DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

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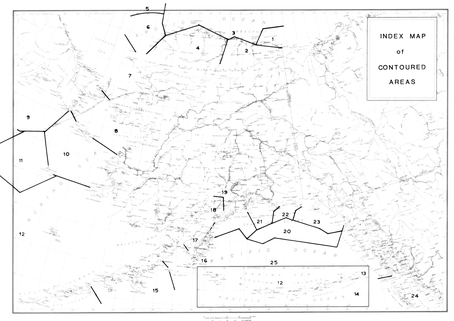
PLATE 1

MAP OF SEDIMENTARY BASINS OF OFFSHORE ALASKA AND ADJACENT REGIONS

(INCLUDING ONSHORE DISTRIBUTION OF JURASSIC AND YOUNGER SEDIMENTARY ROCKS)

Compiled by THOMAS J. WILEY

1986



CONTOURED AREAS

The isopach and structure-contour maps compiled here depict the deepest, oldest, or most representative of the mapped horizons available for each area.

Maps with contour intervals of feet, miles, seconds, fractions of kilometers or multiples of kilometers have been redrawn with a one kilometer contour interval.

Listed below are the type of contour map, contoured horizon, original contour interval, and reference for each area shown on the index map above.

1. Structure-contour map on Paleogene horizon, contour interval 1.0 seconds of two-way seismic reflection time (Grantz and others, 1982a, Figure 4).
2. Structure-contour map on top of the lower Cretaceous unconformity, contour interval 1000 feet (U.S. Geological Survey, 1978, Misc. Field Studies Map MF 928-H).
3. Isopach map of post-Franklinian (Mississippian and younger) sedimentary rocks, contour intervals 0.5, 1.0, and 2.0 kilometers (Grantz and others, 1982a, Figure 6).
4. Depth of horizon 5700 (top of Lower Cretaceous Pebble Shale unit) in feet, contour interval 200 feet (Bruyneel and others, 1982, Geophysical Map 45).
5. Isochrons on the base of the lower Brookian sequence (upper part of the Lower Cretaceous), contour intervals 0.1, 0.5, and 1.0 seconds of two-way seismic reflection time (Grantz and others, 1982a, Figure 7).
6. Isochrons on base of Ellesmerian sequence, contour interval 1.0 seconds of two-way seismic reflection time (Grantz and others, 1982a, Figure 10).
7. Thickness of Tertiary sediments above acoustic basement, contour interval 0.2 kilometers (Bitterlin and others, 1978).
8. Structure contours on horizon A (Paleozoic and older acoustic basement), contour intervals 0.5 kilometers (Plafker and others, 1982, Figures 7 and 10).
9. Structure-contour map of total sediment accumulation, contour interval 1.0 kilometer (Marlow and others, 1981, Figure 20).
10. Structure-contour map of acoustic basement, contour interval 0.25 kilometers (Marlow and others, 1976, Plate 7).
11. Structure-contour map of horizon D (late Cretaceous-early Tertiary), contour interval 0.5 kilometers (Fisher, 1981).
12. Isopach map of strata above acoustic basement, contour interval 0.5 and 1.0 kilometers (Marlow and others, 1979a).
13. Isopach map of Upper Devian rocks in Amlia and Amukta basins, contour interval 0.5 kilometers (Detlef and others, in press).
14. Isopach map of sediment fill in Amlia fracture zone south of the Aleutian Trench, contour interval 0.4 kilometers (Scholl and others, 1982b, Figure 5A).
15. Isopach map of Unit B (basin fill), Shumagin shelf, contour interval 0.5 and 1.0 kilometers (Hayes and others, in press).
16. Structure-contour map of pre-middle (?) Miocene unconformity, contour interval 0.25 kilometers (Fraser and von Huene, 1980).
17. Structure contours on base of Cenozoic rocks, contour interval 1.0 kilometers (Fisher and Magoon, 1982, Figure 6).
18. Structure contours showing depth to base of Tertiary strata, contour interval 0.5 kilometers (Fisher and Magoon, 1978, Figure 10).
19. Generalized isopach map of the Kenai Group (Neogene), contour interval 5000 feet (Kirschner and Lyon, 1973, Figure 13).
20. Total sediment thickness above oceanic crust, contour interval 0.5 kilometers, (Brunk, 1983).
21. Structure contours on the base of the Late Miocene and younger sediments, contour interval 0.5 kilometers (T.R. Brunn, unpub. mapping, 1981).
22. Structure contours on horizon C (late Pliocene), contour interval 0.5 kilometers (Brunn and Schwab, 1983, Sheet 3).
23. Structure contours on a seismic horizon at approximately the base of the Pliocene and younger sediments, contour interval 0.5 kilometers (Brunn, 1982a, Figure 51).
24. Isopach of low velocity (Tertiary?) sediments, contour interval 0.5 kilometers (Shouldice, 1973, Figure 32).
25. Isopach map of sediments in the Pacific Ocean Basin and marginal to the basins, contour intervals 0.1, 0.2, and 0.5 kilometers (Ludwig and Houtz, 1979).

