HARDROCK
Consulting, Inc.

Geologic Report

Drilling Time and Sample Log

Operator **American Warrior, Inc.**			**Elevation** KB **3242'** DF GL **3234'**
Lease **Uhland**		No. **1-16**	
API # **15-109-21509-0000**			**Casing Record** Surface **8 5/8" @ 212'** Production **5 1/2" @ 4899'**
Field **Antelope Springs**			
Location **2278' FSL & 1214' FWL**			**Electrical Surveys** **CNL/CDL, DIL** **MEL, BHCS**
Sec. **16**	Twp. **14s**	Rge. **35w**	
County **Logan**	State **Kansas**		

Formation	Log Tops	Sample Tops	Struct Comp
Anhydrite	2597' +645	2600' +642	
Base	2618' +624	2620' +622	
Topeka	3792' -550	3791' -549	FL
Heebner	4018' -776	4016' -774	FL
Toronto	4034' -792	4034' -792	-1
Lansing	4073' -831	4070' -828	-3
BKC	4406' -1164	4405' -1163	-2
Marmaton	4450' -1208	4449' -1207	+1
Pawnee	4545' -1303	4549' -1307	-2
Fort Scott	4599' -1357	4601' -1359	FL
Cherokee	4628' -1386	4628' -1386	-1
Johnson	4674' -1432	4677' -1435	FL
Morrow	4748' -1506	4748' -1506	FL
Mississippian	4824' -1582	4823' -1581	-7
Total Depth	4900' -1658	4899' -1657	

Reference Well For Structural Comparison **American Warrior, Inc. Wood A #1**
1770' FNL & 2400' FWL Sec. 16 T14s R35w Logan Co. Kansas

Drilling Contractor		**Discovery Drilling Co. Inc.**		**Rig #1**
Commenced	7-1-2017	Completed		7-10-2017
Samples Saved From		**3700'**	To	**RTD**
Drilling Time Kept From		**3600'**	To	**RTD**
Samples Examined From		**3700'**	To	**RTD**
Geological Supervision From		**3700'**	To	**RTD**

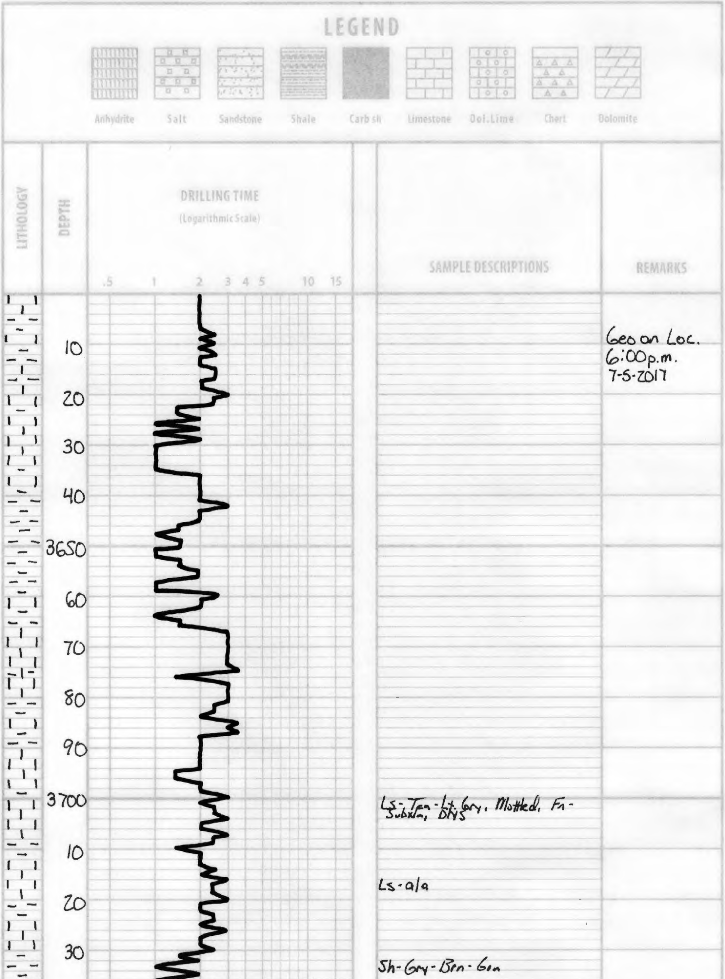
Displacement **3500'** Mud Type **Chemical**

