

LEGEND

- CRETACEOUS
- UPPER CRETACEOUS
- 3 EDMONTON FORMATION: grey and light grey argillaceous sandstone; grey, green, and brown bentonitic shale; dark grey carbonaceous shale; light green bentonite; coal seams (non-marine)
 - 2 BEARPAW FORMATION: brown, argillaceous sandstone; brown, sandy shale; grey shale; ironstone nodules (marine)
 - 1 OLDMAN FORMATION: grey and buff sandstone; grey shale (non-marine)

- Geological boundary (defined, approximate, assumed)
- Rock outcrop
- Area of rock outcrop
- Coal mine
- Boundary of oil and gas fields

Geology by E. J. W. Irish, 1964, 1966

Geological cartography by the Geological Survey of Canada, 1967

Base-map compiled and drawn by the Surveys and Mapping Branch, 1963

Magnetic declination 1967 varies from 2° 51' easterly at centre of west edge to 19° 56' easterly at centre of east edge. Mean annual change 3.2' westerly

All elevations in feet above mean sea-level



INDEX MAP

DESCRIPTIVE NOTES

Glacial and fluvioglacial deposits cover most of the map-area and bedrock exposures are confined almost entirely to the region west of 111° 35' west longitude. Small areas of bedrock also occur in and near Sounding Creek valley in the northeast part of the map-area. Information obtained from surface outcrops and from the drilling of wells for oil and gas indicates that the area is underlain by a succession of marine and non-marine strata of late Upper Cretaceous age.

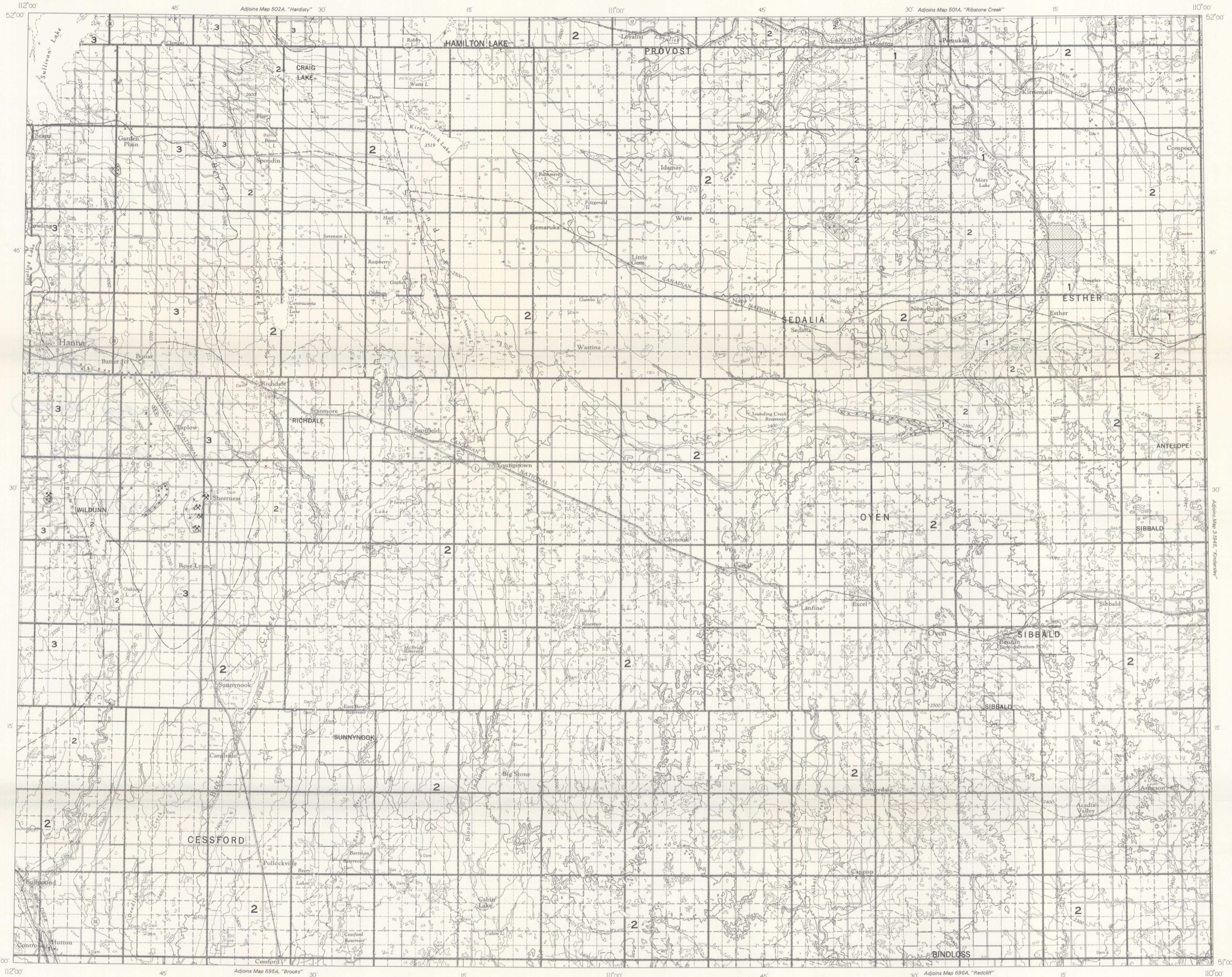
The Oldman Formation (1) occurs mainly in a narrow, curved belt starting in sec. 16, tp. 30, rge. 4 W. 4th mer. and extending downstream along the valley of Sounding Creek to the northern border of the map-area. Another small area of exposure of the Oldman Formation occurs in the northwest corner of tp. 23 and the adjacent southwest corner of tp. 24 along the valley of Red Deer River. At both localities a few very poor outcrops of the uppermost 10 to 20 feet of the formation are exposed. The strata consist of interbedded, non-marine, grey to pale grey sandstones and buff-colored, sandy shales.

