MACKLIN M. ARMSTRONG

Geologist

330 SOUTH TYLER ROAD, NO. 811
WICHITA, KANSAS 67209

PHONE
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COMPANY GRAND MESA OPERATING COMPANY
WELL HESS NO. 1-16
FIELD WILDCAT
COUNTY GOVE STATE KANSAS

o 16

LOCATION:
2004'FNL and 1141'FWL
SEC 16 TWP 14S RGE 31W

Elevations
KB 2890
DF
GL 2885

Logging by:
WEATHERFORD

1. DIL-GR-SP
2. CN/CDL-GR-PE-CAL
3. MICRO LOG
4. SONIC LOG
5.
6.

Contractor MURFIN DRILLING COMPANY RIG 24
Commenced 8-2-10
Completed 8-10-10
RTD 4750
LTD 4748
Surface Casing 8⅝" 23# @ 217'
Production Casing 5½" 15.5# @ 4748
Drilling Time 3600-TD
Samples 3800-TD

Daily Penetration Rate @ 7am

Date	Depth	Activity	Date	Depth	Activity
8-2-10	SPUD				
8-3-10	554	DRILLING			
8-4-10	2739	DRILLING			
8-5-10	3645	DRILLING			
8-6-10	4120	DRILLING			
8-7-10	4186	DST No.2			
8-8-10	4436	DRILLING			
8-9-10	4580	DRILLING			
8-10-10	4750	SET 5½" CASING			

7516

REMARKS PIPE WAS SET TO FURTHER TEST THE JOHNSON ZONE.

Respectfully Submitted,
Macklin M. Armstrong

BIT RECORD

Make & Type	Serial No.	Nozzles	Depth In	Depth Out	Hours
7⅞" SM J42071	M1616	15-15-15	217	3614	41½
7⅞" SM F27I	PP9026	15-15-15	3614	4750	54

Formation	Sample	Log	Datum	*
ANHYDRITE	2371	2369	+537	-16
B/ANHYDRITE	2394	2391	+515	-16
HEEBNER	3917	3915	-1025	-7
TORONTO	3938	3935	-1045	-9
LANSING	3954	3952	-1062	-8
MUNCIE CREEK	4106	4102	-1212	-3
STARK	4195	4192	-1302	-3
HUSHPUCKNEY	4232	4229	-1339	-6
B/KANSAS	4282	4280	-1390	-12
MARMATON	4301	4298	-1408	-2
PAWNEE	4362	4360	-1470	+6
FORT SCOTT	4393	4390	-1500	+8
CHEROKEE SHALE	4476	4472	-1582	+10
JOHNSON	4518	4515	-1625	+10
MORROW	4548	4544	-1654	+8
MISSISSIPPI	4568	4564	-1674	+22
TOTAL DEPTH	4750	4748	-1858	

Formation	Sample	Log	Datum	*

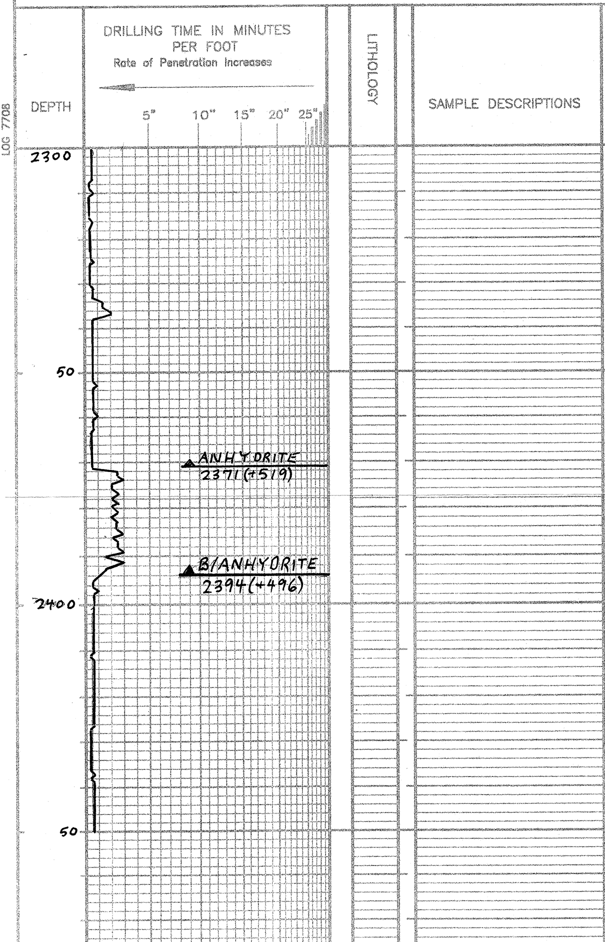
* Structural Position to: NOR-WEST KANSAS OIL, LLC
JOSEPH NO.1 SWSWNE SEC 21 T14S R31W

