UNITED STATES

DEPARTMENT OF INTERIOR

GEOLOGICAL SURVEY

High-resolution seismic reflection profiles: Navarin Basin province, Northern Bering Sea, 1981

by

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This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards.

Menlo Park, California

INTRODUCTION

In June and July 1981, the U.S. Geological Survey conducted a high resolution geophysical and seafloor sampling cruise (DC 2/3-82 BS/NB) in the northern Bering Sea to obtain data on seafloor hazards pertinent to OCS oil and gas lease sale activity. This report contains a list of the seismic reflection records that are publicicly available and include a trackline map of the Navarin Basin province. Microfilm copies of the seismic reflection records are available for reviewing:

(1) U.S. Geological Survey
Room B-164, Deer Creek Facility
3475 Deer Creek Rd., Palo Alto, CA.

or for purchase:

(2) National Geophysical and Solar
Terrestrial Data Center
EDS/NOAA, Code D621
325 Broadway
Boulder, CO 80303
Tele: (303) 497-6338

DATA COLLECTION

DISCOVERER cruise DC 2/3-81 BS/NB left Kodiak June 8, 1981, for work in OCS lease sale area 83 (Navarin Basin). The first leg, which was 65 percent geophysics and 35 percent sampling, ended at Adak July 2, 1981. the second

leg of the cruise which began July 6, 1981, consisted of 55 percent geophysics and 45 percent sampling, and ended at Dutch Harbor July 29, 1981.

Navigation positions were determined by satellite and Loran C. Position accuracies are probably on the order of 0.5 km.

Three separate seismic reflection systems were operated simultaneously, throughout much of the study area, providing high and intermediate frequency acoustic records. The systems were: 3.5 kHz transducer (10,143 km), 400-800 Joule minisparker (5247 km), and two 40 in^3 airguns (8050 km). The 3.5 kHz system was operated continuously throughout the cruise, including transit lines to the study area and part of the way to and from St. Paul Island for two medivacs. The airguns were deployed along all except transit and sampling lines. The minisparker system was operated in shelf and upper-slope water depths (to about 800 m). (See Table 1 for line numbers along which the various systems were operational).

Interpretations of the data have been underway since the cruise. The following preliminary reports and abstracts have been released or are in press:

Carlson, P. R., and Karl, H. A., 1981, Geologic hazards in Navarin Basin province, northwestern Bering Sea: U. S. Geological Survey Open-File Report 81-1217, 149 p.

Carlson, P. R. and Karl, H. A., 1981, High-resolution seismic reflection profiles: Navarin Basin province, northern Bering Sea, 1980: U.S. Geological Survey Open-File Report 81-1221, 4 p., 1 map, scale 1:1,000,000.

Carlson, P. R., Karl, A. A., Fischer, J. M., and Edwards, B. D., 1982, Geologic hazards in Navarin Basin province, northern Bering Sea: 14th Offshore Technology Conference, Houston, Tex., Proceedings, v. 1, p. 73-87.

Carlson, P. R., Karl, H. A., Johnson, K. A., and Fischer, J. M., 1981, Morphology, sedimentology, and genesis of three large submarine canyons adjacent to Navarin Basin, Bering Sea: American Assoc. Petroleum Geol. Bull., v. 65, p. 909.

Carlson, P. R., Karl, H. H., Johnson, K. A., and Fischer, J. M., 1982, Submarine canyons flanking Navarin Basin, Bering Sea: U.S. Geological Survey Circular (Accomplishments in Alaska), 844, p. 139-141.

Fischer, J. M., Carlson, P. R., and Karl, H. A., in press, Bathymetric map of Navarin Basin Province, Bering Sea: U.S. Geological Survey Open-File Report.

Karl, H. A., Cacchione, D. A., and Carlson, P. R., 1982, Large sand waves in canyon heads, Bering Sea: products of internal waves or density currents: International Sedimentologic Congress, abstracts volume.

Karl, A. A. and Carlson, P. R., 1981, Large sediment waves at the shelf edge, northern Bering Sea: Geological Society of America, Abstracts with Program, v. 13, p. 483.

Karl, A. A. and Carlson, P. R., in press, Location and description of sediment samples: Navarin Basin province, Bering Sea, 1980-81: U.S. Geological Survey Open-File Report 82-

_____, in press, Large sand waves in submarine canyon heads, Bering Sea: implications for Pleistocene paleogeography: Journal of Sedimentary Petrology.

Karl, H. A., Carlson, P. R., and Cacchione, D. A., in press, Factors influencing sediment transport at the shelf break: In: Stanley, D. J., and Moore, G. (editors). The shelf-slope boundary, critical interface on continental margins: Society Paleontologists and Mineralogists Special Publication.

Karl, H. A., Carlson, P. R., and Lamb, B., 1982, Sediment waves in the head of Navarinsky, Pervenets, and Zhemchug submarine canyons, northwestern Bering Sea: U.S. Geological Survey Circular (Accomplishments in Alaska) 844, p. 141-143.

Marlow, M. S., Carlson, P., Cooper, A. K., Karl, H., McLean, H., McMullin, R., and Lynch, M. B., 1981, Hydrocarbon resource report for proposed OCS lease sale 83, Navarin Basin, Alaska: U.S. Geological Survey Open-File Report 81-252, 75 p.

Vogel, T. M., Kvenvolden, K. A., Carlson, P. R., and Karl, A. A., 1981, Geochemical prospecting for hydrocarbons in the Navarin Basin province: American Assoc. Petroleum Geol. Bull., v. 65, p. 1004.

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Table 1. Track lines along which seismic systems were operational.

	3.5 only*		Minisparker	Airguns
	Transit	Study Area		
Leg 1 (DC-2-81)	T1-T4	48,49,63,70	T2,T4,1-5, 8-20,24-28 31-47, 50-60 62, 64-68 73-82	1-47, 50-62 64-69, 71-92
Leg 2 (DC-3-81)	None	111, 119-122	106-110, 112-118, 123-137, 141-153, 159-188	95-110, 112-118, 123-188