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Scale 1:240 (5"=100') Imperial
Measured Depth Log

Well Name: Waugh B #2
Location: Wabaunsee County
License Number: API #15-197-20296-00-00
Spud Date: 6/22/2012
Surface Coordinates: 1,210' FSL & 640' FWL
Bottom Hole Coordinates: Section 18 - Township 15 South - Range 12 East
Vertical well with minimal deviation, same as above
Ground Elevation (ft): 1,305' **K.B. Elevation (ft):** 1,313'
Logged Interval (ft): 2,250' **To: RTD** **Total Depth (ft):** RTD:3,119' LTD: 3,121'
Formation: Mississippian-Arbuckle
Type of Drilling Fluid: Chemical (Fud-Mud Co.)
Region: Kansas
Drilling Completed: 6/28/2012

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OPERATOR

Company: John O. Farmer, Inc.
Address: P.O. Box 352
Russell, KS 67665-0352

GEOLOGIST

Name:
Company:
Address:

Cores

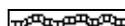
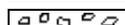
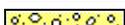
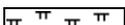
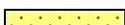
DSTs

Comments

The Waugh B #2 well was drilled by Gullick Drilling (Tool Pusher: Mike Stafford).

The location for the Waugh B #2 well was found via 3-D seismic survey. Based on the results of the drill stem test that was conducted, and the samples and wireline logs that were evaluated, the decision was made to run 5 1/2" production casing on 6/28/12 to further evaluate the Waugh B #2 well.

ROCK TYPES

 Anhy  Bent  Brec  Cht	 Clyst  Coal  Congl  Dol	 Gyp  Igne  Lmst  Meta	 Mrst  Salt  Shale  Shcol	 Shgy  Sltst  Ss  Till
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ACCESSORIES

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	FOSSIL  Algae  Amph  Belm  Bioclst  Brach  Bryozoa  Cephal  Coral  Crin  Echin  Fish  Foram  Fossil  Gastro  Oolite	 Ostra  Pelec  Pellet  Pisolite  Plant  Strom STRINGER  Anhy  Arg  Bent  Coal  Dol  Gyp  Ls  Mrst	 Sltstrg  Ssstrg TEXTURE  Boundst  Chalky  Cryxln  Earthy  Finexln  Grainst  Lithogr  Microxln  Mudst  Packst  Wackst
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OTHER SYMBOLS

POROSITY  Earthy  Fenest  Fracture  Inter  Moldic  Organic  Pinpoint	 Vuggy SORTING  Well  Moderate  Poor	ROUNDING  Rounded  Subrnd  Subang  Angular OIL SHOW  Even	 Spotted  Ques  Dead INTERVAL  Core  Dst	EVENT  Rft  Sidewall
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Curve Track 1

ROP (min/ft) ———
 Gas (units) - - - - -
 Gamma (API) ———

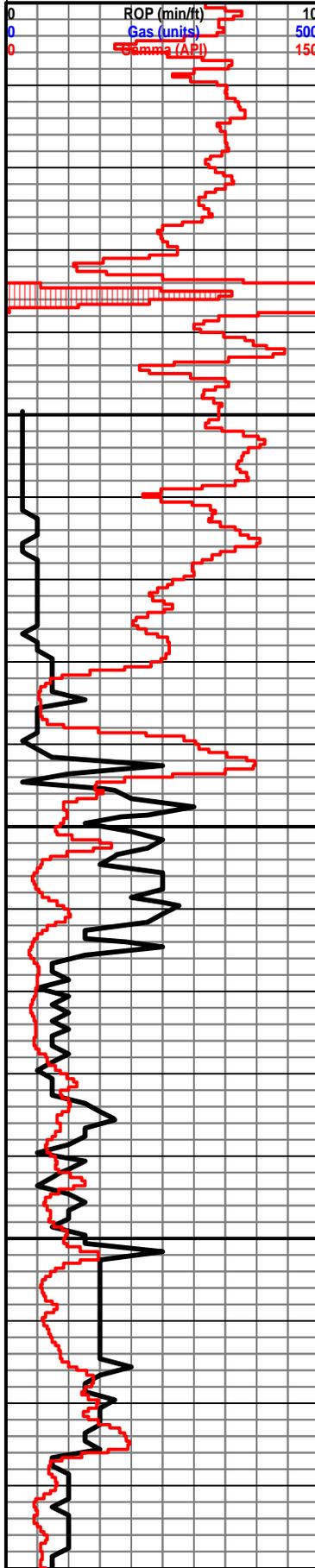
Depth

litholog

Oil Shows

Geological Descriptions

Drill Stem Tests



The open-hole logging was performed by Mr. Larry Smith with the Perforators, LLC (Hays, KS). Logs included: Compensated Neutron/Compensated Density, Dual Induction, and Microlog.

