

During September and October 1974, high-resolution seismic profiles covering approximately 600 km of tracklines (lines 1) were collected from the northern Gulf of Alaska by the R/V Thomas G. Thompson. Details of the profiles plus stratigraphic descriptions of surface sediment samples collected in May and June 1975 by the R/V Seward (USCGC 1155) were used to supplement this surface sediment distribution map for the northern Gulf of Alaska between Montague Island and Yakutat Bay.

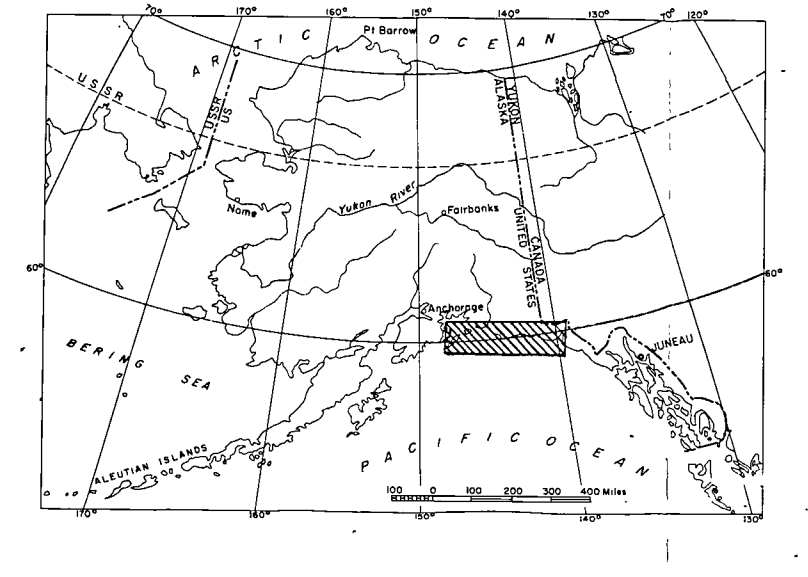
Four major sedimentary units occur on the sea floor of the continental shelf in the map area. These units, which are characterized by their seismic signatures, are: (1) Holocene sediments (Profile A); (2) Holocene end moraine (Profile B); (3) Quaternary glacial marine sediment (Profile C) and (4) Tertiary and Pleistocene stratified deposits (Profile D). The ages used for material reported are based on relative stratigraphic positions and not on any isotopic dates. The term Holocene is applied to sediment accumulating today and to sediments formed in historic time. The term Quaternary is applied to glacial marine deposits which are interpreted as being deposited on the continental shelf during Pleistocene time when sea level was lowered substantially. This unit also may include Holocene levelled sediments. The Tertiary and Pleistocene ages applied to the stratified sedimentary rocks, which are often folded, faulted and truncated (Profile D) are based on similarities in lithology and structure to unexposed identified deposits (Plafker, 1974). Stratigraphically, Holocene sediments when present always overlies Quaternary glacial marine sediment or Tertiary and Pleistocene stratified deposits. The Quaternary glacial marine material when present overlies the identified material.

Holocene sediment blankets the entire near shore area between Hinchinbrook Island and the south end of Kayak Island. In addition, Holocene sediment comprises the surface fill in the Hinchinbrook Sea Valley and covers the area south of Tarr Bank and north of Middleton Island. East of Kayak Island, Holocene sediment spans between the Bay and the Deary Glacier and an area of Tertiary and Pleistocene rock which crops out southwest of Cape Yakataga between Cape Suckling and Icy Bay. Holocene sediment also occurs in a series of isolated basins south of the continental shelf. Analyses of 1000m Cullen samples show Holocene sediment to be predominantly clayey silt with a small sand component. The maximum thickness of Holocene silt with a small sand component. The maximum thickness of Holocene silt with a small sand component. The maximum thickness of Holocene silt with a small sand component.

