SAMUEL GARY, JR. & ASSOCIATES, INC.

WOOLFOLK #26-13

SE SW SW SEC 26 T34S R20W

COMANCHE COUNTY, KANSAS

WELLSITE GEOLOGIST'S REPORT

T. M. McCOY & CO., INC.
CONSULTING GEOLOGISTS

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Samuel Gary, Jr. & Associates, Inc.
Woolfolk #26-13

WELL DATA

OPERATOR:	Samuel Gary, Jr. & Associates, Inc.
WELL NAME:	Woolfolk #26-13
LOCATION:	330' fsl 990' fwl SE SW SW Sec. 26 T34S R20W Comanche County, Kansas
ELEVATIONS:	1724' GL 1736' KB
FIELD:	Extension - Box Ranch Field
ROAD DIRECTIONS:	From Protection, S 10.0 mile on gravel road; E 0.2 mile on lease road.
SURFACE CASING:	8 5/8" 24# J-55 set at 659' KB.
SPUD DATE:	23 July 1990 6:45 AM
DRILLING COMPLETED:	5 August 1990 6:30 PM
TOTAL DEPTH:	6600' Driller 6591' SLM 6594' Logger
MAXIMUM TEMPERATURE:	148 deg F (Schlumberger)
LAST FORMATION PENETRATED:	Ordovician Arbuckle
WELL STATUS:	Plugged and abandoned.
OPERATOR REPRESENTATIVES:	Tom Fertal - Geologist Dan Hall - Engineer

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SUMMARY OF SHOWS AND LITHOLOGY

The following descriptions are interpretive and are tied to the wireline logs. Rig personnel collected unlagged 10-ft samples from 3500' to 6600' rig TD. Sample quality was fair to poor; below 5400' cuttings were recirculated while shaker was bypassed to carry LCM.

Grain size was determined by use of the American Stratigraphic Company comparator. Rock colors were determined from the Rock-Color Chart distributed by the Geological Society of America. 10% HCl was used in acid-reaction tests.

Significant shows are marked in the left margin; lesser indications of hydrocarbons are contained in sample descriptions or are noted as "No show". Cut tests were performed with 1,1,1-trichloroethane. Samples were examined for fluorescence with a Corvascope.

Wellsite geologist's descriptions begin at top of Cherokee.

CHEROKEE / ATOKA TOP: 5083' DATUM: -3347'

5083' - 5192' Shale; dark gray to grayish black, some medium dark gray tinted olive gray; smooth; firm; slightly calcareous, some noncalcareous; platy to splintery. Limestone; pinkish gray (buff), increasingly light brownish to brownish gray; crypto- and micro- to some very fine crystalline, part chalky; firm to some medium hard; clean, trace brown filmy HCl-insoluble residue downhole to some moderately argillaceous; decreasing trace sparry dolomite in limestone matrix, along edges of chips, and rarely lining small vugs; few fossil fragments including several pore-bearing surfaces; mostly dense and no visible porosity to rare slight vuggy porosity uphole. No sample show.

Shale Gas: 215 units at 5086'; 150 units at 5125'; 120 units at 5167' (adjusted downhole from mudlog peak at 5150').

MORROW TOP: 5192' DATUM: -3456'

5192' - 5223' Shale; greenish gray, light olive and olive gray, medium dark to dark gray--part streaked and mottled; smooth; firm; non- to slightly calcareous; fissile, platy to splintery. No show.

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MISSISSIPPIAN TOP: 5223' DATUM: -3487'

5223' - 5242' Limestone; pinkish gray (5 YR 8/1), some white with dispersed black specks and streaks in part; very fine to medium crystalline, granular texture in part; clean; slightly glauconitic; dispersed sand grains in part, few chips limy sandstone without show; trace pyrite; slight to fair intercrystalline and small vug porosity in show lithology, no visible porosity in nonshow lithology. Trace Chert; white to light gray; free and as inclusions in limestone.

