

Confidentiality Requested:

Yes No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

Form ACO-1

January 2018

Form must be Typed

Form must be Signed

All blanks must be Filled

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # _____

Name: _____

Address 1: _____

Address 2: _____

City: _____ State: _____ Zip: _____ + _____

Contact Person: _____

Phone: (_____) _____

CONTRACTOR: License # _____

Name: _____

Wellsite Geologist: _____

Purchaser: _____

Designate Type of Completion:

New Well Re-Entry Workover

Oil WSW SWD

Gas DH EOR

OG GSW

CM (Coal Bed Methane)

Cathodic Other (Core, Expl., etc.): _____

If Workover/Re-entry: Old Well Info as follows:

Operator: _____

Well Name: _____

Original Comp. Date: _____ Original Total Depth: _____

Deepening Re-perf. Conv. to EOR Conv. to SWD

Plug Back Liner Conv. to GSW Conv. to Producer

Commingled Permit #: _____

Dual Completion Permit #: _____

SWD Permit #: _____

EOR Permit #: _____

GSW Permit #: _____

Spud Date or Date Reached TD Completion Date or Recompletion Date

API No.: _____

Spot Description: _____

_____ - _____ - _____ Sec. _____ Twp. _____ S. R. _____ East West

_____ Feet from North / South Line of Section

_____ Feet from East / West Line of Section

Footages Calculated from Nearest Outside Section Corner:

NE NW SE SW

GPS Location: Lat: _____, Long: _____
(e.g. xx.xxxxx) (e.g. -xxx.xxxxx)

Datum: NAD27 NAD83 WGS84

County: _____

Lease Name: _____ Well #: _____

Field Name: _____

Producing Formation: _____

Elevation: Ground: _____ Kelly Bushing: _____

Total Vertical Depth: _____ Plug Back Total Depth: _____

Amount of Surface Pipe Set and Cemented at: _____ Feet

Multiple Stage Cementing Collar Used? Yes No

If yes, show depth set: _____ Feet

If Alternate II completion, cement circulated from: _____

feet depth to: _____ w/ _____ sx cmt.

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

Chloride content: _____ ppm Fluid volume: _____ bbls

Dewatering method used: _____

Location of fluid disposal if hauled offsite:

Operator Name: _____

Lease Name: _____ License #: _____

Quarter _____ Sec. _____ Twp. _____ S. R. _____ East West

County: _____ Permit #: _____

AFFIDAVIT

I am the affiant and I hereby certify that all requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Submitted Electronically

KCC Office Use ONLY

Confidentiality Requested

Date: _____

Confidential Release Date: _____

Wireline Log Received Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

ALT I II III Approved by: _____ Date: _____

Operator Name: _____ Lease Name: _____ Well #: _____

Sec. _____ Twp. _____ S. R. _____ East West County: _____

INSTRUCTIONS: Show important tops of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed.

Final Radioactivity Log, Final Logs run to obtain Geophysical Data and Final Electric Logs must be emailed to kcc-well-logs@kcc.ks.gov. Digital electronic log files must be submitted in LAS version 2.0 or newer AND an image file (TIFF or PDF).

Drill Stem Tests Taken <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i> Samples Sent to Geological Survey <input type="checkbox"/> Yes <input type="checkbox"/> No Cores Taken <input type="checkbox"/> Yes <input type="checkbox"/> No Electric Log Run <input type="checkbox"/> Yes <input type="checkbox"/> No Geologist Report / Mud Logs <input type="checkbox"/> Yes <input type="checkbox"/> No List All E. Logs Run:	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample Name Top Datum
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CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> Used							
Report all strings set-conductor, surface, intermediate, production, etc.							
Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives

ADDITIONAL CEMENTING / SQUEEZE RECORD				
Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
<input type="checkbox"/> Perforate <input type="checkbox"/> Protect Casing <input type="checkbox"/> Plug Back TD <input type="checkbox"/> Plug Off Zone				

1. Did you perform a hydraulic fracturing treatment on this well? Yes No *(If No, skip questions 2 and 3)*
2. Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? Yes No *(If No, skip question 3)*
3. Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry? Yes No *(If No, fill out Page Three of the ACO-1)*

Date of first Production/Injection or Resumed Production/Injection:	Producing Method: <input type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other <i>(Explain)</i> _____			
Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio Gravity

DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <i>(Submit ACO-4)</i>	PRODUCTION INTERVAL: Top Bottom
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Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record <i>(Amount and Kind of Material Used)</i>

TUBING RECORD:	Size:	Set At:	Packer At:	
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Form	ACO1 - Well Completion
Operator	IA Operating, Inc.
Well Name	GUDENKAUF 18-1
Doc ID	1424340

All Electric Logs Run

Compensated Density/Neutron PE Log
Sonic Log
Micro Log
Dual Induction Log

Form	ACO1 - Well Completion
Operator	IA Operating, Inc.
Well Name	GUDENKAUF 18-1
Doc ID	1424340

Tops

Name	Top	Datum
Heebner	1123	+162
Mississippi	2608	-1323
Kinderhook	2668	-1383
Hunton	2930	-1645
Maquoketa Sh	3509	-2224
Viola	3564	-2279
Simpson Sh	3714	-2429
Simpson Sd	3807	-2522
Granite Wash	3850	-2565
LTD	3890	-2605

810 E 7TH
 PO Box 92
 EUREKA, KS 67045
 (620) 583-5561



Cement or Acid Field Report
 Ticket No. **4167**
 Foreman Kevin McCoy
 Camp EUREKA

Date	Cust. ID #	Lease & Well Number	Section	Township	Range	County	State
10-3-18	1296	GUDENKAUF 18-1	18	4S	14E	NEMAHA	KS
Customer IA OPERATING, INC.			Safety Meeting KM AM SM	Unit #	Driver	Unit #	Driver
Mailing Address 785 W. COVELL ROAD STE 200				104	AIAN M.		
City Edmond				113	Steve M.		
State OK							
Zip Code 73003							

Job Type SURFACE Hole Depth 390' KB Slurry Vol. 56 BBL Tubing _____
 Casing Depth 391' KB Hole Size 12 1/4" Slurry Wt. 15" Drill Pipe _____
 Casing Size & Wt. 8 5/8" 23# Cement Left in Casing 20' Water Gal/SK 6.5 Other _____
 Displacement 23.5 BBL Displacement PSI _____ Bump Plug to _____ BPM _____

Remarks: SAFETY MEETING: RIG UP TO 8 5/8" CASING. BREAK CIRCULATION W/ 10 BBL FRESH WATER. MIXED 235 SKS CLASS "A" CEMENT W/ 3% CaCl2, 2% GEL, 1/4" FIOSEAL/SK @ 15" /GAL, YIELD 1.35 = 56 BBL SLURRY. DISPLACE W/ 23.5 BBL FRESH WATER. SHUT CASING IN. GOOD CEMENT RETURNS TO SURFACE = 6 BBL SLURRY. JOB COMPLETE. RIG DOWN.

Code	Qty or Units	Description of Product or Services	Unit Price	Total
C 101	1	Pump Charge	890.00	890.00
C 107	110	Mileage	4.20	462.00
C 200	235 SKS	CLASS "A" Cement	15.75	3701.25
C 205	660 *	CaCl2 3%	.63 *	415.80
C 206	440 *	Gel 2%	.21 *	92.40
C 209	58 *	FIOSEAL 1/4" /SK	2.35	136.30
C108	11.05 TONS	TON Mileage 100 Miles	1.40	1547.00
			Sub Total	7244.75
			Less 5%	379.62
			Sales Tax 8.0%	347.66
Authorization <u>[Signature]</u> Title <u>Tool Pusher</u>			Total	7212.79

I agree to the payment terms and conditions of services provided on the back of this job ticket. Any amendments to payment terms must be in writing on the front of this job ticket or in the Customer's records at ELITE's office.

810 E 7TH
 PO Box 92
 EUREKA, KS 67045
 (620) 583-5561



Cement or Acid Field Report

Ticket No. **4189**
 Foreman Russell McCoy
 Camp Eureka

Date	Cust. ID #	Lease & Well Number	Section	Township	Range	County	State
10-13-18	1296	GUDENKAUF 18-1	18	4 S	14 E	NEMAHA	KS
Customer IA OPERATING INC.			Safety Meeting 2M JASON CALEB	Unit # 105 110	Driver JASON CALEB	Unit #	Driver
Mailing Address 785 W. LOVELL ROAD STE 200			City EDMUND		State OK	Zip Code 73003	

Job Type P.T.A. New well Hole Depth 3890 Slurry Vol. _____ Tubing _____
 Casing Depth _____ Hole Size 7 7/8 Slurry Wt. 13.8 Drill Pipe 4 1/2
 Casing Size & Wt. _____ Cement Left in Casing _____ Water Gal/SK _____ Other _____
 Displacement _____ Displacement PSI _____ Bump Plug to _____ BPM _____

Remarks: SAFETY MEETING Plug well

25 SKs	(A)	3875
25 SKs	(A)	3813
25 SKs	(A)	3441
140 SKs	(A)	403
30 SKs		RATHOLIC
245 SKs		TOTAL

THANK YOU!
 Russell McCoy

Code	Qty or Units	Description of Product or Services	Unit Price	Total
C-103	1	Pump Charge	1,100	1,100.00
C-107	110	Mileage	4.20	462.00
C-203	245	SKs 60/40 Puzmix	13.40	3283.00
C-206	840 #	Gel = 4%	-.21	176.40
C1088	10.53	TONS TON Mileage x 110 miles	1.40	1621.62
			SUBTOTAL	6,643.02
			Less 5%	(345.99)
			Sales Tax	276.15

Authorization [Signature] Title Tool Pusher Total 6,013.18

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Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
 County: NEMAHA
 State: Kansas
 Drilling Contractor: Southwind Drilling, Inc - Rig 2
 Elevation: 1276 GL
 Field Name: McClain (Ext 1/4 W)
 Pool: Pool Ext
 Job Number: 245

Operation:
 Uploading recovery & pressures

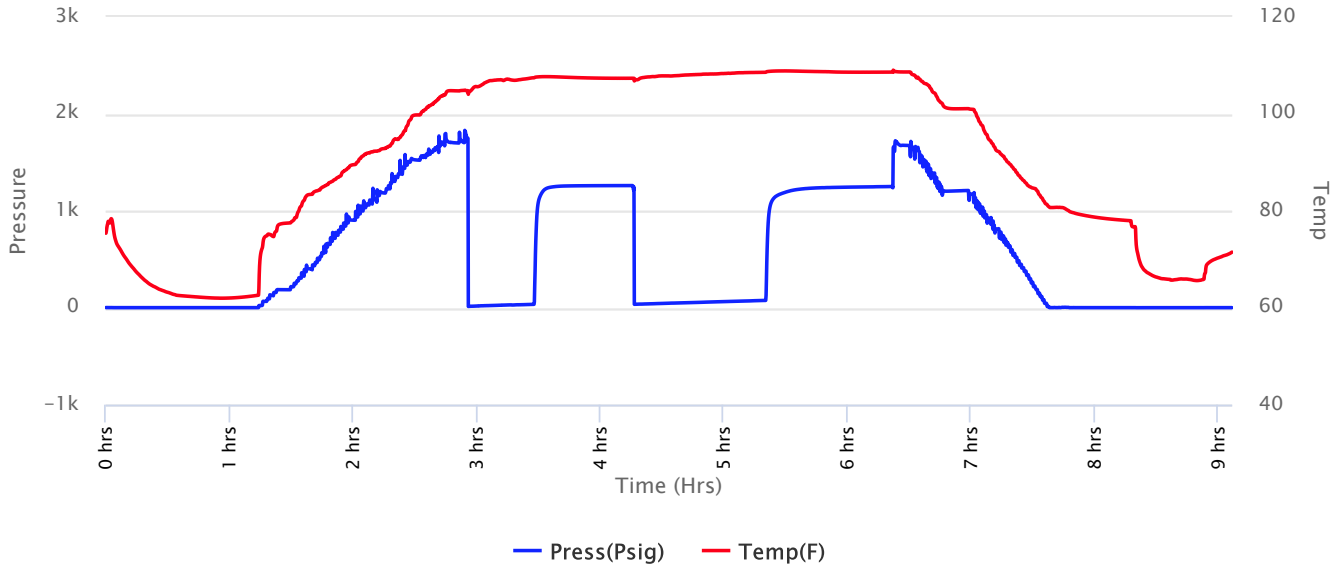
DATE
 October
09
 2018

DST #1 **Formation: Viola** **Test Interval: 3510 - 3577'** **Total Depth: 3577'**
 Time On: 06:38 10/09 Time Off: 15:07 10/09
 Time On Bottom: 09:07 10/09 Time Off Bottom: 12:22 10/09