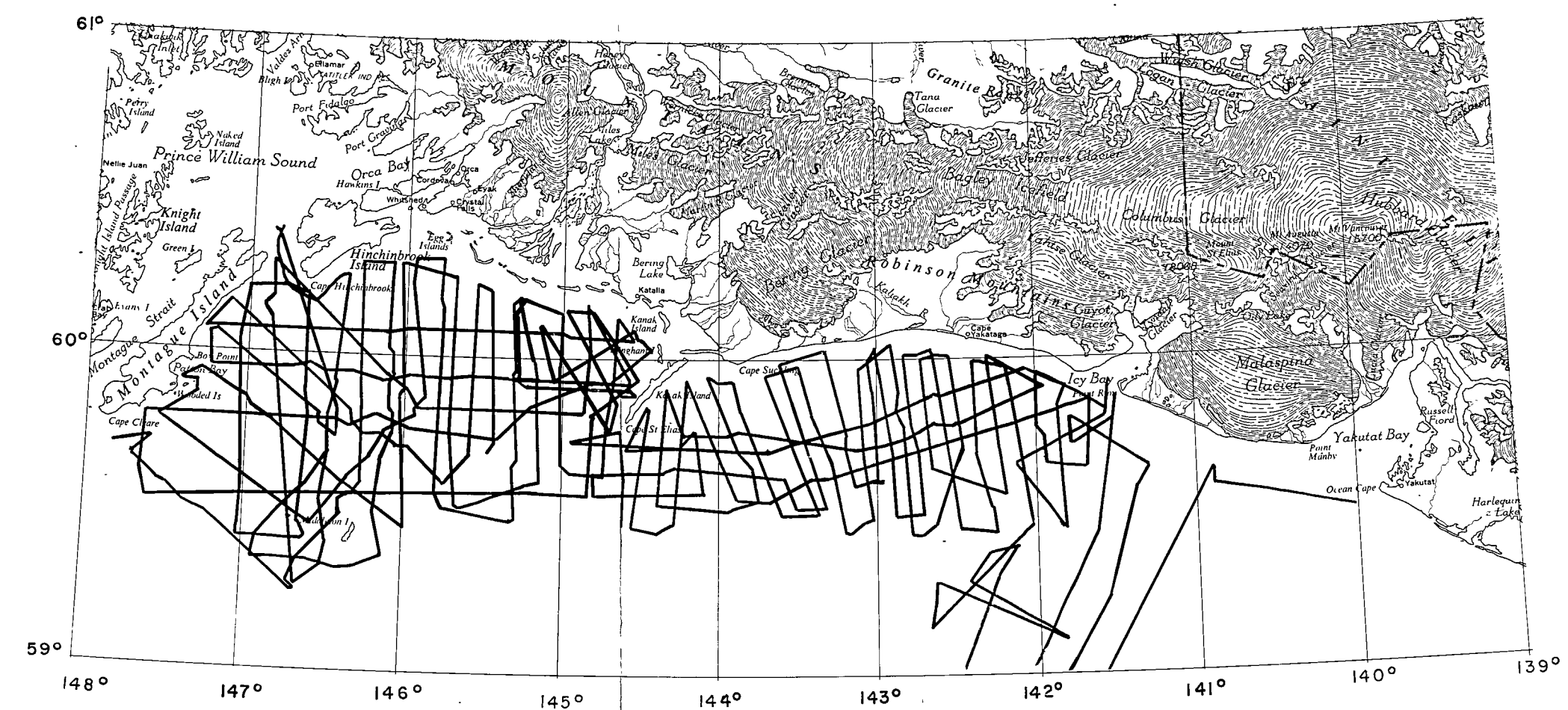
Holocene end moraines are found at the mouth of Icy Bay and south of the Malaspina Glacier. A portion of the Bering Glacier end moraine is shown in Profile B. Tertiary and Pleistocene stratified deposits were also collected south of the Malaspina Glacier and at the mouth of Yakutat Bay. Until the latter they will not be included as end moraines on this sediment distribution map.

Quaternary glacial marine sediments are found in a narrow zone 20 or more km offshore which parallels the shoreline between Icy Bay and Yakutat Bay. Glacial marine sediment collected by the Cullen samples is generally a pebbly silt. Profile C shows a characteristic area of glacial marine sediment.