LOG 7708

LEGEND

Anhydrite	Salt	Sandstone	Shale	Carb sh	Limestone	Ool.Lime	Chert	Dolomite
▥	▦	⛆	▤	■	▦	▦	△	▧

SCALE " = 100'



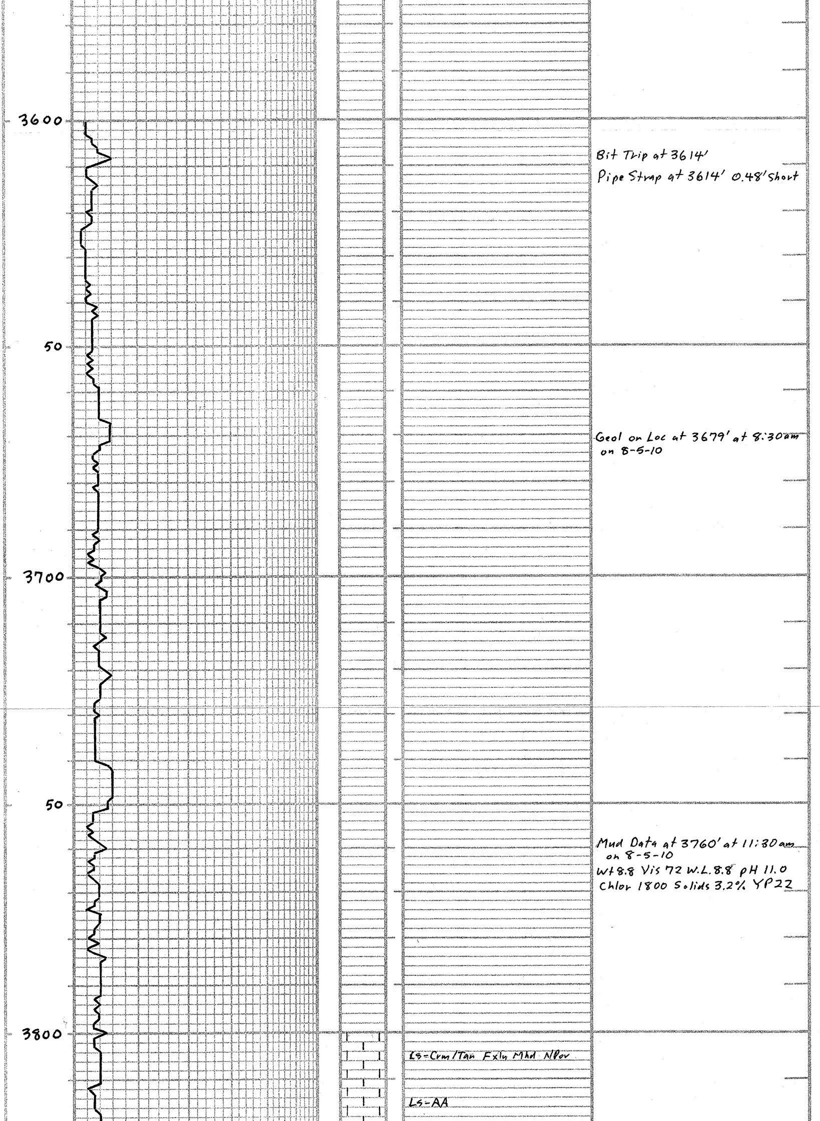
REMARKS

Mud Program:
Mud Co/Service Mud, Inc.
Chem Gel Premix

Testing:
Trilobite

Sample Cuttings:
KGS Well Sample Library

Deviation:
217' – 3/4°
992' – 1/2°
2739' – 3/4°
3614' – 1/4°
4138' – 3/4°
4750' – 1/2°



