

30. REVIEW OF PILOT SCALE DEMONSTRATION OF MICELLAR-POLYMER WATERFLOODING TECHNIQUES FOR ENHANCED OIL RECOVERY, WILMINGTON OIL FIELD.

During consideration of Informative Calendar Item 30 attached, Mr. W. M. Thompson, Chief, Extractive Development, Long Beach Operations, noted for the record a typographical error on page 150: first paragraph, last line, the word "tractor" should read "tracer".

In addition, on page 150, line 4, paragraph 2, he noted the word "early" should be deleted.

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Thompson

REVIEW OF PILOT SCALE DEMONSTRATION OF
MICELLAR-POLYMER WATERFLOODING TECHNIQUES FOR
ENHANCED OIL RECOVERY, WILMINGTON OIL FIELD

The Commission, at its July 1976 meeting, approved a request by the City of Long Beach to enter into a cost-sharing contract with the federal Department of Energy to conduct a pilot scale demonstration of micellar-polymer waterflooding techniques in the Upper Terminal Zone of Fault Block VB, Wilmington Oil Field. The Long Beach Oil Development Company is the oil contractor for the City in this area.

Under the terms of this cost-sharing contract, the City and the federal government agree to share the total estimated project cost of \$7 million on a 50/50 basis. The total federal obligation is limited to $\frac{1}{2}$ of the estimated cost or \$3 $\frac{1}{2}$ million, and the federal government does not share in any incremental oil revenue produced by the pilot demonstration. Through December 31, 1978, total project expenditures have been \$4,966,000.

During the last half of 1978 a series of additional core flood tests were run in an attempt to formulate a satisfactory micellar slug which would provide improved recovery efficiency. This testing delayed the scheduled start of the micellar slug injection. Some encouraging test results have been achieved using an additional alcohol cosurfactant which provides better miscibility with the leading edge of the aqueous mobility buffer. Work will now be continued on polymer optimization.

Project injection wells performed satisfactorily during the review period, with relatively consistent injection rates and pressures. Five of the 6 pilot area production wells were producing at the end of the period. Ninety B/D of crude oil is being produced at world (stripper) price. However, moderate to severe corrosion has been experienced in most of the project producing wells. One producing well was redrilled and extensive coring and logging was performed through the project reservoir sand area. A modification of the contract was negotiated whereby the determination of residual oil saturation and related data for the HX sand is now sponsored by the federal Department of Energy with the total estimated cost, \$282,000, to be paid by the DOE.

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A reservoir tracer program was initiated in mid-October, in which there has been introduction of various tracers into the 4 injection wells. All active producing wells in the project area as well as several wells outside the area are being monitored. As yet no significant amount of any tractor has been detected in the producing wells.

Presently, the initiation of the micellar slug injection is about 1 year behind the originally anticipated starting date. Evaluation of oil recovery effectiveness should be possible by early 1980.

The Commission's staff will continue to analyze the progress and effectiveness of this pilot scale demonstration for enhanced oil recovery, and present semi-annual progress summaries to the Commission for its information.

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