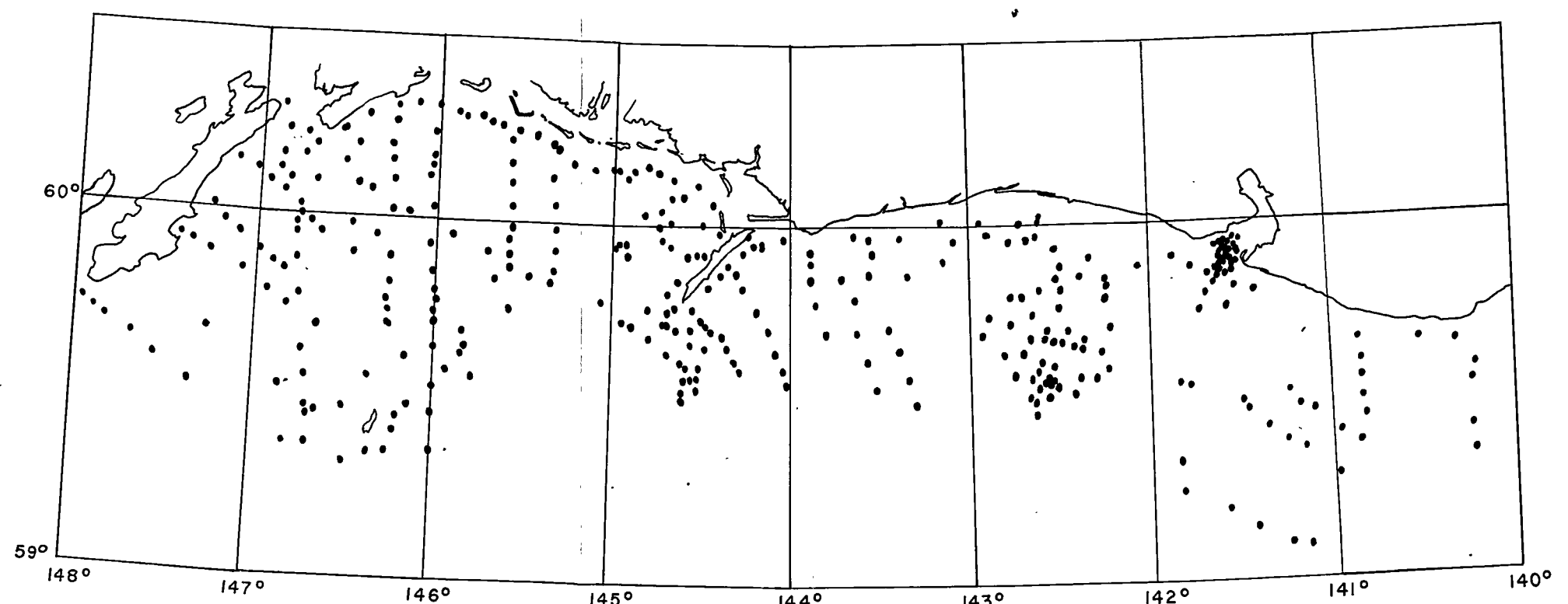
Tertiary or Pleistocene stratified sedimentary rocks, which often are folded, faulted and truncated, crop out on Tarr Bank, offshore of Montague Island and in several localities southeast and southwest of Cape Yakataga. In addition, bedrock was exposed at two localities, between Cape Hinchinbrook and Middleton Island (Sea Rocks and Wessels Reef) in June 1975. Both rocks consist of well foliated sandstone and siltstone that are indistinguishable from the Oroc Formation of Montague and Hinchinbrook Islands (Wheeler, 1973). Wessels Reef is composed of friable sandstone and granule conglomerate that is similar lithologically to rocks of the Katalla Formation on Frank Island (Plafker, 1974; Wheeler, pers. comm., 1975). Duct cores were attempted at many of the outcrop areas during the Cullen cruise. Frequently, the duct core barrel was dented but no sample was recovered. Additional sampling is needed to better characterize the nature of the stratified deposits. Folded stratified deposits on Tarr Bank are shown in Profile D. Sampling on Tarr Bank revealed a number of areas covered by a thin veneer (approximately one metre in thickness) of modern sediment. This veneer of sediment is not detectable on seismic profiles because of the transparency of the sediments and/or the limited resolution (200) of seismic systems and as not shown on the sediment distribution map.



