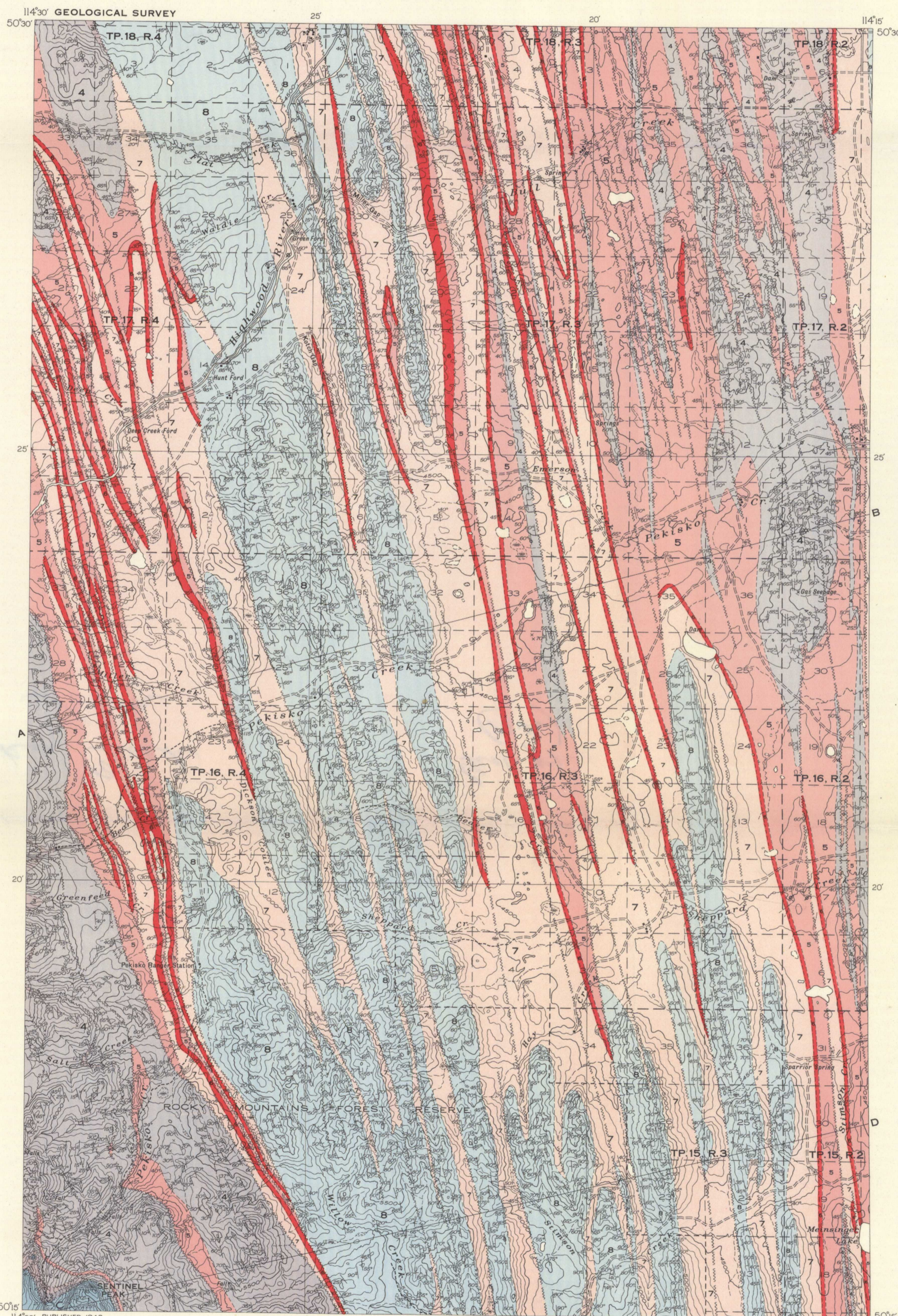


Structure sections along lines A-B and C-D



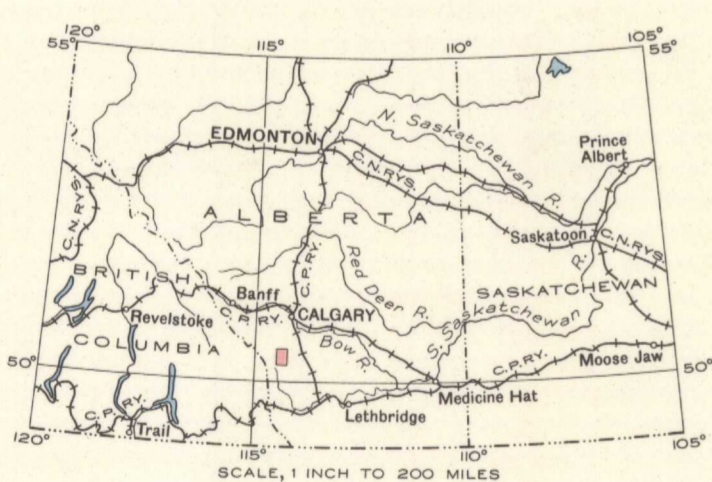
LEGEND

- CRETACEOUS**
- UPPER CRETACEOUS**
- 8 BELLY RIVER FORMATION: sandstone, shale, conglomerate, coal
 - 7 UPPER ALBERTA FORMATION: shale, sandy shale, sandstone
 - 6 CARDIUM FORMATION: conglomerate, sandstone, sandy shale
- LOWER CRETACEOUS**
- 5 LOWER ALBERTA FORMATION: shale, sandy shale, thin sandstone beds
 - 4 BLAIRMORE FORMATION: sandstone, shale, conglomerate, thin limestone beds
 - 3 KOOTENAY FORMATION: sandstone, shale, carbonaceous shale, coal
- JURASSIC**
- 2 FERNIE FORMATION: dark shale, brown sandstone, thin limestone bands
- PALAEZOIC**
- CARBONIFEROUS**
- 1 RUNDLE FORMATION: grey and dark limestone, chert

- Rock outcrop x
- Bedding (inclined, overturned) /
- Fault -
- Well, abandoned -
- Well, with gas *
- Road and buildings -
- Road not well travelled -
- Road along township boundary -
- Bush road or trail -
- Church -
- Abandoned building -
- Township boundary -
- Section line -
- Forest Reserve boundary -
- Intermittent lake and stream -
- Marsh -
- Contours (interval 100 feet) -
- Depression contour -

Geology by G.S.Hume, 1936, 1940, and by C.O.Hage, 1939.

Base-map from surveys and topography by the Topographical Survey, 1934 and 1937. Cartography by the Drafting and Reproducing Division, 1942.



MAP 698A
PEKISKO CREEK
ALBERTA

Scale, 1/250,000 or 1 Inch to 1 Mile

Elevations referred to Mean sea-level
Approximate magnetic declination, 23°15' East.

DESCRIPTIVE NOTES

Several deep wells have been drilled for oil and gas in the map-area.

Hudson's Bay Oil and Gas (Highwood) No. 1 (L.S. 8, sec. 1, tp. 18, rge. 3), drilled in 1929-1930, depth, 4,067 feet; commenced in Blairmore and completed in Banff formation; reached the Home sand at 790 feet, Dalhousie sand at 1,210 feet, Brown sand at 1,580 feet, and top of the Palaeozoic limestone (repeated by faulting) at 2,340, 2,440, and 2,510 feet. Water was encountered in the Rundle formation.

