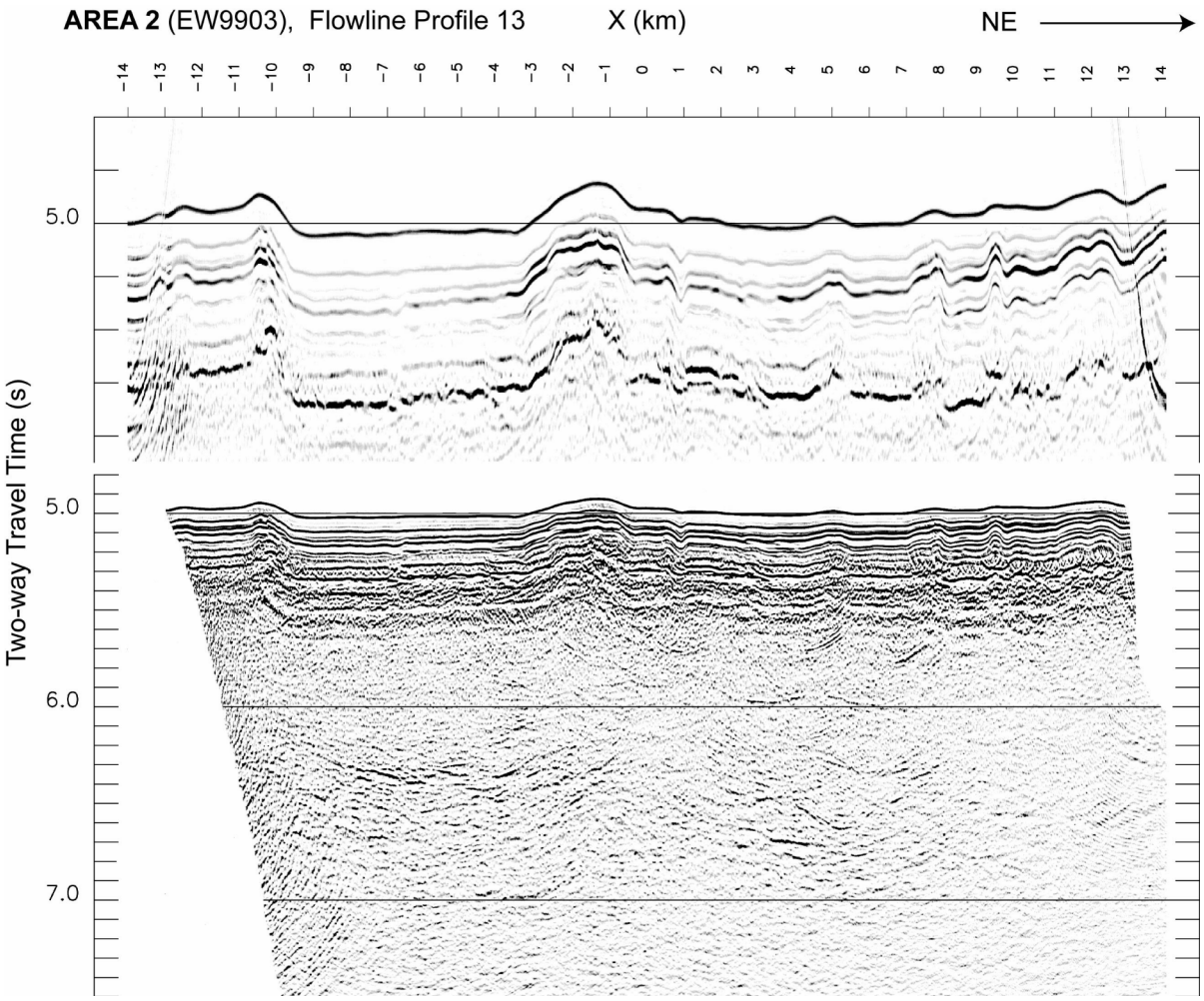


Figure F23. Migrated MCS section for line 14, grid 2. See Figure F16, p. 22, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northwest of the line 11 crossing.

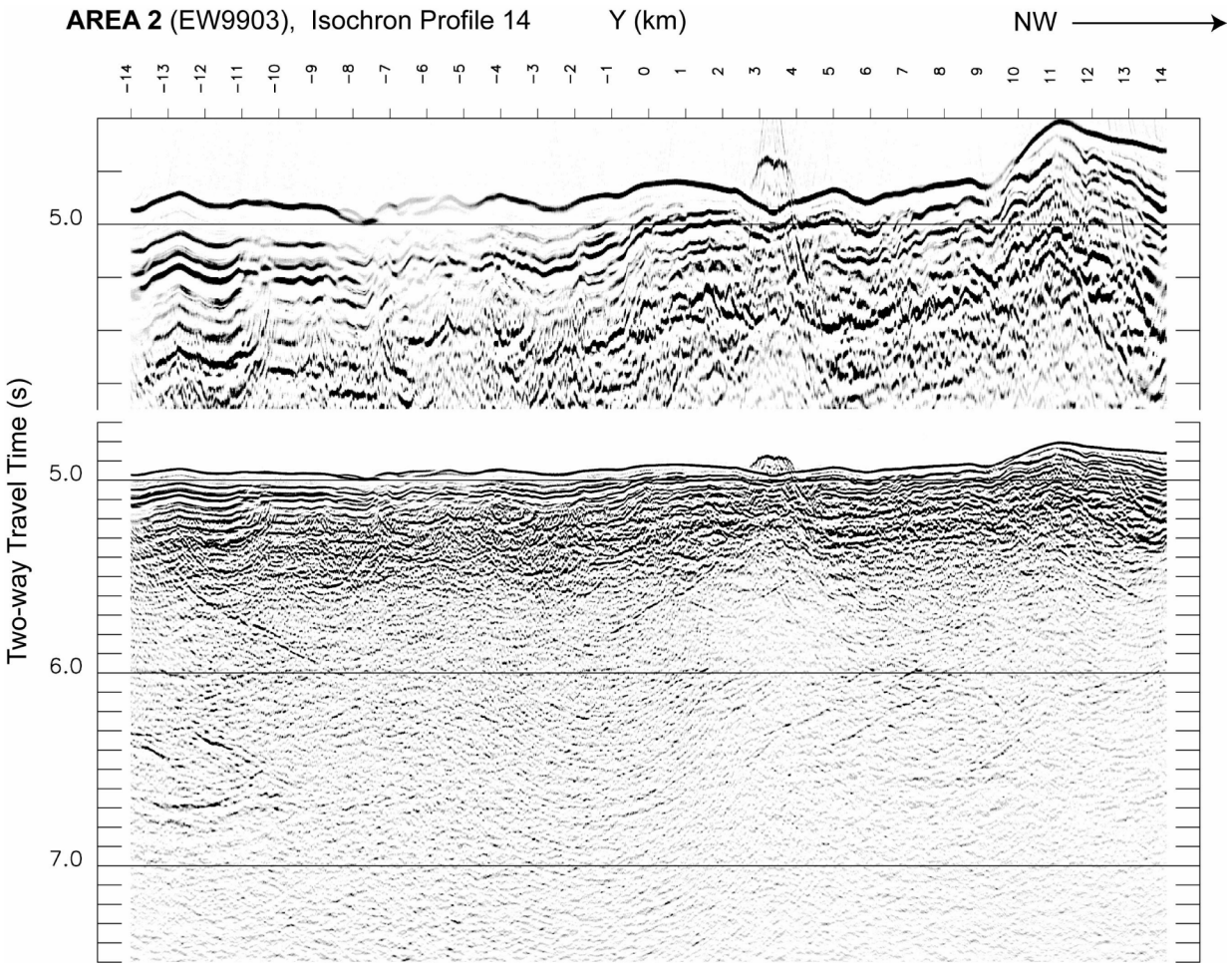


Figure F24. Migrated MCS section for line 15, grid 2. See Figure F16, p. 22, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northwest of the line 11 crossing.

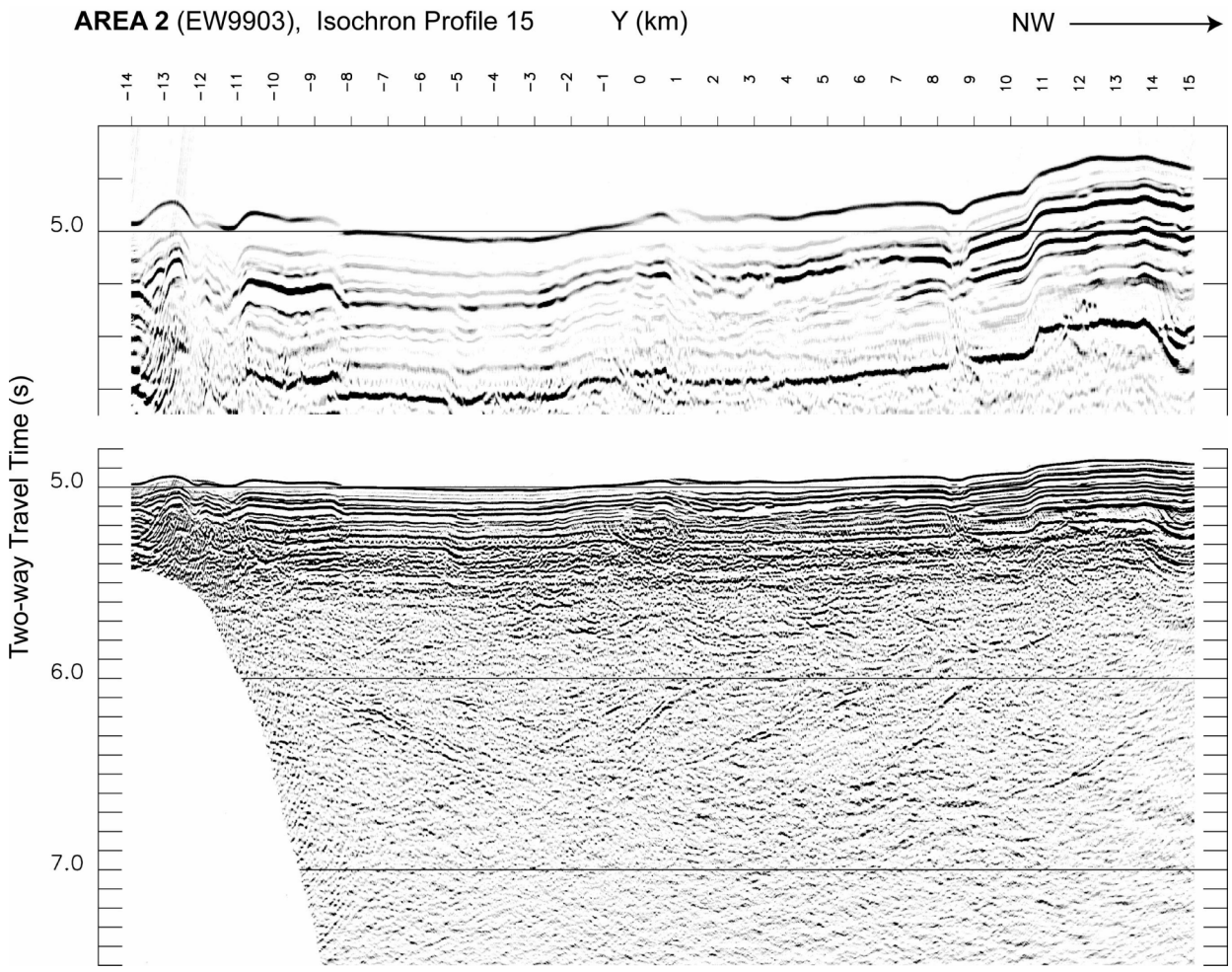


Figure F25. Migrated MCS section for line 16, grid 2. See Figure F16, p. 22, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northwest of the line 11 crossing.