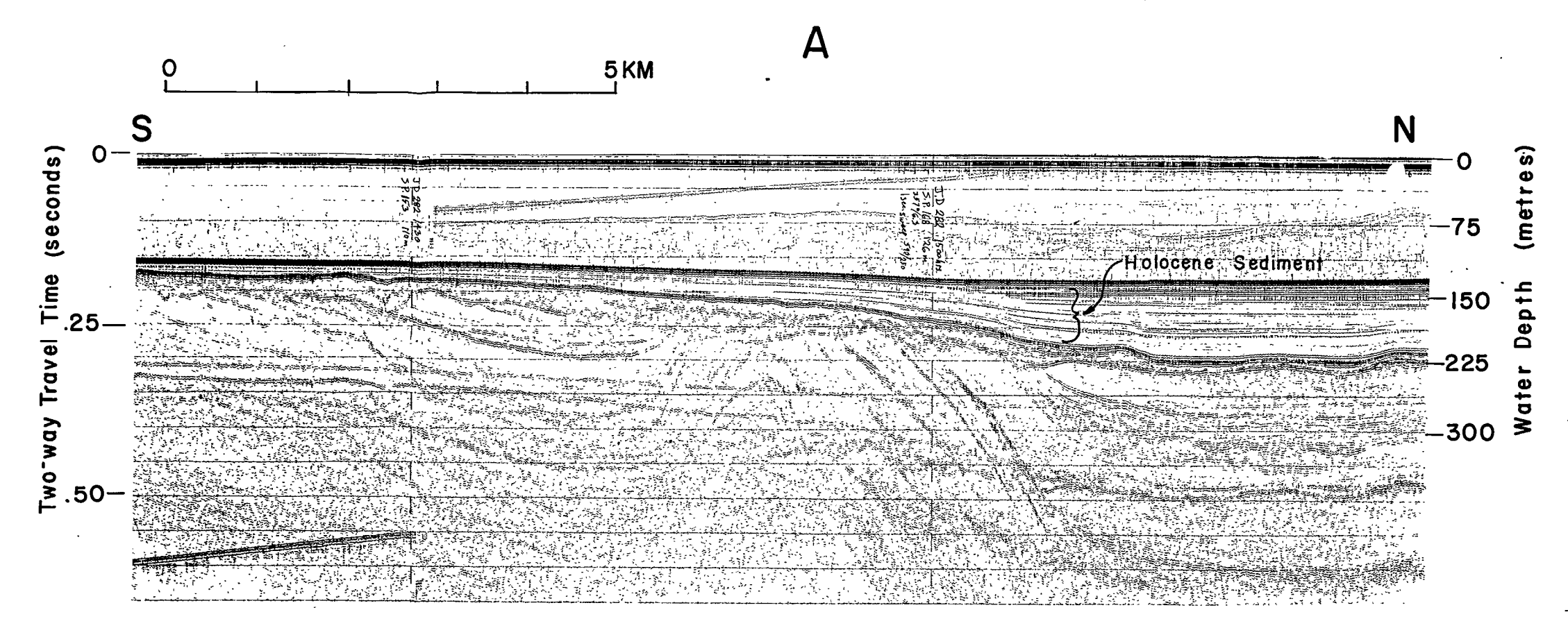
Index showing location of map area.



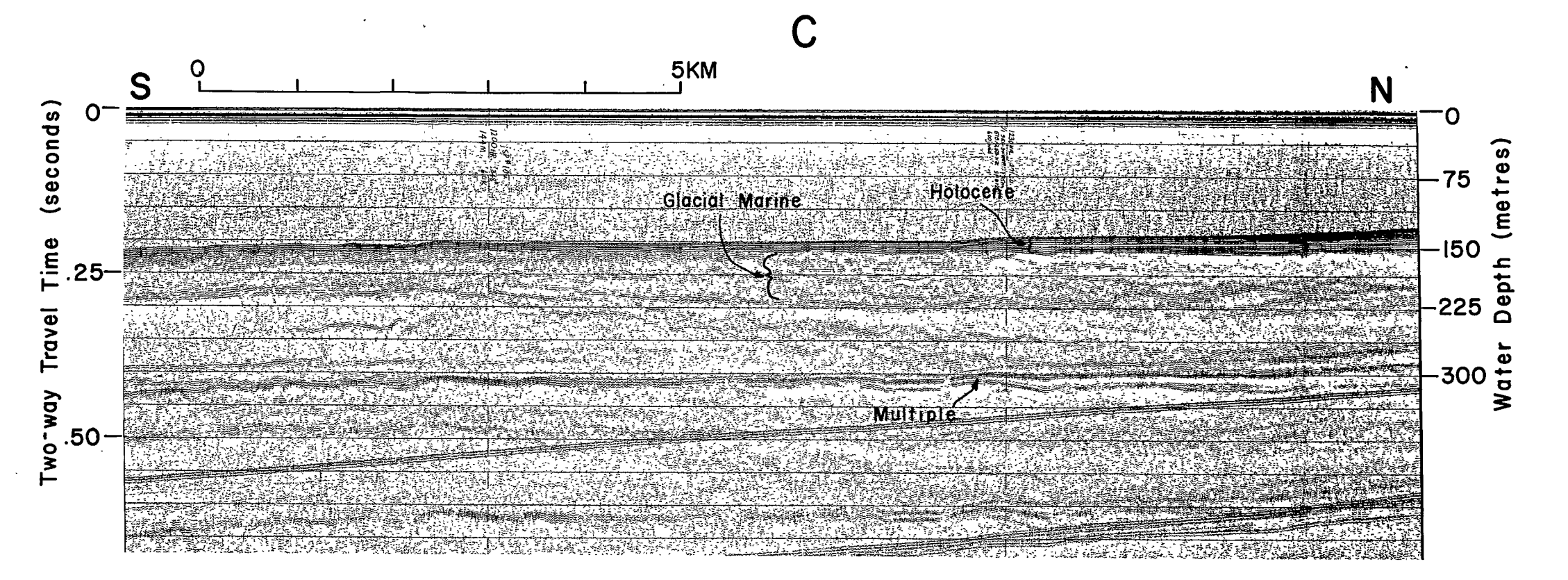
1. Trackline map of the R/V THOMAS G. THOMPSON cruise (September-October, 1974).



