Exhibits 1 through 14
Complete set

WESTFORK UNIT

CHAVES COUNTY, NEW MEXICO

GEOLOGICAL REPORT

May 12, 1988

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May 10, 1988

WESTFORK UNIT
Chaves County, New Mexico

GEOLOGY

The Westfork Unit comprises a total of 20,775.02 acres in portions of Townships 4 and 5 South, Ranges 21 and 22 East, Chaves County, New Mexico. Its general location is indicated on the index map of Figure 1. There are three primary objectives which together form the basis for the unit outline. The zones of interest are shown on the detail log of the reference well (figure 2), and the composite map (figure 3) shows the extent of the three primary objectives and the basis for the unit outline. The reference well (figure 2) is the McKay Oil Corporation's Inexco Federal 4 in section 30, T 5 S, R 22 E. Gas is produced from the Lower Abo "A" and "B" zones in that well and from the Lower Abo "A" zone in McKay's Bonnie No. 1, also located in section 30. Gas has been tested but not produced from the "Granite Wash" in the Inexco Federal 4 (figure 9). The gas of all these zones is interpreted to be trapped in combination traps which extend northward from the Inexco Federal 4 in the unit area. In addition to the primary zones, we consider the shallower Pecos Slope Abo gas reservoirs to be good secondary objectives.

STRUCTURE: Structure has been mapped at the top of Abo formation (figure 4) and the top of Lower Abo "B" zone (figure 7) utilizing well-log data. Within the map area 106 wells have penetrated the top of Abo formation, 22 wells were drilled into the Lower Abo, and 18 reached Precambrian basement. Four of the latter encountered "Granite Wash" above Precambrian.

At the top of Abo local east-plunging noses interrupt an east-southeast regional dip of approximately 60-feet per mile in the southern part of the map (figure 4). That same structural style has been projected northward into the Westfork Unit area where only sparse well data exists. A gentle east-plunging nose has been interpreted in the central part of the prospect in the vicinity of the Transwestern Gas Co. Antelope Federal wells 1, 2, and 3.

Inexco Federal 4, Bonnie 1, and nearby wells are structurally separated from wells to the south by an east-plunging saddle at the Lower Abo "B" and deeper horizons (figure 7). Pinching out of Lower Abo "A" sandstones up-dip is also indicated between Inexco Federal 4 and McKay's Inexco Federal 2 in section 25, T 5 S, R 21 E. The suggested combination of structural and stratigraphic trapping in sandstone reservoirs of Lower Abo "A" and "B" units in the vicinity of the reference well is the basis for the interpretation of Lower Abo structure (figure 7) and net sandstone distribution (figures 5 and 6).

LOWER ABO RESERVOIRS: Reservoirs and potential reservoirs in the Lower Abo units range from one foot to about 20 feet and average six feet in thickness. In contrast to the Pecos Slope reservoirs of the Upper Abo formation these are

part of an immature clastic sequence comprised of shales, red and green, and very fine- to very coarse-grained, angular, quartzose, argillaceous, arkosic, and micaceous sandstones, often carrying much magnetite. Kaolin is also present in many of the sandstone samples examined. Near the base of the Lower Abo in the "B" zone are white, gray, and red wackestones interbedded with the red Abo shales and sandstones. The limestones are dense and therefore of poor reservoir quality.

Those sandstones which are of reservoir-quality are cleaner and better sorted than the typical sandstones of these zones. As shown on the reference log (figure 2) and the cross section (figure 9), the neutron and density porosity logs exhibit cross-over in the cleaner sandstones. That relationship, along with a minimum porosity cut-off of eight percent, has been used as an indicator for reservoir quality in the Lower Abo zones. The net sandstone isopach maps (figures 5 and 6) show the total net sandstone that qualifies as reservoir according to these limitations within each of the Lower Abo units.