Green Valley (Banner) well (L.S. 6, sec. 34, tp. 17, rge. 3), drilling began in 1929, well abandoned in 1940, depth, 6,335 feet; commenced in Lower Alberta and completed in Banff formation; reached the top of the Blairmore at 530 feet, Home sand at 4,430 feet, Dalhousie sand at 4,590 feet, Brown sand at 4,970 feet, and top of the Palaeozoic (Rundle) limestone at 5,350 feet. Small shows of oil and gas but no production.

Western Alberta No. 1 well (L.S. 11, sec. 7, tp. 17, rge. 2), drilled in 1929-1930, depth, 3,578 feet; commenced in Blairmore and completed in Rundle formation; reached Home sand at 1,365 feet, Dalhousie sand at 1,860 feet, Brown sand at 2,070 feet, and top of Palaeozoic (Rundle) limestone at 3,132 feet. Oil at 3,406 feet; salt water in bottom of the well. Hole deviated seriously from the vertical; maximum deviation 38°20' at 2,170 feet. Water rose from bottom of hole to 1,595 feet from the surface.

Pekisko Hills No. 1 well (L.S. 6, sec. 6, tp. 17, rge. 2), drilled in 1934-1936, depth, 4,400 feet; commenced in Blairmore and completed in Banff formation; reached Home sand at about 190 feet, Dalhousie sand at 400 feet, Brown sand at 580 feet, top of Palaeozoic limestone (repeated by faulting) at 1,065 and 1,308 feet. Gas in Palaeozoic limestone with small amount of oil at 3,145 feet.

Alberta Associated Oilfields (Christie) well (L.S. 5, sec. 7, tp. 16, rge. 2), drilled began in 1914, well abandoned in 1921, depth, 2,860 feet; commenced in Lower Alberta and completed in Blairmore formation; other information indefinite; show of oil reported.

Alberta Pacific Consolidated (Sheppard Creek) well (L.S. 6, sec. 7, tp. 16, rge. 2), drilled in 1939-1940, depth, 6,000 feet; commenced in Lower Alberta penetrated a fault and entered Upper Alberta formation; completed in Palaeozoic (Rundle) limestone; reached Cardium at 1,720 feet, top of the Blairmore at 2,550 feet; Home sand at 4,520 feet, Dalhousie sand at 4,770 feet, Brown sand at 4,950 feet, and top of the Rundle at 5,484 feet. Water in the Palaeozoic limestone.