Electronic Volume Estimate:
 115'

<u>1st Open</u>	<u>1st Close</u>	<u>2nd Open</u>	<u>2nd Close</u>
Minutes: 30	Minutes: 45	Minutes: 60	Minutes: 60
Current Reading: 5.2" at 30 min	Current Reading: 0" at 45 min	Current Reading: 7.7" at 60 min	Current Reading: 0" at 60 min
Max Reading: 5.2"	Max Reading: 0"	Max Reading: 7.7"	Max Reading: 0"

Inside Recorder





Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
 County: NEMAHA
 State: Kansas
 Drilling Contractor: Southwind Drilling, Inc - Rig 2
 Elevation: 1276 GL
 Field Name: McClain (Ext 1/4 W)
 Pool: Pool Ext
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Operation:
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DATE
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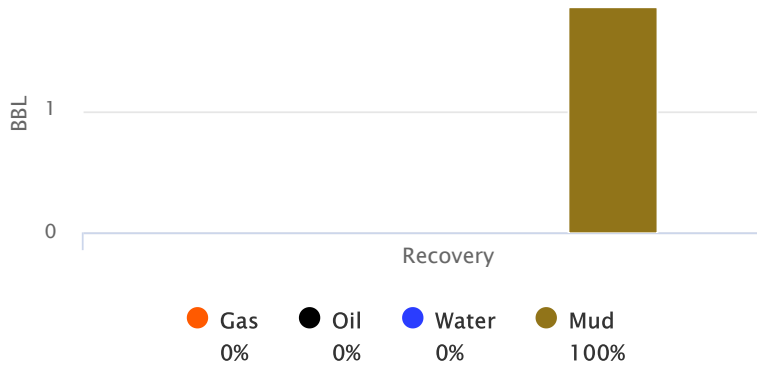
Recovered

Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
130	1.8499	M	0	0	0	100

Total Recovered: 130 ft
 Total Barrels Recovered: 1.8499

Reversed Out
 NO

Recovery at a glance



Initial Hydrostatic Pressure	1699	PSI
Initial Flow	13 to 35	PSI
Initial Closed in Pressure	1260	PSI
Final Flow Pressure	35 to 75	PSI
Final Closed in Pressure	1250	PSI
Final Hydrostatic Pressure	1698	PSI
Temperature	109	°F
Pressure Change Initial Close / Final Close	0.8	%



Company: IA Operating, Inc.
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Inc - Rig 2
Elevation: 1276 GL
Field Name: McClain (Ext 1/4 W)
Pool: Pool Ext
Job Number: 245

Operation:
Uploading recovery &
pressures

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09
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Time On: 06:38 10/09 Time Off: 15:07 10/09
Time On Bottom: 09:07 10/09 Time Off Bottom: 12:22 10/09

BUCKET MEASUREMENT:

1st Open: WSB. Built to 5 1/4 inches
1st Close: NOB
2nd Open: WSB. Built to 7 3/4 inch in 45 mins
2nd Close: NOBB

REMARKS:

Tool Sample: 0% Gas 0% Oil 0% Water 100% Mud



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 Time On: 06:38 10/09 Time Off: 15:07 10/09
 Time On Bottom: 09:07 10/09 Time Off Bottom: 12:22 10/09

Down Hole Makeup

Heads Up: 11.96 FT	Packer 1: 3504.68 FT
Drill Pipe: 3489.07 FT <i>ID-3 1/2</i>	Packer 2: 3509.68 FT
Weight Pipe: FT <i>ID-2 7/8</i>	Top Recorder: 3494.1 FT
Collars: 0 FT <i>ID-2 1/4</i>	Bottom Recorder: 3548 FT
Test Tool: 33.57 FT <i>ID-3 1/2-FH</i> <i>Jars</i> <i>Safety Joint</i>	Well Bore Size: 7 7/8
Total Anchor: 67.32	Surface Choke: 1"
Anchor Makeup	Bottom Choke: 5/8"
Packer Sub: 1 FT	
Perforations: (top): 3 FT <i>4 1/2-FH</i>	
Change Over: .5 FT	
Drill Pipe: (in anchor): 31.82 FT <i>ID-3 1/2</i>	
Change Over: 1 FT	
Perforations: (below): 30 FT <i>4 1/2-FH</i>	



Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
County: NEMAHA
State: Kansas
Drilling Contractor: Southwind Drilling,
Inc - Rig 2
Elevation: 1276 GL
Field Name: McClain (Ext 1/4 W)
Pool: Pool Ext
Job Number: 245

Operation:
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DST #1 **Formation: Viola** **Test Interval: 3510 - 3577'** **Total Depth: 3577'**
Time On: 06:38 10/09 Time Off: 15:07 10/09
Time On Bottom: 09:07 10/09 Time Off Bottom: 12:22 10/09

Mud Properties

Mud Type: Chem **Weight:** 9 **Viscosity:** 63 **Filtrate:** 8 **Chlorides:** 500 ppm



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 Time On Bottom: 09:07 10/09 Time Off Bottom: 12:22 10/09

Gas Volume Report

1st Open

2nd Open

Time	Orifice	PSI	MCF/D
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Time	Orifice	PSI	MCF/D
------	---------	-----	-------



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 Elevation: 1276 GL
 Field Name: McClain (Ext 1/4 W)
 Pool: Pool Ext
 Job Number: 245

Operation:
 Uploading recovery & pressures

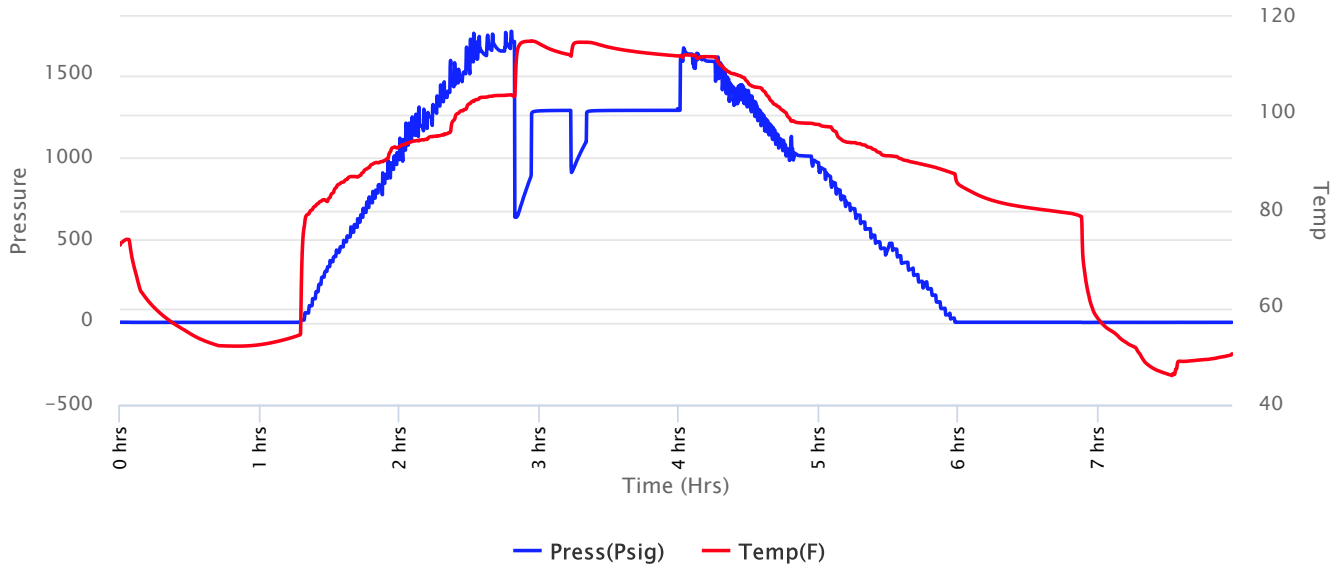
DATE
 October
10
 2018

DST #2 **Formation: Viola** **Test Interval: 3368 - 3585'** **Total Depth: 3585'**
 Time On: 00:31 10/10 Time Off: 08:15 10/10
 Time On Bottom: 03:16 10/10 Time Off Bottom: 04:11 10/10

Electronic Volume Estimate:
 2721'

<u>1st Open</u>	<u>1st Close</u>	<u>2nd Open</u>	<u>2nd Close</u>
Minutes: 5	Minutes: 15	Minutes: 5	Minutes: 30
Current Reading: 220" at 5 min	Current Reading: 0" at 15 min	Current Reading: 220" at 5 min	Current Reading: 0" at 30 min
Max Reading: 220"	Max Reading: 0"	Max Reading: 220"	Max Reading: 0"

Inside Recorder





Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
 County: NEMAHA
 State: Kansas
 Drilling Contractor: Southwind Drilling, Inc - Rig 2
 Elevation: 1276 GL
 Field Name: McClain (Ext 1/4 W)
 Pool: Pool Ext
 Job Number: 245

Operation:
 Uploading recovery & pressures

DATE
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10
 2018

DST #2 **Formation: Viola** **Test Interval: 3368 - 3585'** **Total Depth: 3585'**
 Time On: 00:31 10/10 Time Off: 08:15 10/10
 Time On Bottom: 03:16 10/10 Time Off Bottom: 04:11 10/10

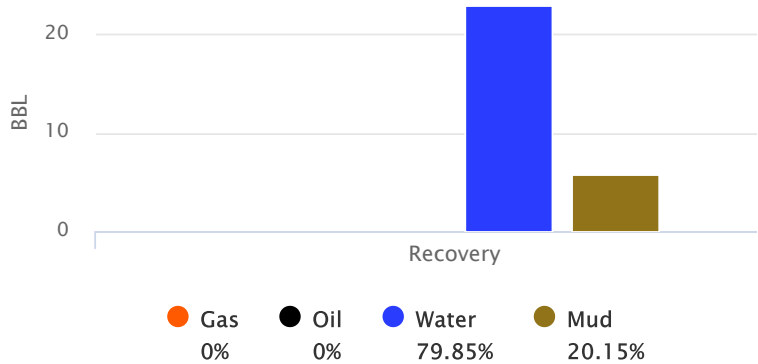
Recovered		Description of Fluid	Gas %	Oil %	Water %	Mud %
Foot	BBLs					
279	3.97017	WCM	0	0	20	80
186	2.64678	SLWCM	0	0	10	90
1550	22.0565	SLMCW	0	0	99	1

Total Recovered: 2015 ft
 Total Barrels Recovered: 28.67345

Reversed Out
 NO

Initial Hydrostatic Pressure	1621	PSI
Initial Flow	640 to 897	PSI
Initial Closed in Pressure	1288	PSI
Final Flow Pressure	911 to 1097	PSI
Final Closed in Pressure	1289	PSI
Final Hydrostatic Pressure	1622	PSI
Temperature	116	°F
Pressure Change Initial Close / Final Close	0.0	%

Recovery at a glance





Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
County: NEMAHA
State: Kansas
Drilling Contractor: Southwind Drilling,
Inc - Rig 2
Elevation: 1276 GL
Field Name: McClain (Ext 1/4 W)
Pool: Pool Ext
Job Number: 245

Operation:
Uploading recovery &
pressures

DATE
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DST #2 **Formation: Viola** **Test Interval: 3368 - 3585'** **Total Depth: 3585'**
Time On: 00:31 10/10 Time Off: 08:15 10/10
Time On Bottom: 03:16 10/10 Time Off Bottom: 04:11 10/10

BUCKET MEASUREMENT:

1st Open: 1" Blow. BOB in 25 secs.

