15-033-20792 14-34s-20w

SAMUEL GARY, JR. & ASSOCIATES, INC.

LEMON RANCH #14-10

NW SE SEC 14 T34S R20W

COMANCHE COUNTY, KANSAS

WELLSITE GEOLOGIST'S REPORT

DISCUSSION

WELL DATA

FORMATION TOPS

SUMMARY OF SHOWS AND LITHOLOGY

DRILL STEM TEST

SERVICES

DAILY OPERATIONS

MUD RECORD

BIT RECORD

DEVIATIONS

DRILLING CURVE

DRILLING TIME LOG

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

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WELL DATA

OPERATOR:	Samuel Gary, Jr. & Associates, Inc.
WELL NAME:	Lemon Ranch #14-10
LOCATION:	2080' fsl 1980' fel NW SE Sec. 14 T34S R20W Comanche County, Kansas
ELEVATIONS:	1755' GL 1767' KB
FIELD:	Lemon Ranch Field
ROAD DIRECTIONS:	From Protection, S 7 miles on gravel road; E 1 mile; S 0.5 mile; W & S 0.5 mile on lease road.
SURFACE CASING:	8 5/8" set at 670' KB with 425 sx.
SPUD DATE:	21 September 1990 8:00 PM
DRILLING COMPLETED:	8 October 1990 5:15 PM
TOTAL DEPTH:	6530' Driller 6536' Logger
MAXIMUM TEMPERATURE:	119 deg F (Logger)
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 5000' to 6530' rig TD. Sample quality was good to 5620'. Below that depth cuttings were recirculated while shaker was bypassed to carry LCM; resulting sample quality varied from poor to fair.

Grain size was determined by use of the American Stratigraphic Company comparator. Colors of dry cuttings 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.

5000' - 5015' Limestone; pinkish to light brownish gray; crypto- to micro- to some very fine crystalline; firm; clean; trace cherty; no visible porosity. No show.

5015' - 5020' Shale; dark gray, grayish black; firm; non- to slightly calcareous; platy, subblocky. No show.

5020' - 5032' Limestone; pinkish to light brownish gray; crypto- to micro- to some very fine crystalline; firm; clean, few contacts with grayish black shale; trace cherty white, light brownish to brownish gray; no to trace visible porosity. No show.

CHEROKEE/ATOKA TOP: 5032' DATUM: -3265'

5032' - 5038' Shale; dark gray, grayish black; smooth to slightly silty; firm; non- to slightly calcareous; trace pyrite; platy, subblocky. No sample show (325 units total gas).

5038' - 5082' Limestone; some pinkish gray, increasingly light brownish to some brownish gray; crypto- and microcrystalline, partly chalky, little very fine crystalline; firm, some moderately hard; mostly clean, some slightly argillaceous; little is cherty, white to brownish gray; one crinoid fragment; no to

SUMMARY OF SHOWS AND LITHOLOGY

rare fair visible porosity. Interbedded Shale; medium light to dark gray, some grayish black, some light olive to olive gray; smooth, little is silty; firm; non- to slightly calcareous; trace micaceous; minor coaly laminae downhole; platy, some subblocky. No sample show (peaks of 160 and 120 units total gas).

5082' - 5140' Thin beds. Increased Shale, medium light to dark gray, some grayish black, light olive to olive gray, brownish gray, and greenish gray; mostly smooth, some silty; firm; non- to slightly calcareous; platy, some subblocky. Limestone; pinkish gray to light brownish to brownish gray; crypto- to microcrystalline; firm, some moderately hard; clean to argillaceous; trace pyrite; few microfossils; minor part cherty, white to light brownish to brownish gray; mostly no visible porosity. No sample show (185 units total gas at 5128' log depth).

MISSISSIPPIAN TOP: 5140' DATUM: -3373'

5140' - 5170' Limestone; pinkish gray, some nearly white, little light brownish gray; microcrystalline, partly chalky, little fine crystalline; firm; clean; trace pyritic; no visible porosity. Minor Chert; white to light gray; hard, sharp cuttings. No significant show.