Show: Minor solid to spotty light brown oil stain. 70% displays bright solid bluish yellow fluorescence. Fast moderately streaming bluish yellow cut fluorescence dries to bright yellow halos. Under white light, no cut but minor brownish yellow microdroplets of oil form discontinuous oil ring.

Hot-wire Gas:	Total	C1	C2	C3	C4	Min/Ft	Mud Log
Before	30	81%	16%	4%	0%	3.1	5216'
During	80	77%	11%	11%	1%	2.8	5218'
During	75	78%	11%	10%	2%	2.4	5220'
Maximum	250	78%	11%	9%	3%	2.6-1.8	5228' - 5236'
During	100	78%	11%	12%	3%	1.9	5240'
After	50	72%	11%	12%	5%	2.1	5245'

5242' - 5426' Limestone; nearly white to pinkish gray (buff); minor light gray; mostly micro- to very fine crystalline, little fine to lower medium crystalline; commonly chalky, minor part peloidal and oolitic; one well preserved bivalve; mostly no visible porosity. Minor Chert; white to light gray; few chips oolitic. Virtually no sample show; slight gas show of 70 units at 5366'.

5426' - 5460' Limestone; nearly white to pinkish gray (buff), light gray; higher resistivity and decreased hole size may result from moderately hard cryptocrystalline clean limestone; no visible porosity. No show.

5460' - 5580' Limestone; less off white, mostly pinkish gray (buff), little light gray; micro- to very fine crystalline, much slightly chalky; firm to little hard and dense; trace fair visible porosity where oolitic and slightly vuggy at 5550' - 5580', otherwise no visible porosity. Trace Chert; white, very light gray. No sample show; gas show of 190 units at

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5536' which correlates to shale shown on logs but not distinguished in samples from caving shale.

Largely caving Shale; medium dark to dark gray to grayish black and olive gray; firm; non- to slightly calcareous; platy to splintery, some subblocky.

5580' - 5654' Limestone; pinkish gray (buff) to light brownish gray, some approaches neutral gray; crypto- to microcrystalline; moderately hard; clean; no visible porosity. Trace Chert; white to light gray; hard. No show.

5654' - 5787' Limestone; pinkish gray (buff), some very light gray; crypto- to microcrystalline, commonly chalky, some very fine to little fine crystalline; faint fine to medium grained texture in part; firm to some moderately hard; clean; trace pyrite; few microfossils; no to slight visible porosity. No show.

OSAGE TOP: 5787' DATUM: -4051'

5787' - 5992' Gradational, interbedded. In upper part, some Limestone; pinkish gray (buff), mottled light to medium gray; micro- to some fine crystalline; firm; clean to slightly argillaceous; slightly glauconitic; partly dolomitic; no to trace visible porosity. Largely Siltstone; light to medium gray; abundant dispersed silt-size to very fine crystals of dolomite; most chips remain intact in acid; partly argillaceous; trace glauconite; some is partly limy; mostly no visible porosity. Minor Shale; medium light to medium gray; silty; dolomitic--dispersed crystals; coarse platy to subblocky. No show.

5992' - 6184' Siltstone; light to medium gray, faint light brownish gray to light olive gray tint common; firm to moderately hard; abundant dispersed silt-size to very fine dolomite crystals; partly argillaceous; little is limy; no to rare glauconite; rare pyrite; trace cherty, white to light gray; subblocky. Less Shale; medium to medium dark gray; silty; dolomitic; platy to blocky. No show.

Note: Lost circulation at 6210' log depth, 6217' rig depth. Reduced sample quality makes the following interpretation questionable.

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6184' - 6224' Decreased Siltstone; light to medium gray; dolomitic; argillaceous; subblocky. Shale; medium to medium dark gray; firm; silty; non- to slightly calcareous/dolomitic; subblocky, platy. Limestone 6208' - 6216'; light brownish gray; crypto- to microcrystalline; moderately hard; slightly argillaceous; dense; blocky; no visible porosity. Minor Shale; dark gray, grayish to brownish black, little dusky yellowish brown; slightly silty; firm; calcareous/dolomitic; platy, subblocky; part appears organic rich. No show.