1st Close: NOBB

2nd Open: BOB Instantly

2nd Close: NOBB

REMARKS:

Tool Sample: 0% Gas 0% Oil 90% Water 10% Mud

Ph: 7

Measured RW: 1.3 @ 51 degrees °F

RW at Formation Temp: 0.612 @ 116 °F

Chlorides: 900 ppm



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DST #2 **Formation: Viola** **Test Interval: 3368 - 3585'** **Total Depth: 3585'**
 Time On: 00:31 10/10 Time Off: 08:15 10/10
 Time On Bottom: 03:16 10/10 Time Off Bottom: 04:11 10/10

Down Hole Makeup

Heads Up: 14.88 FT	Packer 1: 3363 FT
Drill Pipe: 3350.31 FT <i>ID-3 1/2</i>	Packer 2: 3368 FT
Weight Pipe: FT <i>ID-2 7/8</i>	Top Recorder: 3352.42 FT
Collars: 0 FT <i>ID-2 1/4</i>	Bottom Recorder: 3373 FT
Test Tool: 33.57 FT <i>ID-3 1/2-FH</i> <i>Jars</i> <i>Safety Joint</i>	Well Bore Size: 7 7/8
Total Anchor: 17	Surface Choke: 1"
Anchor Makeup	Bottom Choke: 5/8"
Packer Sub: 1 FT	
Perforations: (top): 3 FT <i>4 1/2-FH</i>	
Change Over: 0 FT	
Drill Pipe: (in anchor): 0 FT <i>ID-3 1/2</i>	
Change Over: 0 FT	
Perforations: (below): 13 FT <i>4 1/2-FH</i>	



Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
County: NEMAHA
State: Kansas
Drilling Contractor: Southwind Drilling,
Inc - Rig 2
Elevation: 1276 GL
Field Name: McClain (Ext 1/4 W)
Pool: Pool Ext
Job Number: 245

Operation:
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pressures

DATE
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DST #2 **Formation: Viola** **Test Interval: 3368 - 3585'** **Total Depth: 3585'**
Time On: 00:31 10/10 Time Off: 08:15 10/10
Time On Bottom: 03:16 10/10 Time Off Bottom: 04:11 10/10

Mud Properties

Mud Type: Chem **Weight:** 9.2 **Viscosity:** 57 **Filtrate:** 7.6 **Chlorides:** 500 ppm



Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
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 Time On: 00:31 10/10 Time Off: 08:15 10/10
 Time On Bottom: 03:16 10/10 Time Off Bottom: 04:11 10/10

Gas Volume Report

1st Open

2nd Open

Time	Orifice	PSI	MCF/D
------	---------	-----	-------

Time	Orifice	PSI	MCF/D
------	---------	-----	-------



Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
 County: NEMAHA
 State: Kansas
 Drilling Contractor: Southwind Drilling, Inc - Rig 2
 Elevation: 1276 GL
 Field Name: McClain (Ext 1/4 W)
 Pool: Pool Ext
 Job Number: 245

Operation:
 Uploading recovery & pressures

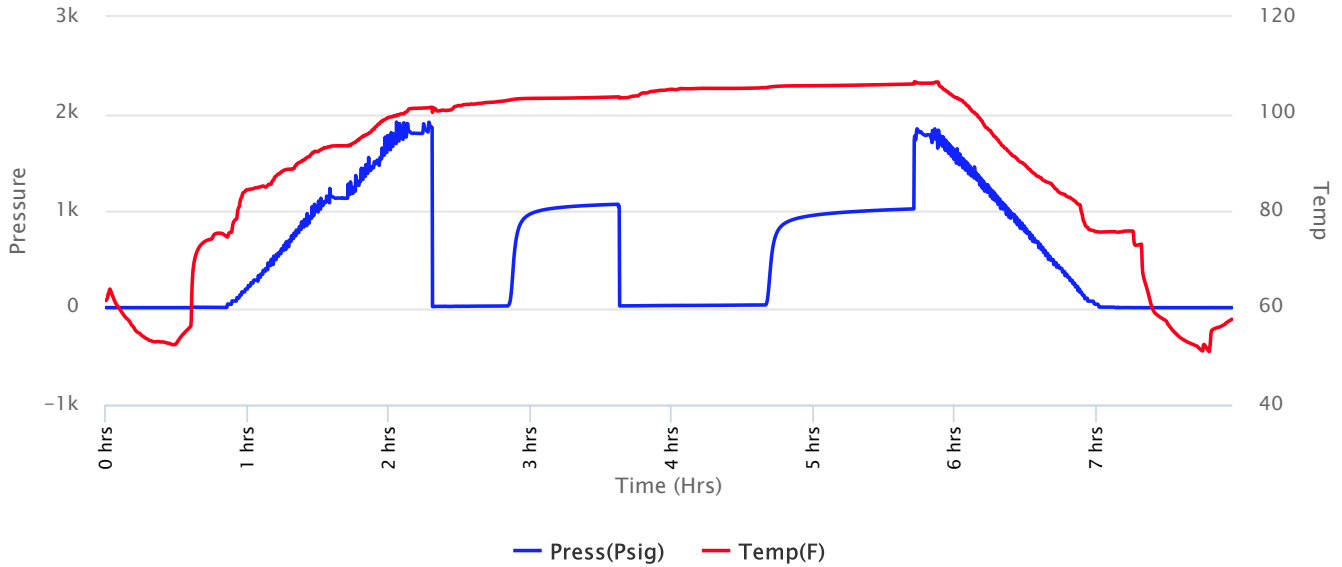
DATE
 October
11
 2018

DST #3 **Formation: Sand** **Test Interval: 3760 - 3800'** **Total Depth: 3800'**
 Time On: 12:26 10/11 Time Off: 20:10 10/11
 Time On Bottom: 14:40 10/11 Time Off Bottom: 17:55 10/11

Electronic Volume Estimate:
 13'

<u>1st Open</u>	<u>1st Close</u>	<u>2nd Open</u>	<u>2nd Close</u>
Minutes: 30	Minutes: 45	Minutes: 60	Minutes: 60
Current Reading: .5" at 30 min	Current Reading: 0" at 45 min	Current Reading: .6" at 60 min	Current Reading: 0" at 60 min
Max Reading: .8"	Max Reading: 0"	Max Reading: .6"	Max Reading: 0"

Inside Recorder





Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
 County: NEMAHA
 State: Kansas
 Drilling Contractor: Southwind Drilling, Inc - Rig 2
 Elevation: 1276 GL
 Field Name: McClain (Ext 1/4 W)
 Pool: Pool Ext
 Job Number: 245

Operation:
 Uploading recovery & pressures

DATE
 October
11
 2018

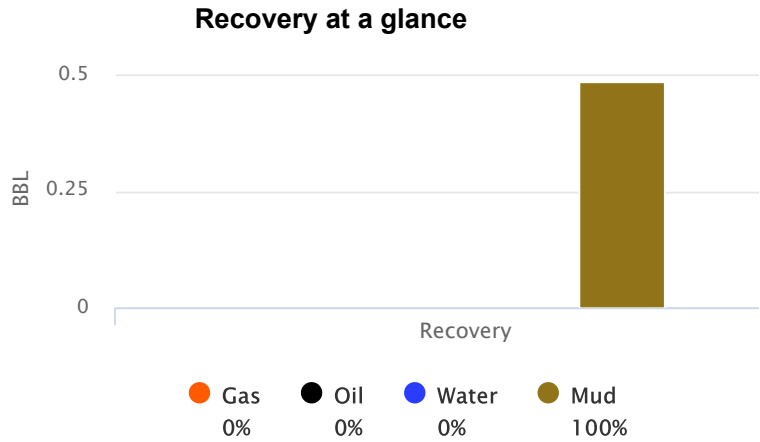
DST #3 **Formation: Sand** **Test Interval: 3760 - 3800'** **Total Depth: 3800'**
 Time On: 12:26 10/11 Time Off: 20:10 10/11
 Time On Bottom: 14:40 10/11 Time Off Bottom: 17:55 10/11

Recovered		Description of Fluid	Gas %	Oil %	Water %	Mud %
Foot	BBLs					
34	0.48382	M	0	0	0	100

Total Recovered: 34 ft
 Total Barrels Recovered: 0.48382

Reversed Out
 NO

Initial Hydrostatic Pressure	1803	PSI
Initial Flow	12 to 18	PSI
Initial Closed in Pressure	1067	PSI
Final Flow Pressure	19 to 29	PSI
Final Closed in Pressure	1020	PSI
Final Hydrostatic Pressure	1807	PSI
Temperature	107	°F
Pressure Change Initial Close / Final Close	4.5	%





Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
County: NEMAHA
State: Kansas
Drilling Contractor: Southwind Drilling,
Inc - Rig 2
Elevation: 1276 GL
Field Name: McClain (Ext 1/4 W)
Pool: Pool Ext
Job Number: 245

Operation:
Uploading recovery &
pressures

DATE
October
11
2018

DST #3	Formation: Sand	Test Interval: 3760 - 3800'	Total Depth: 3800'
	Time On: 12:26 10/11	Time Off: 20:10 10/11	
	Time On Bottom: 14:40 10/11	Time Off Bottom: 17:55 10/11	

BUCKET MEASUREMENT:

1st Open: WSB. Built to 3/4 inch in 30 mins
1st Close: NOBB
2nd Open: WSB. Built to 1/2 inch in 45 mins
2nd Close: NOBB

REMARKS:

Tool Sample: 0% Gas 0% Oil 0% Water 100% Mud



Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
 County: NEMAHA
 State: Kansas
 Drilling Contractor: Southwind Drilling, Inc - Rig 2
 Elevation: 1276 GL
 Field Name: McClain (Ext 1/4 W)
 Pool: Pool Ext
 Job Number: 245

Operation:
 Uploading recovery & pressures

DATE
 October
11
 2018

DST #3 Formation: Sand Test Interval: 3760 - 3800' Total Depth: 3800'
 Time On: 12:26 10/11 Time Off: 20:10 10/11
 Time On Bottom: 14:40 10/11 Time Off Bottom: 17:55 10/11

Down Hole Makeup

Heads Up: 14.93 FT	Packer 1: 3755 FT
Drill Pipe: 3742.36 FT <i>ID-3 1/2</i>	Packer 2: 3760 FT
Weight Pipe: FT <i>ID-2 7/8</i>	Top Recorder: 3744.42 FT
Collars: 0 FT <i>ID-2 1/4</i>	Bottom Recorder: 3765 FT
Test Tool: 33.57 FT <i>ID-3 1/2-FH</i> <i>Jars</i> <i>Safety Joint</i>	Well Bore Size: 7 7/8
Total Anchor: 40	Surface Choke: 1"
Anchor Makeup	Bottom Choke: 5/8"
Packer Sub: 1 FT	
Perforations: (top): 3 FT <i>4 1/2-FH</i>	
Change Over: 0 FT	
Drill Pipe: (in anchor): 0 FT <i>ID-3 1/2</i>	
Change Over: 0 FT	
Perforations: (below): 36 FT <i>4 1/2-FH</i>	



Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
County: NEMAHA
State: Kansas
Drilling Contractor: Southwind Drilling,
Inc - Rig 2
Elevation: 1276 GL
Field Name: McClain (Ext 1/4 W)
Pool: Pool Ext
Job Number: 245

Operation:
Uploading recovery &
pressures

DATE
October
11
2018

DST #3 **Formation: Sand** **Test Interval: 3760 - 3800'** **Total Depth: 3800'**
Time On: 12:26 10/11 Time Off: 20:10 10/11
Time On Bottom: 14:40 10/11 Time Off Bottom: 17:55 10/11

Mud Properties

Mud Type: Chem **Weight:** 9.2 **Viscosity:** 58 **Filtrate:** 8.8 **Chlorides:** 2000 ppm



Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
 County: NEMAHA
 State: Kansas
 Drilling Contractor: Southwind Drilling, Inc - Rig 2
 Elevation: 1276 GL
 Field Name: McClain (Ext 1/4 W)
 Pool: Pool Ext
 Job Number: 245

Operation:
 Uploading recovery & pressures

DATE
 October
11
 2018

DST #3 Formation: Sand Test Interval: 3760 - 3800' Total Depth: 3800'
 Time On: 12:26 10/11 Time Off: 20:10 10/11
 Time On Bottom: 14:40 10/11 Time Off Bottom: 17:55 10/11

Gas Volume Report

1st Open

2nd Open

Time	Orifice	PSI	MCF/D
------	---------	-----	-------

Time	Orifice	PSI	MCF/D
------	---------	-----	-------



Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
 County: NEMAHA
 State: Kansas
 Drilling Contractor: Southwind Drilling, Inc - Rig 2
 Elevation: 1276 GL
 Field Name: McClain (Ext 1/4 W)
 Pool: Pool Ext
 Job Number: 245

Operation:
 Uploading recovery & pressures

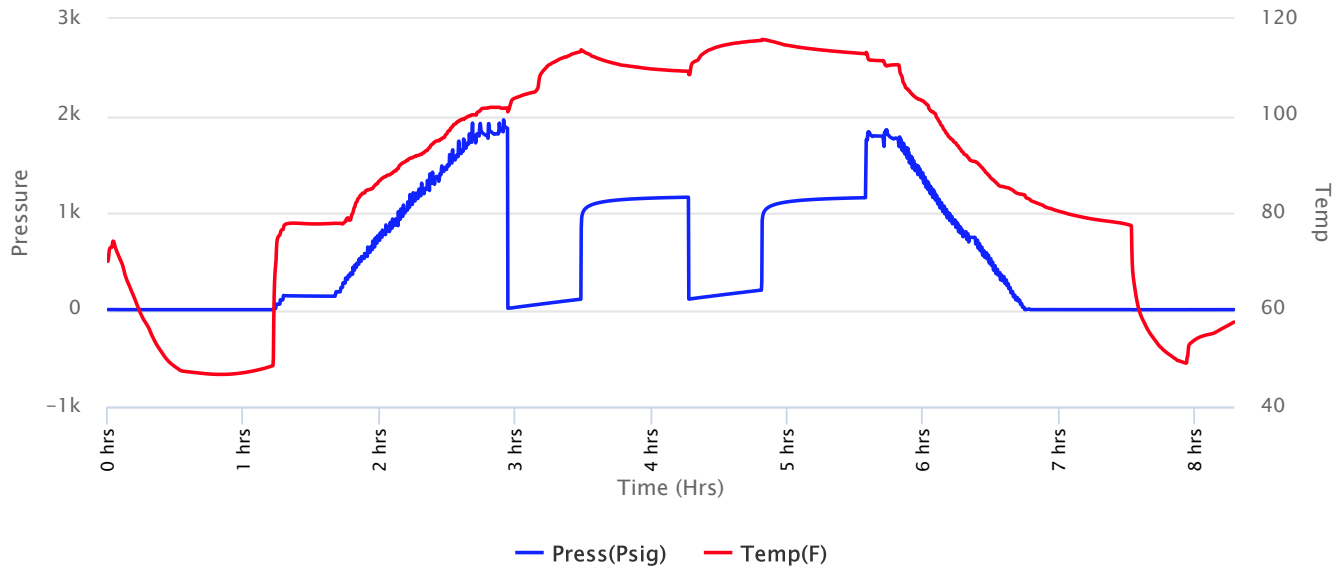
DATE
 October
12
 2018

DST #4 **Formation: Simpson Sand** **Test Interval: 3793 - 3815'** **Total Depth: 3815'**
 Time On: 05:16 10/12 Time Off: 13:19 10/12
 Time On Bottom: 08:08 10/12 Time Off Bottom: 10:38 10/12

Electronic Volume Estimate:
 418'

<u>1st Open</u>	<u>1st Close</u>	<u>2nd Open</u>	<u>2nd Close</u>
Minutes: 30	Minutes: 45	Minutes: 30	Minutes: 45
Current Reading: 22.1" at 30 min	Current Reading: 0" at 45 min	Current Reading: 22.2" at 30 min	Current Reading: 0" at 45 min
Max Reading: 22.1"	Max Reading: 0"	Max Reading: 22.2"	Max Reading: 0"

Inside Recorder





Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
 County: NEMAHA
 State: Kansas
 Drilling Contractor: Southwind Drilling, Inc - Rig 2
 Elevation: 1276 GL
 Field Name: McClain (Ext 1/4 W)
 Pool: Pool Ext
 Job Number: 245

Operation:
 Uploading recovery & pressures

DATE
 October
12
 2018

DST #4 **Formation: Simpson Sand** **Test Interval: 3793 - 3815'** **Total Depth: 3815'**
 Time On: 05:16 10/12 Time Off: 13:19 10/12
 Time On Bottom: 08:08 10/12 Time Off Bottom: 10:38 10/12

Recovered

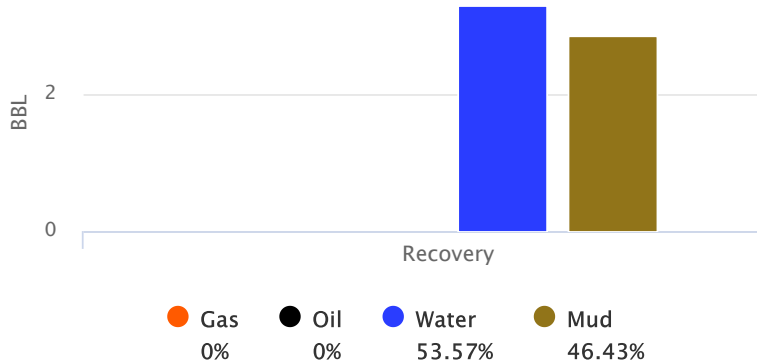
Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
186	2.64678	SLWCM	0	0	15	85
124	1.76452	HMCW	0	0	70	30
124	1.76452	SLMCW	0	0	95	5

Total Recovered: 434 ft
 Total Barrels Recovered: 6.17582

Reversed Out
 NO

Initial Hydrostatic Pressure	1801	PSI
Initial Flow	15 to 109	PSI
Initial Closed in Pressure	1160	PSI
Final Flow Pressure	110 to 202	PSI
Final Closed in Pressure	1155	PSI
Final Hydrostatic Pressure	1804	PSI
Temperature	116	°F
Pressure Change Initial Close / Final Close	0.4	%

Recovery at a glance





Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
County: NEMAHA
State: Kansas
Drilling Contractor: Southwind Drilling,
Inc - Rig 2
Elevation: 1276 GL
Field Name: McClain (Ext 1/4 W)
Pool: Pool Ext
Job Number: 245

Operation:
Uploading recovery &
pressures

DATE
October
12
2018

DST #4 **Formation: Simpson Sand** **Test Interval: 3793 - 3815'** **Total Depth: 3815'**
Time On: 05:16 10/12 Time Off: 13:19 10/12
Time On Bottom: 08:08 10/12 Time Off Bottom: 10:38 10/12

BUCKET MEASUREMENT:

1st Open: 1/2" Blow. BOB in 16 mins
1st Close: NOBB
2nd Open: 1/2" Blow. BOB in 16 1/2 mins
2nd Close: NOBB

REMARKS:

Tool Sample: 0% Gas 0% Oil 97% Water 3% Mud
Ph: 7
Measured RW: 5 @ 50 degrees °F
RW at Formation Temp: 2.312 @ 116 °F
Chlorides: 1000 ppm



Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
 County: NEMAHA
 State: Kansas
 Drilling Contractor: Southwind Drilling, Inc - Rig 2
 Elevation: 1276 GL
 Field Name: McClain (Ext 1/4 W)
 Pool: Pool Ext
 Job Number: 245

Operation:
 Uploading recovery & pressures

DATE
 October
12
 2018

DST #4 **Formation: Simpson Sand** **Test Interval: 3793 - 3815'** **Total Depth: 3815'**
 Time On: 05:16 10/12 Time Off: 13:19 10/12
 Time On Bottom: 08:08 10/12 Time Off Bottom: 10:38 10/12

Gas Volume Report

1st Open

2nd Open

Time	Orifice	PSI	MCF/D
------	---------	-----	-------

Time	Orifice	PSI	MCF/D
------	---------	-----	-------

Scale 1:240 Imperial

Well Name: GUDENKAUF #18-1
Surface Location: SE NE NW SW Sec. 18 - 4S - 14E
Bottom Location:
API: 15-131-20246
License Number: 33335
Spud Date: 10/3/2018 Time: 12:15 AM
Region: NEMAHA COUNTY
Drilling Completed: 10/12/2018 Time: 10:12 PM
Surface Coordinates: 2248' FSL & 1163' FWL
Bottom Hole Coordinates:
Ground Elevation: 1276.00ft
K.B. Elevation: 1285.00ft
Logged Interval: 2400.00ft To: 3980.00ft
Total Depth: 3890.00ft
Formation: VIOLA; SIMPSON SAND
Drilling Fluid Type: FRESH WATER / CHEMICAL GEL

OPERATOR

Company: IA OPERATING, INC.
Address: 785 W COVELL RD
STE 200
EDMOND, OK 73003
Contact Geologist: JON ALLEN
Contact Phone Nbr: (316) 721-0036
Well Name: GUDENKAUF #18-1
Location: SE NE NW SW Sec. 18 - 4S - 14E
API: 15-131-20246
Pool: State: KANSAS Field: UNNAMED
Country: USA

SURFACE CO-ORDINATES

Well Type: Vertical
Longitude: -95.8970923
Latitude: 39.7028040
N/S Co-ord: 2248' FSL
E/W Co-ord: 1163' FWL

LOGGED BY



Company: BIG CREEK CONSULTING, INC.
Address: 1909 MAPLE
ELLIS, KS 67637
Phone Nbr: (785) 259-3737
Logged By: GEOLOGIST Name: JEFF LAWLER

CONTRACTOR

Contractor: SOUTHWIND DRILLING, INC.
Rig #: 2
Rig Type: MUD ROTARY
Spud Date: 10/3/2018 Time: 12:15 AM
TD Date: 10/12/2018 Time: 10:12 PM
Rig Release: 10/13/2018 Time: 12:00 PM

ELEVATIONS

K.B. Elevation: 1285.00ft
K.B. to Ground: 9.00ft

Ground Elevation: 1276.00ft

NOTES

DUE TO A LACK OF ECONOMICAL RECOVERY ON ALL FOUR DRILL STEM TEST IT WAS DETERMINED TO PLUG & ABANDON THE GUDENKAUF #18-1.