The Bearpaw Formation (2) rests conformably and relatively abruptly upon the Oldman beds and it underlies most of the map-area east of longitude 111° 35' west. The only exposures found occur along Sounding Creek in tp. 30, rge. 4 W. 4th mer.; in secs. 1-6, tp. 32, rge. 3 W. 4th mer.; and along the south slopes of the hills in the northern part of tp. 32, rge. 5 W. 4th mer. Exposed Bearpaw strata consist of interbedded, marine, light-brown weathering, brown, silty shales and fine-grained, soft, shaly sandstones with two brown-weathering, concretionary, ironstone zones up to 10 inches thick. The shaly siltstone and shaly sandstone beds, about 50 feet thick, are estimated to be close to the base of the formation and underlie the typical grey shale of the Bearpaw Formation. The thickness of the formation in the map-area ranges from zero along the valley of Sounding Creek where the strata have been removed by differential erosion to between 600 and 700 feet in the western part of the area.

The non-marine Edmonton Formation (3) overlies the Bearpaw transitionally. Outcrops of the lower part of the Edmonton Formation occur in an irregular belt along most of the western side of the map-area west of longitude 111° 35' west. The strata consist mainly of non-marine, light grey weathering, clayey sandstones, buff to grey weathering silty shales and dark carbonaceous shales with minor amounts of thin, brown weathering, hard, calcareous, sandstone, coal seams, thin beds of light grey, tuffaceous sandstone, and thin bentonite beds. In tp. 29, rge. 13 W. 4th mer., near Sheerness, a coal seam is being mined by stripping. At this locality and in a badlands exposure just to the west, brown, shaly sandstones of the upper part of the Bearpaw-Edmonton transition zone are exposed. The thickness of Edmonton strata underlying the map-area ranges from zero to about 250 feet along the western border.

The thick glacial deposits that cover most of the region preclude the possibility of obtaining much information on the bedrock structure by surface mapping. Generally, the strata dip at small angles to the west and southwest but a gently dipping, northwest trending anticline is indicated in the northeast part of the area where the Oldman Formation is exposed. Other minor folds may be present.

Natural gas is produced in commercial quantities throughout the map-area and the present (1966) boundaries of the fields are shown on the map.



Published 1967, the Centennial of Canadian Confederation

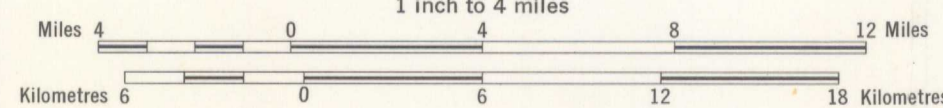
MAP 21-1966

GEOLOGY

OYEN

WEST OF FOURTH MERIDIAN
ALBERTA

Scale 1:253,440
1 inch to 4 miles



Copies of this map may be obtained from the Director, Geological Survey of Canada, Ottawa. Printed by the Surveys and Mapping Branch

MAP 21-1966
OYEN
ALBERTA
72M

