



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

Well Name: VORAN 16 D # 1
Location: 45' S. & 20' E. W/2 - SW - SE1/4 OF SEC. 16-T. 25 S. - R. 27 W.
License Number: A.P.I. # 15-069-20,374-00-00
Spud Date: 5/21/2012
Surface Coordinates: SPOT: 615' FSL & 2290' FEL
Region: GRAY CO., KANSAS
Drilling Completed: 5/29/12

Bottom Hole
Coordinates:
Ground Elevation (ft): 2706' K.B. Elevation (ft): 2717'
Logged Interval (ft): Surface CsTo: 5158' Total Depth (ft): 5160'
Formation: Mississippian Salem (Spergen)
Type of Drilling Fluid: CHEMICAL MUD

Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: RITCHIE EXPLORATION, INC.
Address: P.O. BOX 783188
WICHITA, KANSAS 67278-3188

GEOLOGIST

Name: David P. Williams
Company: DW Energy, LLC (DWE)
Address: 312 North Broadview Street
Wichita, Kansas 67208

Casings, Formation Tops & Surveys Taken

Ran 8 Jts 8 5/8" (23#) Surface Casing Tallied @ 339' & set at 353'. Cemented w/ 240 sx Common 3% cc 2% Gel By Allied Cementing. Cement Did Circulate to Surface.

Deviation Survey's Taken: @ 355' = 1/4 degree; @ 1074' = 3/4 degree; @ 2230' = 1/2 degree; @ 3600' = 1/4 degree; @ 4746' = 1 degree; @ 4960' = 1/2 degree; @ 5160' = 1 1/2 degrees.

DSTs

DST # 1 4716'-4746'. Times: 30"-45"-30"-45". Blow: IF= Weak Surface Blow; FF= No Blow & Flushed Tool (No Blow).

Recovery: 70' Oil Specked Mud. Pressures: IH= 2279 #; FH = 2260 #; IF= 31-44 #; FF = 48-64#; ISIP = 1391 #; FSIP = 1346#; Temp= 112 Degree"s F.

DST # 2 4831'-4960'. Times: 30"-30"-30"-30". Blow: IF= Weak Surface Blow & Died/1"; FF= Weak Surge & Died (Flushed Tool- Weak Surge & No Blow). Recovery: 40' Drilling Mud.

Pressures: IH= 2309 #; FH = 2303 #; IF= 23-59 #; FF = 62-100#; ISIP = 1185 #; FSIP = 1155#; Temp= 112 Degree"s F.

Comments

ROCK TYPES

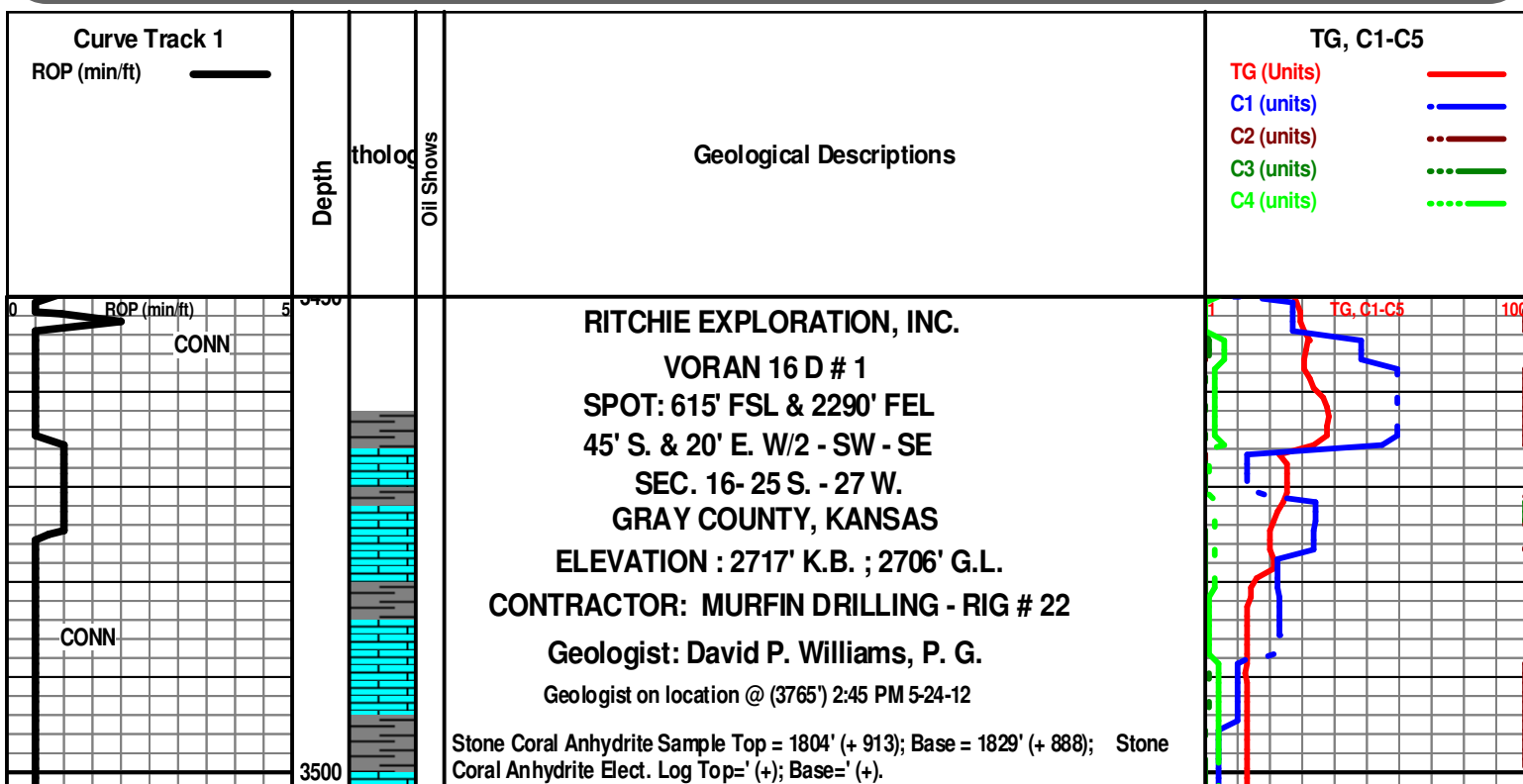
	Anhy		Clyst		Gry shale		Mrlst		Shgy
	Bent		Coal		Gyp		Red shale		Sltst
	Brec		Congl		Igne		Salt		Ss
	Carb sh		Dol		Lmst		Shale		Till
	Cht		Grn sh		Meta		Shcol		