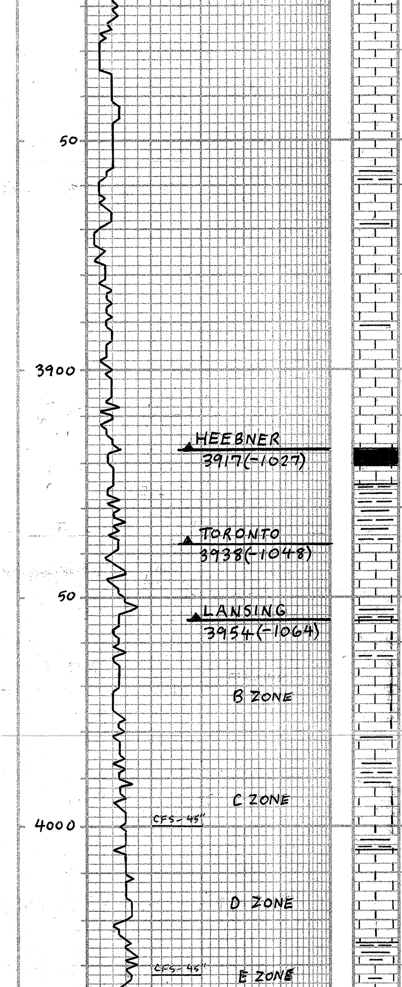
Bit Trip at 3614'
Pipe Strap at 3614' 0.48' Short

Geol on Loc at 3679' at 8:30am
on 8-5-10

Mud Data at 3760' at 11:30am
on 8-5-10
Wt 8.8 Vis 72 W.L. 8.8 pH 11.0
Chlor 1800 Solids 3.2% YP22

