

ABSTRACT

Optimisation of Gas-lift Oil Production
in TRINTOC's Palo Seco Lot 8 Area

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This project seeks to optimise the gas-lift system in Trintoc's Lot 8 Area in Palo Seco. The following aspects of the rotative gas-lift system were analyzed.

The existence of a back pressure of approximately 70-75 psi at Gathering Station 13, derived from measurements of the static pressure on the 6 inch line using the meter run on the line. This back pressure is associated with the inefficient transport of low pressure gas through an undersized 6 inch line.

A reduction in back pressure of 30 psi will result in an increase in oil production of 132 bopd based on an average well inflow performance of 0.13 b/d/psi.

From Table II, a 10 inch line was found to be the best size for the efficient transport of low pressure gas from Gathering Station 13 to Compressor Station 19.

Economics for running an 8 inch line was based on a total cost of \$775,000.00 TT (see appendix V) and 132 bopd increase in oil production. The payout time for this project was found to be 0.7 years over a 4 year period. See appendix IV for the results of the economic calculation.

For intermittent gas-lift wells, the theory after Rike⁴ suggests an optimum operating point when the oil production will be a maximum and the corresponding cycles/day, a minimum. However, field tests on

three wells indicate more than one maximum and minimum, i.e. the curve is sinusoidal. This apparent anomaly can be explained by production from multiple zones of varying static reservoir pressures.

High pressure gas for injection into wells is transported via 2 inch lines near Gathering Station 13. A meter run was placed at PS-475 to monitor the gas injection pressure over a period of about three (3) weeks. The average injection pressure was found to be adequate, i.e. 700 psi. Figure 29 is the resulting plot of pressure readings versus specific times (2 hour intervals) over a 24 hour period.

The amount of gas utilized for gas-lift in the Lot 8 Area is not measured at this time.

Compressor output in the Lot 8 Area is adequate.

N.B: It is not possible to measure the total gas usage at this time in the Palo Seco Area due to the non-existence of meter-runs. This is a severe limitation since for a total optimisation a gas-usage figure is very important. In practice the total gas used in the Western District is divided by some unknown which allocates to Palo Seco a daily volume usage of 6 MMSCF/DAY.

In order that meter-runs be put in place, a total field shut down is required. This however is not practical at this time due to the potential oil loss of approximately 1,500 bopd.

A tentative shut-down may occur when compressor overhaul is being carried out. Meter run/runs will be put in place during this period.