ACCESSORIES

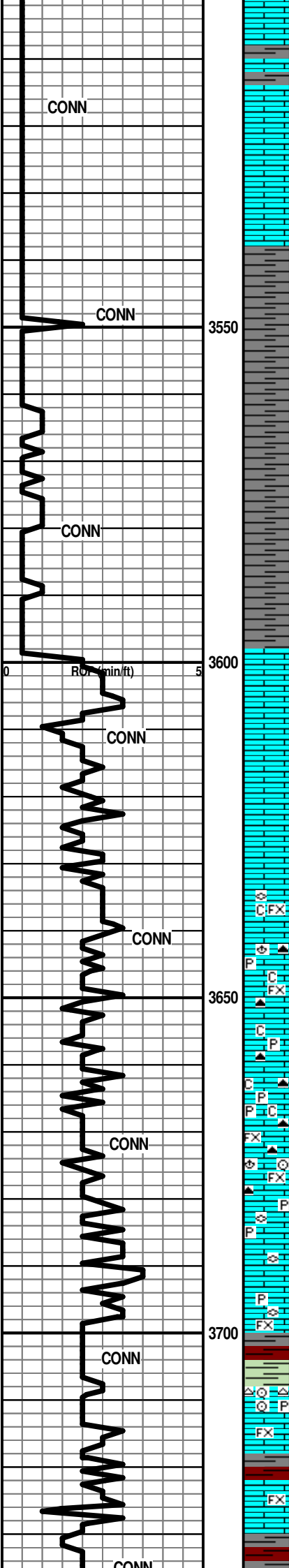
MINERAL		Hvmin		Belm		Pellet	TEXTURE
	Anhy		Kaol		Bioclst		Boundst
	Arggrn		Marl		Brach		Chalky
	Arg		Minxl		Bryozoa		Cryxln
	Bent		Nodule		Cephal		Earthy
	Bit		Phos		Coral	STRINGER	Finexln
	Brecfrag		Pyr		Crin		Grainst
	Calc		Salt		Echin		Lithogr
	Carb		Sandy		Fish		Microxln
	Chtdk		Silt		Foram		Mudst
	Chtlt		Sil		Fossil		Packst
	Dol		Sulphur		Fuss		Wackst
	Feldspar	FOSSIL			Gastro		
	Ferrpel		Algae		Oolite		
	Ferr		Amph		Oomold		
	Glau				Ostra		
	Gyp				Pelec		

OTHER SYMBOLS

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



Deviation Survey's Taken: @ 355' = 1/4 degree; @ 1074' = 3/4 degree; @ 2230' = 1/2 degree; @ 3600' = 1/4 degree; @ 4746' = 1 degree; @ 4960' = 1/2 degree; @ 5160' = 1 1/2 degrees.



Note: All samples have been lagged to depth by calculated time.

Begin 10' Sample Examination @ 3650'.

Ls Wht-Tan-Lt Grn-Gry Dns FxIn Micrite No Vis Por Barren Fos (Fuss) Chalk Sh
Red-Char-Gry-Grn-Maroon Fissil-Soft No Odor Sli ? Min Flor No Stn NS

Ls Wht-Tan-Lt Grn FxIn Micrite No Vis Por Barren Fos (Brack) Cht Drk Smoky Gry
Transl Vit Shp Abd Chalk Sh Red-Char-Gry-Grn-Maroon Fissil-Soft No Odor Sli ?
Min Flor No Stn NS

Ls Wht-Lt Grn FxIn Micrite No Vis Por Barren Cht Drk Smoky Gry-Lt Gry Transl Vit
Shp Abd Chalk Pyr Mass Sh Red-Char-Gry-Grn-Maroon Fissil-Soft No Odor Sli ?
Min Flor No Stn NS

Ls Wht-Lt Grn FxIn Micrite No Vis Por Barren Cht Drk Smoky Gry-Lt Gry Transl Vit
Shp Abd Chalk Pyr Mass Sh Red-Char-Gry-Grn-Maroon Fissil-Soft No Odor Sli ?
Min Flor No Stn NS

Ls Crm-Tan-Lt Grn FxIn Micrite No Vis Por Barren Fos (Brack, Crin) Sh
Red-Char-Gry-Grn-Maroon Fissil-Soft No Odor Sli ? Min Flor No Stn NS

Ls Wht-Lt Gry Dns FxIn Micrite No Vis Por Barren Fos (Fuss) Pyr Mass Sh
Red-Char-Gry-Grn Fissil-Soft No Odor No Flor No Stn NS

Sh Red Abd-Char-Gry-Grn Fissil-Soft Ls Wht-Lt Gry Dns FxIn Micrite Fos (Fuss)
Pyr Mass No Vis Por Barren No Odor No Flor No Stn NS

Ls Wht-Lt Gry Dns FxIn Micrite No Vis Por Barren Fos (Crin) Cht Wht-Gry Banded
Transl-Op Vit Shp Pyr Mass Sh Red-Char-Gry-Grn Fissil-Soft No Odor No Flor No
Stn NS

Ls Wht-Lt Gry Dns FxIn Micrite No Vis Por Barren Fos (Crin) Sh
Red-Maroon-Char-Gry-Grn Fissil-Soft No Odor No Flor No Stn NS

Ls Wht-Lt Gry-Tan Dns FxIn Micrite No Vis Por Barren Sh
Red-Maroon-Char-Gry-Grn Fissil-Soft No Odor No Flor No Stn NS

Ls Gry-Crm Dns FxIn Micrite No Vis Por Barren Sh Red-Char-Gry-Grn Fissil-Soft
No Odor No Flor No Stn NS

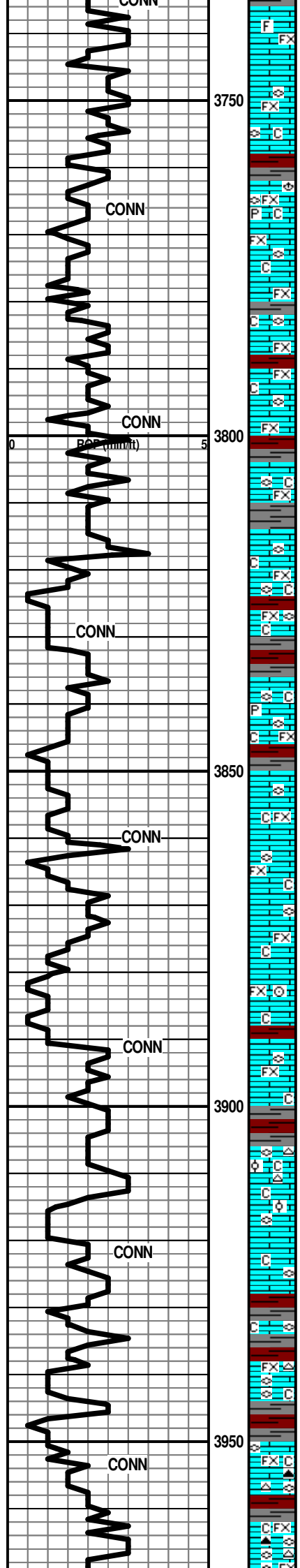
@ 3517' Displace
Mud System.

TOH PDC BIT @
REPLACE WITH
BUTTON BIT.

TG, C1-C5 100

Mudco Ck @
3600' @ 5:50
AM 5/24/12
Vis 52; WT=
8.6#; PV= 16;
YP= 17; WL
8.8; Cake= 1;
Cht= 2700; Cal
= 20; Sol=
2.0%. LCM= 2#;
DMC=\$
4357.25
CMC=\$
9179.65

TOPEKA 373' (- 1020)



Ls Gry-Crm-Brn Dns FxIn Micrite No Vis Por Barren Fos (?) Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor No Flor No Stn NS

Ls Gry-Crm Dns FxIn Micrite No Vis Por Barren Fos (Fuss) Chalk Wht Soft Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor No Flor No Stn NS

Ls Crm-Gry Dns FxIn Micrite No Vis Por Barren Fos (Fuss, Brach) Chalk Wht Soft Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor No Flor No Stn NS

Ls Crm-Gry Dns FxIn Micrite (w/ Pyr Inclus) No Vis Por Barren Fos (Fuss, Brach) Chalk Wht Soft Pyr Mass Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor No Flor No Stn NS

Ls Wht-Crm Dns FxIn Micrite No Vis Por Barren Fos (Fuss) Chalk Wht Soft Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor No Flor No Stn NS

Ls Wht-Crm Dns FxIn Micrite No Vis Por Barren Fos (Fuss) Chalk Wht Soft Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor No Flor No Stn NS

Ls Wht-Crm Dns FxIn Micrite No Vis Por Barren Fos (Fuss) Chalk Wht Soft Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor No Flor No Stn NS

Ls Wht-Crm Dns FxIn Micrite No Vis Por Barren Fos (Fuss) Chalk Wht Soft Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor No Flor No Stn NS