Ls=Crm/Tan Fxln Mhd NPor

Ls-AA



Ls-Tan/Brn F/Mxln Mhd
NPor

Ls-Crm/Tan Fxln S/Mhd Clky

Ls-Tan/Gry Fxln Mhd NPor

Ls-AA

Ls-Lt Gry Fxln Mhd NPor

Sh-Gry/Dk Gry

Ls-Crm/Tan Fxln S/Mhd Clky

Sh-Gry

Ls-Crm/Tan Fxln S/Mhd Clky

Ls-Tan/Lt Gry Fxln Mhd
NPor

Ls-Tan/Gry Fxln Mhd Sl Fos
NPor

Sh-Gry

Ls-Tan F/Mxln Sl Fos Mhd
NPor

Ls-Tan/Brn F/Mxln Mhd
NPor

Ls-AA

Sh-Blk

Ls-Tan/Brn F/Mxln Mhd NPor

Sh-Gry/Dk Gry

Ls-Crm/Wt Fxln S/Mhd Clky
NPor

Ls-AA

Sh-Gry

Ls-Crm/Tan/Lt Gry Mxln
Mhd Sl Clky NPor

Sh-Gry

Ls-Crm/Wt Fxln Mhd Sl Clky
NPor

Ls-AA

Sh-Gry

Ls-AA

Sh-Gry/Dk Gry

Ls-Crm Fxln Mhd NPor
w Ls-Wt/Crm Fxln Sl Clky NPor

Sh-Gry

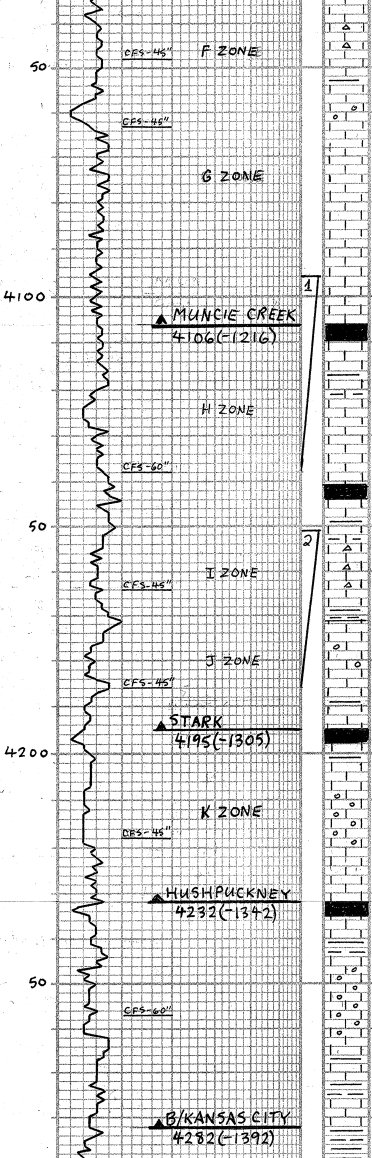
Ls-Tan Fxln Mhd/Dns NPor

Ls-Crm/Tan Fxln Mhd/Dns NPor
w. sm Ls-Wt Fxln Mhd Sl Clky

Ls-Crm F/Cxln Mhd Clky
NPor NSFO

Sh-Gry/Dk Gry

Ls-Tan Fxln Mhd/Dns NPor



Ls-Tan Fxln Mhd/Dns NPor
sm cht-Tan/Wt Fsh Opac
few pcs of Ls-Tan Fxln Trc Vug Por
Lt Brn Stn SSFO on Brk

Sh-Gry
Ls-Tan/Lt Gry Fxln Mhd/Dns NPor
Ls-Tan/Crm Fxln Mhd Fos
Gd Vug/Ooc Por
Ls-Crm/Wt Fxln Mhd/Dns Sl Clky
NPor
Ls-AA
Ls-AA
Ls-Crm/Tan Fxln Mhd/Dns Sl Clky
NPor
Ls-AA
Ls-AA
Sh-Blk
Ls-Tan/Lt Gry Fxln Mhd/Dns NPor
Sh-AA
Ls-Tan/Crm Fxln Mhd/Dns NPor
Ls-Crm F/Mxln S/Mhd Fr interxln
Por Brn Stn Gd Cnt F/G SFO Ft Odor
Ls-Crm Fxln Dns N Por
Ls-Tan/Brn Fxln Dns NPor
Sh-Blk
Ls-Tan/Brn Fxln Dns NPor
Ls-AA
Ls-Crm/Tan Fxln Mhd Sl Clky
NPor sm cht-wt/Lt Gry Fsh Opac
Ls-AA w few pcs Ls-Crm Fxln Fr xln
Por SSFO sm cht-wt/Lt Gry
Ls-Crm/Tan Fxln Mhd/Dns N Por
Sh-Gry/Dk Gry
Ls-Crm Fxln Mhd Fos Sl Clky
NPor and Ls-Lt Gry Fxln Dns N Por
Ls-Crm/wt/Lt Gry Fxln S/Mhd Sl
Clky NPor w Ls-Crm Fxln Fr Inter
xln Por Fos Sl Ool SSFO on Brk
Ls-Tan/Lt Gry Fxln Dns N Por
Sh-Gry/Dk Gry
Ls-AA
Sh-Blk
Sh-Gry
Ls-Tan/Gry/Tan Fxln Clk in Pt
Mhd Dns NPor
Ls-Tan Fxln Mhd Fos Ool
NPor
Ls-AA
Ls-Crm/Tan Fxln Mhd/Dns NPor
Ls-Tan F/Mxln Mhd/Dns Fos N Por
Sh-Blk
Ls-Tan/Gry F/Mxln Dns N Por
Sh-Gry/Dk Gry
Ls-Tan/Crm Fxln Mhd Clky
Ls-Tan/Crm F/Mxln Fos Ool
Sl Clky
Ls-AA
Ls-Tan/Gry Fxln Mhd Fos N Por
Sh-Gry
Ls-Tan/Gry Fxln Dns N Por
Sh-Gry
Ls-Tan/Gry Fxln Sl Shly Dns NPor
Sh-Gry/Dk Gry/Grn