Formation tops and datums from the open-hole logs include the following:

E-Log Tops

- Mississippian: 2294' (-981)**
- Kinderhook: 2633' (-1320)**
- Hunton: 2774' (-1461)**
- Maquoketa: 2860' (-1547)**
- Viola: 2894' (-1581)**
- Simpson Dolo: 2992' (-1679)**
- Simpson Sand: 3008' (-1695)**
- Arbuckle: 3058' (-1745)**

Sh: blk, carb

Sh: blk, carb

Mississippian 2295' (-982)

Dolo: Off Wh-Lt Gry, Fn-Sub xln, Mostly DNS

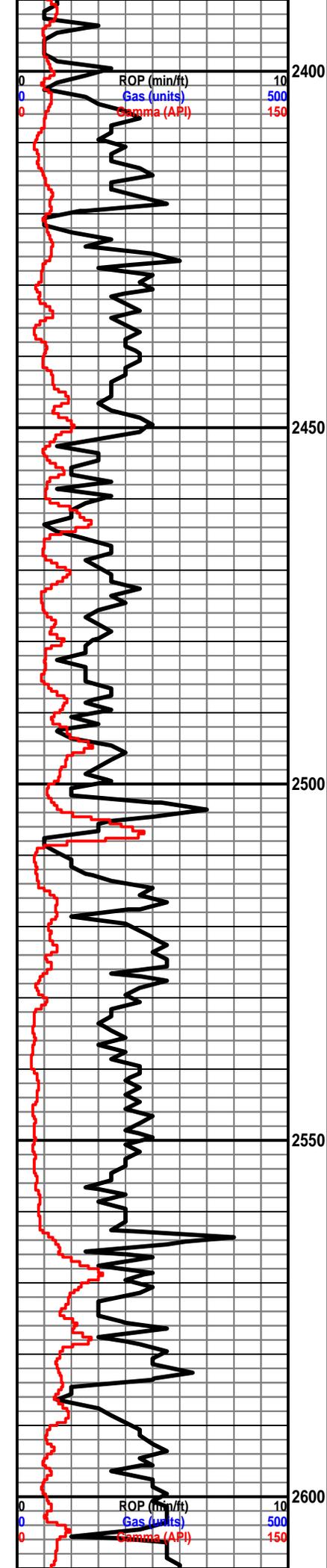
Dolo: Tan-Lt Gry, Fn xln, DNS

Dolo: Tan-Lt Gry, Fn xln, Poor vuggy porosity, Barren

Dolo: ala

Dolo: Tan-Lt Gry, Fn xln, Mostly DNS, SI Chalky

Dolo: Off Wh-Tan, Vry Fn-Fn xln, Mostly DNS, SI chalky



Dolo: ala, chert-off wh

Sh: Drk Gry-Blk, Fissile

Dolo: Off Wh-Tan, Vry Fn xln, Poor scat Int xln porosity, chert-off wh

Dolo: ala

Dolo: Tan-Brn, Fn xln, Mostly DNS, Barren, Chert-off wh

Chert: Off Wh-Lt Gry

Chert: ala

Dolo: Off Wh-Lt Gry, Vry Fn-Fn xln, Mostly DNS, Barren, Chert-off wh

Dolo/Chert: ala

Dolo: Off Wh-Tan, Vry Fn-Fn xln, Mostly DNS, Barren

Dolo: ala

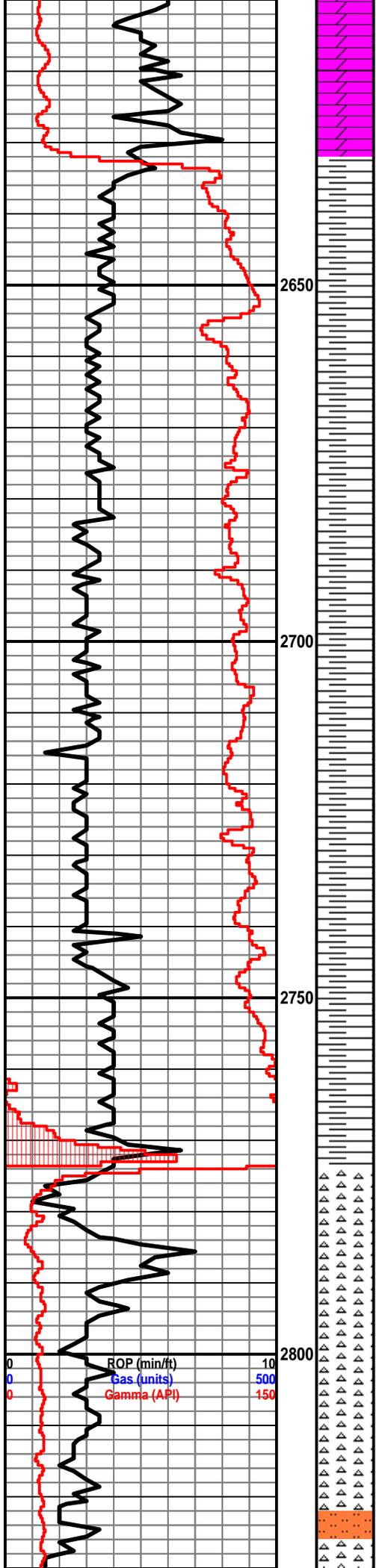
Dolo: Tan-Off Wh, Fn xln, Poor vuggy porosity, sl chalky, Barren

