David A. Barker

CONSULTING GEOLOGIST

Geologist's Report
Drilling Time and Sample Log

OPERATOR Chieftain Oil Co., Inc
LEASE AHS Cattle Co WELL NO. #11
FIELD Stranathan API No. 15-007-24254
LOCATION S2 S2 NE NE 1200' FNL & 660' FEL
SEC. 12 TWP. 35S RGE. 12W
COUNTY Barber STATE Kansas

CONTRACTOR Maverick #106
COMM. 12/16/2014 COMP. 12/22/2014
RTD 5457' LOG TD 5452'
SAMPLES SAVED FROM 4200' TO TD
DRILLING TIME KEPT FROM 3700' TO TD
SAMPLES EXAMINED FROM 4500' TO TD
GEOLOGICAL SUPERVISION FROM 4500' TO TD
MUD UP TYPE MUD GEL/CHEMICAL

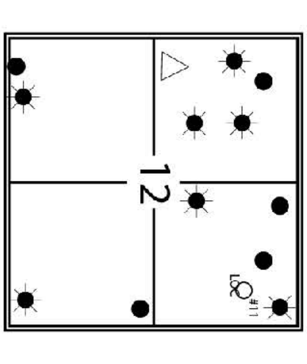
ELEVATION
KB 1400'
DF 1399'
GL 1390'
Measuremnts Are All From KB

CASING RECORD
SURFACE Ran 13 3/8" @313' w/ 350 SX 60/40 POZ
PRODUCTION Ran 5 1/2" 128 jts @5444' w/225 SX

ELECTRICAL SURVEYS
ND/CA

FORMATION	LOG TOP	LOG DATUM	SAMPLE TOP	SAMPLE DATUM	STRUCT. COMP.
Kansas City	4374	-2974	4372	-2972	
Stark SH	4522	-3122	4518	-3118	
Swope	4535	-3135	4526	-3126	
Cherokee SH	4748	-3348	4748	-3348	
Mississippian SH	4821	-3421	4820	-3420	
Kinderhook SH	5056	-3656	5060	-3660	
Chattanooga SH	5135	-3735	5135	-3735	
Misener	NA	-NA	NA	-NA	
Maquoketa SH	5168	-3768	5168	-3768	
Viola	5224	-3824	5222	-3822	
Base Viola	5314	-3914	5316	-3916	
Simpson	5342	-3942	5340	-3940	
		-			
TD	5452				

REFERENCE WELL FOR STRUCTURAL POSITION



GEOLOGIST

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OPERATOR

Company: Chieftain Oil Co., Inc.
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Remarks

Production casing was set to a total depth of 5444' to further test the Mississippian formation.

ACCESSORIES

FOSSIL
- Algae
- Amph
- Belm
- Bioclst
- Brach
- Bryozoa
- Cephal
- Coral
- Crin
- Echin
- Fish
- Foram
- Fossil
- Gastro
- Oolite
- Ostra
- Pelec
- Pellet
- Pisolite
- Plant
- Strom
- Fuss
- Oomold

MINERAL
- Anhy
- Arggrn
- Arg
- Bent
- Bit
- Brecfrag
- Calc
- Carb
- Chtdk
- Chtlt
- Dol
- Feldspar
- Ferrpel
- Ferr
- Glau
- Gyp
- Hvymin
- Kaol
- Marl
- Minxl
- Nodule
- Phos
- Pyr
- Salt
- Sandy
- Silt
- Sil
- Sulphur
- Tuff
- Chlorite
- Dol
- Sand
- Slty

STRINGER
- Anhy
- Arg
- Bent
- Coal
- Dol
- Gyp
- Ls
- Mrst
- Sltstrg
- Ssstrg
- Carbsh
- Clystn
- Dol
- Grysh
- Gryslt
- Lms
- Sandylms
- Sh
- Sltstn

TEXTURE
- Boundst
- Chalky
- Cryxln
- Earthy
- Finexln
- Grainst
- Lithogr
- Microxln
- Mudst
- Packst
- Wackest

OTHER SYMBOLS

INTERVALS
- Core
- Dst
- Dst

EVENTS
- Rft
- Sidewall
- Cfs
- Conn

POROSITY TYPE
- Earthy
- Fenest
- Fracture
- Inter
- Moldic
- Organic
- Pinpoint
- Vuggy

LITHOLOGY
- Anhy
- Cht
- Congl
- Shale
- Shgy
- Ss
- Carb shale
- Gray shale
- Sandy lmst
- Shale
- Slt stn
- Shaly slst
- Slty shale
- Blank
- Gray lmst
- Cream lmst
- Red shale
- Blue-green siltstn
- D. green shale
- Green shale
- Brown lmst
- Brown shale
- Brown dol
- Brown cream
- D. green lmst
- Light cream lmst
- Gray cream lmst
- Green dol
- Gray dol