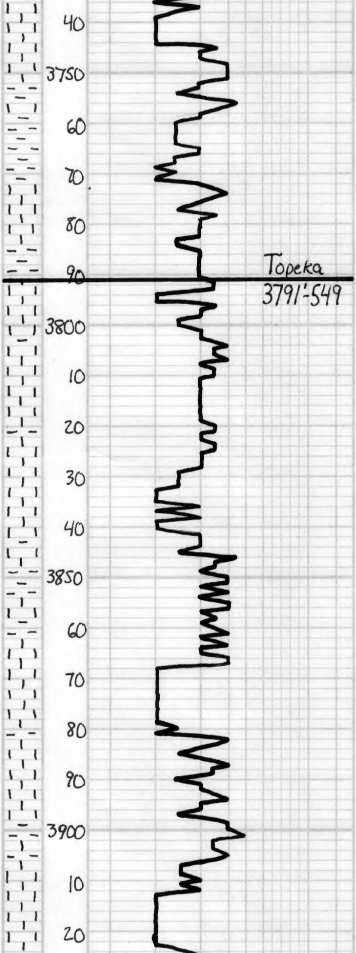
Summary and Recommendations

The location for the Uhland #1-16 was found via 3-D seismic survey. The new well ran structurally as expected via the survey. Two Drill Stem Tests were conducted, one of which recovered commercial amounts of oil from the Altamont "A" Formation. After all gathered data had been examined the decision was made to run 5 1/2 inch production casing to further evaluate the Uhland #1-16 well.

Respectfully Submitted,

Jason T Alm
Hard Rock Consulting, Inc.





Ls- Tan, Fn xln, Fossil w/ Fair-Good inter-Fossil & oom ϕ, Barren

Ls- a/a, DNS

Sh- Brn-Gry

Ls- Tan-Gry, Ool., Mostly DNS, Sl. Mottled w/ Gry Sh

Sh- Gry- Brn

Ls- Tan-Gry, Mottled, Gry Ool., Fn-Subxln w/ Scat Poor oom ϕ Barren

Ls- Offwh-Tan, Fn xln, Ool. w/ Poor Scat interxln & moom ϕ Barren

Sh- Gry

Ls- Wht-Tan, Fn xln w/ Fair interxln ϕ, Barren, V. Chalky

Sh- Gry- Brn, Sl. Silty

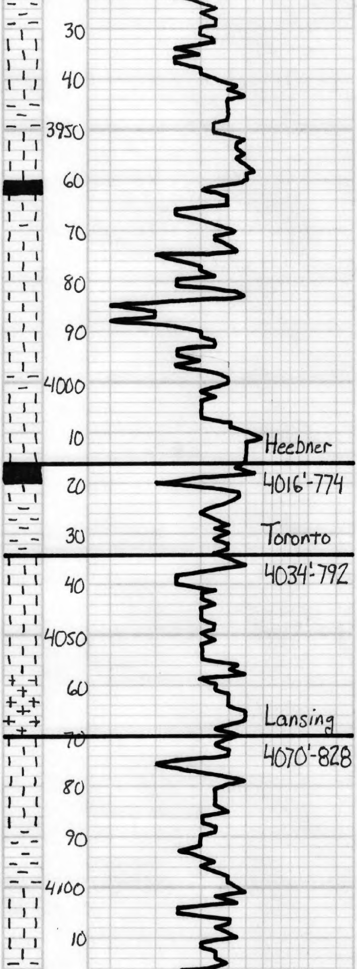
Sh- Lt. Gry- "Gummy"

Ls- Tan, Fn xln, Ool. PKST in Part w/ Fair-Good ooc & Scat Fair interxln ϕ, Barren, Few Pcs w/ Oil residue

Ls- a/a, Mostly DNS

Sh- Gry

Ls- Tan-Lt. Gry, Fn xln, Ool. w/ Fair oom ϕ, Barren, Shaly in Part Gry Sh incl.