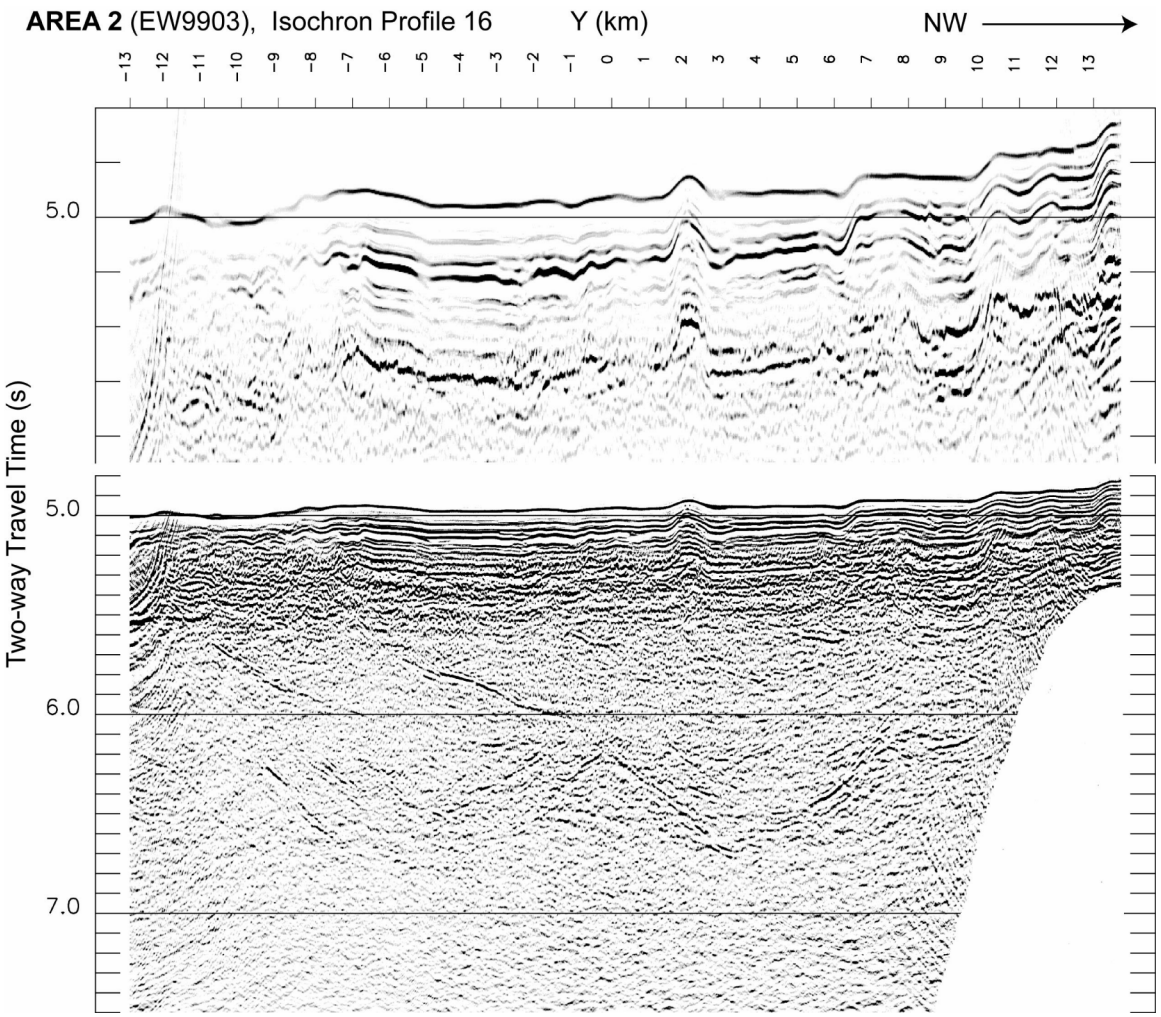


Figure F26. Migrated MCS section for line 17 grid 2. See Figure F16, p. 22, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northwest of the line 11 crossing.

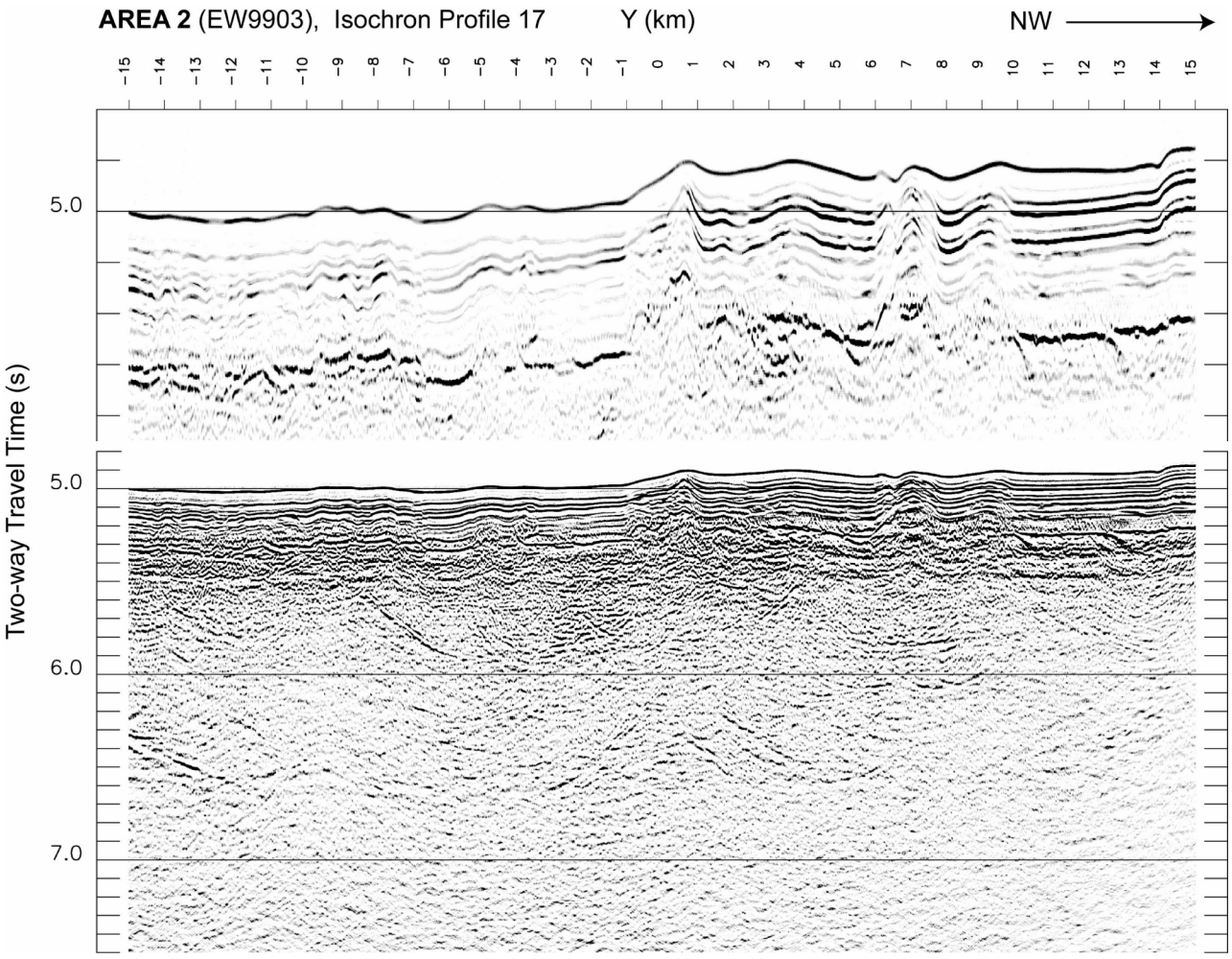


Figure F27. Migrated MCS section for line 18, grid 2. See Figure F16, p. 22, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northwest of the line 11 crossing.