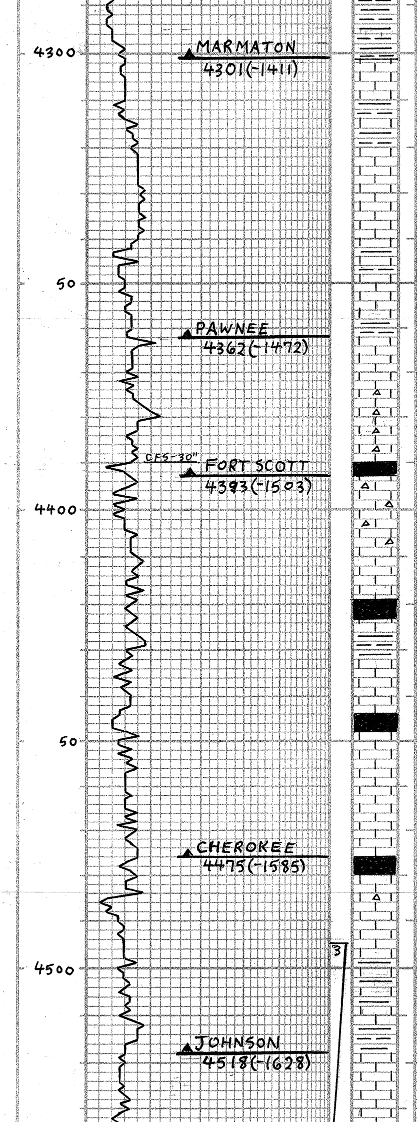
DST NO.1 4096-4138
30-30-30-30
1st Open: Weak blow, died in 1"
2nd Open: No blow. Flushed tool
surge, no blow
REC: 5'Mud
IHP 1998 FHP 1959
IFP 19-23 FFP 24-24
ISIP 561 FSIP 451
TEMP 114°

Mud Data at 4105' at 6:00am
on 8-6-10
Wt 9.2 Vis 47 W.L. 9.6 pH 9.5
Chlor 2000 Solids 6% YP 16

Pulled 35 stand short trip at 4138
Then Cir for Test-60"

DST NO. 2 4151-4186
30-30-30-30
1st Open: Weak blow, 1½ inches
2nd Open: Weak blow, ½ inch
REC: 3'CO
156'MW (Chlor 14,000 ppm)
IHP 2015 FHP 2000
IFP 20-61 FFP 66-80
ISIP 834 FSIP 741
TEMP 120°

Mud Data at 4186' at 7am
on 8-7-10
Wt 9.1 Vis 50 W.L. 8.0 pH 10.5
Chlor 3000 Solids 5.5 YP 17



Sh-AA

Sh-AA

Ls-Tan/Crm Fxln Mhd/Dns NPor

Sh-Gry/Dk Gry

Sh-Gry/Dk Gry

Ls-Tan/Crm Fxln Dns NPor

Ls-AA

Ls-AA

Sh-Gry/Dk Gry/Grn

Sh-AA

Ls-Crm/Lt Gry Fxln Mhd/Dns NPor

Sh-Gry

Ls-Tan/Brn Fxln Dns NPor

Ls-AA sm cht-Lt Gry Fsh Opac

Ls-AA sm cht

Ls-Tan/Brn Fxln Mhd/Dns NPor sm cht-Wt Fsh Opac

Sh-Blk

Ls-Crm/Tan Fxln Mhd Sl Clky NPor w cht-Wt Fsh Opac and Brn Semi Trans

Ls-Tan/Brn Fxln Dns NPor sm cht-Wt Fsh Opac

Ls-AA

Sh-Blk

Ls-Tan/Gry Fxln Dns NPor

Sh-Gry/Grn/Mar/Red

Ls-Tan/Gry/Brn Fxln Dns NPor

Ls-AA

Sh-Blk

Ls-Gry/Tan Fxln Mhd NPor sm cht-Wt/Lt Gry Fsh Opac

Mud Data at 4457' at 8:45am on 8-8-10
Wt 9.3 Vis 57 W.L. 8.8 pH 10.5
Chlor 3400 Solids 6.6% YP 19

Ls-Tan/Crm Fxln Mhd Sl Fos NPor

Ls-AA

Sh-Blk

Ls-Crm/Tan Fxln Mhd/Dns NPor sm Cht-Lt Gry Semi Trans

Ls-Crm/Tan Fxln Sl Mhd Clky

Ls-Tan Fxln Mhd NPor

Sh-Gry/Dk Gry

DST NO. 3 4495-4546
30-45-60-90
1st Open: Strong blow, building to 10"
2nd Open: BOB in 22min
Rec: 620' GIP
226' MCGO (20% M, 15% G 65% O)

