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DESCRIPTION OF DREDGE SAMPLES FROM THE BERING SEA CONTINENTAL MARGIN

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This report is preliminary and has not been edited or reviewed for conformity with Geological Survey standards and nomenclature.

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Description of Dredge Samples from the Bering Sea Continental Margin

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During 1978 twenty dredge sites were occupied and successfully dredged from the R.V. S.P. LEE along the eastern Bering Sea continental margin (Fig. 1). A total of several tons of rock were collected using a chain-bag dredge. Samples were recovered in water depths ranging from 750 to 2,750 meters from exposures along the continental slope bordering the large Bering Sea shelf. A preliminary petrographic description of the major lithologies recovered at each station is given in Table 1. At one locality, station L5-78-BS-5, rocks probably recovered from acoustic basement contain the megafossil, Buchia rugosa, of Kimmeridgian or Late Jurassic age. Similar lithic volcanic sandstones were recovered at eight other sites, L5-78-BS-2, -4, -6, -8, -13, -21, -22, and -27. These samples are also thought to be from the basement complex beneath the margin, but, unfortunately, these rocks did not yield diagnostic fossils. The basement strata are overlain unconformably by diatomaceous mudstone or sandstone as old as late Eocene or early Oligocene.

Seismic-reflection and gravity data indicate that the basement rocks beneath the margin are part of a belt of interconnected ridges that extend from the western tip of the Alaska Peninsula northwest to Siberia, a distance of nearly 1,250 km (Marlow and others, 1979).

We thank John Barron for the identification of fossil diatoms, Robert Arnal for Foraminifera identification, and David Jones, who identified the Buchia rugosa.

Reference

Marlow, Michael S., Scholl, D.W., Cooper, A.K., and Jones, D.L., Shallow-water Upper Jurassic rocks dredged from Bering Sea continental margin: American Association Petroleum Geologists Bull., v. 63, no. 3, 1979, p. 490-491.

Table 1. Preliminary petrographic description of dredge samples from the Bering Sea continental margin

Dredge Station	Latitude	Longitude	Depth (meters)	Lithology	Age
L5-78-BS 2-2	56°12.3'N	171°42.2'W	2500-2750	Volcanic sandstone	
2-4	"	"	"	Diatomaceous mudstone	Late Oligocene
2-5	"	"	"	Diatomaceous sandy mudstone	Early Miocene
3-1	56°22.0'N	171°53.4'W	2000-2200	Volcanic sandstone	
4-1	56°25.6'N	171°53.5'W	1550-1700	Diatomaceous mudstone	Early Oligocene (?)
4-2	"	"	"	Volcanic sandstone	
5-1	56°51.1'N	173°32.7'W	1500-1700	Diatomaceous mudstone	Late Oligocene
5-5	"	"	"	Volcanic sandstone	Late Jurassic
5-7	"	"	"	Micritic limestone	Late Middle Miocene
6-7	56°50.5'N	173°31.4'W	1600-1850	Diatomaceous mudstone	Late Oligocene to Early Miocene
6-9	"	"	"	Volcanic sandstone	
6-16	"	"	"	Graywacke	Pleistocene
7-3	57°53.0'N	171°22.3'W	1600-1900	Diatomaceous mudstone	Early Middle Miocene
8-1	57°53.1'N	174°22.6'W	1250-1500	Diatomaceous mudstone	Late Miocene
8-6	"	"	"	Diatomaceous mudstone	Middle-Middle Miocene
9-2	57°52.0'N	174°25'W	1200-1250	Glauconitic mudstone	Late Middle Miocene
9-3	"	"	"	Micritic limestone	Early Pliocene
11-1	58°20.1'N	174°51.6'W	1400-1550	Micritic diatomaceous mudstone	Middle-Middle Miocene
13-2	58°19.73'N	"	750-1100	Micritic limestone	Late Pliocene
13-3	"	"	"	Volcanic sandstone	
15-2	58°27.5'N	176°51.9'W	950-1100	Micritic limestone	
15-3	"	"	"	Tholeiitic basalt	Minimum age = 54.7± 1.08 m.y.*
16-2	58°28.6'N	176°36.5'W	1800-2050	Basaltic tuff	
16-6	"	"	"	Muddy limestone	Eocene
16-9	"	"	"	Mudstone	Late Early to Early Middle Eocene
19-2	59°03.3'	178°43.1'	1500-2500	Mudstone	Late Quaternary
21-1	59°38.5'	178°52.2'	1800-2600	Volcanic siltstone	Tertiary to Recent
21-2	"	"	"	Volcanic sandstone	
21-3	"	"	"	Metagabbro	
21-5	"	"	"	Andesite tuff	
22-2	59°36.9'	178°49.2'	1500-2200	Glauconitic sandstone with andesite clast	
22-4	"	"	"	Micritic limestone	Late Miocene to Quaternary

Table 1. (continued)