5170' - 5182' Limestone; pinkish gray, some nearly white to minor light gray; micro- to some fine crystalline; firm; clean; few chips contain many microfossils; mostly no visible porosity to some fair intercrystalline and minor small vug and pinpoint porosity. Minor Chert; white to light gray.

Show: Poor to fair overall. No to trace spotty light brown stain. 30% exhibits bright spotty to solid bluish yellow fluorescence. Moderately fast non- to slightly streaming cut fluorescence dries to moderate bluish yellow halos. Under white light, no cut and no oil ring. Total gas: 42 to 228 to 95 units.

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SUMMARY OF SHOWS AND LITHOLOGY

5182′ - 5264′	Limestone; pinkish gray, some nearly white; micro-crystalline to little fine crystalline; firm; clean; rare green inclusions; slightly pyritic; some is cherty; mostly no visible porosity. 5% - 20% Chert; white to light gray, partly translucent; hard. No significant sample show; minor gas increases from 40 units background to 140 units at best.
5264′ - 5268′	Log PE curve suggests Dolomite--not evident in samples--or Chert. Drilling break does correlate with increased neutron-density porosity. Trace sample show is restricted to Limestone.
5268′ - 5308′	Limestone; pinkish gray, increasing light brownish gray; crypto- to micro- to minor fine crystalline; firm, some hard and dense; clean; less cherty. No show.
5308′ - 5342′	Limestone; pinkish gray; micro- to some fine crystalline; part granular; firm; clean; no to poor visible inter-crystalline porosity; faster drilling correlates to fair log porosity. No significant show.
5342′ - 5502′	Limestone; pinkish gray, some very light gray; mostly micro- to some very fine crystalline, partly chalky, and firm; some cryptocrystalline and moderately hard; clean; part cherty; mostly no visible porosity. Trace Chert; white to light gray, part translucent; hard. No show.
5502′ - 5547′	Minor Dolomite; pinkish gray to very light gray; micro- to very fine crystalline; firm; clean; no to little fair intercrystalline and small vug porosity. Mostly Limestone; pinkish gray to very light gray; micro-crystalline; partly dolomitic; firm; clean; no to poor visible porosity. No show.
5547′ - 5570′	Poor sample quality. Logs indicate Limestone.
5570′ - 5668′	Limestone; pinkish gray, some very light gray; micro- to some very fine crystalline; firm; clean; minor part is dolomitic; few microfossils; toward base slightly argillaceous and trace green inclusions--may result from diminishing quality of samples; no to some fair visible intercrystalline and vug porosity. Trace Dolomite; very light gray; very fine crystalline. No show.
Remark:	Bypassed shaker at 5630′ to carry LCM.

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Lemon Ranch #14-10

SUMMARY OF SHOWS AND LITHOLOGY

OSAGE — TOP: 5668' DATUM: -3901'

5668' - 5802' Gradational, interbedded. Uphole, some Limestone; mottled pinkish gray and medium light gray; microcrystalline; firm; slightly to moderately argillaceous; glauconite common; no visible porosity. Dominantly Siltstone; medium light to medium gray, minor light gray; dispersed very fine dolomite crystals and very fine quartz sand; argillaceous; subblocky. Grades to Shale; medium light to medium gray; silty; very fine grained sandy; dispersed dolomite crystals; subblocky. No significant sample show; hot-wire total gas increases to 195 units appear related to aired-up mud.

5802' - 5990' Siltstone; light to medium gray; numerous dispersed very fine crystals of dolomite, most chips remain intact in acid; part siliceous; part argillaceous; few chips cut by translucent chert; subblocky. Less interbedded Shale; medium light to medium gray; silty; very fine grained sandy; dolomitic; subblocky. Trace Chert; very light gray, white; partly translucent; hard. No show.