Ls Wht-Crm Dns FxIn Micrite No Vis Por Barren Fos (Fuss) Chalk Wht Soft Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor No Flor No Stn NS

Ls Wht-Crm Dns FxIn Micrite No Vis Por Barren Fos (Fuss) Chalk Wht Soft Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor No Flor No Stn NS

Ls Wht-Crm Dns FxIn Micrite (w/ Pyr Inclus) Poor IxIn Por Barren Fos (Fuss) Chalk Wht Soft Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor No Flor No Stn NS

Ls Wht-Crm Dns FxIn Micrite Grad Pin-Pt IxIn Por Fos (Fuss) Chalk Wht Soft Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor No Flor No Stn NS

Ls Wht-Crm Dns FxIn Micrite Grad Pin-Pt IxIn Por Fos (Fuss) Chalk Wht Soft Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor No Flor No Stn NS

Ls Wht-Crm-Yell Dns FxIn Micrite Fos Abd (Fuss) Chalk Wht Soft Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor No Flor No Stn NS

Ls Wht-Crm-Tan Dns FxIn Micrite Fos (Crin, Fuss) Pyr Mass Chalk Wht Soft Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor No Flor No Stn NS

Ls Wht-Crm-Gry Dns FxIn Micrite Grad Poor Pin-Pt IxIn Por Fos (Fuss) Chalk Wht Soft Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor No Flor No Stn NS

Ls Wht-Crm-Gry Dns FxIn Micrite Grad Poor OOL Por (w/OOL in pl) Poor Leaching Poor Dissolu Cht Wht Op Shp Vit Fos (Fuss) Chalk Wht Soft Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor No Flor No Stn NS

Ls Wht-Crm-Gry Dns FxIn Micrite Grad Poor-Fair OOL Por (w/OOL in pl) Poor-Fair Leaching Poor-Fair Dissolu Cht Wht Op Shp Vit Fos (Fuss) Chalk Wht Soft Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor Sli ? Min Flor No Stn NS

Ls Wht-Crm-Tan Dns FxIn Micrite Fos (Fuss) Chalk Wht Soft Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor No Flor No Stn NS

Ls Wht-Crm-Tan Dns FxIn Micrite Fos (Fuss) Cht Wht-Clear-Tan Translu - Op Shp Vit Chalk Wht Soft Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor No Flor No Stn NS

Ls Wht-Crm-Tan Dns FxIn Micrite Fos (Fuss) Cht Wht-Clear-Tan Translu - Op Shp Vit Chalk Wht Soft Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor No Flor No Stn NS

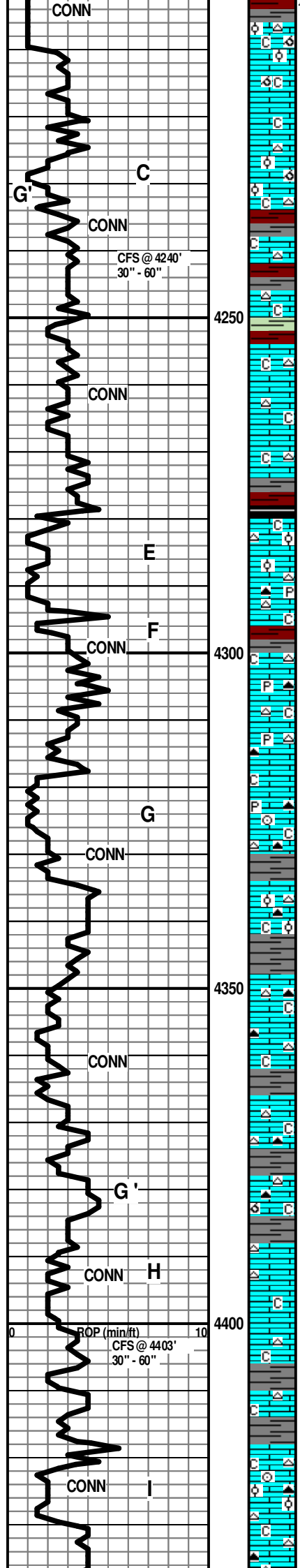
Ls Wht-Crm-Tan Dns FxIn Micrite Fos (Fuss) Cht Wht-Drk Gry Translu - Op Shp Vit Chalk Wht Soft Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor No Flor No Stn NS

Ls Wht-Crm-Tan Dns FxIn Micrite Fos (Fuss) Cht Wht Op Shp Vit Chalk Wht Soft Sh Red-Char-Gry-Grn Abd Fissil-Soft No Odor No Flor No Stn NS

TG, C1-C5 100

RE-ZERO TOOKE
DAQ @ 3863' LAG
DEPTH. BLDG
GAS = 12 UNITS.

GAS TEST TOOKE
DAQ IN
GEOTRAILER @
3865' LAG DEPTH=
266 UNITS SEEN.



Wht-Gry Translu-Op Shp Vit Pyr Mass Chalk No Odor Sli ? Min Flor No Stn NS

Ls Wht-Crm Micritic Grad Fair-Med OOL Por (w/Tr OOM/OOL lXIn Por) Small OOids Fair Leaching Fair-Poor Dissolu Cht Wht-Gry Translu-Op Shp Vit Pyr Mass Chalk No Odor Sli ? Min Flor No Stn NS

30" CFS @ 4240' Ls Wht-Crm Micritic Grad Med-Good OOL Por (w/OOL in pl) Small-Med OOids w/Tr OOM Por Med InterOOL/OOM Por Med-Good Leaching Med-Good Dissolu Cht Wht-Gry Translu-Op Shp Vit Pyr Mass Chalk No Odor Sli ? Min Flor No Stn NS

60" CFS @ 4240' Ls Wht-Crm Micritic Grad Med-Good OOL Por (w/OOL in pl) Small-Med OOids w/Tr OOM Por Med InterOOL/OOM Por Med-Good Leaching Med-Good Dissolu Cht Wht-Gry Translu-Op Shp Vit Pyr Mass Chalk No Odor Sli ? Min Flor No Stn NS

Ls Wht-Lt Gry FxIn Dns Micrite No Vis Por Barren Cht Tan-Gry Op Shp Vit Sh Char-Gry-Grn-Red-Tr Blk Carb Fissil Mass Chalk No Odor Sli ? Min Flor No Stn NS

Ls Wht-Crm-Lt Gry FxIn Dns Micrite No Vis Por Barren Cht Wht-Tan Op Shp Vit Sh Char-Gry-Grn-Red-Tr Blk Carb Fissil Mass Chalk No Odor Sli ? Min Flor No Stn NS

Ls Wht-Crm-Lt Gry FxIn Dns Micrite No Vis Por Barren Cht Wht-Tan Op Shp Vit Sh Char-Gry-Grn-Red-Tr Blk Carb Fissil Mass Chalk No Odor No Flor No Stn NS

Ls Wht-Crm-Lt Gry FxIn Dns Micrite No Vis Por Barren Cht Wht-Tan Op Shp Vit Sh Char-Gry-Grn-Red-Tr Blk Carb Fissil Mass Chalk No Odor No Flor No Stn NS

Ls Wht-Crm-Lt Gry FxIn Dns Micrite No Vis Por Barren Grad Poor-Fair OOL Por (w/OOL in pl) Poor Dissolu Poor Develop Poor Leaching Cht Wht-Clear Translu-Op Shp Vit Sh Char-Gry-Grn-Red-Aqua-Tr Blk Carb Fissil Mass Chalk No Odor No Flor No Stn NS

Ls Wht-Crm-Gry Dns FxIn Micrite Cht Wht-Drk-Smoky-Gry Translu - Op Shp Vit Pyr Mass Chalk Wht Soft Sh Char-Gry (w/Pyr Inclus)-Grn-Tr Red- Fissil-Soft No Odor No Flor No Stn NS