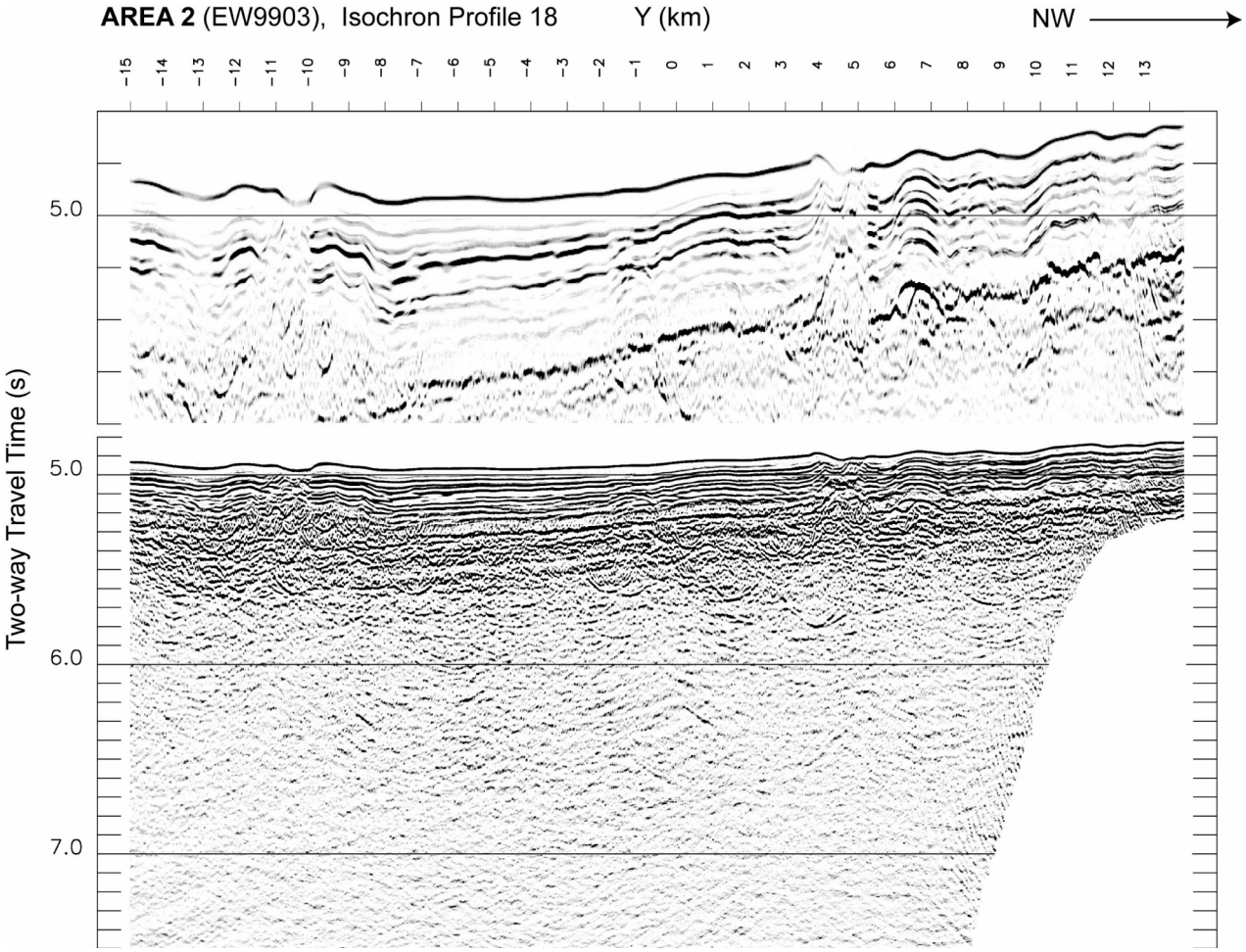


Figure F28. Multibeam bathymetry contour map and MCS track map for grid 3 (data bank Site GUATB-03). Seismic lines 21–28 are numbered to locate Figures F32, p. 38, F33, p. 39, F34, p. 40, F35, p. 41, F36, p. 42, F37, p. 43, F38, p. 44, and F39, p. 45. [N2]

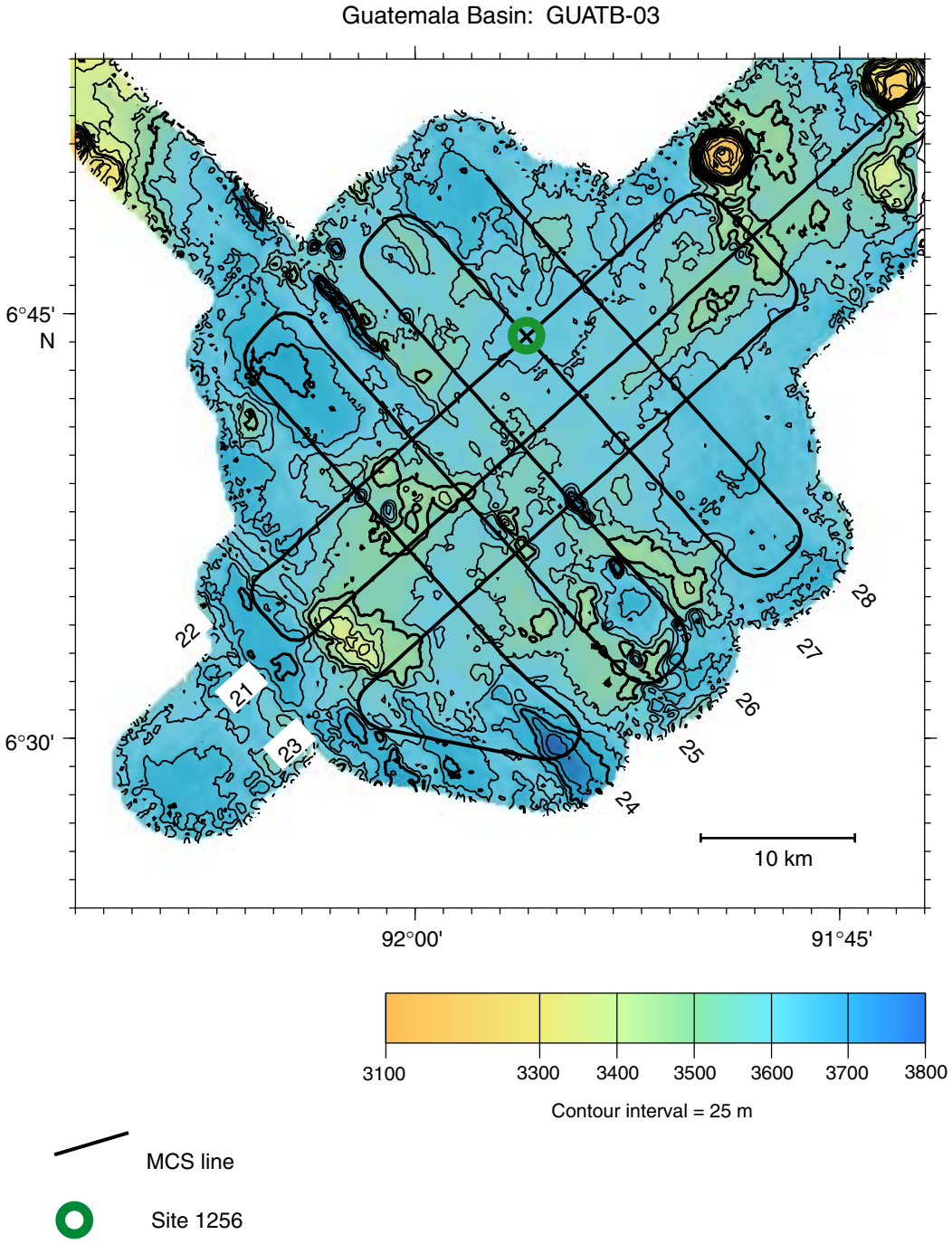


Figure F29. Bathymetry profile map for grid 3 (data bank Site GUATB-03). Depths <3650 m are shaded.

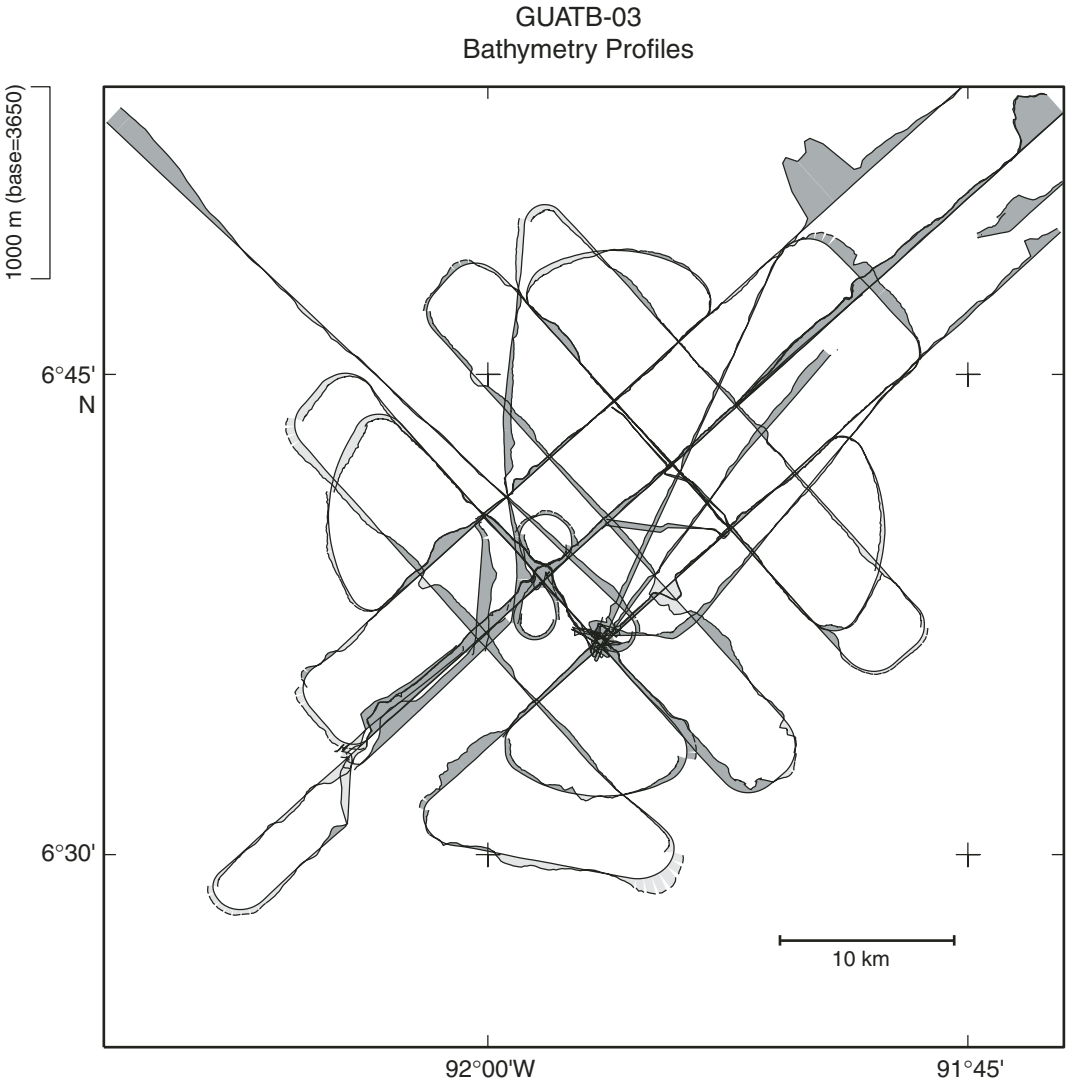


Figure F30. Magnetic profile map for grid 3 (data bank Site GUATB-03). Anomalies less than –100 nT, approximately corresponding to normal polarity, are shaded.

