Pawnee 4414 (-1397) 4422 (-1405) O Mississippi 4650 (-11633) Not Called	Lansing 3819 (-902) 3918 (-901) BKC 4274 (-1259) 4276 (-1261)	Shale 3875 (-858)	Anhydrite 2374 (+643) 2377 (+640) Base Anhydrite 2392 (+625) 2396 (+621)	ELLKevin L. Howar	GEOLOGICAL SUPERVISION FROM 3600' to RTD CND;D/SP;P.E.	SAMPLES EXAMINED FROM 3600' to RTD SURVEYS	DRILLING TIME REPT FROM 5000 to RTD ELECTRICAL	PRODUCTION D&A		Chemical SURFACE	LTD 4738'		COUNTY LOGAN STATE Nations Measurements Are All CONTRACTOR Southwind Drilling Inc	HOWARD m Geologist) 998-5354 ST'S REPORT E AND SAMPLE LOG ELEVATION KB 3017' CFSL &754' FWL RGE 34 W GL 3007' GL 3007'
high at the contain a Altamont shows.	ne top of the my shows of and upper I Due to poo	Mississ foil. Wir Marmato or develo	ippian to the reline log calc	control well ulations sug red 20 feet o ck of oil sho	(KB No gested of mud ws alor	orton; the A with p	McDa Iltam poor h neç	aniel ont A press gative	#2 o , Ma sure:	hickenedry hole armators. DS	e. The Land Kan and Kan T#2 coverage of the Its, it is r	ansir nsas ered	gh thro ig, Kan City J the LK	bugh the LKC then thinned to the Mississippian and ended up 77 feet hasas City, Marmaton and Cherokee zones that pay in the area did not Zones could contain pay. DST 1 was a straddle test covering the KC J zone and recovered 1400 feet of water and some mud with no oil d by all that the McDaniel be plugged and abandoned at 4738 LTD Respectfully Submitted, Kevin Howard #236 Petroleum Geologist
Anhydr LITHOLOGY	DEPTH	Sanda	stone	Limesto DRILL MINU	ING TES I	PER	RFC	001	ale		SEN C	D arb	Sh	Cherty LS Chert Dolomite SAMPLE DESCRIPTION REMARKS
\	2350 60 70 80 90	.5	5 1	.0			5		1	2377	vdrite (+640)	0 3		Ran 7 jts, new #23, talley 295' set at 307' used 170 Sacks of Common 3% gel 2% cc, Circulated, Quality Cement of Oakley, KS 1-5-17; 308' 1-6-17; 1267' 1-7-18; 2625' 1-8-18; 3295' 1-9-18; 3750' 1-10-18; 4189' 1-11-18; 4435' 1-12-18; 4720' 1-13-18; RTD 1-14-18; TD Rig
	2400										#/Anh			Lost Circulation at 3295', Pull 12 stands, mix mud to regain 0700 LC Regain 1100 Call @ 1200 - 1-8-18 Onsite 2040-3500' Drill Bit: Vorel 7 7/8" HE 29H 3/4" jets Lm, tan to brown, fine xllan, abnt. red and green shale, Sh, red to green, trace lm, with ool.
	50													Lm, tan to brown, fine xllan, dense red and green shale, Lm as above with shale. Lm, tan to gray, dense, fine xllan, trace of green and red shale. Lm, tan to gray, dense, fine xllan, scat ool. trace shale. Shale, red and gray
	3700					>								Lm, tan to gray, fine xllan, dense, with shale Lm, tan to gray, dense, fine xllan, with shale, no show Shale, gray and red Lm, white to tan, fine xllan, dense, trace fossiliferous. no show Lm, white to tan, fine xllan, dense
	50													with shale streaks, no show Lm, white to gray, fine xllan, dense trace fossiliferous, no show, Lm, white to gray, fine xllan, dense sli fossiliferous. no show. Lm, white to gray, dense, sli chalky fine xllan, trace chert. Shale Black
	3800													Lm, white to tan, dense, fine xllan, trace very poor ppt porosity, slightly chalky, no show Lm, white to tan, dense, fine xllan, traces of black, green and red shale Lm, white to tan, mostly dense, with pieces of white medium xllan Lm, scatter pieces of tan poorly cemented sandstone, fine grain, soft, friable. no Show Lm, white to tan, dense fine xllan with red and green shale streaks
	50					>								Shale red and green with traces of gray Lm, white to tan, dense fine xllan Shale Black Sand fine grain, tan, friable, no show Lm, white to tan, fine to med xllan, poor ppt porosity, sli fossiliferous. no show Lm, white to tan, trace of chalk, fine to med xllan, no show Shale Oread
	3900													Lm, white to tan, fine to med xllan, poor ppt porosity, no show, trace fine grain tan sand. Lm, white to tan, fine xllan, dense abndt. green and maroon shale Heebner Shale Black Carb. Lm; white to tan fine xllan, dense shale green and maroon. Toronto Lm; white to tan, fine xllan, dense, trace of chert and pyrite, sli fossilif.