Dolo: Off Wh-Tan, Vry Fn-Fn xln, DNS, Barren

Ls: Drk Gry, Fn xln, Mostly DNS, Sl chalky

Ls: ala

Dolo: Tan-Brn, Fn xln, Mostly DNS, sl chert-off wh



Dolo: ala

Kinderhook 2630' (-1317)

Sh: Drk Gry, soft

Sh: Drk Gry, vry soft

2650

Sh: Drk Gry, soft

Sh: Drk Gry-Blk, Fissile

Sh: Drk Gry, soft

2700

Sh: Drk Gry, soft

Sh: Gry-Drk Gry, soft

Sh: ala, Blk Fissile

2750

Sh: Drk Gyr-Brn, Blocky

Sh: ala

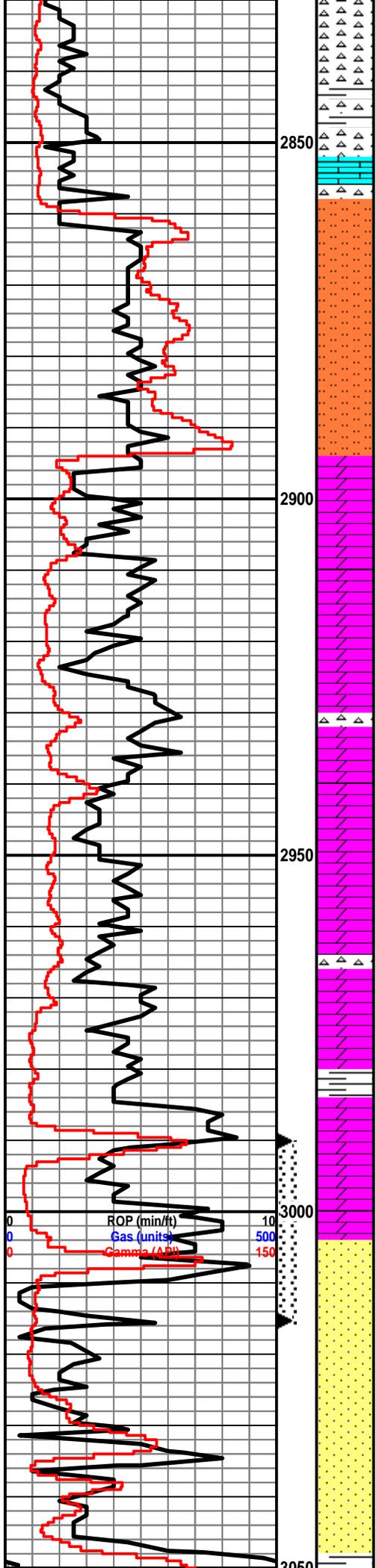
Hunton 2774' (-1461)

Chert: Lt Gry-Opaque, poor frac porosity, Dead oil st, Fair-Good odor, no yel fluor

2800

Chert: Off Wh-Lt Gry, Barren

Slstst: Lt Gry, Vry Fn Grn, Mostly DNS, Barren



Slstst: ala

Sh: Drk Gry-Brn

2850

Ls: Tan-Brn, Fn-Vry Fn xln, Mostly DNS

Maquoketa 2860' (-1547)

Slstst: Drk Gry, Fn Grn, DNS, Barren

Slstst: ala

Slstst: Drk Gry-Brn, Fn-Vry Fn Grn, DNS, Barren

Viola 2891' (-1578)

Dolo: Off Wh-Lt Gry, Fn-Md sucrosic xln, Fair-Good int xln porosity, GSFO-Heavy, Good Odor, Dull Yel Fluor

