

**A**  
RIO PRADO SOURIS  
FENTON 5-17  
S-17-1-28 WPM  
Elev. 1519 K.B.

**B**  
CANADIAN SUPERIOR  
STRATH 6-23  
6-23-17-23 WPM  
Elev. 1863 K.B.

**C**  
GREAT SWEETGRASS SAPPHIRE  
DUCK MOUNTAIN NO. 1  
16-35-34-26 WPM  
Elev. 1835 K.B.

**LEGEND**  
Structure contour (interval 100 feet) . . . . . + 500  
Geographic limit of Favel Formation . . . . .  
Fault (position approximate) . . . . .  
Subsurface control point . . . . .

Datum: sea-level  
Compiled by L. L. Price, 1963

Cartography by the Geological Survey of Canada, 1964

**DESCRIPTIVE NOTES**

The base of the Favel Formation is a widespread and consistent stratigraphic marker horizon. Structure contours on this horizon in Manitoba give a good representation of late Mesozoic structure in the eastern part of the Canadian Plains. The Fish Scale marker horizon, slightly lower in the stratigraphic column has been contoured in Alberta and northeastern British Columbia for the same purpose.

The name Favel was proposed by Wickenden<sup>1</sup> for exposures of calcareous speckled shale along the Manitoba escarpment which coincides with the eastern geographic boundary of the formation over most of its length in the report area. The Favel Formation comprises the lower of two intervals of calcareous white speckled shale in the lower part of the Upper Cretaceous Series and has been known as the "second white specks" to subsurface geologists. The unit extends continuously from the type section on the escarpment westward to the foothills of the Cordillera and into the Northwest Territories. It ranges in thickness over this area from 60 feet in northern Manitoba to as much as 200 feet in a few localities.

The Favel Formation comprises firm, grey marine shale, blocky to flaky in texture, with abundant chalky calcareous white specks of the order of 1 mm. in diameter. Much disseminated brown organic matter is present and many lenses of white, crystalline limestone, in part a poorly indurated calcarenite of foraminiferal tests, minute pelecypod prisms, and matted accumulations of *Inoceramus*.

The shale of the underlying Ashville Group is a dark grey, flaky, slightly carbonaceous shale with poorly defined dark carbonaceous specks. Thin beds of bentonite are common in both Ashville and Favel. Transitional beds, 5 to 10 feet thick at the contact, consist of non-calcareous shale with thin interbeds of white-speckled grey calcareous shale. In Manitoba and Saskatchewan the Favel is easily distinguished from the Ashville in electric logs at the change downward from variable high resistivity to consistently low resistivity. Between the two extremes the transitional beds have moderately low resistivity well illustrated in cross-section A-B-C. The transitional beds are included arbitrarily with the Favel Formation.

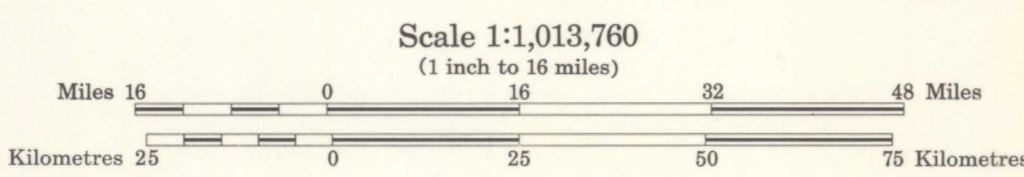
The base of the Favel Formation in Manitoba lies from 90 to 130 feet above a persistent thin sandy or silty interval about equivalent to the "Fish Scale sandstone" of Alberta and continuous with the sandy interval shown by Hansen (Plate I)<sup>2</sup> as forming the base of the Belle Fourche Formation in North Dakota. These horizons are regarded as the boundary between the Upper and Lower Cretaceous Series in the respective areas.

**Structure**

Faults shown in the vicinity of Tp. 5, Rge. 25, W. P. M. are part of a more complex fault system<sup>3</sup> which could not be depicted on this scale. Strongly flexed contours near Tp. 9, Rge. 26, W. P. M. probably reflect additional faults affecting Cretaceous strata in an area where minor faulting has been reported from anomalous subsurface thicknesses<sup>4</sup>. The same situation is evident at Tp. 1, Rge. 25, W. P. M. Interpretation of Cretaceous faulting is limited on the map to electric log data and density of well control is insufficient to show the trace of these faults on the contoured horizon.

<sup>1</sup>Wickenden, R. T. D.: Mesozoic stratigraphy of the Eastern Plains, Manitoba and Saskatchewan; Geol. Surv. Can., Mem. 239, p. 23 (1949).  
<sup>2</sup>Hansen, D. E.: Subsurface correlation of the Lower Cretaceous Greenhorn - Lakota interval in North Dakota; North Dakota Geol. Surv., Bull. 29 (1955).  
<sup>3</sup>Haites, T. B., and Van Hees, H.: The origin of some anomalies in the Plains of Western Canada; Alta. Soc. Petrol. Geol., Jour., vol. 10, No. 9, p. 24 (1962).  
<sup>4</sup>Milne, J. F., and Nicoloff, C. D.: Virden - Roselca shows promise of Manitoba; the Petroleum Engineer, February 1955, pp. B81, B83-B90 (1955).

MAP 5-1964  
STRUCTURE CONTOURS OF BASE OF FAVEL  
FORMATION, SOUTHWESTERN MANITOBA



G  
3401  
.05  
1956  
G4  
omvsc  
c.1

5-1964