Development of a Depositional Model for the Oil-Prone Jurassic Section in the Wapella - Moosomin Area, Southeastern Saskatchewan

by L.K. Kreis

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A preliminary study of the Wapella-Moosomin area by the author, published in the 1985 Summary of Investigations, disclosed the geographic areas and stratigraphic interval in which Jurassic production is found. Particular attention was paid to the Wapella pool. The investigation concluded that, because no detailed geologic study of the area had yet been done and in view of the recent Jurassic

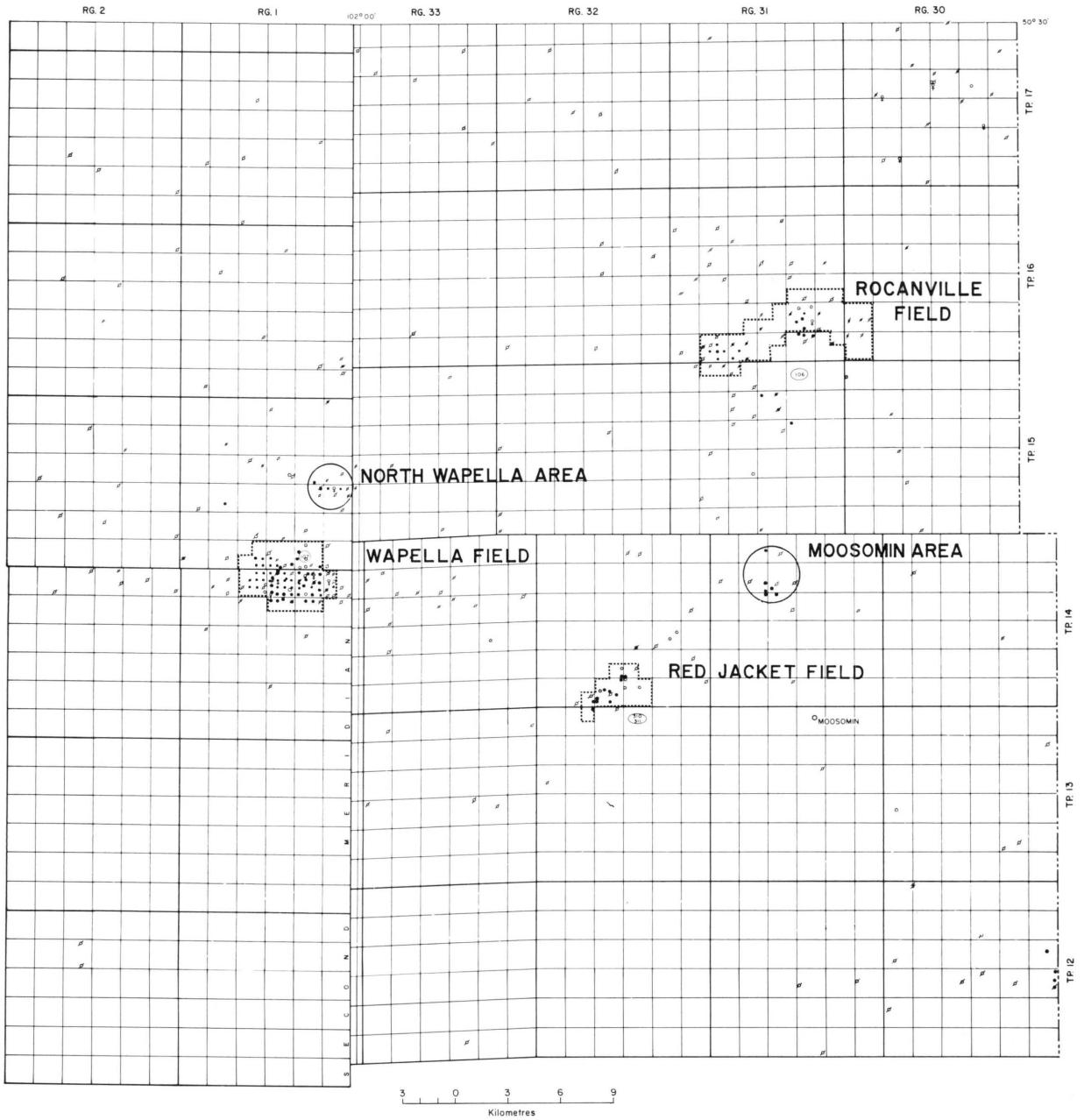


Figure 1 - Location of study area.

discoveries in the Moosomin and Red Jacket localities, the region has greater potential than was previously believed.