RESPECTFULLY SUBMITTED,
JEFF LAWLER

WELL COMPARISON SHEET

FORMATION	P&A4-15								SWD				H				•											
	NOBLE PETROLEUM								CITIES SERVICE CO.				NOBLE PETROLEUM				PENDLTON LAND & EXPLOR.											
	KING #1								MCCLAIN A #2				WESSEL #1				MCCLAIN #1											
	GUDENKAUF 18-1								CS/2 NENE 13-4S-13E				SE SW NE 18-4-14				NESW 19-4-14				C SE NE 18-4-14							
	KB 1285		GL 1276		KB 1264		KB 1289		KB 1205		KB 1288																	
	LOG TOPS		SAMPLE TOPS		LOG		SMPL.		LOGS		LOG		SMPL.		COMP. CARD		LOG		SMPL.									
	DEPTH	DATUM	DEPTH	DATUM	DEPTH	DATUM	CORR.	CORR.	DEPTH	DATUM	CORR.	CORR.	DEPTH	DATUM	CORR.	CORR.	DEPTH	DATUM	CORR.	CORR.								
LKC	1310	-25															1298	-10	-	15								
BKC	1680	-395															1680	-392	-	3								
MISSISSIPPIAN	2607	-1322	2584	-1299	2544	-1280	-	42	-	19			2585	-1380	+	58	+	81	2556	-1268	-	54	-	31				
KINDERHOOK	2667	-1382	2663	-1378	2636	-1372	-	10	-	6			2630	-1425	+	43	+	47	2596	-1308	-	74	-	70				
HUNTON DOLOMITE	2929	-1644	2930	-1645	2868	-1604	-	40	-	41	2906	-1617	-	27	-	28	2881	-1676	+	32	+	31	2859	-1571	-	73	-	74
MAQUOKETA	3510	-2225	3516	-2231	3486	-2222	-	3	-	9	3486	-2197	-	28	-	34	3454	-2249	+	24	+	18	3421	-2133	-	92	-	98
VIOLA DOLOMITE	3564	-2279	3566	-2281	3538	-2274	-	5	-	7	3545	-2256	-	23	-	25	3512	-2307	+	28	+	26	3478	-2190	-	89	-	91
SIMPSON SHALE	3715	-2430	3735	-2450	3695	-2431	+	1	-	19	3700	-2411	-	19	-	39	3658	-2453	+	23	+	3						
SIMPSON SAND	3807	-2522	3806	-2521	3787	-2523	+	1	+	2	3772	-2483	-	39	-	38						3698	-2410	-	112	-	111	
GRANITE WASH	3850	-2565	3851	-2566	3836	-2572	+	7	+	6	3857	-2568	+	3	+	2												
GRANITE			3864	-2579	3839	-2575											3796	-2591										
TOTAL DEPTH	3890	-2605	3890	-2605	3834	-2570	-	35	-	35	3890	-2601	-	4	-	4	3826	-2621	+	16	+	16	3800	-2512	-	93	-	93

DST #1 VIOLA 3510' - 3577'



Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
County: NEMAHA
State: Kansas
Drilling Contractor: Southwind Drilling, Inc - Rig 2
Elevation: 1276 GL
Field Name: McClain (Ext 1/4 W)
Pool: Pool Ext
Job Number: 245

Operation:

Uploading recovery & pressures

DATE
October
09
2018

DST #1 Formation: Viola Test Interval: 3510 - 3577' Total Depth: 3577'
Time On: 06:38 10/09 Time Off: 15:07 10/09
Time On Bottom: 09:07 10/09 Time Off Bottom: 12:22 10/09

Electronic Volume Estimate:
115'

<u>1st Open</u> Minutes: 30 Current Reading: 5.2" at 30 min Max Reading: 5.2"	<u>1st Close</u> Minutes: 45 Current Reading: 0" at 45 min Max Reading: 0"	<u>2nd Open</u> Minutes: 60 Current Reading: 7.7" at 60 min Max Reading: 7.7"	<u>2nd Close</u> Minutes: 60 Current Reading: 0" at 60 min Max Reading: 0"
---	--	---	--

Inside Recorder



0 hrs 1 hrs 2 hrs 3 hrs 4 hrs 5 hrs 6 hrs 7 hrs 8 hrs 9 hrs
Time (Hrs)

— Press(Psig) — Temp(F)

DST #1 VIOLA 3510' - 3577'



Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
County: NEMAHA
State: Kansas
Drilling Contractor: Southwind Drilling, Inc - Rig 2
Elevation: 1276 GL
Field Name: McClain (Ext 1/4 W)
Pool: Pool Ext
Job Number: 245

Operation:
Uploading recovery & pressures

DATE
October
09
2018

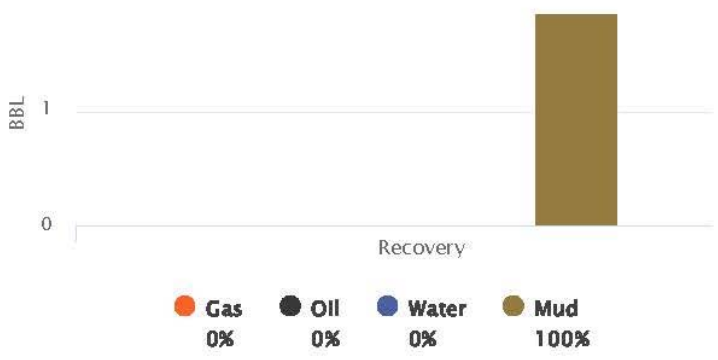
DST #1 **Formation: Viola** **Test Interval: 3510 - 3577'** **Total Depth: 3577'**
Time On: 06:38 10/09 Time Off: 15:07 10/09
Time On Bottom: 09:07 10/09 Time Off Bottom: 12:22 10/09

<u>Recovered</u>		<u>Description of Fluid</u>	<u>Gas %</u>	<u>Oil %</u>	<u>Water %</u>	<u>Mud %</u>
<u>Foot</u>	<u>BBLs</u>					
130	1.8499	M	0	0	0	100

Total Recovered: 130 ft
Total Barrels Recovered: 1.8499

Reversed Out
NO

Recovery at a glance



Initial Hydrostatic Pressure	1699	PSI
Initial Flow	13 to 35	PSI
Initial Closed in Pressure	1260	PSI
Final Flow Pressure	35 to 75	PSI
Final Closed in Pressure	1250	PSI
Final Hydrostatic Pressure	1698	PSI
Temperature	109	°F
Pressure Change Initial Close / Final Close	0.8	%

DST #2 VIOLA 3568' - 3585'



Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
 County: NEMAHA
 State: Kansas
 Drilling Contractor: Southwind Drilling, Inc - Rig 2
 Elevation: 1276 GL
 Field Name: McClain (Ext 1/4 W)
 Pool: Pool Ext
 Job Number: 245

Operation:
 Test Complete

DATE
 October
10
 2018

DST #2 Formation: Viola Test Interval: 3568 - 3585' Total Depth: 3585'
 Time On: 00:31 10/10 Time Off: 08:15 10/10
 Time On Bottom: 03:16 10/10 Time Off Bottom: 04:11 10/10

Electronic Volume Estimate:
 2884'

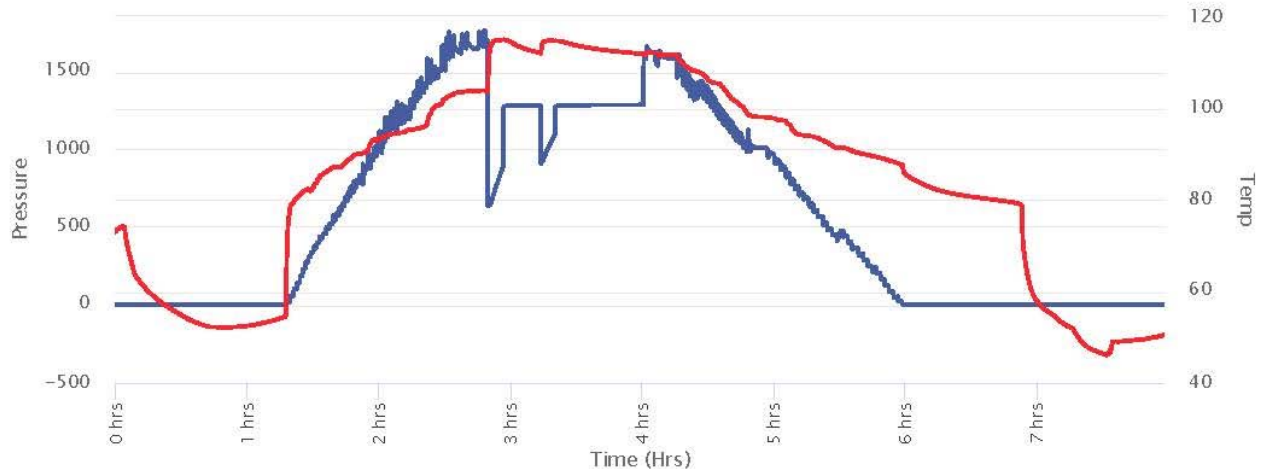
1st Open
 Minutes: 5
 Current Reading:
 220" at 5 min
 Max Reading: 220"

1st Close
 Minutes: 15
 Current Reading:
 0" at 15 min
 Max Reading: 0"

2nd Open
 Minutes: 5
 Current Reading:
 220" at 5 min
 Max Reading: 220"

2nd Close
 Minutes: 30
 Current Reading:
 0" at 30 min
 Max Reading: 0"

Inside Recorder



DST #2 VIOLA 3568' - 3585'



Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
 County: NEMAHA
 State: Kansas
 Drilling Contractor: Southwind Drilling, Inc - Rig 2
 Elevation: 1276 GL
 Field Name: McClain (Ext 1/4 W)
 Pool: Pool Ext
 Job Number: 245

Operation:
 Test Complete

DATE
 October
10
 2018

DST #2 **Formation: Viola** **Test Interval: 3568 - 3585'** **Total Depth: 3585'**
 Time On: 00:31 10/10 Time Off: 08:15 10/10
 Time On Bottom: 03:16 10/10 Time Off Bottom: 04:11 10/10

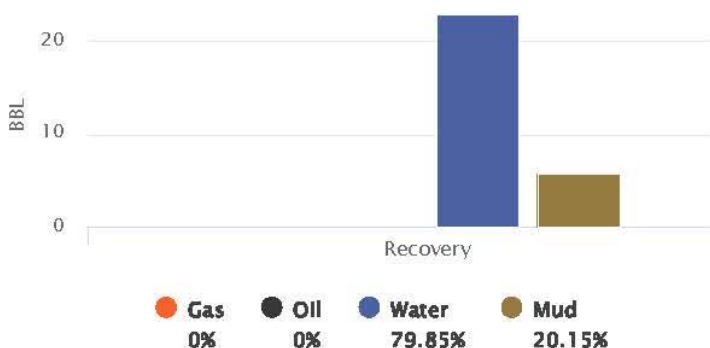
<u>Recovered</u>		<u>Description of Fluid</u>	<u>Gas %</u>	<u>Oil %</u>	<u>Water %</u>	<u>Mud %</u>
<u>Foot</u>	<u>BBLs</u>					
279	3.97017	WCM	0	0	20	80
186	2.64678	SLWCM	0	0	10	90
1550	22.0565	SLMCW	0	0	99	1

