

RS2 Plan for offset to Riley-Surrat Well Number One, (RS-1)

Objective: Confirm or deny speculation on presence or absence of oil in the pre-Paleozoic formations in the lease area near Ellis Chapel east of Wynne Ar. The RS-1 well was spudded Thursday June 21, 1952 and logged Tuesday June 24, 1952. Since then, speculation exist about presence of small quantities of oil coming from the well after June 20, 1952. To this day, no commercial production is obtained in eastern Arkansas from post-Paleozoic formations. But nearly all lands surrounding this lease are under mineral lease for drilling of Fayetteville Shale Gas, a secondary target to the upper zones considered here-in.

Basis:

A) First & Second Hand Eye Witness Reports

1. The original land owner reports a blow-out, getting oil on her chickens and residence, with considerable problems containing the blow-out. Another home owner across the road was reported to have stated oil blew over to his house front.
2. A second eye witness recalled getting married at Ellis Chapel on Friday June 20, 1952, returning on Saturday June 21, 1952 to see oil on trees adjacent to the well.
3. Second hand reports from a retired driller, observing the well in drilling, stating "the well was as good an oil well" as any he had seen in Illinois.
4. Another second hand report was that the well would likely make 25BBL/DY but the well site geologist recommended against completion due to low oil price and excessive transportation distances. Another report was the well tested 5 bbl/dy.
5. Filing papers with the AR O&G Commission were that the well was "dry and abandoned, drilled without surface casing".

B) Geological Reports, Detailed by Armstrong, O&G Potential of the ME of NEA; oiljetpump.com

- o 93 miles Southeast from location a 6foot paraffin saturated core submitted to Miss. state Geological survey from Bardwell #1 taken at 2264 just below Arkadelphia
- o 64 miles Southwest an 8" section of oil saturated core recovered from Nacatoch formation
- o Driller logs from Cross and St. Francis Counties report oil shows in pre-Paleozoic formations from Wilcox and lower. Twenty-one miles southwest from RS-1 a cretaceous well burned out of control in the 50's as reported by several eye witness to author.
- o analysis of electrical survey log made with 16" and 64" normal, 18'-8" lateral, and SP Sondes indicate 3 perspective zones in upper cretaceous formations. Analysis of the most perspective zone at 2220 feet indicates 12 bpd production if oil or 200mscfd if gas.

C) other wells in vicinity: Cross County Oil company drilled a total of 6 wells in 52-53 (RS-1, Brown 2.6mi. west pipe stuck in Paleozoic formation, Rhoades 7.7 miles North, Newman, 5.9miles w-nw, Smith, 18.4miles NE, Whitby, 11.5miles NE-N. In 1953 Seaboard drilled two core holes nearby, D 2.2 miles NE, pipe stuck in cretaceous, C 15.6 miles North. In early 60's independents drilled, Tucker, 11.4 miles SE and Armstrong 10.1 miles east, CNG-Cockrell Carter1 was drilled to 14775 ft in 1979 and is the closest SW well, some 15.1 miles, S-SE from RS1.

D) Recent activity by Maverick, Wheatly 18 miles SW, and McCrory 15m W-NW, from RS-1 reported good Fayetteville Shale gas shows, and a completion in the Wheatly well. A review of electric & driller log in the McCrory well also placed 10 feet of pay in the Cretaceous. A Hallwood well 31 miles south & 2 miles west reports 600 feet of Fayetteville shale and a completion in 100 feet of Fayetteville, with additional wells planned by Hallwood.

Target Zones:

Based on drilling rate of 20ft/hour and time scale of witness report number 2, particular attention to cuttings between a depth of 500 and 1,500 feet for oil signs should be observed.