Consequently, work on the oil-prone subsurface Jurassic section in the Wapella-Moosomin area was initiated as a full-scale department project in June 1986. The focus of this study will be on the development of a depositional model for the oil productive portion of the undifferentiated Jurassic section in the study area (Figs. 1 and 2). At present, Jurassic oil production is found in the Wapella and Red Jacket fields and miscellaneous production is observed in the North Wapella and Moosomin localities (Fig. 1).

Some 360 wells are present in the study area and all will be examined for their geophysical log and available core information. Well cuttings will also be used if necessary.

In this report, the term "field" is used to describe the surface limits of an oil-producing area where production may be from several pools. The term "pool" will refer to a discrete stratigraphic accumulation of oil.

A bibliography for the study area is included.

Geology and Stratigraphy

The section to be studied is generally characterized by a sequence of silts, sands and shales. Facies changes in the section have caused it to differ markedly from the type sections. This makes correlation difficult. It appears to be stratigraphically equivalent to the Jurassic Gravelbourg and Shaunavon Formations (Francis, 1956).

The study will be primarily concerned with all sediments below what is informally known by workers in the area as the Jurassic (Shaunavon?) shale marker down to the top of the Watrous anhydrite, also of Jurassic age (Fig. 2). Where the Upper Watrous is not present by way of nondeposition and possibly erosion, the Jurassic section of interest rests unconformably on the Souris Valley Beds of the truncated Mississippian surface. All known Jurassic production in the study area comes from this stratigraphic interval.

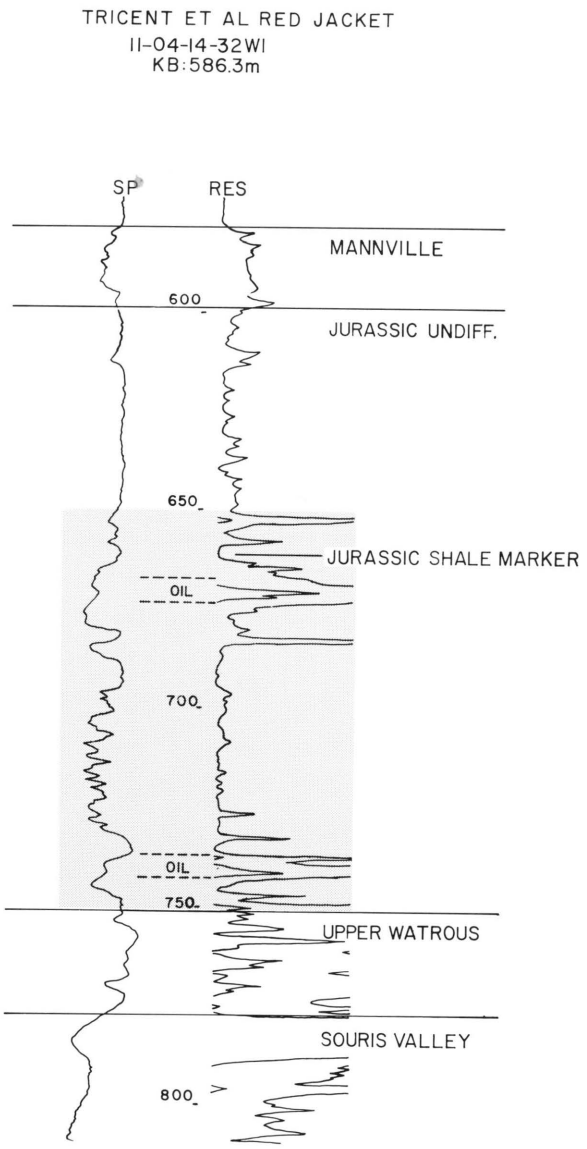


Figure 2 - Section showing stratigraphic interval being studied (indicated by shading). Note that two separate oil-productive reservoirs exist below the Jurassic (Shaunavon?) shale marker in this well.

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