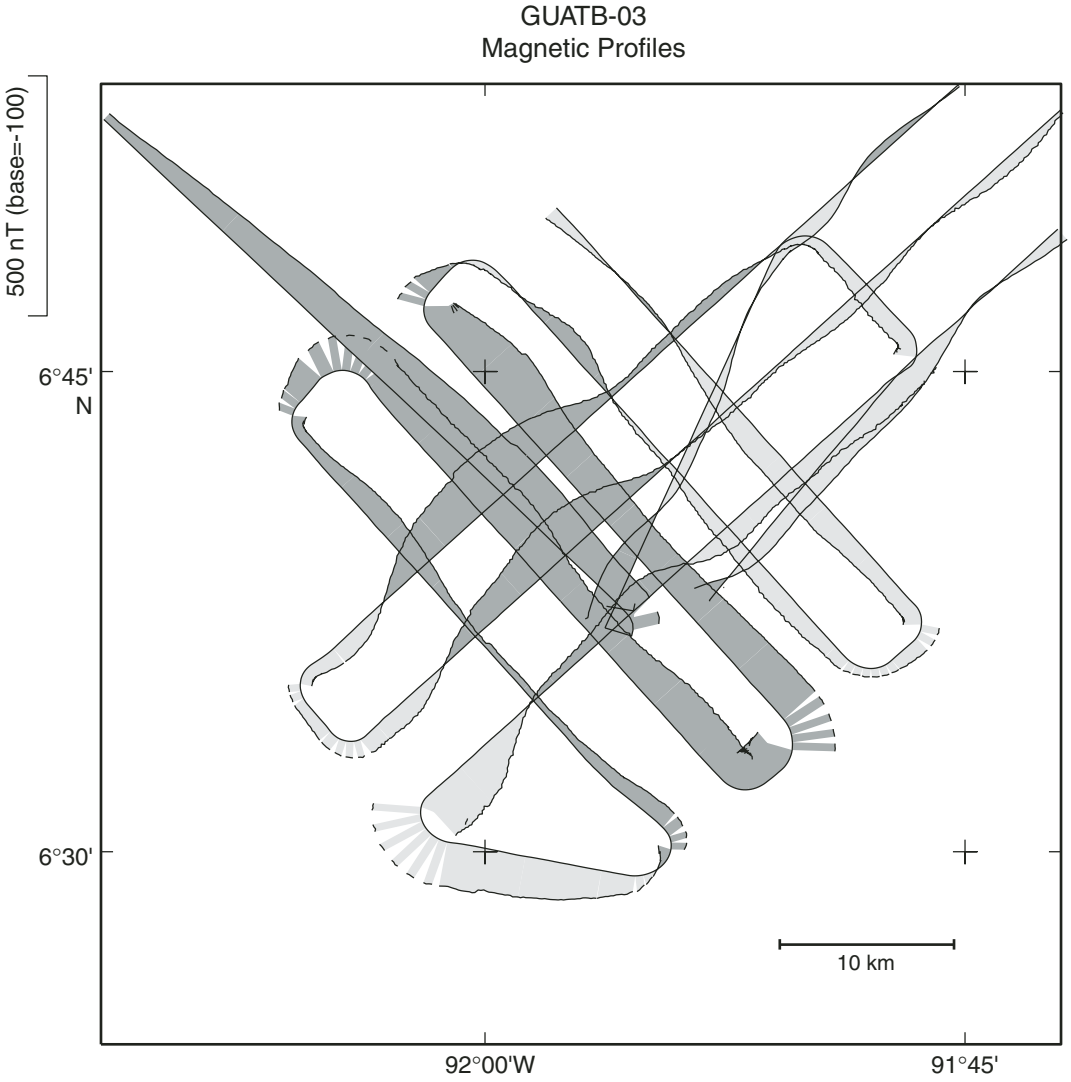


Figure F31. Gravity profile map for grid 3 (data bank Site GUATB-03). Anomalies >20 mgal are shaded.

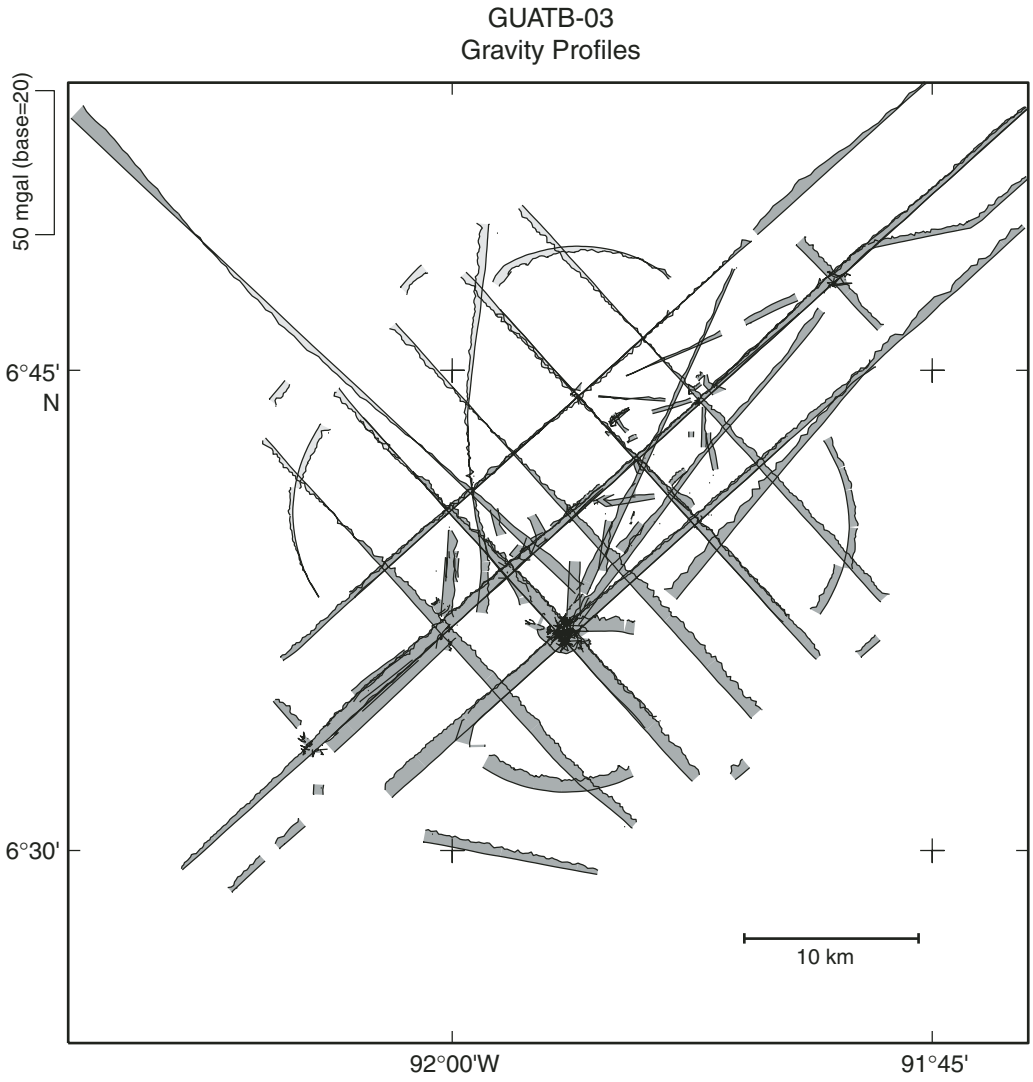


Figure F32. Migrated MCS section for line 21, grid 3. See Figure F28, p. 34, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northeast of the line 26 crossing.

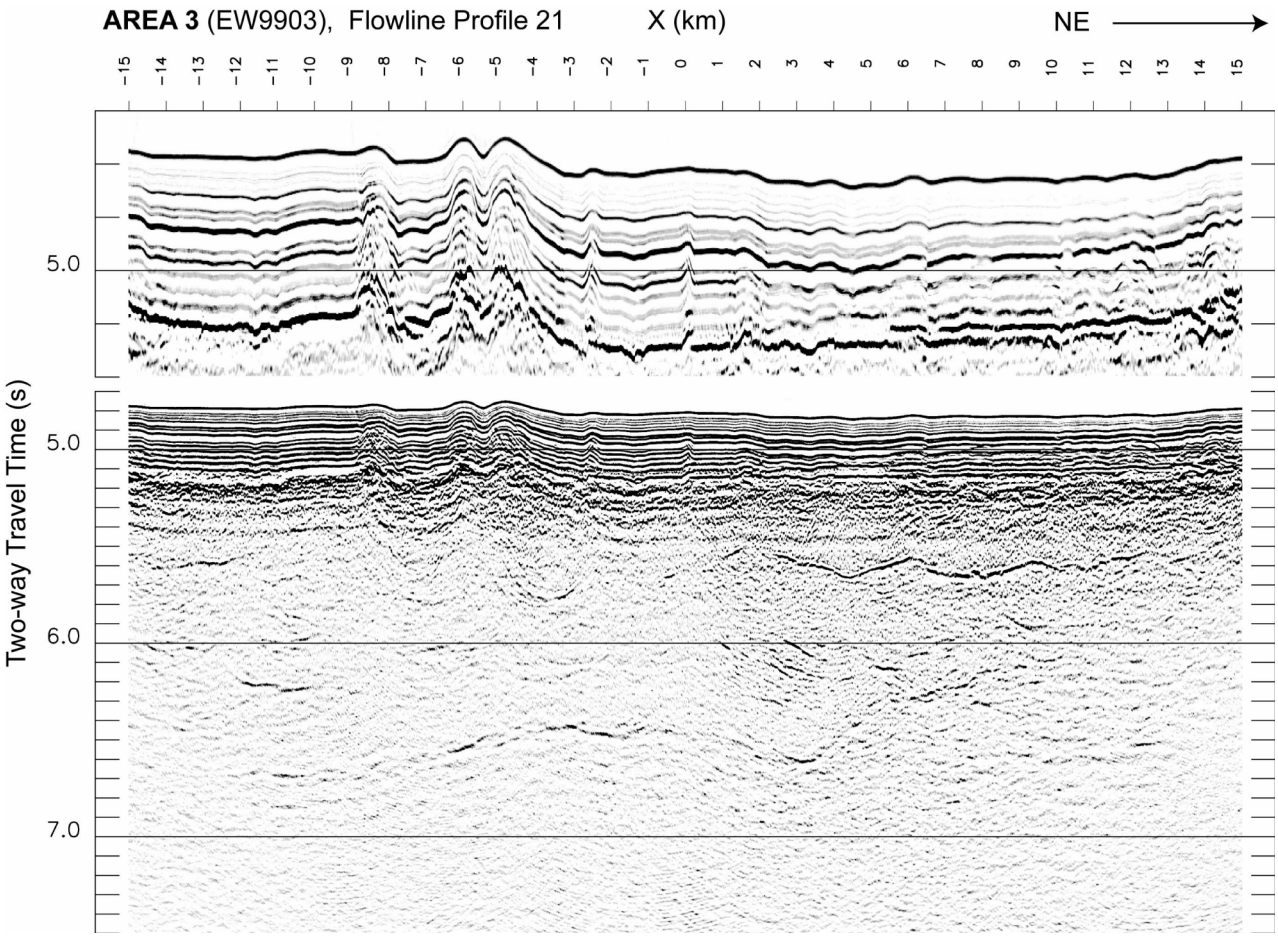


Figure F33. Migrated MCS section for line 22, grid 3. See Figure F28, p. 34, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northeast of the line 26 crossing. Site 1256 is at +5 km.

