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GEOLOGICAL REPORT
MICHAEL 12-16
SE/4 SECTION 12 – T35S – R16W
COMANCHE COUNTY, KANSAS

SUMMARY

The above captioned well was drilled to a total depth of 5,830 feet on January 15, 2001. A one-man mud-logging unit was on location from 2,000 feet to TD, with samples being analyzed from 4,000 feet to TD. The well was under the geological supervision of the undersigned from approximately 4,900 feet to TD. At TD, Reeves wire-line logs were run that consisted of Dual induction, Compensated Neutron – density and Micro-log. From data collected while drilling and analyzing, hydrocarbon shows were encountered in the Mississippian Detrital and Mississippian Dolomite zones. The decision was made to set production casing and attempt completion.

MISSISSIPPIAN

The Mississippian Detrital was topped at 5,246 (-3398) feet. This zone was a total of 28 feet thick, with best porosity being 22%, along with 16 feet of positive micro-log separation. A 102-unit gas kick was recorded through this zone, which is described as a light tan to brown, very fine to fine crystalline dolomitic conglomerate. Cherts and multicolored shales were also observed through this zone, along with a dull yellow fluorescence, good streaming cut, trace of live oil staining and slight odor.

The top of the Mississippian Unconformity was recorded at 5,274 (-3427) feet. Samples were described as off-white to cream tan, very fine to fine crystalline sucrosic dolomite, with fair intercrystalline, pinpoint and vugular porosity. A bright yellow fluorescence along with good streaming cut; live oil staining and strong odor was reported through a 90-unit gas kick. Electric logs indicate a 9-foot zone of 18% porosity, with positive micro-log separation throughout that calculates productive. This dolomite package would be equivalent to the producing dolomite in the Miller 18-3 only the porosity and permeability seem to be enhanced.

A lower dolomite package was encountered from 5,298 – 5,316, which is equivalent to the Spicer 7-15 interval. Samples were described as same as above with an 88-unit gas kick and porosity averaging 10%.

ELECTRIC LOG TOPS

	REDLAND MICHAEL 12-16 N/2 S/2 SE/4 12-T35S-R16W	SPRING BROWNBACK SW/4 SW/4 7-T35S-R15W	REDLAND MILLER 18-3 NE/4 NW/4 18-T35S-R15W
CHASE (subsea)	2441 (-594)	2424 (-598)	2412 (590)
TOP PENN. (subsea)	3363 (-1516)	3380 (-1554)	3355 (-1533)
BS. HEEBNER (subsea)	4339 (-2492)	4320 (-2494)	4318 (-2496)
LANSING (subsea)	4544 (-2697)	4508 (-2682)	4516 (-2694)
STARK SHALE (subsea)	4950 (-3103)	4955 (-3129)	4942 (-3120)
CHEROKEE SH. (subsea)	5197 (-3350)	5190 (-3364)	5184 (-3362)
MISS DETRITAL (subsea)	5246 (-3398)	5242 (-3416)	5233 (-3411)
MISS UNCONFORM. (subsea)	5274 (-3427)	5264 (-3438)	5218 (-3422)
VIOLA	5736 (-3889)	NDE	NDE

VIOLA

The Michael 12-16 was structurally running slightly counter-regional at the Cherokee and Mississippian intervals. American Warrior (a Kansas Operator) had just made an Ordovician discovery in the E/2 of section 3 T34S – R16W, which is located northwest of our well. A drill stem test reportedly recovered 3.7 MMCFGPD. Due to our structural position and lack of nearby control, we decided to take the Michael 12-16 to the Viola. Samples were described as white to off-white very fine to fine crystalline limestone which is slightly dolomitic. A dull yellow mineral fluorescence along with a cloudy cut was recorded. The Viola section was overall very "tight".