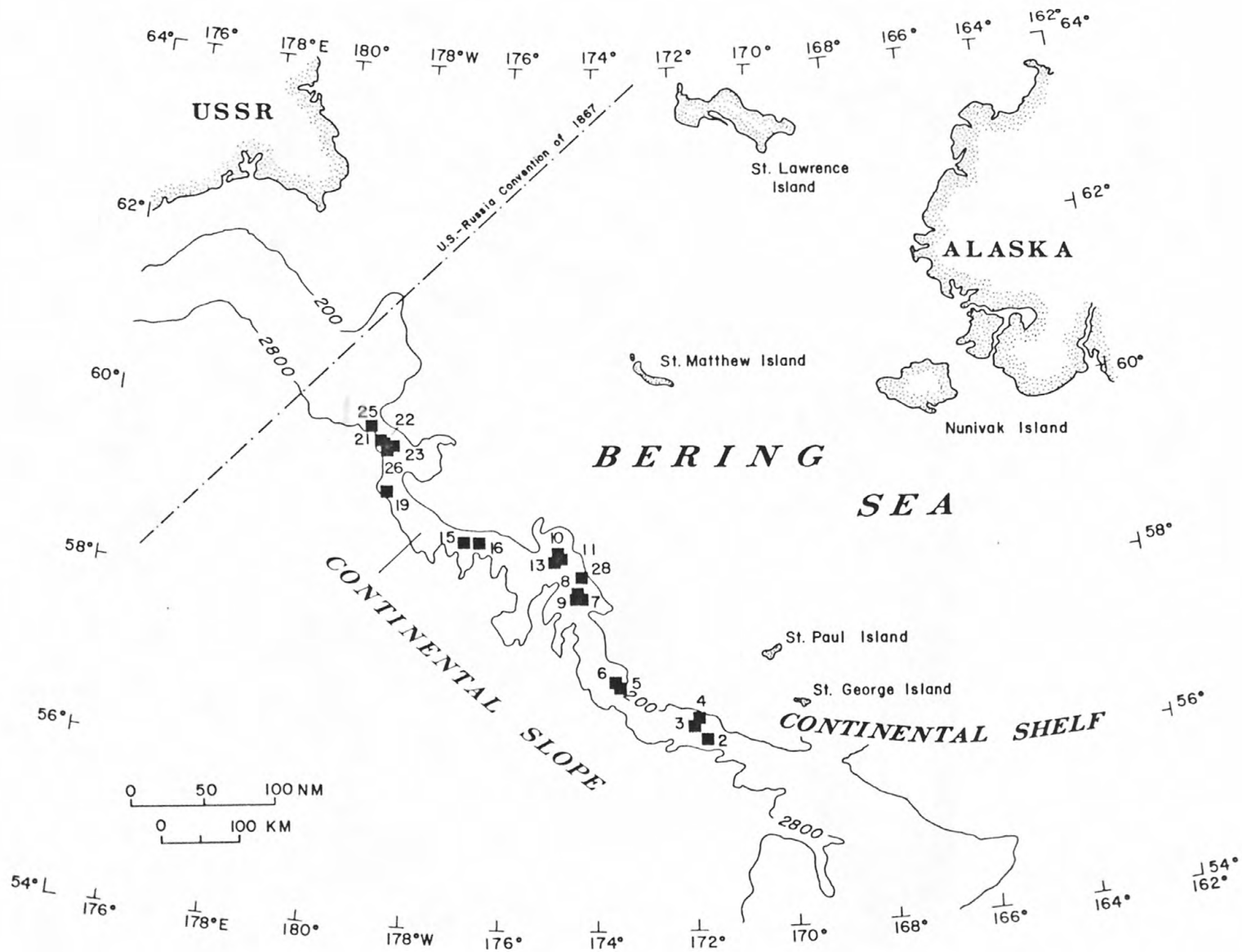
Dredge Station	Latitude	Longitude	Depth (meters)	Lithology	Age
L5-78-BS 22-13	59°36.9'N	178°49.2'W	1500-2200	Latite or Dacite	
22-17	"	"	"	Keratophyric tuff	
25-2	59°47.2'N	179°08.3'W	2000-2800	Tuff	Quaternary
26-1	59°33.8'N	178°47.4'W	1800-2500	Volcanic sandstone	Early Pliocene
26-2	"	"	"	Mudstone	
26-4	"	"	"	Tuff (replaced by calcite)	
26-6	"	"	"	Micritic limestone	
27-1	59°36.2'N	178°38.8'	1750-1800	Sandy siltstone interbedded with volcanic sandstone	Possibly Eocene
27-2	"	"	"	Volcanic sandstone	
28-1	58°06.1'N	174°18.3'W	800-1650	Sandy mudstone	Late Miocene
28-3	"	"	"	Sandy limestone	Late Miocene to Early Pliocene
28-E3	"	"	"	Volcanic sandstone	

$$* K_2O = 2.189, 2.191\%$$

$${}^{40}\text{Ar}_{\text{rad}}/\text{gm} = 1.752 \times 10^{-10} \text{ moles/gm}$$

$$\frac{{}^{40}\text{Ar}_{\text{rad}}}{{}^{40}\text{Ar}_{\text{total}}} = 0.8453$$

Apparent minimum (sample altered) age using K^{40} decay constants of: $\lambda_{\beta} = 4.962 \times 10^{-10}/\text{yr}$; $\lambda_{\epsilon} = 8.78 \times 10^{-13}/\text{yr}$;
 abundance ratio: ${}^{40}\text{K}/\text{K} = 1.167 \times 10^{-4}$ atom percent



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