Total Recovered: 2015 ft
 Total Barrels Recovered: 28.67345

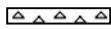










Reversed Out
 NO

Initial Hydrostatic Pressure	1621	PSI
Initial Flow	640 to 897	PSI
Initial Closed in Pressure	1288	PSI
Final Flow Pressure	911 to 1097	PSI
Final Closed in Pressure	1289	PSI
Final Hydrostatic Pressure	1622	PSI
Temperature	116	°F
Pressure Change Initial Close / Final Close	0.0	%

Recovery at a glance












ROCK TYPES

 Cht	 Dolsec	 shale, gry	 Ss
 CglSandy	 Lmst fw7>	 Shblck	 Igne
 Dolprim	 shale, grn	 Shcol	

OTHER SYMBOLS




MISC

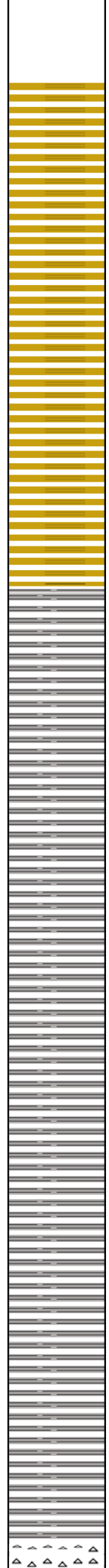
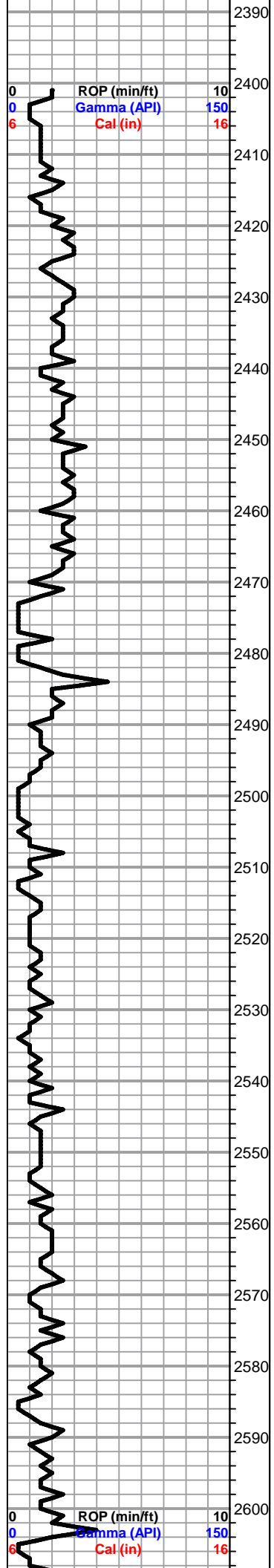
-  Daily Report
-  Digital Photo
-  Document
-  Folder
-  Link
-  Vertical Log File
-  Horizontal Log File
-  Core Log File
-  Drill Cuttings Rpt

DST

-  DST Int
-  DST alt

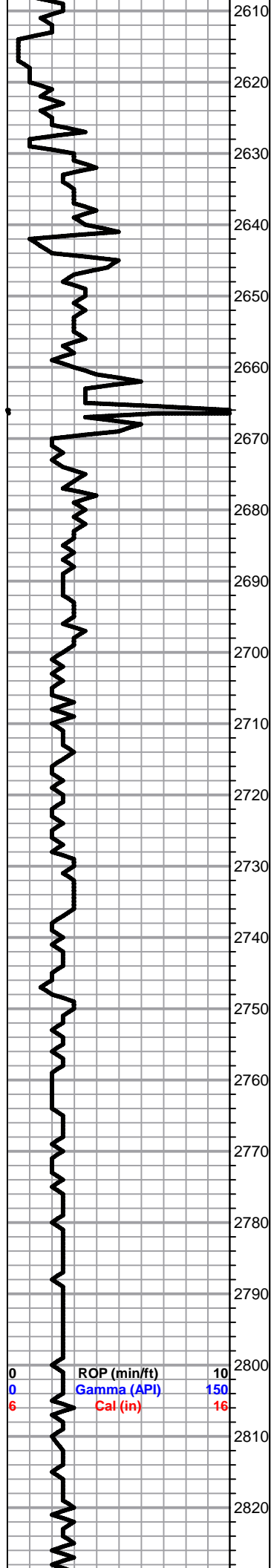
Printed by GEOstrip VC Striplog version 4.0.8.15 (www.grsi.ca)

Curve Track #1	Depth Intervals	DST	Lithology	Oil Show	Geological Descriptions	Curve Track #3
ROP (min/ft)  Gamma (API)  Cal (in) 	Cored Interval DST Interval					
1:240 Imperial ROP (min/ft) 10 Gamma (API) 150 Cal (in) 16	2360 2370 2380				<p>1' DRILL TIME FROM 2400' - RTD 10' WET/DRY SAMPLES FROM 2450' - RTD</p> <p>GEOLOGICAL SUPERVISION BY JEFF LAWLER FROM 2400' - RTD</p> <p>8 5/8" SURFACE PIPE SET @ 390' SURVEY 3/4 deg.</p>	1:240 Imperial

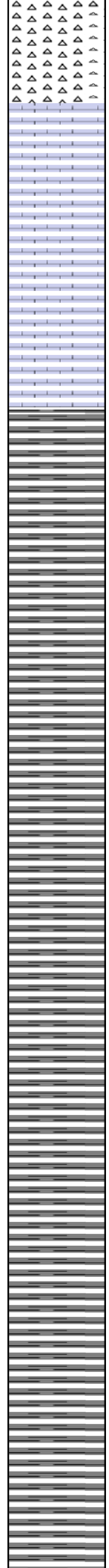


Sh- Black Gray Maroon, gritty & earthy, silty & calcareous
 Sh- Black Gray, carbonaceous silty & soft
 Ss- Brown Frosted Gray, Med Grn, sub-rounded, well cemented, shaley, massive, poorly consolidated, mod. sorted, barren
 Sh- Black, carbonaceous, soft
 Sh- Black Gray, carbonaceous dense & waxy
 Sh, A/A w/ gray semi-gummy wash
 Sh/Ss, A/A w/ fn grn, semi friable, consolidated & well sorted, sub-rounded, barren
 Sh- Black Gray Brown, soft & carbonaceous, dense & waxy
 Sh- A/A
 Sh- A/A, some mint green w/ fn grn rounded qtz inclusions
 Ss- Clear, Fn-Med Grn, brown cementation, angular to sub-rounded, friable to well cemented, barren

MISSISSIPPIAN 2584' (-1299) E-LOG 2607' (-1322) Chert- Bone White, mix of mostly fresh bedded vitreous chert & reworked white chert



0	ROP (min/ft)	10
0	Gamma (API)	150
6	Cal (in)	16



Chert- Bone White, gritty sl dolomitic fresh bedded chert w/ XLN porosity, barren, loosely cemented

Lm- Brown, VFXLN, dense, well cemented, cherty Ls w/o vis. porosity, some w/ dense fracturing

Lm- Tan, FXLN, dense, XLN porosity, some sl chalky in part

KINDERHOOK 2663' (-1378) -LOG 2667' (-1382) Sh- Gray Green, silty, dense & waxy

Sh- A/A, influx of waxy green & green wash

Sh- A/A w/ mauve

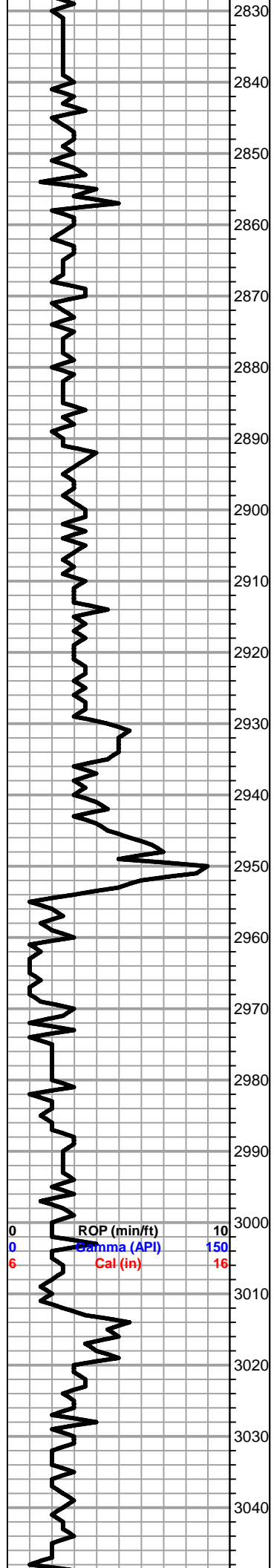
Sh- Lt Gray Lt Green, calcareous wash

Sh- A/A

Sh- A/A

Sh- Lt Gray Lt Green, soft silty & calcareous

Sh- A/A



Sh- A/A

Sh- A/A w/ some gummy argillaceous wash

Sh- Lt Gray Lt Green, soft silty & calcareous

Sh- Lt Gray Lt Green, silty soft & calcareous

HUNTON DOLOMITE 2930' (-1645) E-LOG 2929' (-1644) Dolomite- Tan, VFXLN, dense, well cemented, consistent interXLN porosity, barren

Lm/Dol- Tan, VF-FXLN, dense, well cemented, mostly tight w/ dense micro XLN porosity, possible fracturing

Lm/Dol- Cream Tan, A/A w/ mod. dev. medXLN dolomite, some sl cherty Ls w/ poor vis. porosity, barren

Dolo/Chert- Tan Cream Milky White/Gray, A/A w/ several pcs of semi-translucent med XLN dolomite & fresh bedded chert, soft white chalk

Dolo/Chert- Off White, F-Med XLN, mix of mostly dev. dolomite w/ consistent interXLN porosity, barren, soft white chalk

A/A w/ influx of soft white chalk

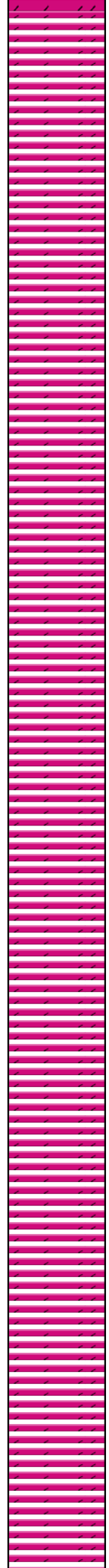
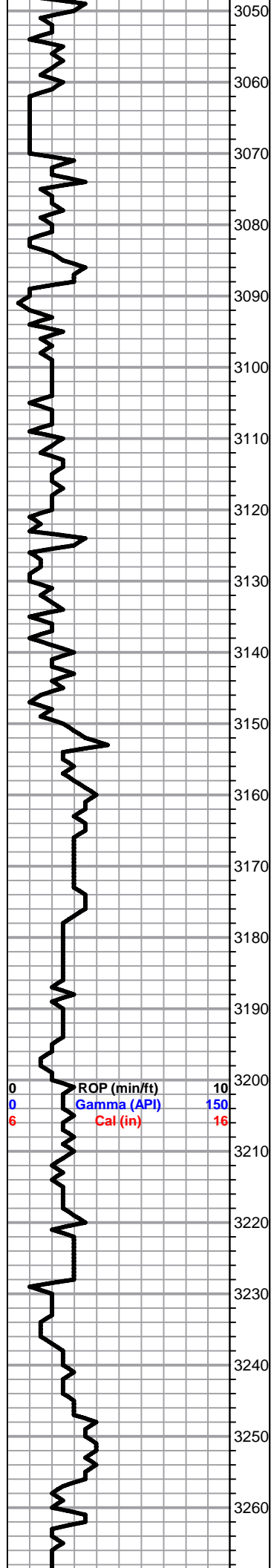
Dolo/Chalk- Tan Cream, VF-FXLN, dense, well cemented, mostly tight w/ dense XLN porosity, barren, soft white chalk