"GRANITE WASH" RESERVOIR: In the reference well (figure 2) 128 feet of clear, quartzose, arkosic, coarse-grained, silica-cemented sandstone was encountered at 4068 feet. It rests directly on the Precambrian which in that well is schist and granite-gneiss. In several of the wells which drilled to basement "Granite Wash" appears to be absent, Lower Abo "B" lying directly on Precambrian igneous or metamorphic rocks. There are four wells within the area which encountered "Granite Wash" (figure 8).

The map of "Granite Wash" is an isopach of the total net feet of neutron-density cross-over. There was no porosity cut-off used for this map. In the reference well, in which gas was tested from this zone, log-derived porosity ranges from four to 11 percent and averages six percent (figure 2). There was rough drilling and loss of mud in that interval suggesting that a natural fracture system was encountered.

The Coleman Pipkin 1, north of the Westfork Unit in section 26, T 3 S, R 22 E encountered approximately 140 feet of what appears to be the "Granite Wash" unit with 30 feet of neutron-density cross-over (figures 8 and 9). The microresistivity log for that well suggests that the zone is tight.

The "Granite Wash" zone is prospective in the Westfork Unit on the basis of the points discussed above. Where natural fracture systems can be encountered within this unit we expect to find excellent permeability and good conditions for trapping hydrocarbons. Fractures are present at the McKay Oil Corporation Inexco Federal 4 in section 30, T 5 S, R 22 E in this zone. They are interpreted to be present to the north within the unit (figures 8 and 9).

WESTFORK UNIT
Chaves County, New Mexico

CONCLUSIONS: The Lower Abo Zones are the basis for the Westfork Unit outline as indicated on the Composite Map (figure 3). The "Granite Wash" zone is also prospective within the Westfork Unit.

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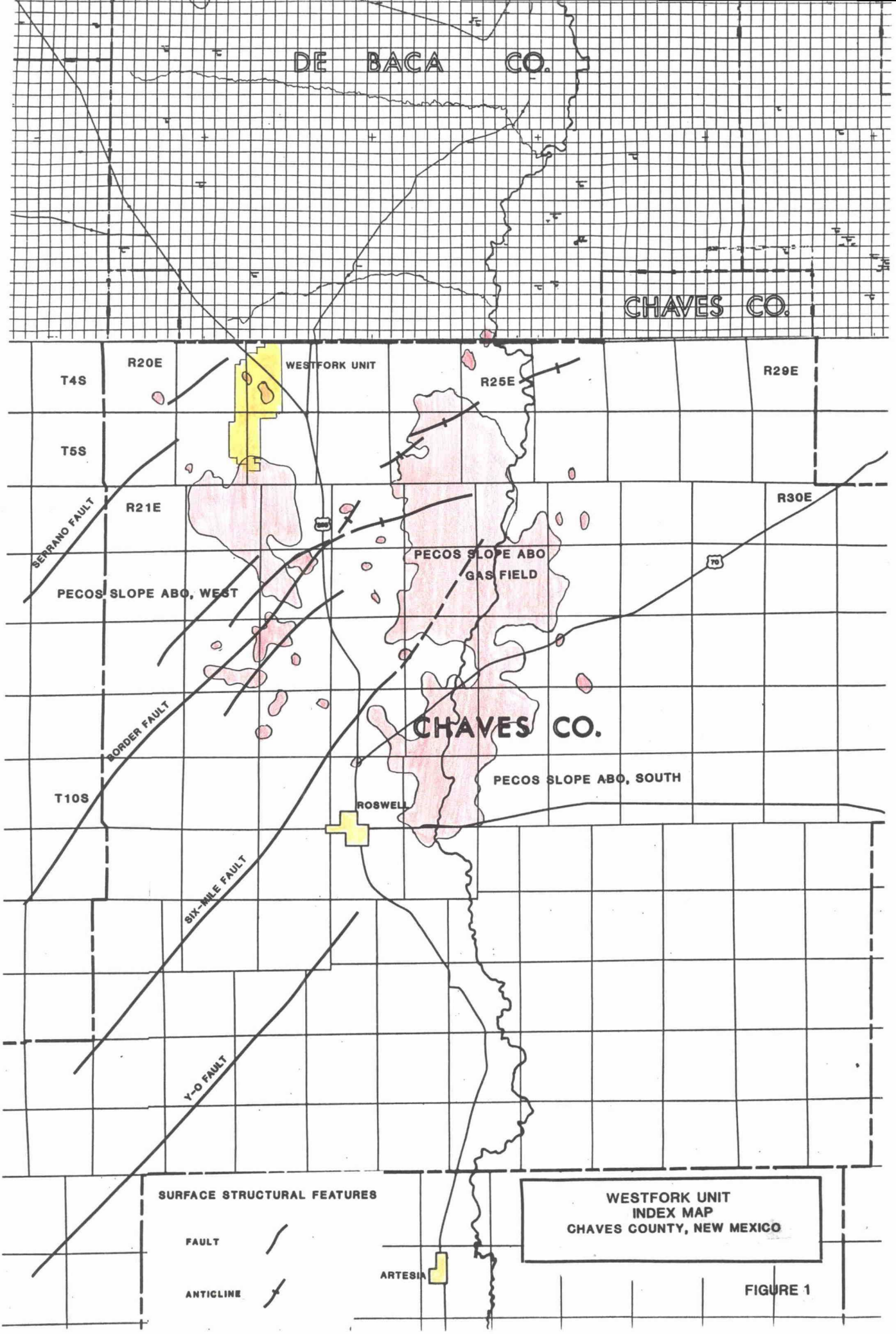
DE BACA CO.
CHAVES CO.
T4S
T5S
T10S
R20E
R21E
R25E
R29E
R30E
WESTFORK UNIT
SERRANO FAULT
BORDER FAULT
SIX-MILE FAULT
Y-O FAULT
PECOS SLOPE ABO, WEST
PECOS SLOPE ABO GAS FIELD
PECOS SLOPE ABO, SOUTH
CHAVES CO.
ROSWELL
ARTESIA
380
70
SURFACE STRUCTURAL FEATURES
FAULT
ANTICLINE
WESTFORK UNIT
INDEX MAP
CHAVES COUNTY, NEW MEXICO