											A Zone			trace of chert and pyrite, sli fossilif. no show Shale green and maroon with gray Lansing Lm; white to tan, fine xllan, dense trace of brown chert, poor ppt porosity in scatted pieces. no show Lm; white to tan, fine to some medium xllan, scattered fossil frags, micro oolitic with partial oolicastic pieces scattered in the sample. No show Lm; white to tan, fine grain, fossif in part, micro oolitic, poor ppt porosity
	50			V			>				C Zone			Em; white to tan, line grain, rossir in part, micro oolitic, poor ppt porosity no show Shale: green, gray and maroon Lm; white med xllan, oolic with scattered oil staining, p-f inter oolitic porosity with scattered p vuggy porosity, no show of free oil Shale; green, maroon, gray Lm; white to lite tan, fine xllan, dense with scattered micro oolites; rare staining on several samples, oolites are well cemented and firm in the lm. no show of free oil.
	4000													Shale; dark gray to black Lm; white, fine xllan, dense, no show, Shale; gray to green with maroon Lm; white, fine xllan, mostly dense scattered pieces with poor vugs, no show Shale; green and maroon Shale; dark gray to almost black
	50									G Zor	e Poros	ity		Lm; white to light tan, fine xllan, dense, slightly oolitic Lm; white to light tan, mostly dense, fine xllan, traces of dolomitic Lm with med xlls, slightly chalky, Lm; white to light tan, mostly dense, fine xllan, traces of dolomitic Lm with med xlls, slightly chalky, Lm; white to light tan, mostly dense
	4100			Malfu and E))))	Aut	D [riller	H Zone			Lm, white to tan, shaley, Shale; black Lm; white to tan, fine to xllan, dense, Shale; maroon, gray green Lm, white to tan, micro xllan to fine xllan, dense, no show Lm, white to tan, micro xllan to fine xllan, dense, no show Shale; green maroon
	50			Strad.			>				I Zone			Lm; white to tan, fine xllan, dense shaley Lm & Shale as above Straddle Test DST #2 4150-4187 30"-60"-30"-60" IF: BOB in 2 Min, no return FF: BOB in 2.5
	4200										K Zone			Shale; green, maroon and gray Stark Shale Shale; Black Carb. Shale; green, maroon, dark gray Lm, white to tan, fine xllan, slightly oolit chalky, no show of oil Lm, tan, fine xllan, trace oolitic chalky, dense, cherty. Shale; Black Carb Stark Shale 4393 (-1176) 3791' Mud-Co Onsite 0810 Reid Atkins; Mud Wt. 8.9 lb/gal Vis 58 sec/qt. API Filtrate 7.2 ml/30min. Chlor 2,400 ppm LCM 1 lbs/bbl. Hushpuckney
	50						>				L Zone			Lm, tan to brown, dense, fine xllan, cherty with abundt. brown and tan soft shale, chalky, no show of oil Lm, tan to brown, dense, micro to fine xllan, cherty with abundt. brown and tan soft shale, chalky, no show of oil Lm, tan to brown, dense, fine xllan, Cherty, no show. Lm, tan to brown, dense, fine xllan, Cherty, no show. BKC
	4300			Strad						Work o	Brakes			Shale: green to gray, with traces of black Lm, brown cherty, dense, fine xllan, oolitic to oolistic. Traces of fine grained sand stone, silty, medium hard, poorly sorted, rounded. Lm, brown cherty, dense, fine xllan, oolitic to oolistic. Traces of fine grained sand stone, silty, medium hard, poorly sorted, rounded. Shaley Lm, tan to brown, dense, fine xllan, trace oolitic, shaley, no show. Shale, green to brown
	50			DST#1						Brake p	roblems			Marmaton Lm, tan brown, fine xllan, dense, scat oolitic lime, chalky, no show Shale, green to brown Shale, green to brown Altamont A 4348 (-1333) Lm, tan, fine xllan, dense, very sli oolit. shaley, slightly chalky, no show Shale, green, brown with scattered green and black combined Lm, tan, fine xllan, dense, slightly chalky. Altamont B
	4400			Malfunct	ionin			Dril	ler	and	Brake			Lm, tan, fine xllan, dense, slightly chalky shaley, no show 4372 (-1355) DST #1 4323-4360 30"-60"-0"-0" IF: built to 3/4", no return FF: Pulled Tool Rec: 20' Mud, N Show FPs: 23-25#/Pulled tool SIPs: 164#/Pulled tool HSPs: 2176#/Pulled tool HSPs: 2176#/Pulled tool BHT: 112 deg F Chlor: 4,000ppm) Shale: black, with green and maroon