Ls Wht-Crm-Gry Dns FxIn Micrite Cht Wht-Drk-Smoky-Gry Translu - Op Shp Vit Pyr Mass Chalk Wht Soft Sh Char-Gry (w/Pyr Inclus)-Grn-Tr Red- Fissil-Soft No Odor No Flor No Stn NS

Ls Wht-Crm-Gry Micritic Grad Fair-Med OOL Por (w/OOL in pl) Small-Med OOids Fair-Med InterOOLPor Fair-Med Leaching Fair-Med Dissolu Cht Wht-Drk-Gry/Blk Translu-Op Shp Vit Pyr Mass Chalk No Odor Sli ? Min Flor No Stn NS

Ls Wht-Crm-Gry Dns FxIn Micrite Cht Wht-Drk-Smoky-Gry Translu - Op Shp Vit Pyr Mass Fos (Crin) Chalk Wht Soft Sh Char-Gry (w/Pyr Inclus)-Grn-Tr Red- Fissil-Soft No Odor No Flor No Stn NS

Ls Wht-Crm-Gry Micritic Grad Fair-Med OOL Por (w/OOL in pl) Small-Med OOids Fair-Med InterOOLPor Fair-Med Leaching Fair-Med Dissolu Cht Wht-Tan-Drk Blk Translu-Op Shp Vit Chalk Sh Char-Gry (w/Pyr Inclus)-Aqua-Red- Fissil-Soft No Odor Sli ? Min Flor No Stn NS

Ls Wht-Crm-Gry Micritic Cht Wht-Tan-Drk Blk Translu-Op Shp Vit Chalk Sh Char-Gry (w/Pyr Inclus)-Aqua-Red- Fissil-Soft No Odor Sli ? Min Flor No Stn NS

Ls Wht-Crm-Gry Micritic Cht Wht-Tan-Drk Blk Translu-Op Shp Vit Chalk Sh Char-Gry (w/Pyr Inclus)-Aqua-Red- Fissil-Soft No Odor Sli ? Min Flor No Stn NS

Ls Wht-Crm-Gry Micritic Cht Wht-Tan-Drk Blk Translu-Op Shp Vit Chalk Sh Char-Gry (w/Pyr Inclus)-Aqua-Red- Fissil-Soft No Odor Sli ? Min Flor No Stn NS

Ls Wht-Crm-Gry Micritic Cht Wht-Tan-Drk Blk Translu-Op Shp Vit Chalk Sh Char-Gry-Grn-Aqua-Red Fissil-Soft No Odor Sli ? Min Flor No Stn NS

MUNCIE CREEK 4374' (- 1657)

30" CFS @ 4403' Sh Char-Drk Gry-Lt Gry-(w/Pyr Inclus)-Aqua-Red- Fissil-Soft Ls Wht-Crm-Gry Micritic Tr/ Poor OOM Por Poor InterOOM Por Cht Wht-Tan-Drk Blk-Org Translu-Op Shp Vit Chalk No Odor Sli ? Min Flor No Stn NS

KANSAS CITY "H" (DRUM) 4388' (- 1671)

60" CFS @ 4403' Ls Wht-Crm-Gry Micritic Grad Fair-Med OOL Por (w/OOL in pl) Small-Med OOids Fair-Med InterOOLPor Fair-Med Leaching Fair-Med Dissolu Cht Wht (w/Fos Inclus)-Tan-Drk Blk Translu-Op Shp Vit Chalk Sh Char-Gry (w/Pyr Inclus)-Aqua-Red- Fissil-Soft No Odor Sli ? Min Flor No Stn NS

Ls Wht-Gry Micritic Cht Wht-Amber Translu-Op Shp Vit Chalk Sh Char- Gry/Grn - Red Fissil-Soft No Odor Sli ? Min Flor (Lt Wht) No Stn NS

KANSAS CITY "I" (BLOCK) 4418' (- 1701)

Ls Wht-Crm-Gry Micritic Grad FxIn Pin-Pt Vug Por Grad Fair OOL Por (w/OOL in pl) ? Uncleite?) Small-Med-V Lg OOids Fair Inter OOL Por Fair Leaching Fair Dissolu Cht Wht-Amber Translu-Op Shp Vit Chalk Fos (Crin) Sh Char-Gry/Grn-Red- Fissil-Soft No Odor Sli ? Min Flor AA No Stn NS

Ls Wht-Gry Micritic Cht Wht-Amber Translu-Op Shp Vit Chalk Sh Char- Gry/Grn - Red Fissil-Soft No Odor Sli ? Min Flor (Lt Wht) No Stn NS

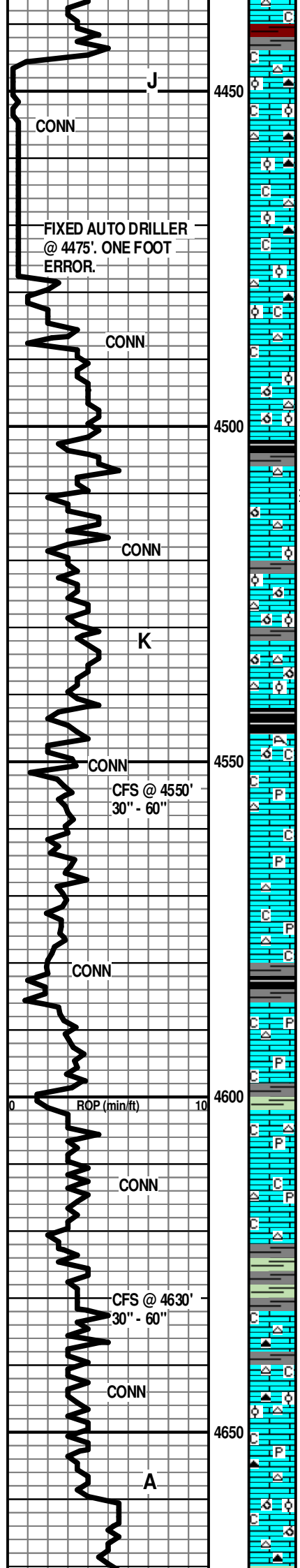
GAS KICK = 27 UNITS

BKGD GAS = 18 UNITS

RE-ZERO TOOKE DAQ @ 4319' LAG DEPTH. BKGD GAS = 12 UNITS.

BKGD GAS = 18 UNITS

TG, C1-C5 100



KANSAS CITY "J" (DENNIS) 4444' (- 1727)

Ls Wht-Gry Micritic Grad Fair OOL Por (w/OOL in pl) Small OOids Fair InterOOLPor Fair Leaching Fair Dissolu Cht Wht-Amber Translu-Op Shp Vit Fos (Crin) Chalk Sh Char- Gry/Grn - Aqua-Red Fissil-Soft No Odor Sli ? Min Flor (Lt Wht) No Stn NS

Ls Wht-Gry Micritic Grad FxIn Pin-Pt Por Barren Grad Fair OOL Por (w/OOL in pl) Small OOids Fair InterOOLPor Fair Leaching Fair Dissolu Cht Wht-Amber Translu-Op Shp Vit Chalk Sh Char- Gry/Grn-Red Fissil-Soft No Odor Sli ? Min Flor (Lt Wht) No Stn NS

Ls Wht-Gry Micritic Grad FxIn Pin-Pt Por Barren Grad Fair OOL Por (w/OOL in pl) Small OOids Fair InterOOLPor Fair Leaching Fair Dissolu Cht Wht-Amber Translu-Op Shp Vit Chalk Sh Char- Gry/Grn-Red Fissil-Soft No Odor Sli ? Min Flor (Lt Wht) No Stn NS