Sh - Brn - Gry

Ls - Tan - Lt. Gry, Fn - Subxln, Ool. in Part, Mostly DNS

Sh - Brn

Ls - Tan - Fn xln, DNS

Sh - Drk Gry - Blk

4 Ls - Tan - Offwh, Fn xln, Sl. Ool. w/ Poor - Fair oom & Scat vugsy ɸ, V. lt scat tarry oil st, Mostly Barren

Ls - Tan, Fn xln, Ool PKST w/ Good oom ɸ, Barren, Sl. Mottled w/ wht chert

Ls - ala, Poor ool ɸ

Sh - Gry

Ls - Tan - Lt Gry, Subxln, DNS

12 Sh - Blk, Carb. Fissile

Sh - Gry - Grn - Brn

Ls - Tan, Fn xln, Ool. PKST in Part, w/ Fair - Good oom & ooc ɸ, Barren. Sl. Δ - Lt Gry - Wht

Ls - ala, Poor ool ɸ, Sl. Chalky

Ls - ala, DNS

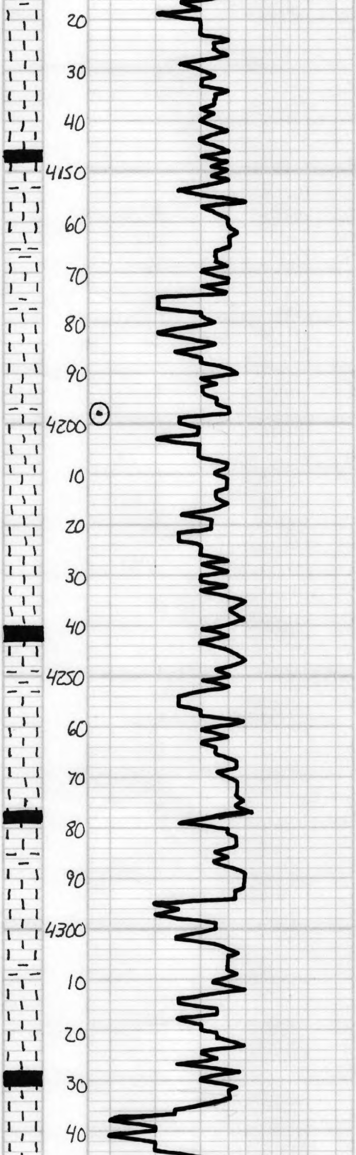
Sh - Brn

Ls - Tan - Offwh, Fn xln, Ool in Part w/ Fair oom & interxln ɸ, Barren

Ls - ala, Mostly DNS

Sh - Brn - Gry

Ls - Tan, Fn xln, Ool. w/ Fair oom & ooc ɸ, Barren



3 Ls- Offwh-Tan, Fn-Subxln, Ool. PKST w/ Poor ooc : oom φ. Lt Scat tarry oil St. Mostly Barren, NSFO

Ls- ala w/ Poor Scat ooc φ, Lt Scat Tarry oil St, NSFO, Mostly Barren

10 Sh- Drk Gry- Blk

Ls- Tan, Fn xln, Ool in Part w/ Poor oom & ooc φ, Sl. Oil St, Barren

Ls- Tan, Fn xln, Ool PKST w/ Fair-Good oom φ, Barren

Short Trip
@4198'