VIOLA TOP: 6224' DATUM: -4488'

6224' - 6242' Limestone; light brownish to brownish gray; crypto- to very fine crystalline; moderately hard; quite clean to argillaceous; dense; one crinoid; no visible porosity. No show.

VIOLA "B" TOP: 6242' DATUM: -4506'

6242' - 6248' Limestone; light gray; fine to medium crystalline; firm to moderately hard; clean; no visible porosity. No show.

6248' - 6263' Shale; grayish to brownish black, some dusky yellowish brown; firm, some moderately hard; silty; non- to slightly calcareous/dolomitic; platy to blocky. No show.

6263' - 6320' Much Chert; white to light gray to little medium gray; hard, sharp irregular cuttings; slightly calcareous. Poor recovery of dolomite indicated by logs: Dolomite; light gray; crypto- to very fine crystalline; Alizarin Red staining indicates some calcite; silicified--many chips remain intact in acid; dense; no visible porosity. No show.

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MIDDLE VIOLA MARKER TOP: 6320' DATUM: -4584'

6320' - 6334' Dolomite; pinkish gray (buff), trace tinted olive; micro- to very fine crystalline; firm; clean; no to slight intercrystalline porosity. No show.

6334' - 6384' Abundant Chert; white to light gray to minor light brownish gray and medium gray; hard, sharp; mostly free, some cuts through dolomite chips. Dolomite; pinkish gray (buff) to light brownish gray; micro- to very fine crystalline; partly limy; moderately hard, some firm; clean to slightly argillaceous; parts siliceous, cherty; no to trace visible intercrystalline porosity. No show.

6384' - 6420' Poor recovery in samples of limestone indicated by logs: Limestone; pinkish gray (buff) to light brownish gray; micro- to very fine crystalline; firm; clean; mostly no visible porosity. Much Chert; white to light gray, some light brownish gray; hard. No show.

SIMPSON TOP: 6420' DATUM: -4684'

6420' - 6480' Uphole, mostly Dolomite; light brownish to some brownish gray, pale yellowish brown; micro- to very fine crystalline; firm; clean to slightly argillaceous; no to slight visible porosity. Downhole, Dolomite; pinkish gray (buff) to light brownish gray, some light gray; micro- to very fine to some medium crystalline; firm to moderately hard; clean; trace pyrite; varies from dense and no visible porosity to some good intercrystalline and vug porosity. 6426' - 6431': Shale; dusky yellowish brown; silty; firm; calcareous/ dolomitic; subblocky. Some Chert; white to light gray; hard; may be recirculated. No significant show.

6480' - 6488' Sandstone; very light gray to pinkish gray (buff); fine to lower medium grained; subrounded to rounded; well sorted; slightly to very dolomitic--grades from sandy dolomite; trace pyrite; slight visible porosity. No show.

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SIMPSON SHALE TOP: 6488' DATUM: -4752'

6488' - 6539' Poor recovery in samples: Few chips Shale; grayish green to olive gray; smooth; firm; slightly calcareous; platy to splintery. No show.

SIMPSON SANDSTONE TOP: 6539' DATUM: -4803'

6539' - 6558' Sandstone; quartzose; very light gray to some medium light gray; upper fine to lower coarse grained, mostly medium grained; rounded to well rounded; moderately well sorted; unconsolidated in samples; some faceted grains indicate minor quartz overgrowths; broken quartz grains suggest silica cement, rare clusters also contain dolomite cement, trace pyrite; too few clusters to estimate porosity. No sample show; slight gas increase to 55 units.

ARBUCKLE TOP: 6558' DATUM: -4822'

6558' - 6562' Logs indicate Sandstone; not distinguished in samples from Simpson Sandstone.

6562' - 6594' TD Dolomite; light brownish gray to medium light gray; very fine to fine crystalline; moderately hard, quite dense; clean; no visible porosity. No show.