	50													Lm, tan to brown, dense, micro xllan, abndt. tan chert , no show, no odor Lm, tan to brown cherty and dense AA Lm, tan to brown cherty and dense AA Lm, tan to brown, gray Lm, tan to brown, gray Lm, tan to brown, dense, micro xllan, cherty with chalk Lm, tan to brown, dense, micro xllan, oolitic, cherty and chalky
	4500													Lm, tan to brown, dense, micro xllan, oolitic, cherty and chalky Fort Scott 4475 (-1458) Shale, dark gray, green and black Lm, tan to brown, trace oolitic, dense, micro xllan few pieces with poor vuggy porosity, abndt chert. Shale, dark green and gray Cherokee Sh 4500 (-1483) Lm, tan to brown, trace of micro oolites, dense, micro xllan, abndt chert, with pyrite, chalky no show, no vis. porosity. Lm, tan to brown, scattered micro oolites
	50									Brake	issues			dense, micro xllan, cherty and chalky, no show, no vis porosity. Johnson Zone 4531 (-1515) Shale, black carb. Lm, tan to brown, micro oolitic in part, dense, micro xllan, chalky and cherty no show of oil Shale, gray, black with green Lm, tan to brown, micro xllan, dense, cherty with traces of pyrite, sli chalky,
	4600													Shale, black, green, gray Lm, tan to brown, micro xllan, dense, cherty, with shale, gray and green Shale, dark gray to black, with Lm stringers tan brown Lm, cherty, slightly oolitic, dense Shale as above Lm, tan to brown, some micro oolitic pieces dense, micro xllan, no visible porosity, Cherty, no show Morrow Sh. Shale black, gray and green, with dense Lm streaks,
	50	the 2 to	nost Ever Area Dri	lls back es a foo	to t									Lm, tan to brown, micro oolitic, dense, fine xllan, cherty and chalky, no show Shale, green, black and gray, with inter bedded Ls, dense Shale, yellow, gray green black Shale, yellow, gray green, black with scattered sandstone clusters, fairly cemented but can bust apart, sub round poorly sorted, mostly white with a greenish tent, few clusters contained dark oil stain no odor, Shale, yellow, black and green with pyritic sand clusters.
	4700	belo	function ler and E	ississip ing Auto	pi									Shale as above, black shales with yellow streaks, scattered pyritic sand clusters Shale, black, with scattered green and maroon, few clusters of fine grain, well rounded, poorly sorted white sand, fair to firm cementing no show. Shale, black with clusters of white fine grained well rounded, poorley sorted sand, traces of very fined grained suger sand, pyritic, No Show Shale and sand clusters as above
	50													Shale, mostly black and dark gray with yellow, sand white, firmly cemented, fine grain no show Shale mostly black, still caring white well cemented sand, white, no show Shale and sand as above Total Depth 4740' (-1723) LTD 4738' CTCH-9:16 am - 10:20 am 9:16 am Short Trip 10:30 am - 11:30 am 1/12/2018 CTCH 11:30 am - 2:00 pm Trip Out for Log 2:00 pm 4:00 pm Log 5:00 to 7:00 as 30 am 1/12 4700 4700 Mud-Co Onsite 0800 Reid Atkins;
														Log 5:00 to 7;00 pm Lost Circulation After Straddle DST #1 1/13/18, going back in hole @10:30 am Pull 25 stands of pipe work to regain circ most of the day, regain @ 7:30 pm go back in hole to condition for DST #2 Reid Atkins; Mud Wt. 9.5 lb/gal Vis 58 sec/qt. API Filtrate 9.6 ml/30min. Chlor 4,000 ppm LCM 1 lbs/bbl. working on getting mud wt down to 9.2 for the log 4740' Mud-Co Onsite 0810 Reid Atkins; Mud Wt. 9.3 lb/gal Vis 56 sec/qt. API Filtrate 8.8 ml/30min. Chlor 5,000 ppm LCM 2 lbs/bbl.
	4800													
	50													
	4900													
	50													
	5000													
	50													
	5100													
	50													
	5200													