Ls- Tan- Offwh, Fn xln, Ool w/ Fair oom : ooc φ, Barren

Ls-ala, Poor Ool φ

Ls- ala, Mostly DNS

Ls- Offwh- Tan, Fn xln, Sl. Ool. w/ Fair interxln & vugsy φ. Barren

Ls-ala, DNS. Δ-Wht

10 Sh- Blk, Carb.

Ls- Tan, Subxln, DNS

Sh- Brn- Grn

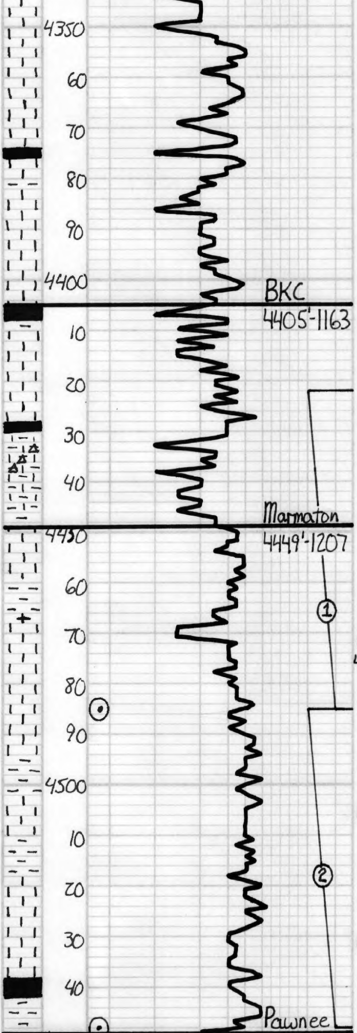
Ls- Tan- Gry, Subxln, Heavily Mottled w/ Gry Sh in Part. Mostly DNS, Chalky, Δ-Gry

Sh- Gry

Ls- Offwh- Tan, Fn xln, Sl. Ool. w/ Poor ooc & interxln φ, Barren

8 Sh- Blk Carb.

Ls- Tan, Fn xln, Ool. w/ Good Oom & interxln φ. Barren Δ-Wht



Ls-a/a, Poor Cb/ϕ

Ls- Tan, Subxln, Ool. DNS

Ls-a/a, Mostly DNS

1S Sh- Blk, Carb.

Ls- Offwh-Tan, Fn xln, Mic Ool. w/ Fair Pinpoint oom ϕ, Barren

Ls-a/a, Mostly DNS

Sh- Drk Gry-Blk

Ls- Tan-Gry Mottled w/ Gry Sh, Sl. Ool. w/ Poor scat oom ϕ, Barren

Ls- a/a, DNS

Sh- Drk Gry

Ls- Offwh-Lt. Gry, Fn-Subxln, Sl. Ool., Mixed w/ Grn-Gry Sh
Δ- Tan-Wht

Ls- Lt. Gry - Tan, Fn-Subxln, Sl. Fossil, Mottled, DNS

Sh- Brn-Gry

● 4S Ls- Wht- Offwh, Fn-Subxln, Ool. PKST w/ Poor ooc ϕ. Lt-Good oil St in ϕ w/ Lt scat scat FSFO, Lt Odor, Fair Yel Fluor, Good Cut

Ls- a/a, Mostly DNS, Mostly Barren

Sh- Drk Gry- Gry

● Ls- Offwh-Tan, Fn-Subxln, Ool. w/ Scat Poor ooc ϕ, Lt oil st in ϕ, NSFO, No Odor, Fair Yel Fluor.

Sh- Brn- Gry

Ls- Tan- Offwh, Subxln, Ool. in Part, Mostly DNS

● Ls- Offwh, Fn xln, Ool in Part, Fossil w/ Poor scat ooc & Poor Intr-fossil ϕ, Lt oil St in ϕ, Sl. SFO when broken, No Odor, Dull Yel Fluor.

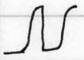
Sh- Drk Gry-Blk

Sh- Brn

DST#1

Altamont "A"
4422'-4485'
30"-30"-30"-30"

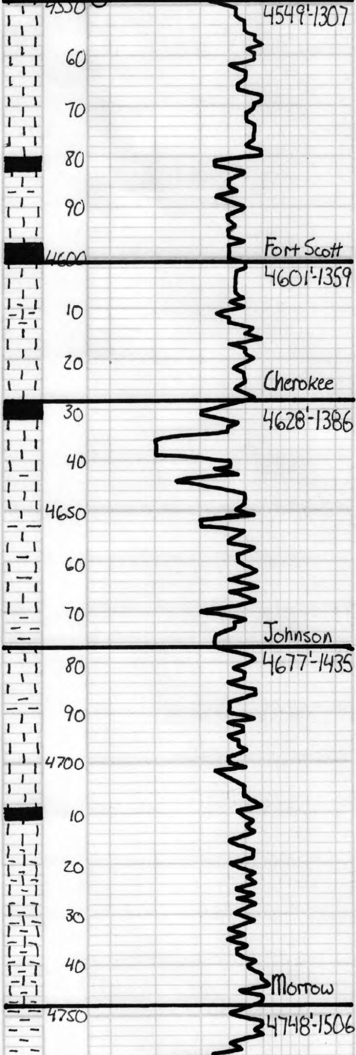
IH 2265#
IF 19-32# Built to 2½ in
ISI 572# Dead
FF 37-55# Built to 1½ in
FSI 554# Dead
FH 2243#
BHT 117°F
Recovery:
30' Clean Oil
50' SOCM 3% Oil