ONSHORE GEOLOGY

Lithologic and age data are from Beikman, 1980; Shouldice, 1973; and Jones and others, 1981.

Sediment thicknesses shown on the data table for areas which are not contoured are from Grybe, 1973; Patton, 1973; and Bhm, 1983.

Basin names for areas which are not contoured are adapted from Detterman, 1973; Grybe, 1973; Grantz and Kirschner, 1976; Kirschner and Lyon, 1973; and Jones, 1983.

Map Symbols

- FAULT
- NORMAL FAULT (hachured on downthrown side)
- THRUST FAULT (teeth on upper plate)
- STRIKE-SLIP FAULT
- ANTIFORM (including anticlines, arches, diapiric ridges, etc.)
- SYNFORM (including synclines, etc.)
- ISOPACH AND STRUCTURE CONTOURS (Contour interval 1 kilometer)
- HACHURED OR THICKER ISOPACH OR DEEPER STRUCTURE CONTOUR) SIDE
- APPROXIMATE OUTLINE OF OFFSHORE BASIN (Contour maps not available, mainly summit basins of the Aleutian Arc and basins of the Aleutian Terrace)
- APPROXIMATE OUTLINE OF SUBMARINE FAN
- DATA SET SEPARATION
- DEFORMED TERTIARY SEDIMENTARY ROCKS
- DEFORMED CRETACEOUS AND JURASSIC SEDIMENTARY ROCKS
- IGNEOUS AND METAMORPHIC ROCKS, PRE-JURASSIC SEDIMENTARY ROCKS

