

PRESSURE MAINTENANCE PERFORMANCE BY WATER FLOOD IN THE DOLLARD FIELD

by

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ABSTRACT

Through a study of production performance and analysis of reservoir data, the Dollard Field of Southwestern Saskatchewan was early recognized as having limited areal extent, and in which natural water encroachment would be generally ineffective. The lack of a gas-oil ratio and the relatively low solution gas-oil ratio indicated an inferior unaided primary recovery, necessitating the application of pressure maintenance by water injection to reduce both the time and cost required to obtain the maximum economic recovery of oil.

The Field was developed on a 160-acre spacing pattern. A total of 52 wells have been drilled, of which 40 are oil wells and 12 are dry holes. The Field presently encompasses 10,200 surface acres.

Unitization of the field was necessary to set in operation a pressure maintenance program. Actually, plans were well advanced towards pressure maintenance and unitization by water flood before the field was fully developed.

Results of a model study indicated a favorable line flood could be obtained by conversion of approximately ten producing wells to injection wells along the southeast and southwest perimeter of the field.

Source water is obtained from three water wells completed in the Viking and Lower Blairmore zones of cretaceous age. The water is lifted to the surface through the use of Reda pumps and the water production at present is 14,000 barrels per day.

The first indication of aid being derived from the water flood occurred in October, 1956, approximately six months after the injection program had begun. At this time, 1,100,000 barrels of source water had been injected into the initial four wells in the southeastern portion of the field, and the full scale injection program into ten wells had been started. From October, 1956, to the present time, the production trend has been upward, until at the present time the field is producing 6,500 barrels per day of clean oil.