DST#2

Altamont "B-C"
4486'-4548'
30"-30"-15"

IH 2330#
IF 16-21# Built to ¼ in
ISI 39# Dead
FF 20# Dead
FH 2232#
BHT 112°F
Recovery:
5' Oil Spot. Mud



Ls- Lt. Gry, Subxln, Ool. DNS
Sl. 4- Gry

Ls- Gry, Subxln, Ool. in Part, DNS

Ls- a/a, Mottled w/ Tan w/ Gry Sh incl.

Ls- a/a

Sh- Drk Gry- Blk, Carb.

Ls- Tan, Fn xln, DNS

60 Sh- Blk, Carb.

Ls- Lt. Gry- Brn, Subxln, Ool., DNS, Few spot Yel Fluor.

Ls- Tan- Lt. Gry, Subxln, DNS

70 Sh- Blk

Ls- Tan, Fn xln, Ool. w/ Good com : oolc ф, Barren

Ls- Tan, Subxln, Sl. Ool. DNS

Sh- Drk Gry

Ls- Tan, Subxln, Ool, DNS

Sh- Brn- Grn- Gry

Ls- Tan, Fn- Subxln w/ V. Poor- Scat. vuggy ф & scat. oil Stn in ф, Mostly Barren, Mostly DNS

Ls- Offwh- Tan, Subxln, DNS

Ls- a/a

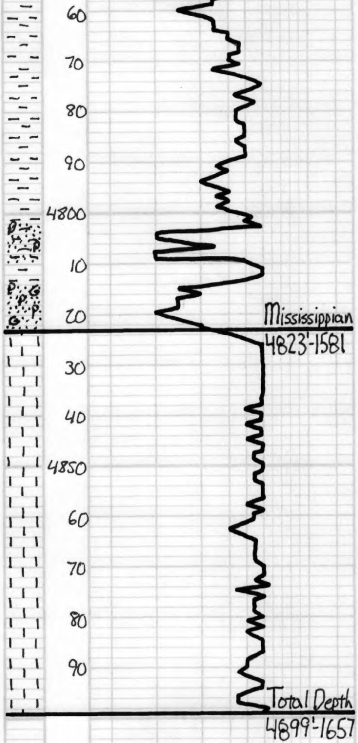
Sh- Blk- Drk Grn

Ls- Tan- Offwh, Subxln, Ool. in Part, DNS, V. Shaly- Grn- Brn- Gry

Ls- a/a

Ls- a/a

Sh- Gry- Grn- Brn, Sl. Glauconite



Sh- Gry- Grn- Brn, Few DNS Ss Clusters w/ It scat Gil ST. w/ Heavy incl Gry & Grn Sh, Glauconitic

Sh- Ss- a/a

Sh- Ss- a/a

Sh- Drk Gry- Drk Grn, Few DNS Ss clusters, Glauconitic, Barren

Ss- Qtz, Fn Gr, Mostly DNS, V. Pyritic, Mottled w/ Grn-Gry Sh

Ss: Qtz- Frosted, Fn Gr, Med Rnd Fair-Well Sort, Fair Cem w/ Fair-Good inter-gr Φ., Barren, Heavy Pyrite, Glauconitic

Ls- Offwh- Tan, Fn- V. Fn Gr. DNS

Ls- a/a, Sl. more x/n

Ls- a/a, x/n + Gr mix, Sl. Ool.

Ls- Tan- Offwh, Subx/n, DNS, Ool PKST in Part

Ls- Tan- Lt. Gry, Subx/n, DNS Ool. in Part

Ls- a/a

Respectfully,
7-10-2017