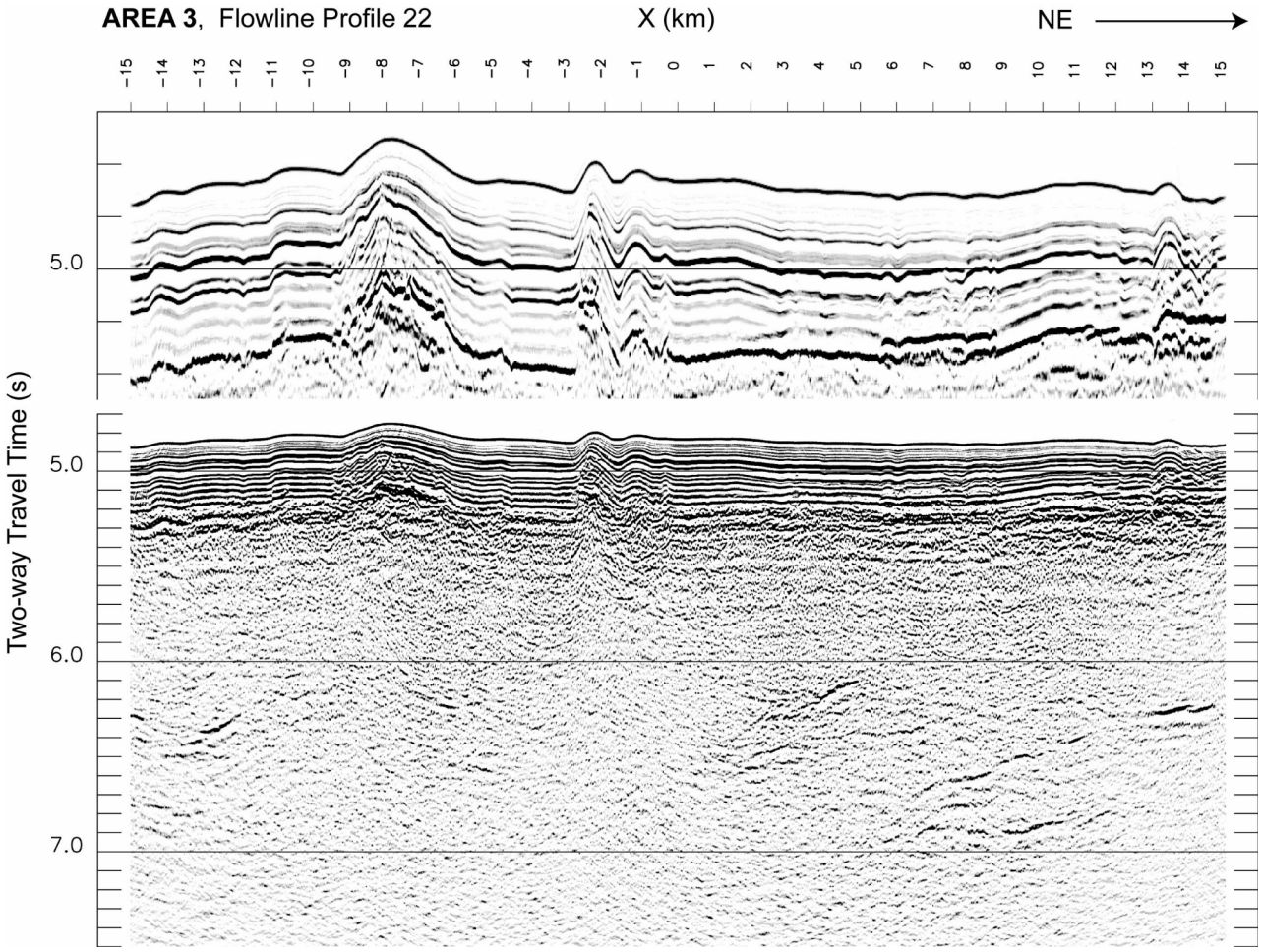


Figure F34. Migrated MCS section for line 23, grid 3. See Figure F28, p. 34, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northeast of the line 26 crossing.

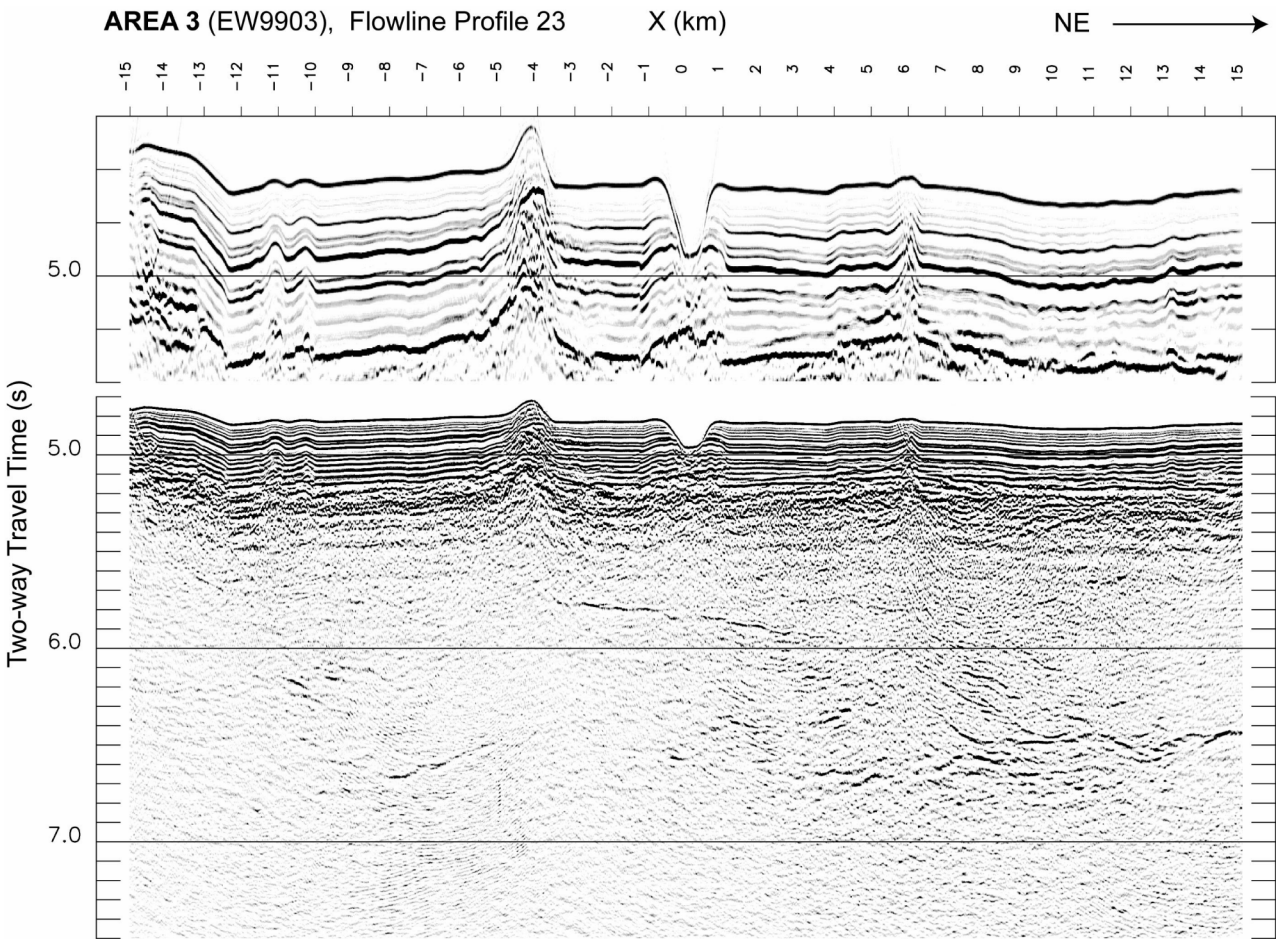


Figure F35. Migrated MCS section for line 24, grid 3. See Figure F28, p. 34, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northwest of the line 21 crossing.

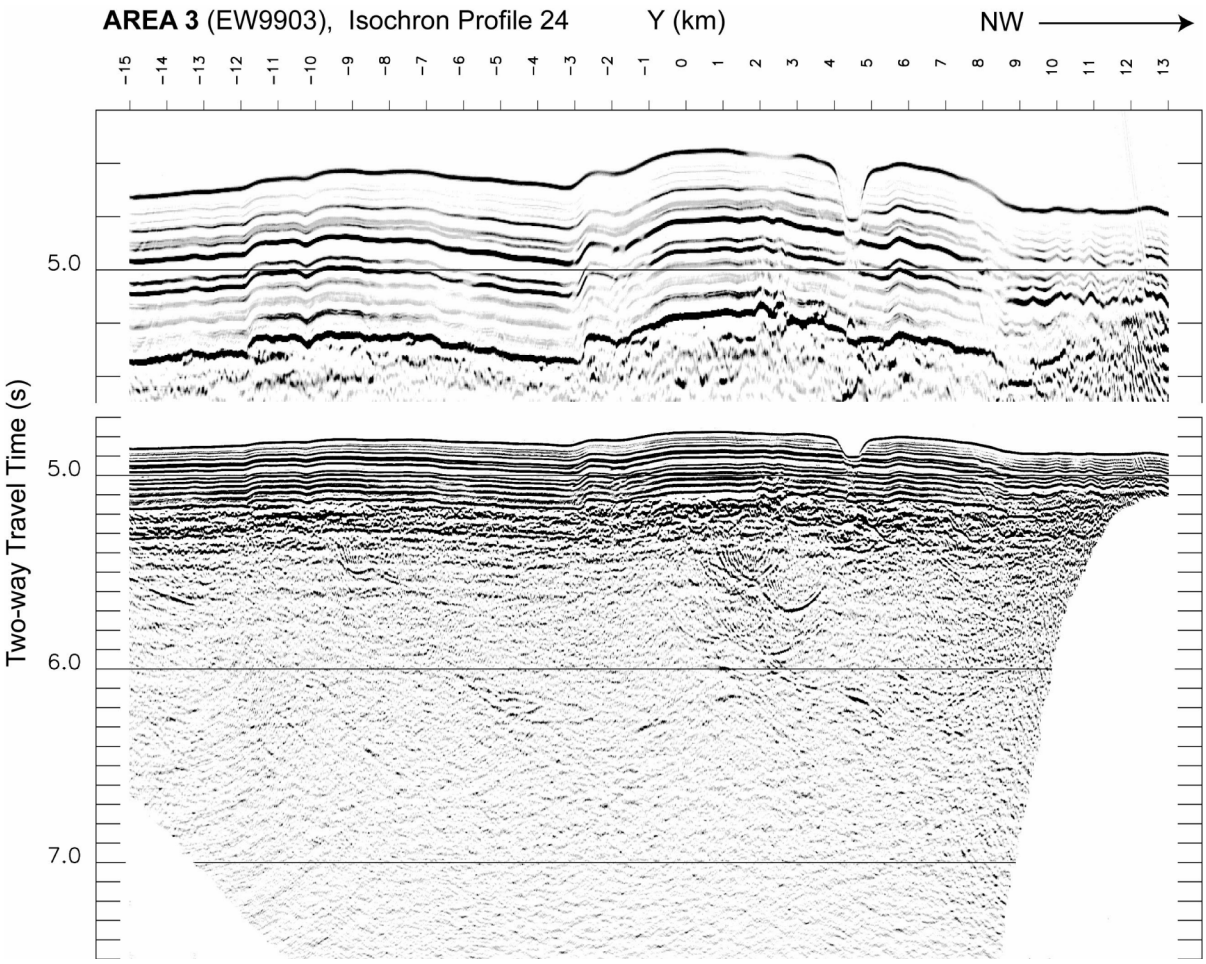


Figure F36. Migrated MCS section for line 25, grid 3. See Figure F28, p. 34, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northwest of the line 21 crossing.