Chert- Translucent Tan Milky White, vitreous fresh bedded chert w/o vis. porosity

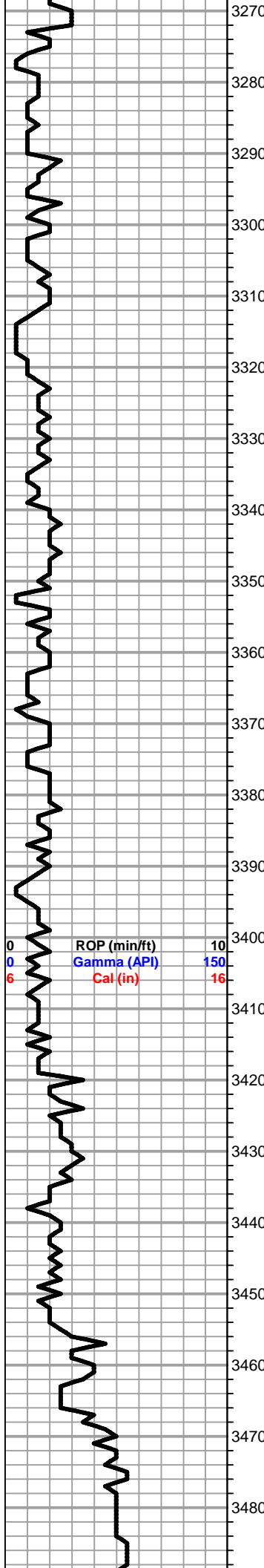
Lm- Cream Tan, VFXLN, dense, tight, well cemented cherty Ls w/o vis. porosity, barren

Chert- A/A w/ translucent fresh bedded vitreous chert

Lm/Dolo- Buff Lt Gray, VF-FXLN, dense, well cemented & mostly tight w/ micro XLN porosity, vry clean & barren



Lm/Dolo- Tan, VFXLN, some sl cherty Ls, dense, well cemented & tight, micro XLN porosity, vry clean & barren
 Lm/Dolo- Tan, VFXLN, tight & poorly dev. w/ micro XLN porosity, barren
 Dolo- Buff, VFXLN, dense, well cemented, tight w/ poor vis. porosity, barren
 Dolo- Gray Buff, VF-FXLN, dense, well cemented, sctrd dev. w/ fn ppt & sctrd vuggy porosity, barren
 Dolo- Gray Buff, FXLN, dense, tight, micro XLN porosity, barren
 Dolo- Gray Buff, VFXLN, dense, tight, poor vis. porosity, barren
 Dolo- Crea Buff, FXLN, massive, consistent micro XLN porosity throughout, barren
 Dolo- A/A w/ soft white chalk
 Dolo- Cream Off White, FXLN, dense, well cemented, poor vis. porosity, much soft white chalk
 Dolo- Cream Tan, VFXLN, tight w/ poor vis. porosity, vry clean & barren
 Dolo- Buff Cream, VF-FXLN, dense, well cemented, poorly dev. w/ consistent interXLN porosity, barren, some soft white chalk
 Dolo- Cream, FXLN, dense XLN porosity, barren, few pcs of fresh bedded chert w/o vis. porosity
 ○ Dolo- Cream, FXLN, massive, consistent XLN porosity, NO SHW/STN, TR ODR??, TR LT FLOR??
 Dolo- Cream Tan, FXLN, dense, well cemented, poorly dev. w/ consistent XLN porosity, barren, few pcs of soft white chalk
 Dolo- Cream, VF-Med XLN, mix of vry tight, sl cherty like w/o much vis porosity, & few massive, mod. dev. pcs w/ dense XLN & sctrd fn ppt interXLN porosity, all barren
 ○ Dolo- Cream, F-Med XLN, mostly tight, poorly dev. w/ dense XLN porosity, several pcs massive w/ consistent XLN & ppt porosity, mod well dev. NO SHW/STN, TR ODR??, 1-2 PCS W/ TR LT HALO FLOR??
 Dolo- Cream, VF-FXLN, poorly dev. & mostly tight w/ micro XLN porosity, barren
 Dolo- A/A w/ buff FXLN, micro XLN porosity
 Dolo- Cream, VF-FXLN, dense, well cemented, mostly tight w/ micro XLN porosity, some w/ dense XLN porosity, barren
 Dolo- Buff, VF-Med XLN, mix of tight w/ poor vis. porosity & mod. dev., nearly sucrosic w/ fn ppt interXLN porosity, all clean & barren



Dolo- Buff, Med-Crs XLN, well dev., massive, sucrosic w/ XLN & ppt interXLN porosity, some soft white chalk, barren

Dolo- A/A w/ ppt interXLN porosity, few pcs of semi-translucent dolomite A/A

Dolo- Buff, VF-FXLN, dense, well cemented, mostly tight w/ micro XLN porosity, barren

Dolo- Off White, Crs XLN, well dev. sucrosic w/ mostly consistent ppt interXLN porosity, barren, soft white chalk

Dolo- A/A, sucrosic & semi-sucrosic

Dolo- Off White Buff, FXLN, dense, well cemented, dense micro XLN porosity, barren

Dolo- Off White, FXLN, dense & well cemented, sctrd ppt interXLN porosity, barren

LOST CIRCULATION @ 3353'

Dolo- Off White Buff, Med XLN, well dev. w/ ppt interXLN porosity, massive & semi-sucrosic, barren, soft white chalk

Dolo- A/A, semi-sucrosic, influx of soft white chalk

Dolo- A/A

Dolo- Buff Off White, F-Med XLN, massive, sctrd fn ppt & dense XLN porosity, much soft white chalk, barren

Dolo- Cream Off White, FXLN, massive, dense micro XLN porosity, soft white chalk, vry clean & barren

Dolo- Cream Off White, A/A gradating into VFXLN, dense, well cemented, dense micro XLN porosity, barren

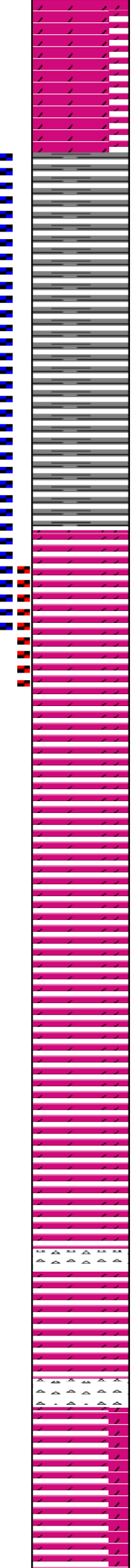
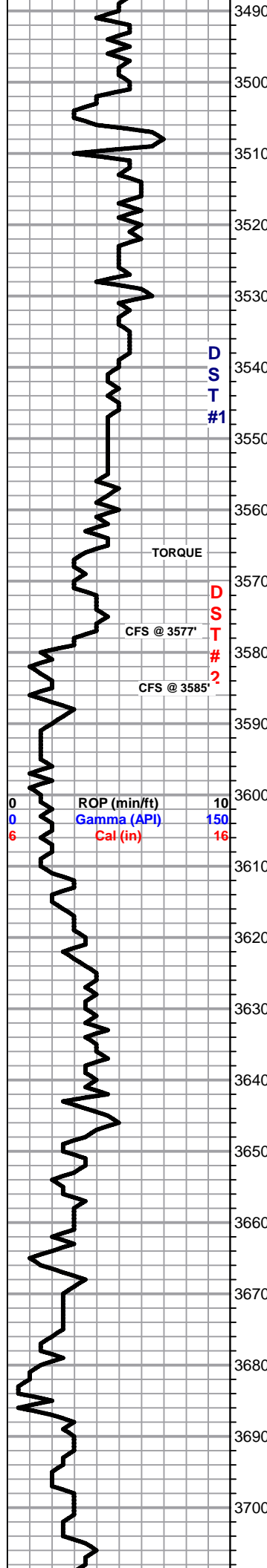
Dolo- Lt Green tint, FXLN, dense & well cemented, micro XLN porosity, vry clean & barren

Dolo- Cream Off White w/ Lt Green tint, FXLN, massive, mod. dev. w/ sctrd fn ppt interXLN porosity, some w/ clear recrystallization, barren, much soft white chalk

Dolo- Off White, FXLN, massive, poorly dev. w/ dense XLN porosity, barren, soft white chalk A/A

Dolo- Cream Off White w/ Lt Green tint, F-Med XLN, mix of mostly tight w/ micro XLN & friable w/ rare pyrite inclusions, semi-sucrosic w/ consint fn interXLN porosity, all clean & barren

Dolo- Tan Brown, VF-FXLN, dense, tight & poorly dev. w/ micro XLN porosity, barren



Dolo- Tan Brown, A/A

Dolo- Tan, VF-FXLN, dense, well cemented, mostly tight w/ micro XLN porosity, barren

Dolo- White Cream, FXLN, well cemented, mostly tight, speckled w/ black mica

MAQUOKETA SHALE 3516' (-2231) E-LOG 3510' (-2225) Sh- Green Gray, sl sandy, soft & calcareous, some gummy wash

Sh- Lt Green, calcareous, sandy, argillaceous clumps

Ss- Lt Gray, Fn Grn, calcareous, consolidated & well sorted, barren

Ss- A/A w/ argillaceous gray clumps & dense & waxy green shale

VIOLA DOLOMITE 3566' (-2281) E-LOG 3564' (-2279) Dolo- Tan Brown Cream, F-Med XLN, mix of dense consistent XLN porosity & well dev. w/ sctrd ppt porosity & sucrosic, ALL W/ SCTRD STN, FEW W/ TR FO, ALL W/ WK-FR ODR

Dolo- Off White, Crs XLN, well dev. rhombic & sucrosic w/ consistent ppt interXLN porosity, NO APPARENT STN OR ODR, TR OF OILY SHEEN ON WET CUP, NO FLOR

Dolo- Off White Lt Pink, F-Med XLN, well cemented rhombic mix, XLN porosity, clean & barren

Dolo- Off White Buff, Med XLN, reworked appearance, dense XLN porosity, some clear replacement cementation, barren

Dolo/Chert- Off White Milky White, FXLN, well cemented, dense XLN porosity throughout, barren, clean fresh bedded vitreous chert w/o vis. porosity

Dolo/Chert- Chert A/A, Off White Tan, well cemented & mostly tight dolomite w/ dense micro XLN porosity

Dolo- Cream Tan, VF-FXLN, dense, well cemented, dense micro XLN porosity, several pcs of dolomitic white chert

Dolo- Tan, VFXLN, dense micro XLN porosity, well cemented, barren

Dolo- A/A w/ White & Translucent fresh bedded vitreous chert

Dolo- Tan Buff, Med XLN, well dev. rhombic sucrosic w/ fn ppt porosity, chert A/A