Correlation of Jurassic and younger sedimentary rocks

0 Miles 200
0 Kilometers 400

Data Table

BASIN	LOCATION (latitude, longitude)	AREA (square km)	MAXIMUM THICKNESS (km)	AGE OF FILL
Albatross	56°30'N., 153°W.	6,000	5	late Miocene and younger
Aleutian	52° to 63°N., 175°W. to 171°E.	480,000	10	Cenozoic (Cretaceous?)
Aleutian Terrace	51°20'N., 176°E. to 51°N., 177°W. to 53°20'N., 164°W.	40,000	8	Eocene and younger
Aleutian Trench	53°N., 165°E. to 50°N., 180° to 56°N., 151° W.	75,000	4	Cenozoic
Amak	55°N., 165°W.	2,400	4	Cenozoic
Amatignak	50°50'N., 179°40'W.	300	2	Cenozoic
Amlia	52°20'N., 173°W.	2,700	5	Pliocene and younger
Amukta	52°30'N., 172°W	3,800	3	Pliocene and younger
Anadyr	64°N., 176°W.	49,000	9	Cretaceous and younger
Atka	51°20'N., 174°W.	4,000	5	Oligocene and younger
Bethel	61°N., 162°W.	77,000	> 4.6	Cretaceous and younger
Bowers	53°30'N., 174°E.	80,000	3	Cenozoic (Cretaceous?)
Bristol Bay	56°N., 162°W.	18,900	> 7	Jurassic and younger
Buldir depression	52°15'N., 174°45'E.	1,000	0.3	Pliocene and younger
Colville foredeep	68° to 70°N., 145° to 173°W.	165,000	7	Cretaceous and younger
Cook-Shelikof	60°N., 152°W.	40,000	? Tertiary ? Mesozoic	Mesozoic and younger
Copper River	62°N., 146°W.	18,000	> 3	Jurassic and younger
Dinkum Graben	70°30'N., 148°W.	4,250	10.6	Jurassic and younger
Gulf of Alaska	59°N., 140°W.	125,000	9	Cenozoic
Hall	61°20'N., 171°W.	2,500	1	Cenozoic
Hope	66°30' to 68°N., 164° to 172°W.	63,000	5.4	Cenozoic (Cretaceous?)
Kaktovik	70°N., 141° to 145°W.	14,000	> 12.5	Jurassic and younger
Kanaga	50°45'N., 178°30'W.	600	> 2	Cenozoic
Kobuk	67°N., 159°W.	4,500	> 3	Cretaceous
Koyukuk	66°30'N., 153°W.	22,000	unknown	Cretaceous
Kresta	65°N., 179°W.	4,500	5	Cretaceous (?) and Cenozoic
Kushokwim	61°N., 158°W.	83,000	unknown	Jurassic and Cretaceous
Lower Yukon	64°N., 165°W.	44,000	> 6	Cretaceous
Middleton segment	60°N., 146°W.	16,000	5.5	Middle Eocene and younger
Navarin	60°N., 177°W.	42,000	> 12	Cenozoic
Nenana	64°30'N., 150°W.	49,000	> 6	Cenozoic
North Chukchi	73°N., 161°W.	10,000	> 12	Cretaceous and younger
Norton	64°N., 166°W.	55,000	6.5	Cenozoic
Nuwuk	71°40'N., 151° to 155°W.	15,000	> 12.4	Cretaceous and younger
Ommonsk	62°20'N., 178°W.	500	11	Cretaceous (?) and younger
Pacific Ocean segment	58°N., 140°W.	35,000	4	Late Oligocene and younger
Pacific Ocean Basin	56°N., 140°W.	> 1,000,000	6	Cretaceous and younger
Pennant	52°N., 175°30'E.	1,500	3	Pliocene and younger
Pratt depression	51°50'N., 179°E.	1,000	1.5	Pliocene and younger
Queen Charlotte	52°N., 131°W.	35,000	5	Neogene
St. George	56°N., 168°W.	12,000	> 10	Paleogene and Mesozoic
St. Matthew	62°N., 169°W.	15,000	1	Cenozoic
Sanak	54°N., 161°W.	4,000	> 8	Cenozoic
Shumagin	55°30'N., 156°30'W.	3,800	2.5	late Miocene and younger
South Chukchi	70°N., 165°W.	75,000	11	late Miocene and younger
Southeastern Alaska	56°N., 135°W.	25,000	6	Mississippian and younger
Stevenson	54°N., 149°W.	7,000	7	Neogene
Sunday	51°15'N., 180°	700	1.5	late Miocene (?) and younger
Susitna	62°N., 150°30'W.	11,000	> 3	Cenozoic
Tanadak	50°45'N., 178°30'W.	140	unknown	Cenozoic
Thurmond	50°50'N., 177°30'E.	570	unknown	Cenozoic
Trinity	56°N., 154°W.	2,200	4	Cenozoic
Tugidak	56°15'N., 155°30'W.	3,000	5	late Miocene and younger
Umnak	52°30'N., 168°W.	1,000	unknown	late Miocene and younger
Unalaska	53°N., 166°W.	3,300	unknown	Cenozoic
Unimak	53°40'N., 164°30'W.	5,000	> 4	Cenozoic
Yakataga segment	59°30'N., 143°W.	15,000	?	late Miocene and younger
Yakutat segment	59°N., 141°W.	35,000	> 9	Eocene and younger
Yukon Flats	66°30'N., 146°W.	40,000	5	Cenozoic
Zodiac fan	45° to 55°N., 155° to 168°W.	1,220,000 (375,000 shown)	0.9	Mesozoic and younger

Base from U.S. Geological Survey National Atlas of the United States of America, 1970.

Bathymetry from Beikman, 1980.

Albers conical equal area projection based on standard parallels 55° and 65°.

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