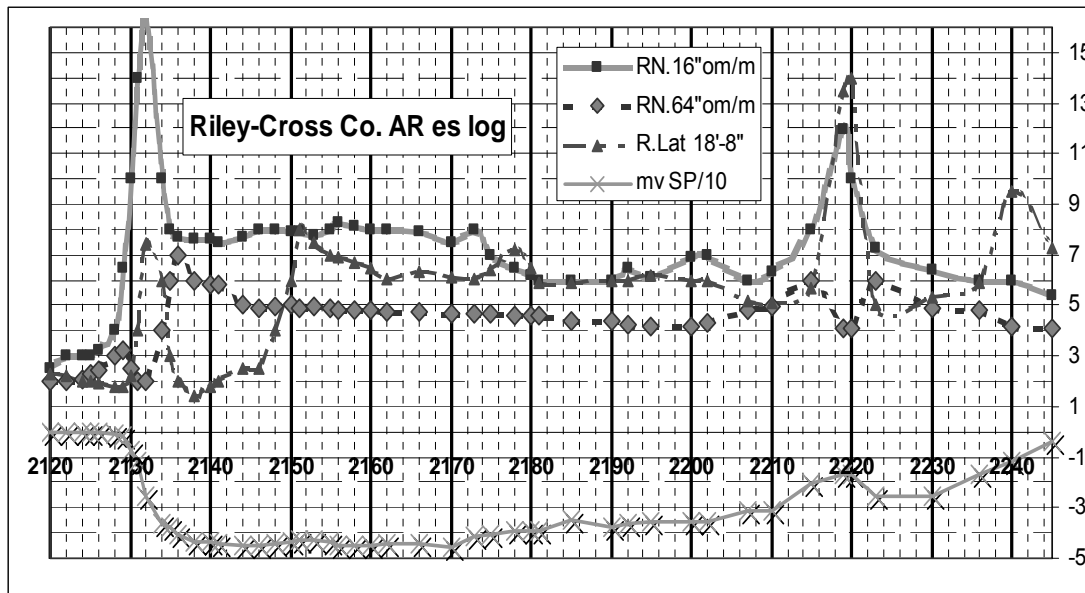
Based on analysis of ES tool data, formations below the limestone cap of the Nacatoch should have careful examination at depths of:

1. 2130 to 2140 feet, 2220-2230 ft, 2355-2365, 2465-2475, 2495-2505.

General Lithology & Implications for Electrical Survey Tools

The upper Cretaceous formations in the region are deposited below Midway Shales, lower Cenozoic era.. The Midway top, at base of Wilcox, for this well is estimated at 1590 feet and base at 2010. The

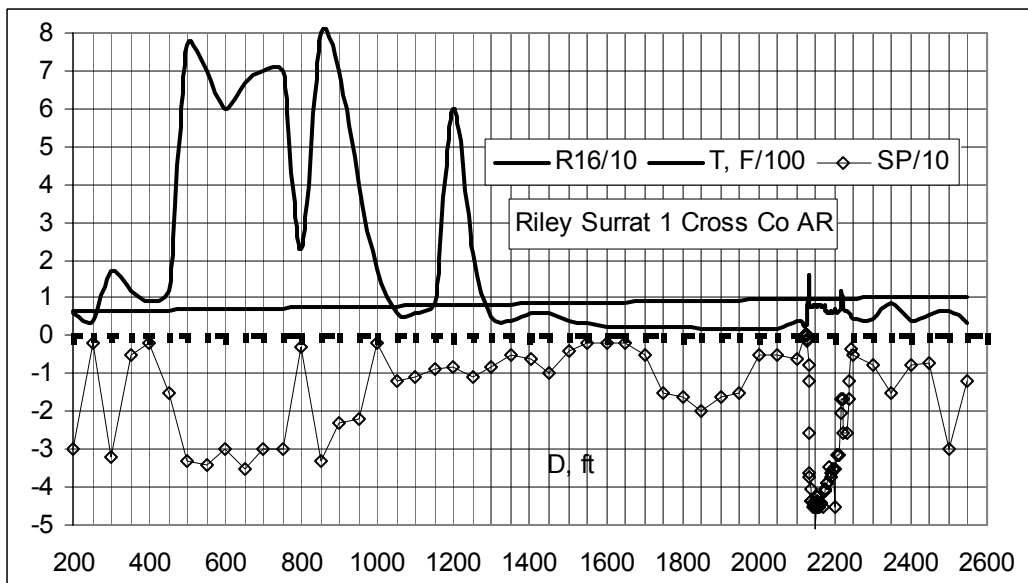
Arkadelphia Marl top is called from ES log as the first separation between R16 and R64 with the top being 2010 feet of measured depth. The Nacatoch sand is taken to be just below a thin limestone cap at about



2130 feet. The SP curve of Nacatoch top is just slightly reduced (about +2.5MV suppression) between 2136 and 2142 feet. A possible result of either or both 1)shale; given reduced R16" values over the range or 2)hydrocarbon suppression.