FIGURE 1

WESTFORK UNIT

Schlumberger

COMPENSATED NEUTRON/LITHODENSITY

CSU

COMPANY: MC KAY OIL CORPORATION

WELL: INEXCO FEDERAL NO. 4

FIELD: WEST PECOS SLOPE ABO
COUNTY: CHAVES
STATE: NEW MEXICO
NATION: U.S.A.
LOCATION: 1650' FNL & 660' FWL
"CONFIDENTIAL" "TITE HOLE"
SEC: 30 TWP: 5S RGE: 22E

SEE DETAIL LOG FOR TOPS AND TESTS

PERMANENT DATUM: GROUND LEVEL ELEVATIONS-
ELEV. OF PERM. DATUM: 4249.0 F KB: 4262.0 F
LOG MEASURED FROM: K.BUSHING DF: 4261.0 F
13.0 F ABOVE PERM. DATUM GL: 4249.0 F
DRLG. MEASURED FROM: KELLY BUSHING

DATE: 16 MAR 87
RUN NO: 1

DEPTH-DRILLER: 4257.0 F
DEPTH-LOGGER: 4255.0 F
BTM. LOG INTERVAL: 4252.0 F
TOP LOG INTERVAL: 2600.0 F

CASING-DRILLER: 1082 F
CASING-LOGGER: 1082 F
CASING: 8 5/8"
WEIGHT: 24.00 LB/F
BIT SIZE: 7 7/8"
DEPTH: 3440 F

OTHER SERVICES-
DLL/MSFL
EPT
CYBERLOOK

PROGRAM
TAPE NO:
26.2
SERVICE
ORDER NO:
481601

TYPE FLUID IN HOLE: SALT GEL/STARCH
DENSITY: 10.4 LB/G
VISCOSITY: 42.0 S
PH: 7.0
FLUID LOSS: 12.0 C3
SOURCE OF SAMPLE: CIRCULATED