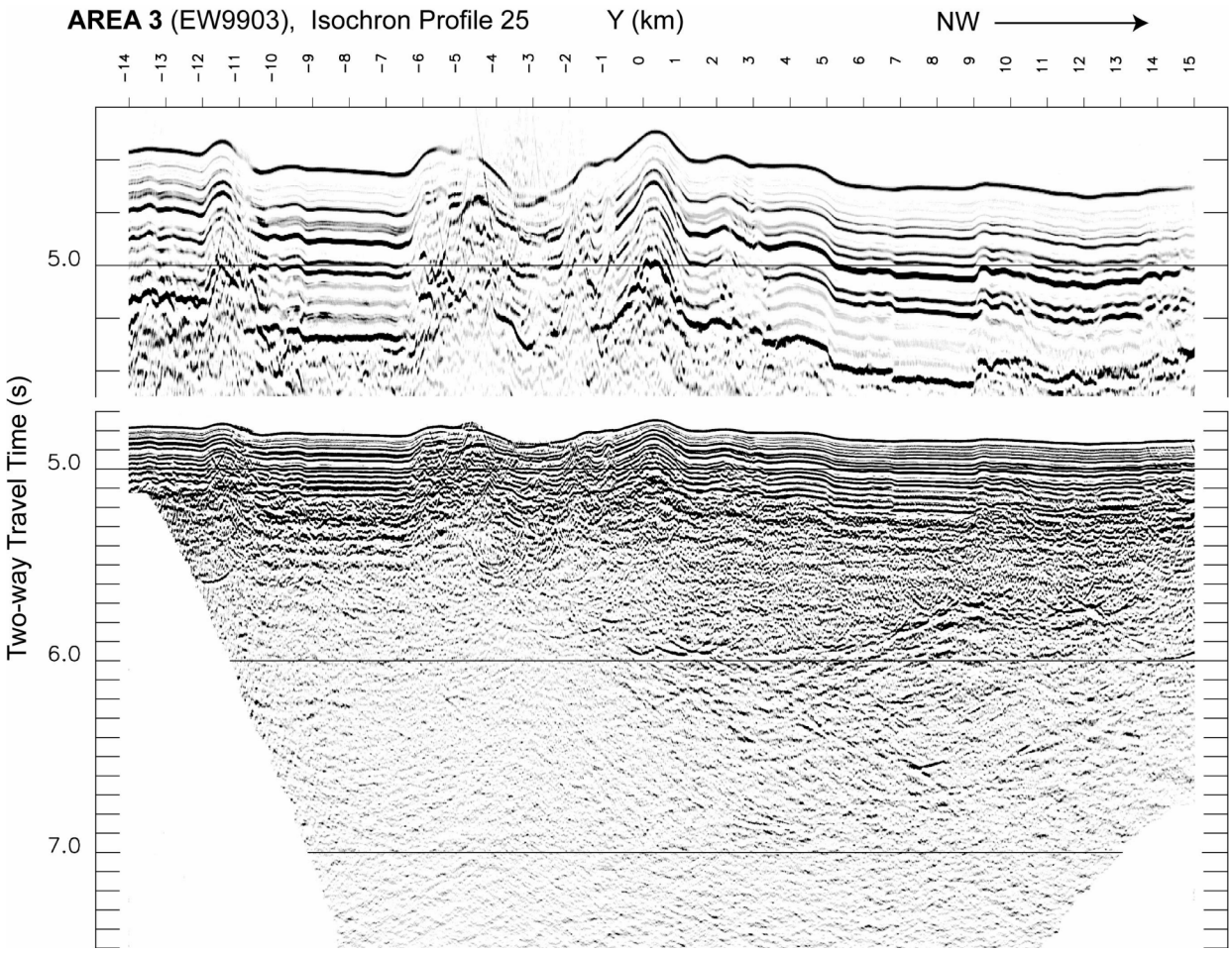


Figure F37. Migrated MCS section for line 26, grid 3. See Figure F28, p. 34, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northwest of the line 21 crossing.

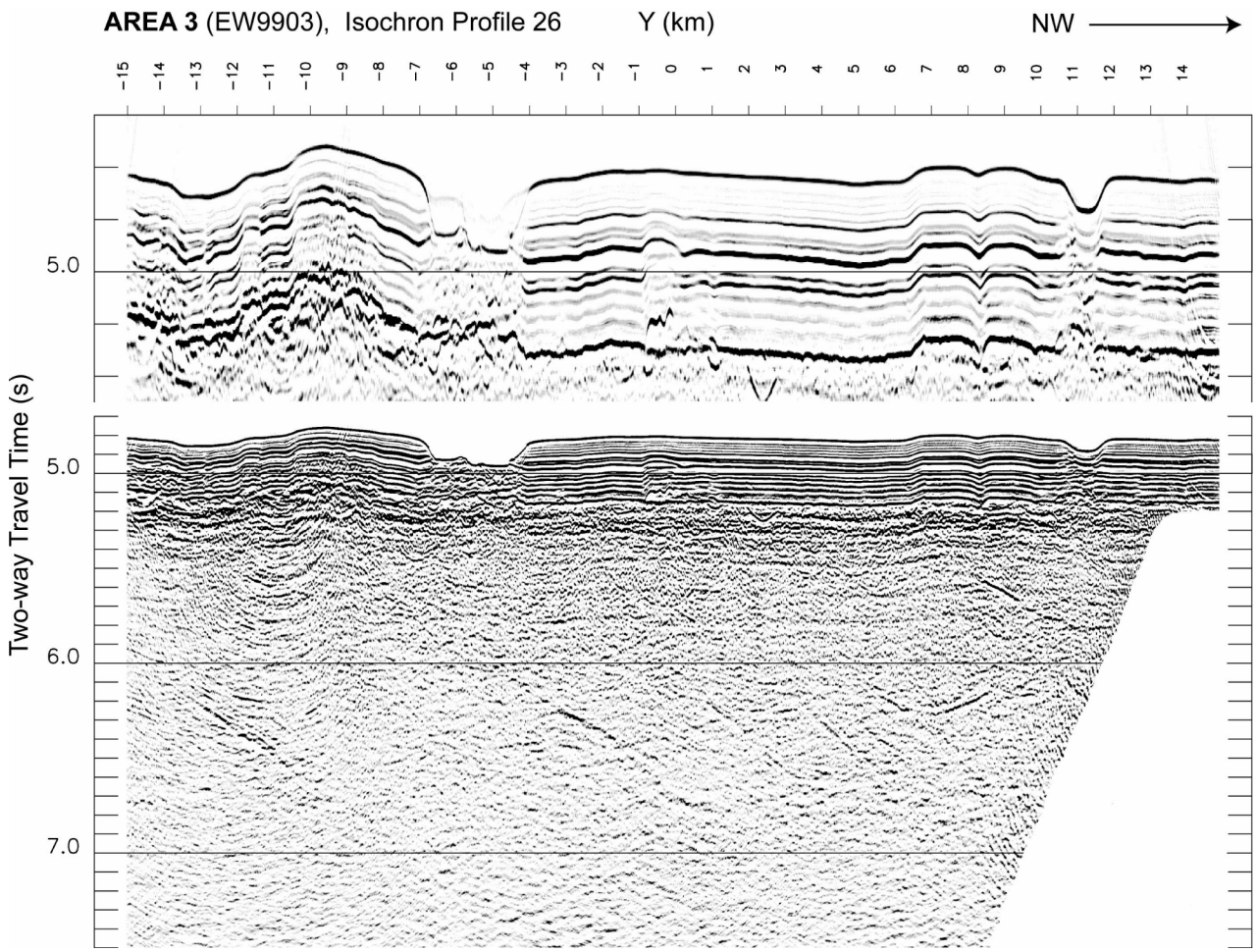


Figure F38. Migrated MCS section for line 27 grid 3. See Figure F28, p. 34, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northwest of the line 21 crossing. Site 1256 is at +5 km.

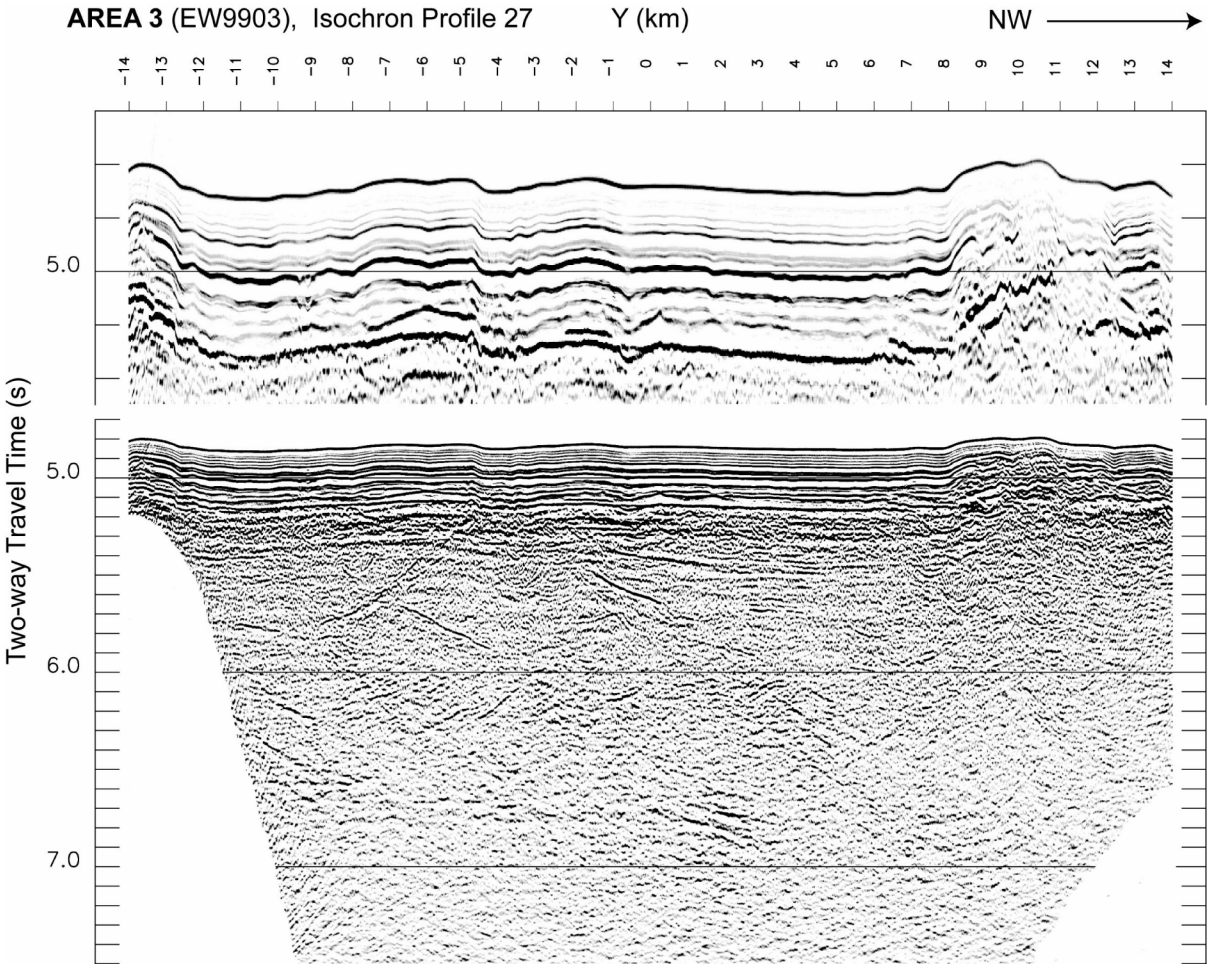


Figure F39. Migrated MCS section for line 28, grid 3. See Figure F28, p. 34, for location. The upper panel shows part of the same data as the lower panel but plotted at lower gain and greater vertical exaggeration to show detail in the sedimentary section. Distances are measured northwest of the line 21 crossing.