Ls Wht-Gry Micritic Grad FxIn Pin-Pt Por Barren Grad Fair OOL Por (w/OOL in pl) Small OOids Fair InterOOLPor Fair Leaching Fair Dissolu Cht Wht-Amber Translu-Op Shp Vit Chalk Sh Char- Gry/Grn-Red Fissil-Soft No Odor Sli ? Min Flor (Lt Wht) No Stn NS

Ls Wht-Gry Micritic Grad Fair OOL Por (w/OOL in pl) Small OOids Fair InterOOLPor Fair Leaching Fair Dissolu Cht Wht Translu-Op Shp Vit Chalk Sh Char- Gry/Grn - Aqua-Red Fissil-Soft No Odor Sli ? Min Flor (Lt Wht) No Stn NS

STARK 4502' (- 1785)

KANSAS CITY "K" (SWOPE) 4506' (- 1789)

Ls Wht-Gry Micritic Grad Fair OOL Por (w/OOL in pl) Small OOids Fair InterOOLPor Fair Leaching Fair Dissolu Cht Wht Translu-Op Shp Vit Fos (Crin) Chalk Sh Char- Gry/Grn - Aqua-Red Fissil-Soft No Odor Sli ? Min Flor (Lt Wht) No Stn NS

Ls Wht-Gry Micritic Grad Fair OOL Por (w/OOL in pl) Small OOids Fair InterOOLPor Fair Leaching Fair Dissolu Cht Wht Translu-Op Shp Vit Chalk Sh Char- Gry/Grn - Aqua-Red Fissil-Soft No Odor Sli ? Min Flor (Lt Wht) No Stn NS

30" CFS @ 4550' Ls Crm-Brn-Wht FxIn Good OOM Por (5 Pcs w/OOL in pl) Good Leaching Good Dissolu Barren Fos (? Coral) Grad Micrite Chalky Sh Char-Grn Soft No Odor No Stn Sli ? Min Flor NS

HUSHPUCKNEY 4542' (- 1825)

KANSAS CITY "L" (HERTHA) 4546' (- 1829)

60" CFS @ 4550' Ls Wht-Crm FxIn Good OOM Por (4 Pcs w/OOL in pl) Good Leaching Good Dissolu Barren Fos (? Coral) Grad Micrite Chalky Sh Char-Grn Soft No Odor No Stn Sli ? Min Flor NS

Ls Wht-Crm-Gry Micritic Cht Wht Op Shp Vit Pyr Mass Chalk Sh Blk Carb-Char-Gry Fissil-Soft No Odor Sli ? Min Flor No Stn NS

Ls Wht-Crm-Gry Micritic Cht Wht Op Shp Vit Pyr Mass Chalk Sh Blk Carb-Char-Gry Fissil-Soft No Odor Sli ? Min Flor No Stn NS

Ls Wht-Crm-Gry Micritic Cht Wht Op Shp Vit Pyr Mass Chalk Sh Blk Carb-Char-Gry Fissil-Soft No Odor Sli ? Min Flor No Stn NS

BASE KANSAS CITY 4582' (- 1865)

MARMATON 4586' (- 1869)

Ls Wht-Crm-Gry Micritic Cht Wht Op Shp Vit Pyr Mass Chalk Sh Blk Carb-Char-Gry Fissil-Soft No Odor Sli ? Min Flor No Stn NS

Ls Wht-Crm-Gry Micritic Cht Wht Op Shp Vit Pyr Mass Chalk Sh Blk Carb-Char-Gry Fissil-Soft No Odor Sli ? Min Flor No Stn NS

Ls Wht-Crm-Gry Micritic Cht Wht Op Shp Vit Pyr Mass Chalk Sh Blk Carb-Char-Gry Fissil-Soft No Odor Sli ? Min Flor No Stn NS

30" CFS @ 4630' Ls Wht-Crm-Gry Micritic Cht Wht-Tan-Drk Blk Translu-Op Shp Vit Chalk Sh Char-Gry (w/Pyr Inclus)-Aqua-Red- Fissil-Soft No Odor Sli ? Min Flor No Stn NS

60" CFS @ 4630' Ls Gry FxIn Cht Wht-Amber Translu-Op Shp Vit Chalk Sh Char-Grn Soft No Odor No Stn Sli ? Min Flor NS

Ls Wht-Crm-Tan FxIn Micritic Cht Wht-Gry-Drk Amber Translu-Op Shp Vit Chalky Sh Char-Gry/Grn-Red Soft- Fissil No Odor No Stn Sli ? Min Flor NS

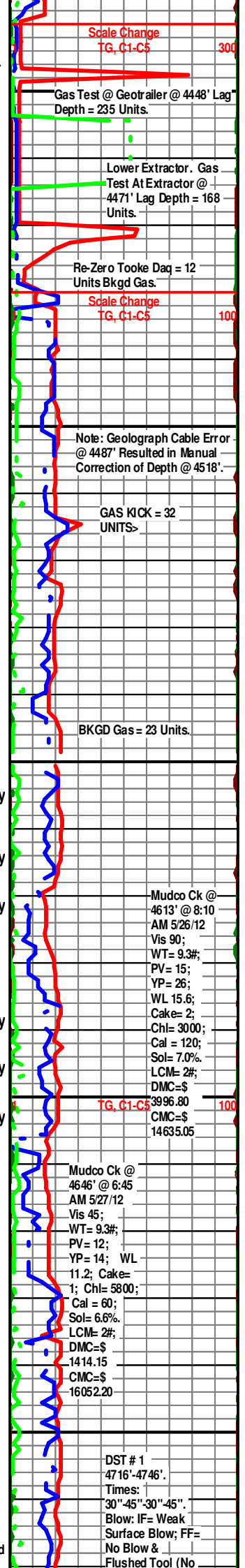
ALTAMONT "A" 4640' (- 1923)

Ls Wht-Gry FxIn Micritic Grad Tr V Poor OOL Por (w/OOL in pl) Poor Vis Por Barren Cht Wht-Drk Amber Translu-Op Shp Vit Chalky Sh Char-Gry/Grn-Tr Aqua-Tr Red Soft- Fissil No Odor No Stn Sli ? Min Flor NS

Ls Wht-Gry FxIn Micritic Cht Wht-Drk Amber Translu-Op Shp Vit Pyr Mass Chalky Sh Char-Gry/Grn-Red Soft- Fissil No Odor No Stn Sli ? Min Flor NS

Ls Wht-Gry-Crm FxIn Micritic Grad Tr Poor OOL Por (w/OOL in pl) Poor Dissolu Poor InterOOL Por Poor Leaching Tr Poor Vug Por Cht Wht-Drk Amber Translu-Op Shp Vit Pyr Mass Chalky Sh Char-Gry/Grn-Red Soft- Fissil No Odor No Stn Sli ? Min Flor NS

30" CFS @ 4690' Sh Char-Gry/Grn-Aqua Red-Tr Blk Carb Soft- Fissil Ls Wht-Crm FxIn Micritic AA Grad Tr Poor OOM Por (w/OOL in pl) Poor Dissolu Poor InterOOL Por Poor Leaching Cht Wht-Drk Amber



Scale Change TG, C1-C5 300

Gas Test @ Geotrailer @ 4448' Lag Depth = 235 Units.

Lower Extractor . Gas Test At Extractor @ 4471' Lag Depth = 168 Units.

Re-Zero Tooke Daq = 12 Units Bkgd Gas.

Scale Change TG, C1-C5 100

Note: Geograph Cable Error @ 4487' Resulted in Manual Correction of Depth @ 4518'.