5990' - 6081' Gradational, interbedded. Siltstone; some light gray, mostly medium light to medium gray, commonly tinted olive; firm to medium hard; dolomitic--numerous dispersed silt-size to very fine sand-size crystals--chips remain intact in acid; largely argillaceous and partly very fine grained sandy; some siliceous patches, trace light gray translucent chert; probable crinoid stem fragment set in one chip of siltstone; subblocky, some blocky. Particularly at base, Shale; medium to medium dark gray, tinted olive; silty; firm; dolomitic--dispersed crystals; subblocky; few chips show lamination with lighter colored siltstone; may be slightly micaceous. No show.

Note: Twisted off at 6029'. Added 50 bbls crude while fishing.

VIOLA — TOP: 6081' DATUM: -4314'

6081' - 6108' Thin beds: Minor Chert; white to very light gray; opaque to translucent; few chips contact dolomite. Minor Siltstone and Shale; medium light to medium gray; dolomitic; similar to abundant Osage cavings but with white cherty patches and trace grayish black laminae. Limestone 6090' - 6093' shown on logs is not distinguished from

SUMMARY OF SHOWS AND LITHOLOGY

cavings in samples: pinkish to some light gray; micro- to fine crystalline; faint granular texture in part; partly dolomitic; clean; no to trace visible porosity. Minor Shale; brownish to grayish black, olive tint in part; firm; calcareous to dolomitic; moderately smooth to silty; platy, subblocky. Minor Dolomite; white to light gray, faint greenish to olive tint common; micro- to very fine crystalline; part calcitic; firm, moderately hard; clean to slightly argillaceous and silty (light colored insoluble residue); mostly no visible porosity. No sample show; 380 units total gas.

Note: Tripped at 6099' rig depth for bad pump pressure gauge.

6108' - 6141' Dolomite; very light to medium gray, some tinted pinkish to light brownish gray; micro- to fine crystalline; some sucrosic; firm to hard and dense; clean, some slightly argillaceous; part is cherty or siliceous; trace pyritic; no to minor good visible intercrystalline porosity--fair fast 6-ft drilling break correlates to best log porosity at 6120'. 5% - 10% Chert; white to very light gray; opaque to translucent; some contacts with dolomite; trace pyrite. Virtually no sample show; no hot-wire total gas increase.

DST #1 & #2: 6111' - 6141' log depth, 6105' - 6135' rig depth. Recovered 245 ft of mud and 30 ft of filtrate on DST #1; 150 ft of mud, 180 ft of filtrate cut mud, and 90 ft of salt water on DST #2.

6141' - 6176' Dolomite; light to medium gray, some faintly pinkish to light brownish gray; micro- to fine crystalline; moderately hard; clean to slightly argillaceous; slightly calcitic in part; mostly no visible porosity. 5% - 15% Chert; white to light gray; mostly opaque. No show.

6176' - 6190' Dolomite; light brownish gray; mostly very fine crystalline; firm; slightly silty, slightly argillaceous; staining shows minor calcite; trace pyrite; slight visible intercrystalline porosity--no good drilling break. Decreased Chert; white to light gray. No show.

6190' - 6278' Dolomite; light brownish gray, some medium light to medium gray; micro- to some fine crystalline; moderately hard; clean to slightly argillaceous; cherty; some is calcitic; no to slight intercrystalline porosity. 10% - 30% Chert; light brownish to brownish gray, some white and medium light to medium gray; contacts with carbonate common; fine dispersed brown specks do not fluoresce or cut; trace

SUMMARY OF SHOWS AND LITHOLOGY

pyritic; hard. No show (only commercially insignificant slow nonstreaming bluish yellow cut fluorescence).

SIMPSON TOP: 6278' DATUM: -4511'

6278' - 6301' Dolomite; light brownish to brownish gray; micro- to fine crystalline; calcitic; very fine to lower coarse grained subrounded quartz sand in some chips; slightly to very argillaceous; firm to moderately hard; no to trace visible porosity. Minor Shale and Siltstone; dusky yellowish brown and brownish gray to brownish black; firm; dolomitic, calcareous; part sandy; platy, subblocky. Trace Sandstone; brownish gray; very fine to fine grained; subrounded; moderately sorted; appears dirty; carbonate cement; no visible porosity. No fluorescence; slight streaming cut fluorescence from brown gray limy dolomite.