Dolo/Chert- Buff Tan, FXLN, consistent XLN porosity, fresh bedded vitreous chert

A/A w/ influx of white & milky gray sl fsl fresh bedded chert w/o vis. porosity

SHORT TRIP
SURVEY 3/4 deg.
STRAP +0.07

DST #1 VIOLA
3510' - 3577'
30-45-60-60

130' MUD

IFP: 13-35#
FFP: 35-75#
SIP: 1260-1250#
BHT: 109 deg

-3570.jpg

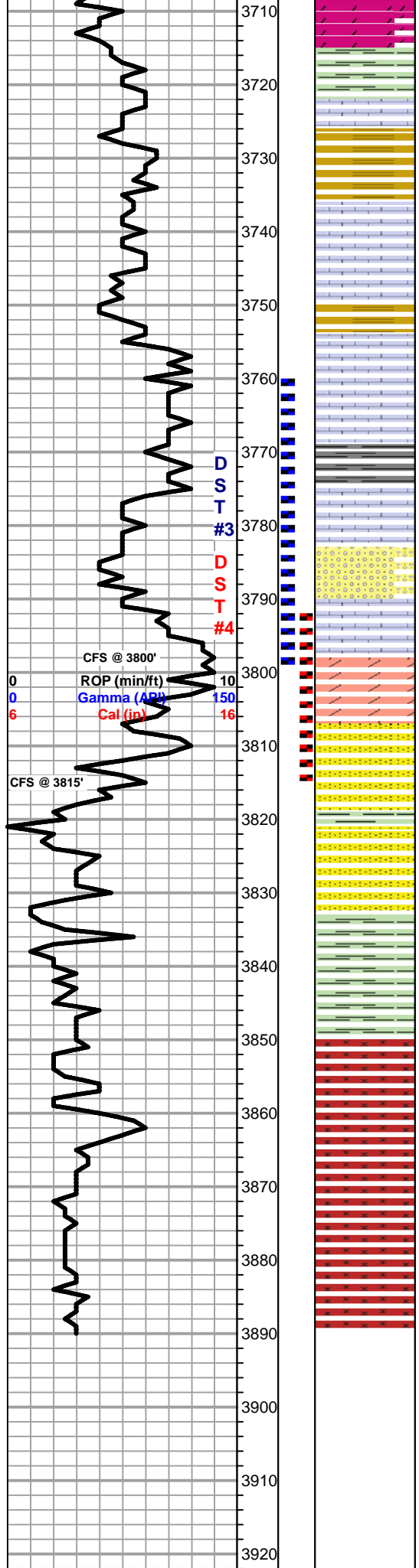
STRAP +0.48

DST #2 VIOLA
3568' - 3585'
5-15-5-30

2015' TTL FLUID
279' WCM
(20%W,80%M)
186' SLWCM
(10%W,90%M)
1550' SLMCW
(99%W,1%M)

CHLOR: 900
Rw: 1.3 @ 51 deg

IFP: 640-897#
FFP: 911-1097#
SIP: 1288-1289#
BHT: 116 deg.



A/A

SIMPSON SHALE 3735' (-2450) E-LOG 3715' (-2430) Sh- Green Gray, dense & waxy, pebbly

Sh- A/A w/ black dense & waxy

Lm- Cream Tan, VF-FXLN, dense, well cemented & tight w/ poor vis. porosity, barren

Lm- Brown, VFXLN, tight w/ no vis. porosity

Ss- Clear, Fn-Med Grn, sub-rounded to rounded, consolidated & mod. sorting, mod. dolomite cementation, scTRD intergranular porosity, some w/ solid cementation amongst grains, SCTRDRK STN, TR FO??, TR ODR, LT YLW FLOR.

Lm- Cream Tan, FXLN, dense, well cemented, scTRD XLN porosity, barren

SIMPSON SAND 3806' (-2521) E-LOG 3807' (-2522) Ss- Clear, Fn Grn, consolidated & well sorted, semi-friable, rounded, SCTRDRK STN, NSFO, NO ODR, SEVERAL PCS W/ BLK DO STN, 1-3 PCS W/ LT YLW FLOR

Ss- White/Clear, Fn Grn, consolidated & well sorted, semi-friable, rounded, barren, black mica or shale??

Ss- White Lt Green Tint, Vf Grn, consolidated & well sorted, rounded, loosely cemented, barren

Sh- Green Red, sandy, argillaceous wash

GRANITE WASH 3851' (-2566) E-LOG 3850' (-2565) Translucent Pink Salmon, Qtz, heavily micaceous, NSTN NODR

GRANITE 3864' (-2579) Translucent Pink Salmon, heavily speckled w/ black mica

A/A

RTD 3890' (-2605) LTD 3890' (-2605) @ 22:12 10/12/2018

SHORT TRIP
 DST #3 SAND
 3760' - 3800'
 30-45-60-60
 34' MUD
 IFP: 12-18#
 FFP: 19-29#
 SIP: 1067-1027#
 BHT: 107 deg.

-3788.jpg
 -3.1.jpg
 -3.1.1.jpg

-3808.jpg
 DST #4
 SIMPSON SAND
 3793' - 3815'
 30-45-30-45

434' TOTAL FLUID
 186' SLWC
 (15%W,85%M)
 124' HMCW
 (70%W,30%M)
 124' SLMCW
 (95%W,5%M)
 CHLOR: 1000

IFP: 15-109#
 FFP: 110-202#
 SIP: 1160-1155#
 BHT: 116 deg.

-DST 4.1.jpg
 -DST 4.1.1...

SURVEY

3930

3940

3570.jpg

A001 1280x1024 2018/10/08 21:11:34 Unit: mm Magnification: 77.5 x 1



0.5 mm

3570' X 20



3.1.jpg



Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

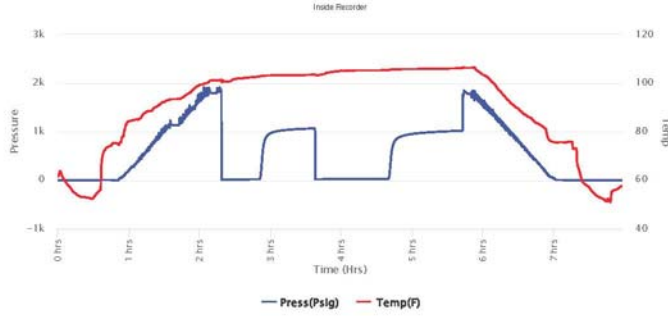
SEC: 18 TWN: 4S RNG: 14E
County: NEMAHIA
State: Kansas
Drilling Contractor: Southwind Drilling, Inc - Rig 2
Elevation: 1276 GL
Field Name: McClain (Ext 1/4 W)
Pool: Pool Ext
Job Number: 245

Operation:
Uploading recovery & pressures

DATE
October
11
2018

DST #3 Formation: Sand Test Interval: 3760 - 3800' Total Depth: 3800'
Time On: 12:26 10/11 Time Off: 20:10 10/11
Time On Bottom: 14:40 10/11 Time Off Bottom: 17:55 10/11

Electronic Volume Estimate:	1st Open	1st Close	2nd Open	2nd Close
13'	Minutes: 30	Minutes: 45	Minutes: 60	Minutes: 60
	Current Reading: .5" at 30 min	Current Reading: 0" at 45 min	Current Reading: .6" at 60 min	Current Reading: 0" at 60 min
	Max Reading: .8"	Max Reading: 0"	Max Reading: .6"	Max Reading: 0"



3.1.1.jpg



Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
County: NEMAHIA
State: Kansas
Drilling Contractor: Southwind Drilling, Inc - Rig 2
Elevation: 1276 GL
Field Name: McClain (Ext 1/4 W)
Pool: Pool Ext
Job Number: 245

Operation:
Uploading recovery & pressures

DATE
October
11
2018

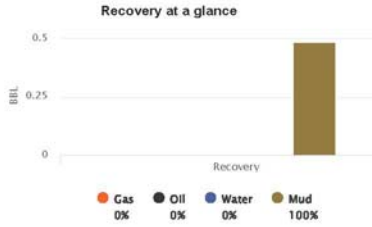
DST #3 Formation: Sand Test Interval: 3760 - 3800' Total Depth: 3800'
Time On: 12:26 10/11 Time Off: 20:10 10/11
Time On Bottom: 14:40 10/11 Time Off Bottom: 17:55 10/11

Recovered		Description of Fluid	Gas %	Oil %	Water %	Mud %
Foot	BEELS					
34	0.48382	M	0	0	0	100

Total Recovered: 34 ft
Total Barrels Recovered: 0.48382

Reversed Out
NO

Initial Hydrostatic Pressure	1803	PSI
Initial Flow	12 to 18	PSI
Initial Closed in Pressure	1067	PSI
Final Flow Pressure	19 to 29	PSI
Final Closed in Pressure	1020	PSI
Final Hydrostatic Pressure	1807	PSI
Temperature	107	°F
Pressure Change Initial Close / Final Close	4.5	%





0.5 mm

3808' X 20

DST 4.1.jpg

10/1



Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

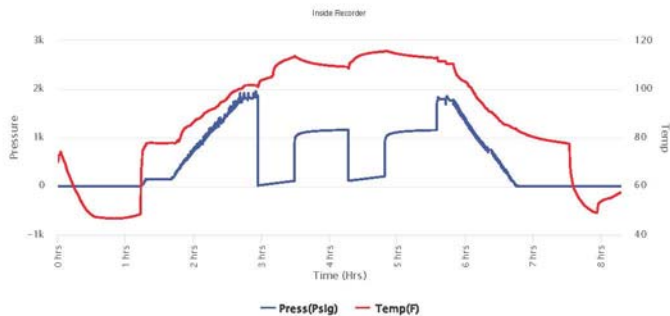
SEC: 18 TWN: 4S RNG: 14E
County: NEMAHIA
State: Kansas
Drilling Contractor: Southwind Drilling, Inc - Rig 2
Elevation: 1276 GL
Field Name: McClain (Ext 1/4 W)
Pool: Pool Ext
Job Number: 245

Operation:
Uploading recovery & pressures

DATE
October
12
2018

DST #4 **Formation: Simpson Sand** **Test Interval: 3793 - 3815'** **Total Depth: 3815'**
Time On: 05:16 10/12 Time Off: 13:19 10/12
Time On Bottom: 08:08 10/12 Time Off Bottom: 10:38 10/12

Electronic Volume Estimate:	1st Open	1st Close	2nd Open	2nd Close
418'	Minutes: 30	Minutes: 45	Minutes: 30	Minutes: 45
	Current Reading: 22.1" at 30 min	Current Reading: 0" at 45 min	Current Reading: 22.2" at 30 min	Current Reading: 0" at 45 min
	Max Reading: 22.1"	Max Reading: 0"	Max Reading: 22.2"	Max Reading: 0"



DST 4.1.1.jpg



Company: IA Operating, Inc.
Lease: Gudenkauf #18-1

SEC: 18 TWN: 4S RNG: 14E
County: NEMAHIA
State: Kansas
Drilling Contractor: Southwind Drilling, Inc - Rig 2
Elevation: 1276 GL
Field Name: McClain (Ext 1/4 W)
Pool: Pool Ext
Job Number: 245

Operation:
Uploading recovery & pressures

DATE
October
12
2018

DST #4 **Formation:** Simpson Sand **Test Interval:** 3793 - 3815' **Total Depth:** 3815'
Time On: 05:16 10/12 Time Off: 13:19 10/12
Time On Bottom: 08:08 10/12 Time Off Bottom: 10:38 10/12

Recovered		Description of Fluid	Gas %	Oil %	Water %	Mud %
Foot	BELS					
186	2.64678	SUWCM	0	0	15	85
124	1.76452	HMCW	0	0	70	30
124	1.76452	SLMCW	0	0	95	5

Total Recovered: 434 ft
Total Barrels Recovered: 6.17582

Reversed Out
NO

Initial Hydrostatic Pressure	1801	PSI
Initial Flow	15 to 109	PSI
Initial Closed in Pressure	1160	PSI
Final Flow Pressure	110 to 202	PSI
Final Closed in Pressure	1155	PSI
Final Hydrostatic Pressure	1804	PSI
Temperature	116	°F
Pressure Change Initial Close / Final Close	0.4	%

Recovery at a glance

