HUME DEEP AREA - LEA COUNTY, NEW MEXICO

EXHIBIT No. 1 is a structure map on the top of the Morrow lime which indicates that a rather large structure was present at the end of Morrow time and immediately prior to Atoka sand deposition.

EXHIBIT No. 2 is an isopach map of the Atoka sand which produces in the area. It indicates that a series of Narrow Northeast-Southwest trending sand channels were deposited over the Morrow topography in the area flanking the Hume Deep structure.

Drill stem tests and log analysis indicate that these sands have rather erratic and unpredictable permeability. The tight impermeable sands are not always thin and on the outer limits of the channels as would be expected. An example is the Moncrief #1 State "8" which encountered 12' of Atoka sand from 12,303'-12,315'. A DST 12,275'-12,325' was open 30 minutes, shut in 1 hour, open 3 hours and shut in 3 hours. It had GTS in 34 minutes at a maximum volume of 30 MCFGPD. Recovery was 1030' water blanket + 15' of SIGCWB. Flow pressures were 350-350#, ISIP was 1969#, regular flow period pressures were 306-393# and FSIP was 4780#.

Reserves from these Atoka sands can be very impressive as evidenced by the Mewbourne #1-Y State in NENE section 7 which was completed from Atoka sand perfs 12,410'-12,426' after a 200 gallon mud acid treatment. It started selling gas on 1-24-86 and has produced 1,236,730 MCFG + 35,016 BC to 11-1-89. It still produces 1,000 MCFGPD + 20 BC/day

The proposed location will be west of the permeability barrier indicated in the Moncrief #1 State "8" and updip from the Mewbourne Atoka producer which has excellent permeability. It will reduce the chances of drilling an expensive dry hole on the wrong side of an undefined permeability barrier and will enable Moncrief and the State to recover reserves that might not otherwise be recovered.

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