GAS KICK = 32 UNITS

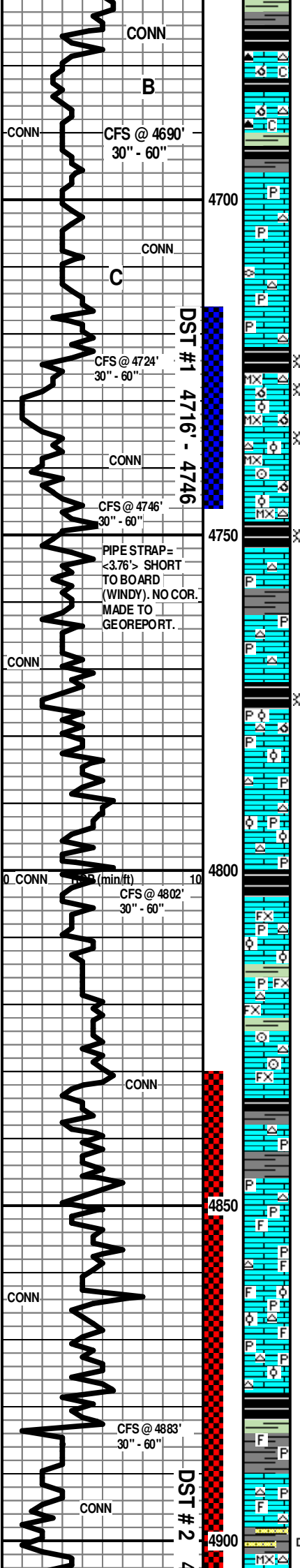
BKGD Gas = 23 Units.

Mudco Ck @ 4613' @ 8:10 AM 5/26/12
Vis 90;
WT= 9.3#;
PV= 15;
YP= 26;
WL 15.6;
Cake= 2;
Chl= 3000;
Cal = 120;
Sol= 7.0%
LCM= 2#;
DMC=\$ 3996.80
CMC=\$ 14635.05

TG, C1-C5 100

Mudco Ck @ 4646' @ 6:45 AM 5/27/12
Vis 45;
WT= 9.3#;
PV= 12;
YP= 14; WL 11.2; Cake= 1; Chl= 5800;
Cal = 60;
Sol= 6.6%
LCM= 2#;
DMC=\$ 1414.15
CMC=\$ 16052.20

DST # 1 4716'-4746'.
Times: 30"-45"-30"-45".
Blow: IF= Weak
Surface Blow; FF= No Blow & Flushed Tool (No



Translu-Op Shp Vit Pyr Mass Chalky No Odor No Stn Sli ? Min Flor NS

ALTAMONT "B" 4678' (- 1961)

60" CFS @ 4690' Sh Char-Gry/Grn-Aqua Red-Tr Blk Carb Soft- Fissil Ls Wht-Crm Fxln Micritic AA Grad Tr Poor OOM Por (w/OOL in pl) Poor Dissolu Poor InterOOM Por Poor Leaching Cht Wht-Drk Amber Translu-Op Shp Vit Pyr Mass Chalky No Odor No Stn Sli ? Min Flor NS

ALTAMONT "C" 4693' (- 1976)

Sh Char Gry-Grn-Blk Carb Abd Ls Wht-Crm Fxln Micrite Cht Wht Op Shp Vit Pyr Mass No Odor No Stn Sli ? Min Flor NS

30" CFS @ 4724' Sh Char Gry-Grn-Blk Carb Abd Ls Wht-Crm Fxln Micrite Grad Poor - Fair OOL Por (w/OOL in pl) Poor-Tr Leaching Poor-Fair InterOOL Vug Por Barren Cht Wht Op Shp Vit Fos (Fuss) Pyr Mass No Odor No Stn Sli ? Min Flor NS

60" CFS @ 4724' Sh Char Gry-Grn-Blk Carb Abd Ls Wht-Crm Fxln Micrite Cht Wht-Clear Translu-Op Shp Vit Pyr Mass No Odor No Stn Sli ? Min Flor NS

PAWNEE 4726' (- 2009')

30" CFS @ 4746' Ls Wht Microxln Poor-Fair-OOL/OOM Por (w OOL in pl Poor-Fair Leaching Poor-Fair InterOOL/OOM Por Chalky Abd Cht Wht Op Shp Vit Faint Odor Sli ? Min ? Flor No Stn SG

60" CFS @ 4746' Ls Wht Microxln Poor-Fair-OOL/OOM Por (w OOL in pl Poor-Fair Leaching Poor-Fair InterOOL/OOM Por Chalky Abd Cht Wht Op Shp Vit Fos (Crin) Faint Odor Sli ? Min? Flor No Stn SSG

Sh Blk Carb (w/SG)-Char-Gry-Lt Grn Carb-Red Ls Wht-Crm Fxln Micrite Barren Cht Clear Op Shp Vit Pyr Mass No Odor No Stn No Flor NS

MYRIC 4763' (- 2046)

Sh Char Carb-Gry-Grn-Red Fissil Ls Wht-Crm Fxln Micrite Barren Cht Wht Op Shp Vit Pyr Mass Fos (Crin) No Odor No Stn No Flor NS

CHEROKEE SHALE 4773' (- 2056)

FORT SCOTT 4776' (- 2059)

30" CFS @ 4802' Ls Wht-Crm-Gry Fxln Micrite w/ Pyr Inclus Barren Grad Tr OOL Por (w/OOL in pl) Poor Develop Poor-No Vis Por Cht Wht Op Shp Vit Pyr Mass Sh Blk Carb-Char-Aqua-Grn-Red Fissil No Odor No Stn No Flor NS

60" CFS @ 4802' Ls Wht-Crm-Gry Fxln Micrite w/ Pyr Inclus Barren Grad Tr OOL Por (w/OOL in pl) Poor Develop Poor-No Vis Por Cht Wht Op Shp Vit Pyr Mass Abd Sh Blk Carb-Char-Aqua-Grn-Red Fissil No Odor No Stn No Flor NS

CHEROKEE SHALE (LOWER) 4801' (- 2084)

Ls Wht-Crm Fxln Micrite Barren Grad Fair Pin-Pt Ixln Por w/ Tr Fair Vug Leaching Por Cht Wht Op Shp Vit Pyr Mass Sh Char Carb - Gry - Grn-Maroon - Red Fissil No Odor No Stn No Flor NS

Ls Wht-Crm Fxln Micrite Barren (w/ Pyr Inclu) Cht Wht-Tan Translu-Op Shp Vit(w/OOL Inclus) No Vis Por Fresh Pyr Mass Sh Char Carb - Gry-Grn - Aqua - Maroon - Red Fissil No Odor No Stn No Flor NS

Ls Wht-Crm Fxln Micrite Barren Cht Wht (? Frac Por) Op Shp Vit Pyr Mass Fos Crin Sh Char Carb-Gry-Grn-Maroon-Red Fissil No Odor No Stn No Flor NS

Ls Wht-Crm Fxln Micrite Barren Cht Wht (? Frac Por) Op Shp Vit Pyr Mass Fos Crin Sh Blk Carb Char-Gry-Grn-Maroon-Red Fissil No Odor No Stn No Flor NS

HUCK 4846' (- 2129)

Ls Wht-Crm Fxln Micrite Barren Cht Wht (w/ Fos Inclus) Pyr Mass Abd Sh Grn/Gry Siltstone w/Varicoloeed Sh Blk Carb Char -Aqua - Red Fissil AA No Odor No Stn Scat Sli ? Min Flor NS

30" CFS @ 4883' Sh Grn/Gry Siltstone w/Varicoloeed Sh Blk Carb Char -Aqua - Red Fissil AA Ls Wht-Crm Fxln Micrite Barren Grad Fxln Pin-Pt Por Grad Tr OOL Por Poor InterOOL Por Cht Wht (w/ Fos Inclus) Pyr Mass Abd No Odor No Stn Scat Sli ? Min Flor NS