IHP 2206	FHP 2180
IFP 24-68	FFP 71-110
ISIP 1241	FSIP 1237

Sh-AA

Sh-AA

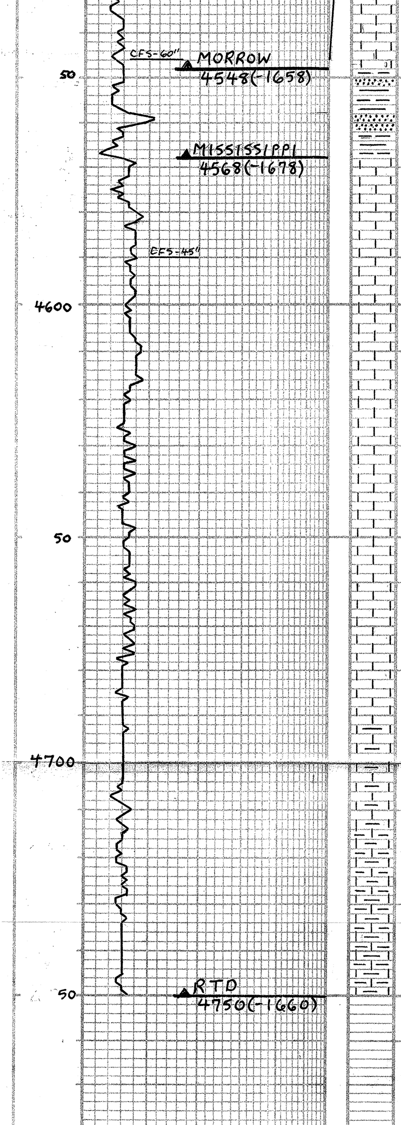
Ls-Tan/Brn Fxln Dns NPor

Sh-Gry/Dk Gry

Ls-Tan/Brn Fxln Mhd NPor

Ls-AA with few pcs of Ls-Tan Fxln Mhd Brn Stn Fr Interxln/Vug Por SSFO on Brk

Ls-Crm/Tan F/Mxln Sl Mhd Sl Fos NPor



TEMP 125°

Ls-AA

Ls-Brn/Gry F/Mxln Mhd/NPor

Pulled 10 stand short trip at 4546' then Cir for Test-60"

Ls-AA

Sh-Gry/Dk Gry

SS-Tan/Brn FGrn SAng-SRd Tite

Sh-Gry/Grn/Red/Yell

SS-Tan/Wt/Brn FGrn SubAng to SubRnd Tite Cemt NS

Sh-Gry/Dk Gry

Ls-Crm/Wt Fxln/Mxln Mhd/Dns NPor

Ls-AA

Ls-Wt/Crm F/Mxln Mhd/Dns Sl Clky NPor

Mud Data at 4584' at 8:15 a.m. on 8-9-10
Wt 9.3 Vis 63 W.L. 7.2 pH 10.5
Chlor 4400 Solids 6.3% YP 22

Ls-AA

Ls-Crm/Tan Fxln Mhd/Dns Sl Clky NPor

Ls-AA

Ls-Crm/Tan F/Mxln Mhd Sl Clky NPor

Ls-AA

Ls-Crm/Tan F/Mxln Mhd/Dns Sl Clky NPor

Ls-AA

Ls-Tan Fxln Mhd/Dns NPor and Ls-Crm Fxln Mhd Clky

Ls-AA

Ls-Gry/Tan Fxln Mhd/Dns NPor

Ls-AA

Ls-AA

Ls-Gry/Lt Gry Fxln Mhd Dns NPor

Ls-AA w. sh-Gry/Dk Gry Mar/Grn

Ls-Tan/Gry Fxln Mhd/Dns NPor w. sh-AA

Ls-AA w. sh-AA

Ls-AA w. sh-AA

Finished Drilling at 6:01 p.m. on 8-9-10 Cir For Log-75"

Finished Logging at 1:30 a.m. on 8-10-10

DEPTH	5" 10" 15" 20" 25" DRILLING TIME Minutes/Foot ← Rate of Penetration Increases	LITHOLOGY	SAMPLE DESCRIPTIONS	REMARKS

COMPANY GRAND MESA OPERATING COMPANY

LEASE HESS NO. 1-16

ELEVATION: KB 2890

LOCATION 2004'FNL & 1141'FWL SEC 16 TWP 14S RNG 31W

COUNTY GOVE STATE KANSAS