2900

Dolo: ala

Dolo: Off Wh-Lt Gry, Fn-Md xln, Poor-Fair int xln porosity, SSFO, Fair Odor, Dull Yel Fluor

Dolo: Gry-Brn, Fn xln, Mostly DNS, Chert-off wh, Barren

Dolo: ala

2950

Dolo: Lt Gry-Brn, Fn xln, Mostly DNS, Barren

Dolo: ala

Dolo: Tan-Brn, Fn-Vry Fn xln, Mostly DNS, Barren

Simpson Dolomite 2986' (-1673)

Dolo: Lt Gry-Brn, Fn xln, Poor-Fair int xln porosity, FSFO, Fair-Good Odor, SI Dull Yel Fluor

3000

Simpson Sand 3004' (-1691)

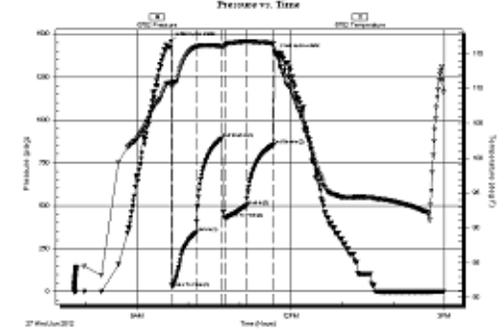
Ss: Qtz, Vry Fn-Md Grn, Rnd-Sub Rnd, Fair Sorting, Fair-Good intergranular porosity, Fairly well cemented, Good oil saturation, GSFO, Strong Odor, Dull Yel Fluor

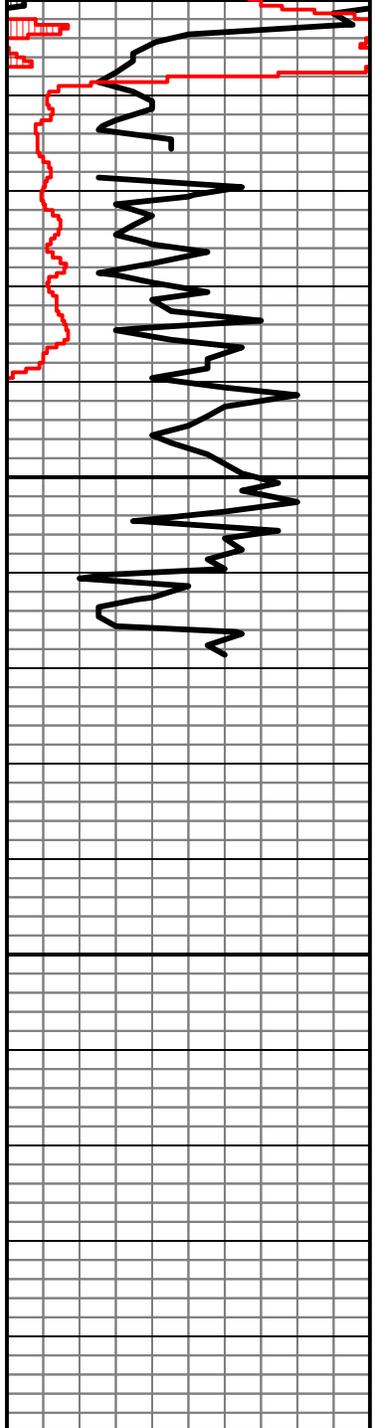
Ss: Qtz, Fn-Md Grn, Rnd-Sub Rnd, Fair-Good Sorting, Fair intergranular porosity, poorly cemented - friable, SSFO

Ss: Qtz, white, Fn-Md Grn, Rnd, Fair-Good sorting, Poor intergranular porosity, well cemented, NSFO

DST #1 2,990'-3,014' (Top 10' of Simpson Sand)
 30"-30"-30"-30"

IF: BOB in 7 minutes, no blow back on shut in
 FF: BOB in 2 minutes, no blow back on shut in
 Rec: 60' Gas in Pipe
 105' Oil Cut Mud (15% O, 85% M)
 820' Sand Cut Oil (25% S, 75% O) (21 API)
 FP: 25-343, 429-501#
 SIP: 892-854#
 HP: 1,457-1,389#
 BHT: 117





3000
3100
3150
3200

Sh: Drk Gry-Brn-Grn, soft

Arbuckle 3058' (-1745)

Dolo: Lt Gry-Tan, Fn xln, Mostly DNS, Barren

Dolo: Lt Gry-Tan, Fn-Md xln, Poor int xln porosity, NSFO

Dolo: ala

Dolo: Tan-Gry, Fn xln, Mostly DNS, Barren, sl chert-off wh

RTD 3119 (-1806)