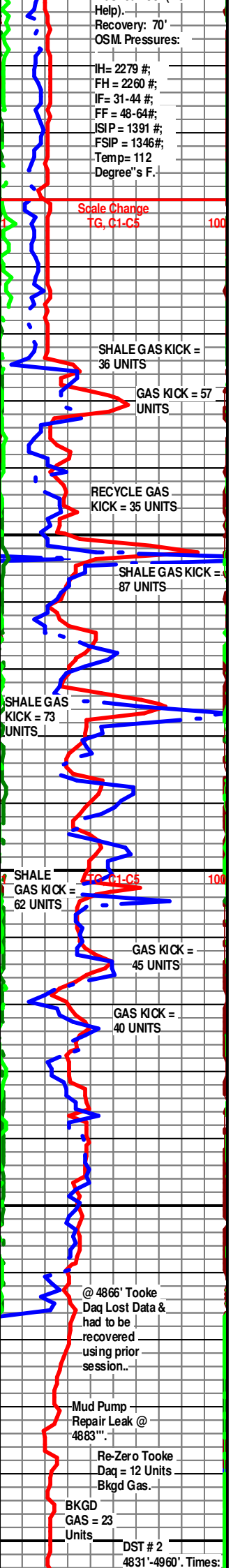
ATOKA 4878' (- 2161)

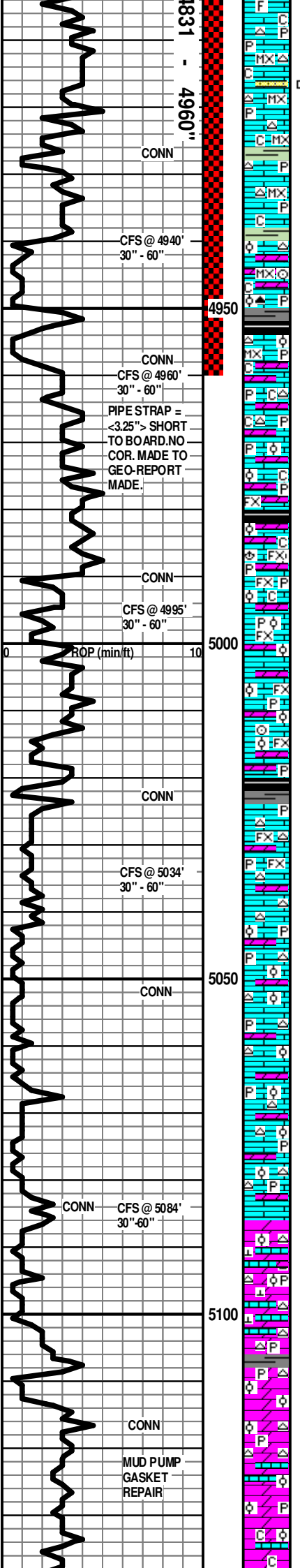
60" CFS @ 4883' Sh Grn/Gry Siltstone (w/Carb Banded) w/Varicoloeed Sh Blk Carb -Aqua - Char - Red Fissil AA Ls Wht-Crm Fxln Micrite Barren Cht Wht (w/ Fos Inclus) Pyr Mass Abd No Odor No Stn Scat Sli ? Min Flor NS

Sh Char-Gry-Grn-Aqua Ls Wht-Tan-Crm Fxln Dns Micrite Cht Tan-Wht (w/Fos (Spic)) Transl-Op Shp Vit Pyr Mass Abd Chalky Qtz Ss FGM Poor Soet In Aqua Clay Matrix No Vis Por Friable No Odor Sli Scatt ? Min Flor (Lt Wht) NS

MISSISSIPPIAN 4902' (- 2185)