6301' - 6314' Limestone; pinkish gray (buff), slightly mottled medium gray; fine to medium crystalline; firm; partly dolomitic; clean; no to trace visible intercrystalline porosity. No show.

6314' - 6350' Dolomite; pinkish gray (buff) to some light brownish gray, very light to light gray toward base; very fine to fine crystalline, medium crystalline toward base; partly calcitic uphole; clean; commonly sucrosic; some slightly pyritic; intercrystalline and some vug porosity varies from slight to excellent, generally improves downhole; good drilling break. 5% - 10% medium bright yellow fluorescence but virtually no cut fluorescence.

6350' - 6374' Dolomite; very light to light gray (light brownish to brownish gray cuttings are believed to be recirculated); fine to medium crystalline; moderately hard; clean; no to slight intercrystalline porosity. No show.

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Lemon Ranch #14-10

SUMMARY OF SHOWS AND LITHOLOGY

SIMPSON SHALE TOP: 6374' DATUM: -4607'

6374' - 6416' 5% Shale; dark greenish gray (3 GY 4/1 to 5 G 4/1) to some greenish gray; smooth, part waxy; firm; noncalcareous; trace pyrite; platy to splintery, some subblocky. No show.

6416' - 6432' 2% Sandstone; very light gray; fine to coarse grained; moderately well sorted in rare clusters; rounded to well rounded where medium to coarse grained; mostly loose; trace pyrite; rare red-orange grains; silica and some dolomite cement; low visible porosity in rare clusters.

Show: Few clusters and trace loose grains show brown oil stain; bright yellow solid to spotty fluorescence; moderately fast slightly streaming bluish yellow cut fluorescence that dries to moderate bluish yellow halo. No cut or oil ring under white light.

No significant increase in hot-wire total gas: 210 - 220 units background, 10 - 12 units C1, trace C2.

ARBUCKLE TOP: 6432' DATUM: -4665'

6432' - 6452' Dolomite; pinkish gray (buff); very fine to fine crystalline; firm to moderately hard; clean; slight to fair intercrystalline and small vug porosity.

Show: No stain. Uphole, 15% of total sample displays uniform goldish yellow fluorescence. Slow weak nonstreaming cut fluorescence to virtually no cut fluorescence; rare chips produced modeately fast streaming cut fluorescence that dries to bright yellow halos. No cut or oil ring under white light. Downhole, only trace fluorescence.

6452' - 6500' Dolomite; pinkish gray (buff) to light brownish gray, some light to medium gray; trace dark gray to black streaks and inclusions; some micro- to mostly very fine and fine crystalline to some medium crystalline; firm, some moderately hard; clean, some slightly argillaceous; few thin sandstones and minor sandy dolomite, mostly indicated by

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Lemon Ranch #14-10

SUMMARY OF SHOWS AND LITHOLOGY

trace pyrite; trace to some good visible intercrystalline porosity, trace fair to good visible vug porosity.

Show: No stain. 20% of total sample displays uniform fluorescence and trace cut fluorescence as above, one chip with spotty bright bluish yellow fluorescence produced cut fluorescence equal to group of 15 chips.

Also Dolomite; white to light gray; fine to medium crystalline; firm to moderately hard; clean; trace gray outlines around crystals where gray and not white; no to fair visisble intercrystalline porosity. No show.

6500' - 6536' TD Dolomite; light brownish to brownish gray; micro- to very fine crystalline; moderately hard; slightly argillaceous; no to slight intercrystalline porosity. Trace Shale; dusky yellowish brown to brownish black; firm; dolomitic; subblocky. 10% uniform goldish yellow fluorescence; minor slow nonstreaming yellow cut fluorescence from nonfluorescent as well as from some fluorescent chips dries to weak to fair yellow fluorescent halos: no substantial show.