The highest structural part of the Highwood uplift is in Pekisko Hills where Pekisko Hills No. 1 well was drilled and encountered considerable gas under low pressure in the Rundle limestone. Western Alberta No. 1 well, to the north, found oil underlain by water in the upper part of the Palaeozoic limestone but because of the considerable deviation of the well it is thought that the depth to the limestone is much less than the drilling indicated. The presence of oil in the limestone, as indicated by the two wells, suggests that it will be found elsewhere on the flanks of the Pekisko Hills uplift within the same porous limestone zone. The oil should occur above the water level of the Western Alberta No. 1 well and below the level of the gas encountered in Pekisko Hills No. 1 well. As the gas pressure in the latter well was low, and as the water in Western Alberta No. 1 well only rose to 1,595 feet from the surface, it is concluded that wells drilled to the oil-bearing zone will not flow. Since the lateral deviation of the Western Alberta well is greatest below a depth of 2,000 feet it is possible that the apparent excessive thickness drilled between the Brown sand and the top of the Palaeozoic limestone is due, mainly, to the crooked hole. The deviation was probably caused by deflection of the drill down the flank of the anticlinal structure and, hence, had the well been straight, it might have reached the top of the Palaeozoic limestone several hundred feet higher and have been in the oil zone above the level of the water. The difference in elevation of the strata penetrated by Pekisko Hills No. 1 and Western Alberta No. 1 wells respectively is more nearly given by the difference in elevation of the Dalhousie or Brown sand than of the top of the Palaeozoic limestone. As the surface elevation of the Pekisko Hills well is about 200 feet higher than that of the Western Alberta No. 1 well, the difference in elevation of the Dalhousie or Brown sand in the two wells is between 1,500 and 1,700 feet.

The structure of the Palaeozoic limestone in the Highwood uplift is imperfectly known from the few wells drilled both within and north of the map-area. Pekisko Hills No. 1, Western Alberta No. 1, and Hudson's Bay Oil and Gas (Highwood) No. 1 wells are each on anticlines separated from one another by synclines but it is not known that these folds persist downward to include the Palaeozoic limestone. It may be that the limestone, as in Turner Valley, is a westward tilted fault block with a comparatively uniform dip but somewhat folded along its eastern edge. The study of the surface structure of the Highwood uplift suggests, however, that the limestone mass under it reaches a maximum elevation in two places. One of these is in the Pekisko Hills area and the other is believed to include the Hudson's Bay Oil and Gas (Highwood) No. 1 well and to extend northwest to and beyond Highwood River where several other wells have been drilled on it. It is not known whether these two parts are separated by a fault within the Palaeozoic limestone or are two folds in the one limestone fault block. In either case each is probably a unit as far as oil and gas accumulations are concerned. The Green Valley (Banner) well, to the west of the Hudson's Bay well, encountered the Palaeozoic limestone on the north plunge of the Pekisko Hills uplift and down the west dip from Pekisko Hills No. 1 well, whereas Alberta Pacific Consolidated (Sheppard Creek) well, however, was drilled 1,200 feet east of the Alberta Associated Oilfields (Christie) well and may be east of the area of possible accumulation of oil. When no production was secured in the Blairmore, the well was continued to the Palaeozoic limestone where water was encountered because of the low structural position as already indicated.

In the southwest corner of the area Palaeozoic limestone is thrust over Fernie shale that lies on Kootenay strata. It is uncertain whether the Fernie has been thrust over the Kootenay or whether both are overturned. The Kootenay is overthrust onto Blairmore beds that in turn are thrust over Alberta shales. The faults between these various formations are believed to dip westward at low angles.

An isolated mass of Rundle limestone capping a small peak northwest of Sentinel Peak is an erosion remnant east of the main overthrust mass. At this place the limestone has been thrust onto Kootenay coal-bearing beds and is in a small synclinal structure with the fault plane under it about 100 feet lower than it is under the limestone about 200 yards to the southwest.

On the west side of the map-area, nearly six miles north of Sentinel Peak, there is a folded fault with the fault plane eroded through in the valley of Bear Creek to expose an anticline in upper Blairmore beds below it. The fault has been traced from the southeast to Bear Creek where Kootenay strata are thrust eastward onto Blairmore beds. North of Bear Creek and partly west of the map-area the fault completely encircles a high ridge one-half mile long and has been traced back to Bear Creek only 650 feet west of its eastern position. The fault then follows west around the south side of the steep Bear Creek valley for a mile or so, rising nearly 700 feet and then descending 400 feet to the level of the creek where it again assumes its north and northwest trend. Only a narrow gap separates the two parts of the fault a mile north of the creek so that the area exposed through the fault plane in the valley of Bear Creek is not quite a "window."

In the northwest part of the map-area is an anticlinal structure exposing Blairmore strata and plunging southward. It continues across the southwest corner of the Turner Valley into the Dyson Creek map-area where the east limb of the anticline is replaced by a large thrust fault.

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