

**LOUIS DREYFUS NATURAL GAS CORP.
SHEEP DRAW FED COM NO. 1
33-22S-26E
EDDY CO., NM
APPLICATION FOR DOWNHOLE COMMINGLING**

DISCUSSION OF APPLICATION

Collins & Ware originally drilled the Sheep Draw Fed Com 1 in December 1991 to a total depth of 11735'. A 7" casing string was set at 10742' and a 4 1/2" liner was set to total depth at 11733' with the liner top at 10646'. The well was initially completed as a Strawn producer from perforations at 10292-10304. A second Strawn interval from 10203-10220 was tested by setting a packer between the two. A sliding sleeve was inserted in the tubing, which allowed both Strawn intervals to be tested separately or commingled without moving the packer. Finally, in December 1993, a packer was set at 10603' with a sliding sleeve above at 10496' and the Morrow was completed from perforations between 11288-11735 overall. The sleeve was opened briefly during completion operation to unload the Strawn up the tubing with a temporary plug set in the packer above the Morrow. Then the sliding sleeve was closed, isolating the Morrow from the Strawn. Since December 27, 1993, the well has produced as a dual completion with Morrow producing up 2 3/8" tubing, and the Strawn producing up the tubing-casing (2 3/8" - 7") annulus.

Louis Dreyfus Natural Gas Corp. (LDNGC) took over operations January 1, 1995. As a general observation, the Strawn production dropped from about 165 MCFPD to 75 MCFPD when it was switched from producing up tubing to producing up the annulus in December 1993 when the Morrow was added. Liquid loading was suspected to be the reason. LDNGC has considered some stimulation options for the Morrow, but has not pursued those due to the dual production arrangement. Also the tail of the tubing (11107') is 477' above the lowest set of Morrow perforations, so some liquid loading of the Morrow is possible. LDNGC has also considered putting a plug over the Morrow and just producing the Strawn to depletion up the tubing. This would cause total production to drop, and might put the Morrow reserves at risk.

Recently, it became apparent that some communication had developed between the Morrow and the Strawn. The sliding-sleeve in the tubing is considered to be a likely point for leakage. LDNGC tried producing each side separately with the other side shut-in. By producing the well up the tubing with the annulus shut-in, production has increased over what could be produced by both zones separately. Therefore, LDNGC is making an application to continue producing the Morrow and Strawn commingled. It is apparent that some reallocation of production may be necessary. Our estimate of the correction is attached.

Material balance data was available for the lower Strawn interval (10292-10304), showing original gas-in-place to be 127 MMF with recoverable reserves of 117 MMF to an abandonment pressure of 500 psi. An initial pressure was available for the upper Strawn interval (10203-10220), and one pressure was taken with both intervals commingled. Consequently, material balance is only approximate. Recoverable reserves of 387 MMF was made by rate-time extrapolation. If recovery as a percent of gas-in-place is the same for both zones as it is for the lower, the original gas-in-place would be 418 MMF. This does not appear unreasonable from the pressure data available.

The Morrow had three pressure points. The first pressure was for the Morrow intervals of 11515-11520 and 11584-11612. Two pressures were available with all Morrow intervals open (11288-11612). Fitting these two points indicated original gas-in-place to be 783 MMF. Recoverable reserves to 750 psi were in good agreement with the rate-time estimate of 584 MMF.