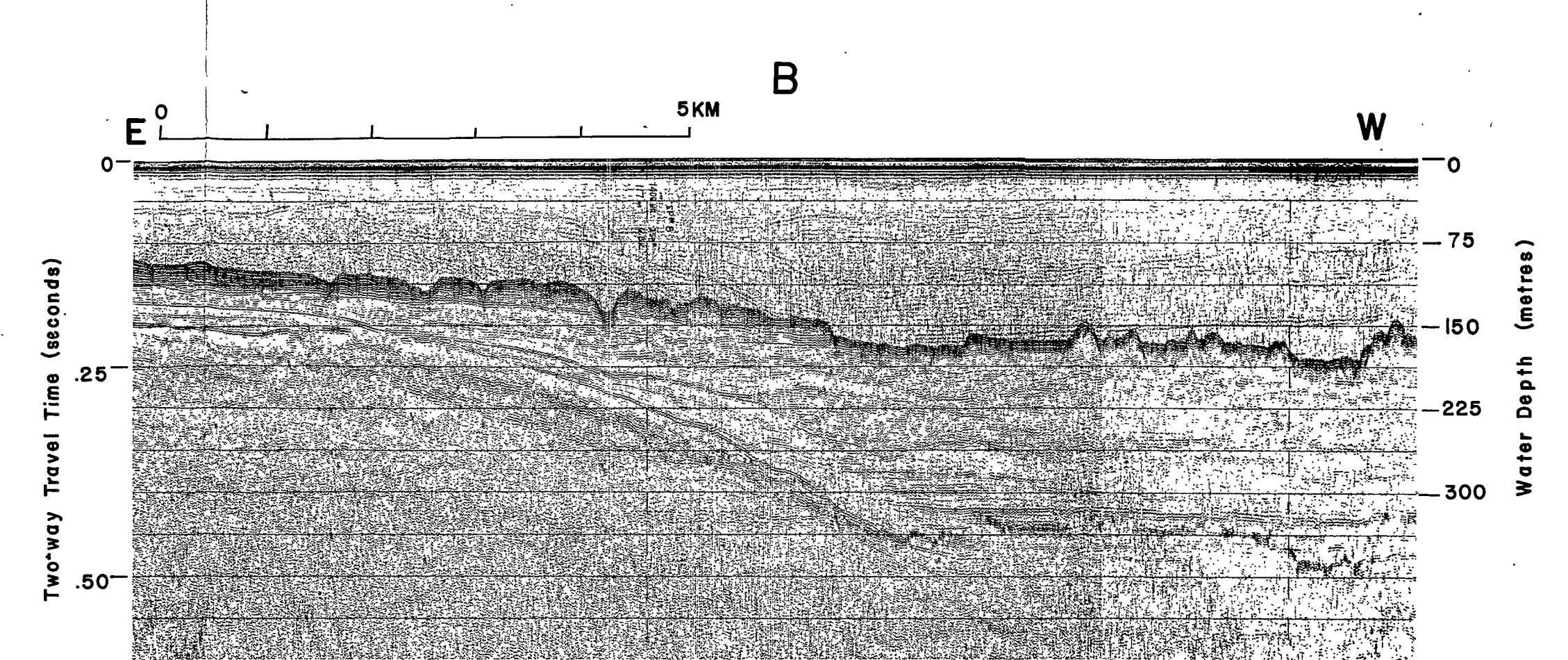
- HOLOCENE SEDIMENTS
- HOLOCENE END MORAINE
- QUATERNARY GLACIAL MARINE SEDIMENT
- TERTIARY & PLEISTOCENE STRATIFIED DEPOSITS
- 200 METRE ISOBATH