SORTING
- Well
- Moderate
- Poor

ROUNDING
- Rounded
- Subrnd
- Subang
- Angular

OIL SHOWS
- Even
- Spotted
- Ques
- Dead
- Gas show

ROCK TYPES

- Anhy
- Cht
- Congl
- Shale
- Shgy
- Ss
- Carb shale
- Gray shale
- Sandy lmst
- Shale
- Slt stn
- Shaly slst
- Slty shale
- Blank
- Gray lmst
- Cream lmst
- Red shale
- Blue-green siltstn
- D. green shale
- Green shale
- Brown lmst
- Brown shale
- Brown dol
- Brown cream
- D. green lmst
- Light cream lmst
- Gray cream lmst
- Green dol
- Gray dol

LS: Gray buff to buff, fnxyln, firm to chky

Shale: Black carb, LS: Buff, fnxyln, no vis por, friable

LS: Gray/Buff, fnxyln, friable in part, Shale: black carb

Chert: Semiclean, sharp, Shale: gray to black, Shale: green/ gray mott, LS: dark gray brown, microxyln, very dense, LS: buff, fnxyln, cryptoxyln in part, friable in part.

LS: Dark gray, microxyln, LS: off white, chky, Shale: dark gray, Chert: light gray, semi trans, LS: dark gray, microxyln, fossil frag, very dense

LS: gray/buff, microxyln, dense cherty, fossile, Shale: gry

Shale: Light Green

LS: Crm, buff, fnxyln, poor interxyln porosity

LS: Crm to buff, microxyln, dense, cherty, LS: gray, microxyln, very dense

LS: Crm to light brown, microxyln, poor interxyln porosity

LS: Crm, fnxyln, friable, cherty in party, LS: dirty gray, poor interxyln porosity.

Shale: gray/green, LS: buff, microxyln, blocky w/green shale streak

LS: Buff/ crm, fnxyln, poor interxyln porosity, Shale: green

LS: Brown to gray, microxyln, very dense

Shale: Brown, dense, blocky

30 Min: Slight odor, Chert: sharp, slight show free oil, set slight trip por, set dark brown stain
60 Min: Slight odor, Chert: semi clean, fair set tripolitic, fair stain, slight visable show free oil, set heavy stain, limy in part

90 Min: Chert: Dark brn stn, fair trip por, oily luster

Off white cherty, poor intergranular por, Dolomite: dull yellow

Dolomite: off white, fine gran, poor ingrnr por, gritty

Chert: fresh chert, Dolomite: off wht, fine gran

Dolomite: dirty gray, poor interxyln porosity

Dolomite: dirty gray, poor interxyln por, Shale: gray

Dolomite: dirty gray, Shale: drk gray

Dolomite: dirty gray, Shale: gray

Dolomite, some gray shale

Shale: gray, Ls: gray, fnxyln, Dolomite

Shale: gray , Dolomite

Shale: gray, mostly fine granular, Dolomite, silty, LS: buff, gray, fnxyln, cherty, poor interxyln porosity

Shale: dark gray, no fluorescence

Shale: gray, brown, no fluorescence, dense

Shale: Brown, dense, no fluor

30 min: Shale: brown w fluor spores, 1 piece sandstone

60 min: Dolomite: fine granular, orange fluor

90 min: No sand, one piece buff LS

Maquoketa Dolomite: redish drk brn, fine granular, pr intergranular por

Maquoketa Dolomite: dirty gray, very fine granular, pr intergranular porosity

LS: crm/buff, coarsexyln, mottled w drk gry, fair interxyln in part, sub chky, white in part, Dolomite: dirty gry, fn granular

Grading into LS : light, buff, medxyln in part, fnxyln in part, very dense in part, cherty, Chert: semi trans, dirty gray w blk flecks

Chert: Dark brn, semi clean, sharp, LS: buff to light brn, fnxyln w darker specs

Typical Viola LS: light brn, fnxyln, poor interxyln por, drk brown shale streaks, cherty in part

Chert: semi trans, brown, LS: light brn, fnxyln, poor interxyln por, w salt & pepper drk brn flecks, no simpson

30 Min: Shale: emerald grn, waxey, LS: white/buff, coarsexyln w drk gry specks, friable in part, no show, no sand

60: Sandstone: fine grained, sub angular, friable, dull yellow fluor, rainbow show when crushed, drk brn, fair residual cut, milky wht, no streaming cut

Sandstone: fine grained, rounded, friable, dolomitic, gray to drk brn

Sandstone: clean grained, friable, no show, poorly sorted, mostly Shale

Sandstone: pure white, poorly sorted,clean grained in part, friable, no show

Silt Stone: blue/green, Sandstone: white, poorly sorted, friable

Shale: green/gray, mottled

30 min Shale: green, waxey

60 min Shale: grn w gray, fine grained sandstone layers.