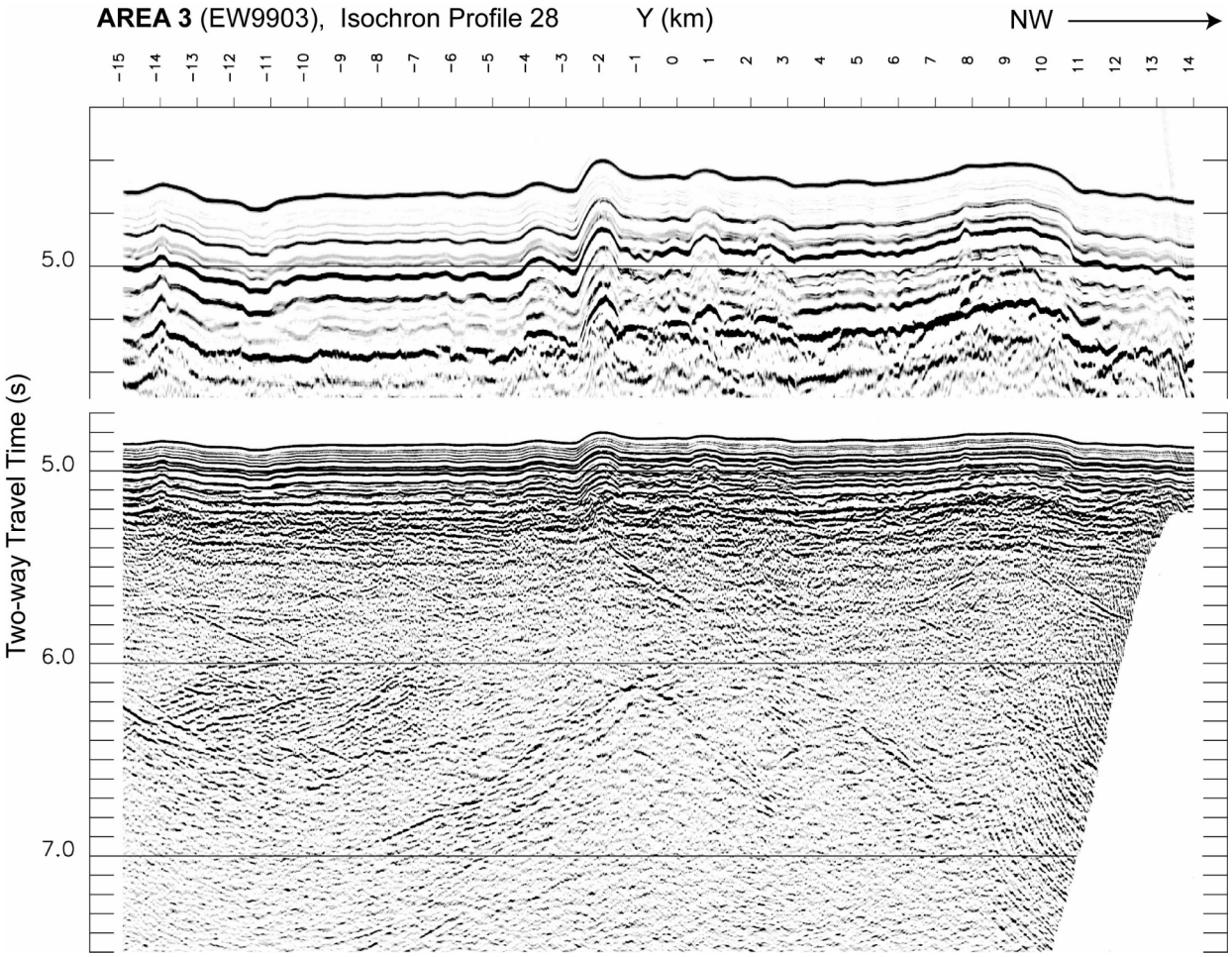


Figure F40. Multibeam bathymetry contour map and multichannel seismic (MCS) track map for grid 4 (data bank Site ALIJOS-01).

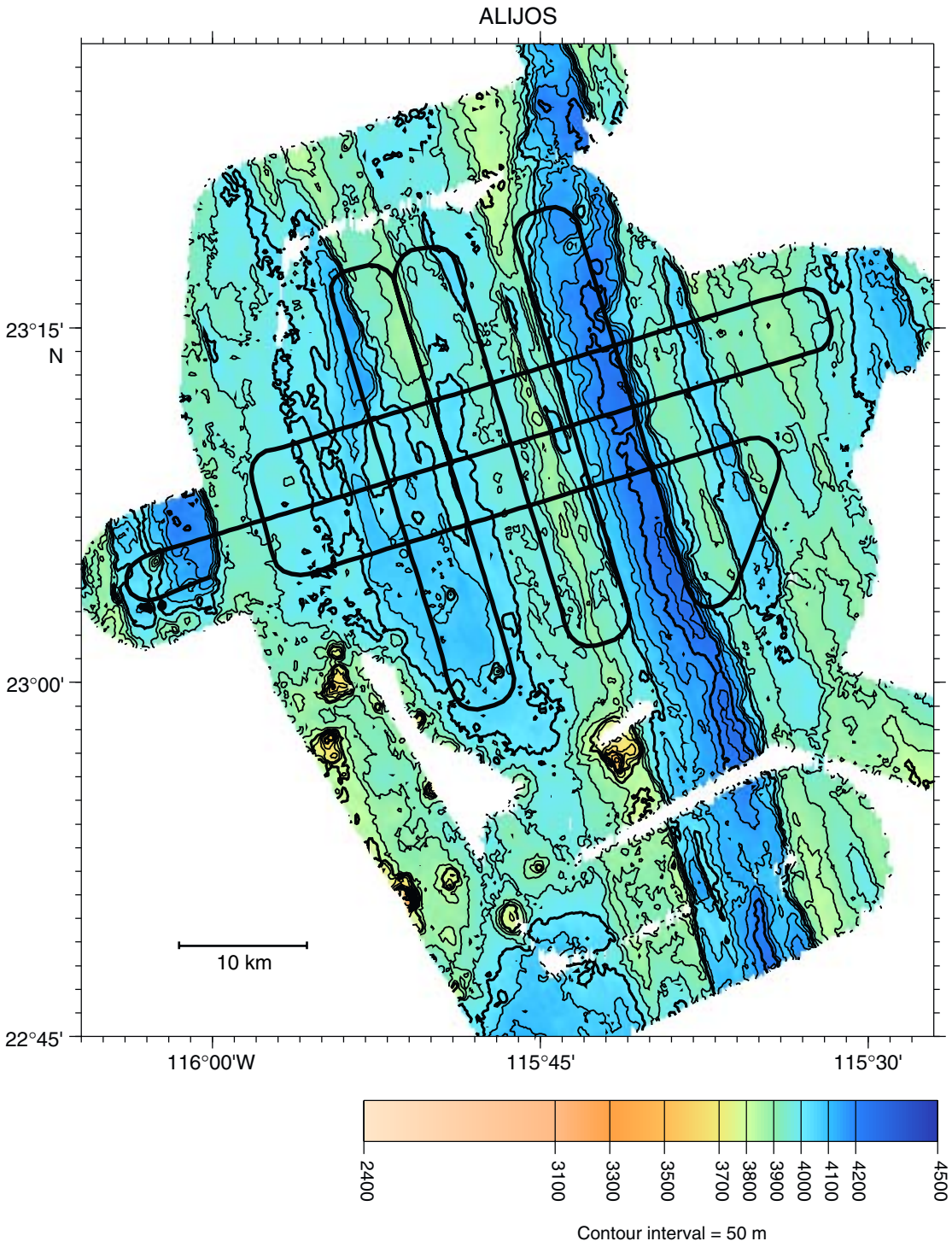


Figure F41. Bathymetry profile map for grid 4 (data bank Site ALIJOS-01). Depths <4000 m are shaded.