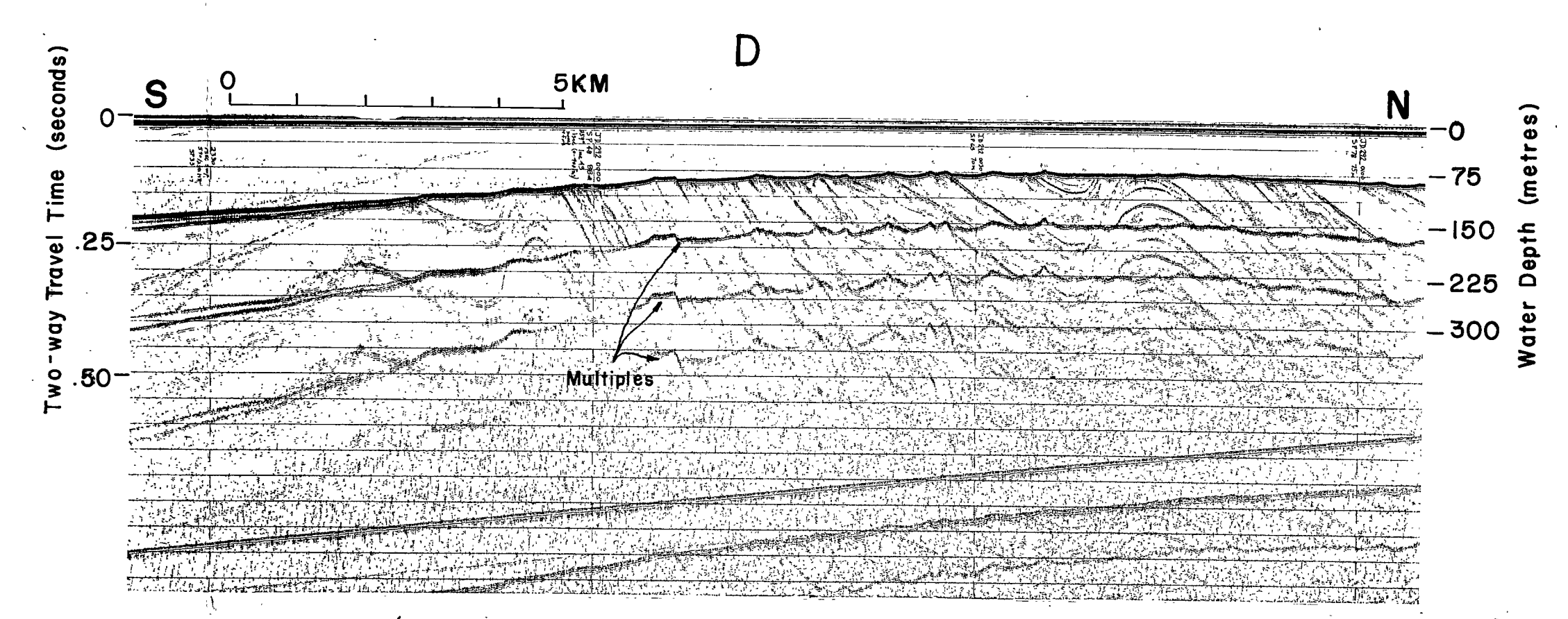
A. Holocene sediment overlying folded stratified deposits south of Copper River (Vertical Exaggeration  $\times 9X$ ).



C. Quaternary glacial marine sediment filling Bering Trough (V.E.  $\times 9X$ ).



B. A portion of the Holocene Bering Glacier end moraine (V.E.  $\times 9X$ ).



D. Seismic profile showing folded Tertiary and Pleistocene stratified deposits on Tarr Bank (V.E.  $\times 9X$ ).

# SURFACE SEDIMENT DISTRIBUTION MAP, NORTHERN GULF OF ALASKA

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 1975

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

U.S. GEOLOGICAL SURVEY  
 OPEN FILE MAP 75-505