Ls Wht-Tan-Crm Microxln Dns Micrite Cht Tan-Wht (w/Fos (Spic)) Transl-Op Shp

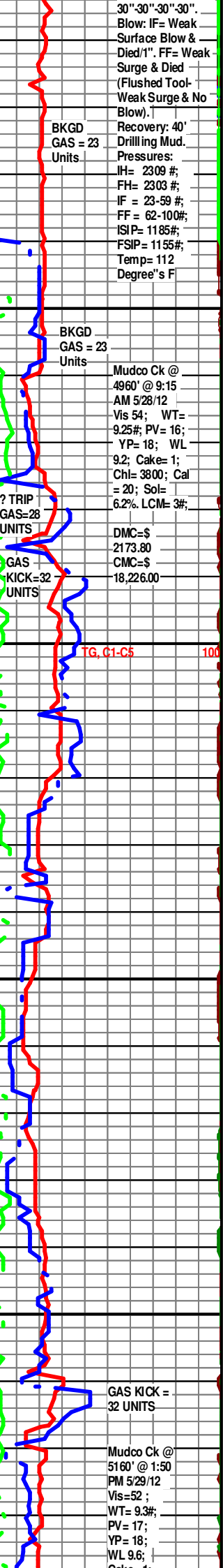




Lt Wht Tan Chalky Sh Char-Gry-Grn-Aqua-Olive No Odor Sli Scatt ? Min Flor (Lt Wht) No Stn NS
 Vt Pyr Mass Abd Chalky Sh Char-Gry-Grn-Aqua-Olive No Odor Sli Scatt ? Min Flor (Lt Wht) No Stn NS
 Ls Wht-Tan MicroIn Dns Micrite Cht Wht-Lt Tan-Clear Transl-Op Shp Vit Pyr Mass Chalky Qtz Ss FGrn Well Sort Sub Ang Friable (w/Gills "Dead" Stn ? Sluff AA) Sh Char-Gry/Grn-Aqua (w Qtz Ss Fgrn Includ) Tr Blk Carb Fissil No Odor Fair Inc Scatt ? Min Flor (Lt Wht) No Stn NS
 30" CFS @ 4940' Ls Wht-Tan MicroIn Dns Micrite Cht Wht-Lt Tan-Clear Transl-Op Shp Vit Pyr Mass Chalky Sh Char-Gry/Grn-Aqua Fissill No Odor Fair Inc Scatt ? Min Flor (Lt Wht) No Stn NS
 60" CFS @ 4940' Ls Wht-Tan MicroIn Dns Micrite Cht Wht-Lt Tan-Clear Transl-Op Shp Vit Pyr Mass Chalky Sh Char-Gry/Grn-Aqua Fissill No Odor Fair Inc Scatt ? Min Flor (Lt Wht) No Stn NS
 30" CFS @ 4960' Ls Wht MicroIn/FxIn Micrite Grad Dolo Wht "Sandy" OOL Por (w/OOL in pl) V Small OOids Poor Inter OOL Friable Por Barren Cht Wht-Tan Transl-Op Shp Vit Pyr Mass Chalky Fos (Crin) Sh Char-Gry/Grn-Aqua Fissill No Odor Fair Inc Scatt Dec ? Min Flor (Lt Wht) No Stn NS
 60" CFS @ 4960' Ls Wht MicroIn/FxIn Micrite Grad Dolo Wht "Sandy" OOL Por (w/OOL in pl) V Small OOids Poor Inter OOL Friable Por Barren Cht Wht-Tan Transl-Op Shp Vit Pyr Mass Chalky Fos (Crin) Sh Char-Gry/Grn-Aqua Fissill No Odor Fair Inc Scatt Dec ? Min Flor (Lt Wht) No Stn NS
 Ls Wht-Gry FxIn Micrite Grad Poor-Fair Pin-Pt IxIn Por Grad Dolo Gry "Sandy" OOL Por (w/OOL in pl) V Small OOids Poor Inter OOL Friable Por Barren Cht Wht-Tan-Gry Transl-Op Shp Vit Pyr Mass Chalk Inc Abd Sh Char-Gry/Grn-Aqua-Blk Carb Fissil No Odor Scatt Inc ? Min Flor (Lt Wht) No Stn NS
 Ls Wht-Gry FxIn Micrite Grad Poor-Fair Pin-Pt IxIn Por Grad Dolo Gry "Sandy" OOL Por (w/OOL in pl) V Small OOids Poor Inter OOL Friable Por Barren Cht Wht-Tan-Gry Transl-Op Shp Vit Pyr Mass Chalk Inc Abd Sh Aqua-Char-Gry/Grn-Blk Carb Fissil No Odor Scatt Inc ? Min Flor (Lt Wht) No Stn NS
 30" CFS @ 4995' Ls Wht-Gry FxIn Micrite w/ Poor-Fair Pin-Pt IxIn Por Grad Dolo Gry-Grn "Sandy" OOL Por (w/OOL in pl) V Small OOids Poor Inter OOL Friable Por Barren Cht Wht-Peach/Org-Clear Transl-Op Shp Vit Pyr Mass Chalk Abd Fos (Brach) Sh Char-Gry/Grn-Aqua-Blk Carb Fissil No Odor Scatt Inc ? Min Flor (Lt Wht) No Stn NS
 60" CFS @ 4995' Ls Wht FxIn w/Pin-Pt Por Barren Grad Micrite AA Tr Dolo AA Cht Wht-Clear-Gry Op Shp Vit Pyr Mass Abd Fos (Brach) Sh AA No Odor Scatt ? Min Flor No Stn NS
 Ls Wht FxIn w/Pin-Pt Por Barren Grad Micrite Tr Dolo Gry-Grn (w/V Small OOids in pl) Fair Inter OOL Por Cht Wht-Clear-Gry Op Shp Vit Pyr Mass Abd Sh Aqua-Char-Gry Blk Carb AA Fissil No Odor Scatt ? Min Flor No Stn NS
 Ls Wht FxIn w/Pin-Pt Por Barren Grad Micrite Tr Dolo Gry-Grn (w/V Small OOids in pl) Fair Inter OOL Por Cht Wht-Clear-Gry Op Shp Vit Pyr Mass Abd Fos (Crin) Sh Aqua - Char - Gry AA Fissil No Odor Scatt ? Min Flor No Stn NS
 30" CFS @ 5034' Ls Wht FxIn w/Pin-Pt Por Barren Grad Micrite Cht Wht-Clear Op Shp Vit Pyr Mass Abd Sh Aqua-Char-Gry AA Fissil No Odor Scatt ? Min Flor No Stn NS
 60" CFS @ 5034' Ls Wht FxIn w/Pin-Pt Por Barren Grad Micrite Cht Wht-Clear Op Shp Vit Pyr Mass Abd Sh Aqua-Char-Gry AA Fissil No Odor Scatt ? Min Flor No Stn NS
 Ls Wht FxIn w/Pin-Pt Por Barren Grad Micrite Cht Wht-Clear Op Shp Vit Pyr Mass Abd Sh Aqua-Char-Gry AA Fissil No Odor Scatt ? Min Flor No Stn NS
 30" CFS @ 5084' Ls Wht-Crm FxIn Med Pin-Pt IxIn Por Grad "Sandy" OOL Por (w/OOL in pl) V Small-Med OOids Med-Good Inter OOL Friable Por Barren Cht Wht-Clear Transl-Op Shp Vit Pyr Mass Abd Chalk Tr Sh Char-Gry/Grn-Aqua-Blk Carb Fissil No Odor Scatt Inc ? Min Flor (Lt Wht) No Stn NS
 60" CFS @ 5084' Ls Wht-Crm FxIn Good Pin-Pt IxIn Por Grad "Sandy" OOL Por (w/OOL in pl) V Small-Med OOids Good Inter OOL Friable Por Barren Cht Wht-Clear Transl-Op Shp Vit Pyr Mass Abd Chalk Tr Sh Char-Gry/Grn-Aqua-Blk Carb Fissil No Odor Scatt Inc ? Min Flor (Lt Wht) No Stn NS

SALEM (SPERGEN) 5087' (- 2370)

Dolo/Ls Wht FxIn Good Vug Pin-Pt IxIn Por Grad Dolo Wht-Gry "Sandy" OOL Por (w/OOL in pl) Tr Calcite OverGroth Xls In Vug Por Med-Lg OOids Good Inter OOL Vug Leaching Por Friable Barren Cht Wht-Clear Transl-Op Shp Vit Pyr Mass Sh Char-Gry/Grn-Aqua-Blk Carb Fissil Tr Only No Odor Sli Dec Tr Scatt ? Min Flor (Lt Wht) No Stn NS
 Dolo Wht-Gry FxIn Good Vug Pin-Pt IxIn Por Grad Good OOL Por (w/OOL in pl) Tr Calcite OverGroth Xls In Vug Por Med-Lg OOids Good Inter OOL Vug Leaching Por Friable Barren Cht Wht-Clear Transl-Op Shp Vit Pyr Mass Sh Char-Gry/Grn-Aqua-Blk Carb Fissil Tr Only No Odor Sli Dec Tr Scatt ? Min Flor (Lt Wht) No Stn NS
 Dolo Wht-Gry FxIn Good Vug Pin-Pt IxIn Por Grad Good OOL Por (w/OOL in pl) Tr Calcite OverGroth Xls In Vug Por Med-Lg OOids Good Inter OOL Vug Leaching Por Friable Barren Cht Wht-Clear Transl-Op Shp Vit Pyr Mass Sh Char-Gry/Grn-Aqua-Blk Carb Fissil Tr Only No Odor Sli Dec Tr Scatt ? Min Flor (Lt Wht) No Stn NS
 Dolo Wht-Gry FxIn Good Vug Pin-Pt IxIn Por Grad Good OOL Por (w/OOL in pl) Med-Lg OOids Good Inter OOL Vug Leaching Por Friable Barren Ls Wht-Crm FxIn Micrite Barren Cht Wht-Clear Transl-Op Shp Vit Pyr Mass Sh Char-Gry/Grn-Aqua-Blk Carb Fissil Tr Only No Odor Sli Dec Tr Scatt ? Min Flor (Lt Wht) No Stn NS
 30" CFS @ 5130' Dolo Wht-Gry FxIn Good Vug Pin-Pt IxIn Por Grad Good OOL Por (w/OOL in pl) Small-Med OOids Good Inter OOL Vug Leaching Por Friable Barren Ls Wht-Crm FxIn Micrite (w/Pvr Includ) Barren Cht Wht-Clear Transl-Op Shp Vit



CONN

5150



Chalk Pyr Mass Sh Char-Gry/Grn-Aqua-Blk Carb Fissil Tr Only No Odor Sli Dec Tr
 Scatt ? Min Flor (Lt Wht) No Stn NS
 60" CFS @ 5130' Dolo Wht-Gry Fxln Good Vug Pin-Pt lxn Por Grad Good OOL Por
 (w/OOL in pl) Small-Med OOids Good InterOOL Vug Leaching Por Friable Barren
 Ls Wht-Crm Fxln Micrite (w/Pyr Inclus) Barren Cht Wht-Clear Transl-Op Shp Vit
 Chalk Pyr Mass Sh Char-Gry/Grn-Aqua-Blk Carb Fissil Tr Only No Odor Sli Dec Tr
 Scatt ? Min Flor (Lt Wht) No Stn NS

Case= 1;
 Chl= 3300;
 Cal = 20;
 Sol= 7.0%
 LCM= 2#;
 DMC=\$
 1175.20
 CMC=\$
 19,401.20

Electric Logs Run: By Superior Logging:

Dual Induction and Compensated Density-Neutron Logs.

Geologist Left Location at: P.M. 5/29/2012

R.T.D. = 5160' (- 2443)

L.T.D. = 5158' (- 2441)

5200

ROP (min/ft)

5250

5300

TG, C1-C5

100