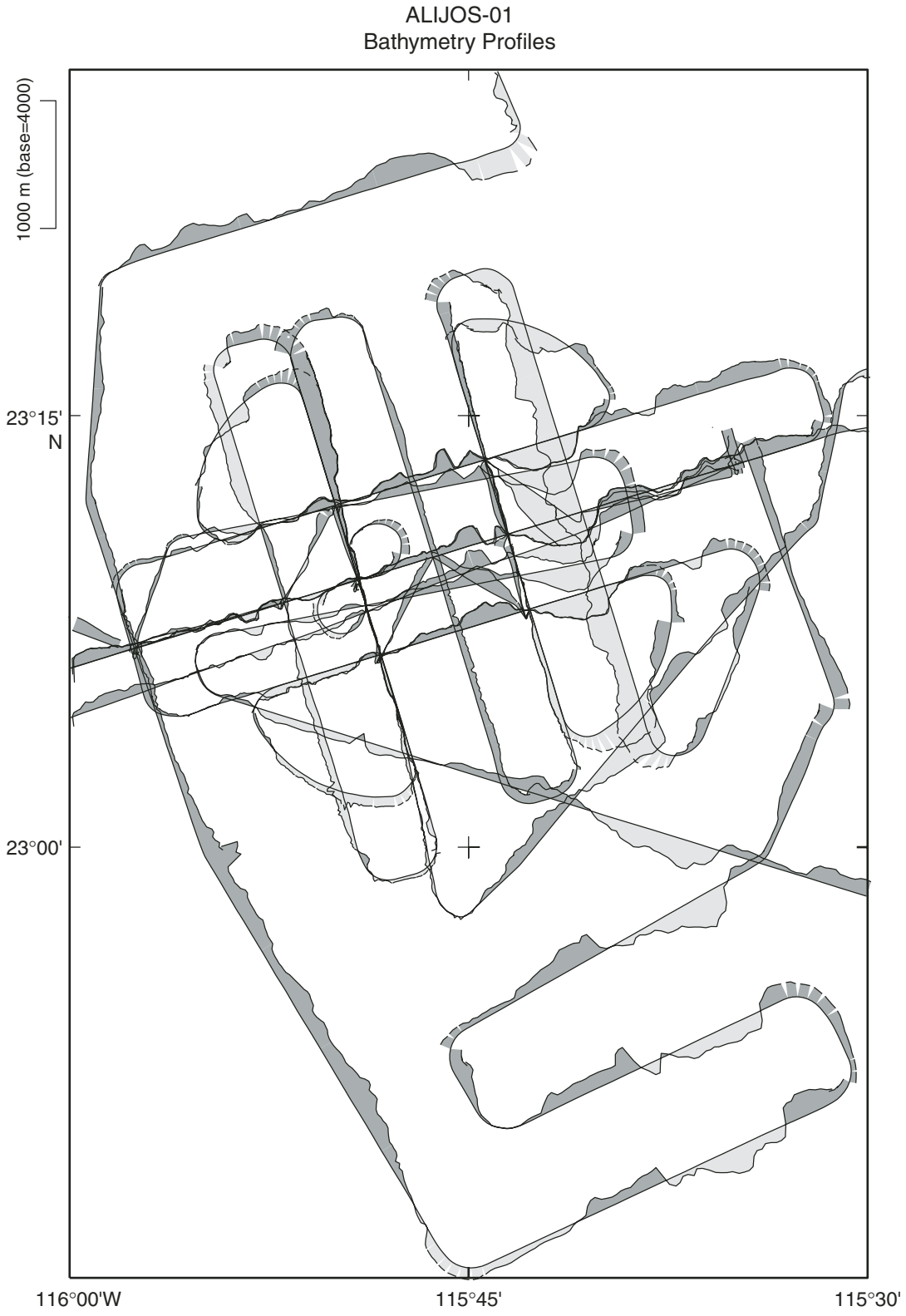


Figure F42. Magnetic profile map for grid 4 (data bank Site ALIJOS-01). Positive anomalies, approximately corresponding to normal polarity, are shaded.

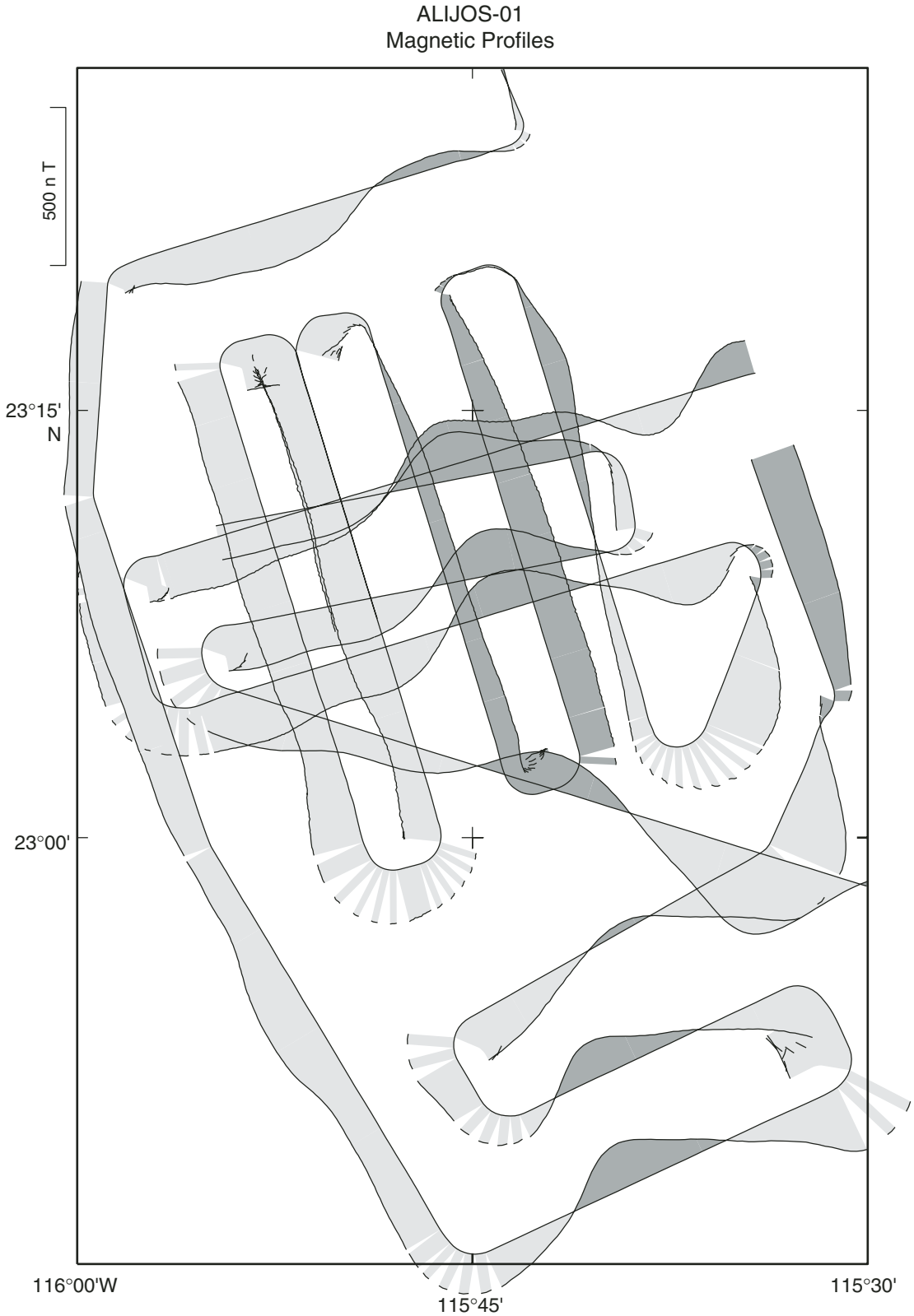
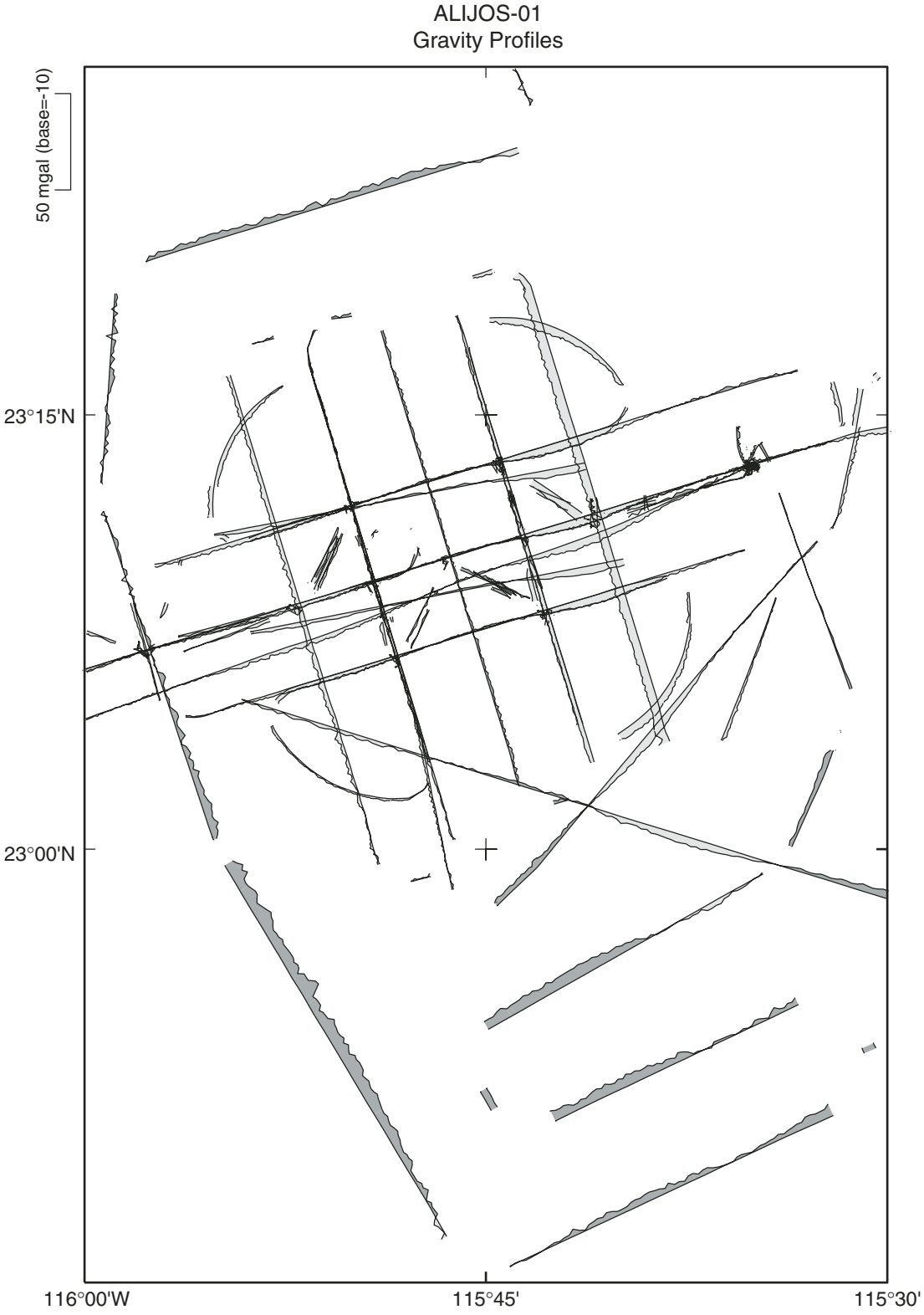


Figure F43. Gravity profile map for grid 4 (data bank Site ALIJOS-01). Anomalies greater than –10 mgal are shaded.



CHAPTER NOTES*

N1. 22 December 2003—Hallenborg, E., Harding, A.J., Kent, G.M., and Wilson, D.S., 2003. Seismic structure of 15 Ma oceanic crust formed at an ultrafast spreading East Pacific Rise: evidence for kilometer-scale fracturing from dipping reflectors. *J. Geophys. Res.,* 108:10.1029/2003JB002400.

N2. 22 December 2003—Figure F28 was replaced with a corrected figure (location of Site 1256 was incorrect), and caption links were replaced with correct figure links. The correct figure and caption appear in this version.

*Dates reflect file corrections or revisions.