The Nacatoch and other regional Mesozoic and Cenozoic sands typically occur as high porosity, modestly

cemented sands, with porosity ranging from 20% to 40%, (25%-34% sidewall core porosity Engler1 18 miles S-SE of Riley) Such high porosity sands have limited invasion by mud filtrate. For this range of porosity, the invaded zone diameter to hole



diameter ratio is about 2, 16 inches on a 8 inch hole. Thus resistivity of the short normal, R16, tool may approximate true formation value, investigation radius of 32 inches.

Brief Review of ES tool Borehole Measurement Model

The borehole model of ES tools uses the concept of flushed zone resistivity, invaded zone resistivity and true resistivity such that

$F = (S_w^2)R_t/R_w = (S_i^2)R_i/R_z = (S_{xo}^2)R_{xo}/R_{mf}$. The basis for interpretation charts is a mixed zone salinity defined as $1/R_z = z/R_w + (1-z)/R_{mf}$ & $z = \text{por}/2 - .01$ with an imaginary water wet mixed zone so at $S_w = 1$ $R_t/R_w = F = R_i/R_z$ or $R_i = (R_t/R_w)R_z$ and $R_{xo} = R_i R_{mf}/R_z$. In the case of shale free HC zones, the accepted postulates are: $S_{xi} = (S_w)^{0.2}$ and $S_{wxo} = (S_w)^{0.2}$. These models give water saturation by ratio as $S_w = [(R_{xo}/R_t)(R_w/R_{mf})]^{0.625}$ and $S_w = [(R_i/R_t)(R_w/R_z)]^{0.625}$. The value of R_{xo} is typically measured using either a micro normal or MFL in fresh mud systems. Neither are available for RS1 well, but the invasion method can be applied, given a general knowledge of porosity. A detailed review of invaded zone ratio method is given by Armstrong, and can be downloaded from www.oiljetpump.com.

Determination of Formation Factor

Formation factor is inversely related to porosity. Two methods for calculation of F in unconsolidated sands are: Humble formula: $F = 0.62/\text{por}^{2.15}$ (8.3 at 30% porosity) or Archie: $F = 1/\text{por}^m$, m varies with cementation, 1.7 to 1.8 for moderately to slight cemented sands, ($F = 7.7$ at 30% porosity $m = 1.7$) use average of $F = 8$ and for $R_w = 0.75$ R_o for clean sand is 6. In this brackish water sand, a corrected log resistivity greater than 6, merit additional investigation for possible hydrocarbon accumulations.

Tixler method for Sw with invaded zone resistivity

For low to moderate porosity rocks, Tixler uses the following relationship:

$S_w = (R_i/R_t) / (\text{alog}[SP^{2*}(-2/100000) - 0.0108*SP - 0.0118])$, with R_i/R_t determined from invasion charts for either normal combination of R16 and R64 or Short Normal, R16, and Lateral, R18.8". Invasion correction charts were regressed for values of $R/R_{mud} < 3$ & > 1 , as follows:

$R_i/R_m = 0.63 + (R_{64}/R_m)(0.57R_{64}/R_m - 6.7) - R_{16}/R_m(0.49R_{16}/R_m - 7.08)$ & $R_t/R_m = 1.1R_{64}/R_m - 0.1$

$R_i/R_m = 3.1 + R_{18}/R_m(0.51R_{18}/R_m - 5.95) + R_{16}/R_m(4.26 - 0.1R_{16}/R_m)$ & $R_t/R_m = R_{18} - 8/R_m$

Nacatoch Formation Water Salinity in Cross County

At the latitude of the Riley Surrat well, there is considerable variation of water salinity. For example, to the east of Crowley's ridge borings into the Nacatoch indicate a lower salinity. Water salinity by maps of the McNary-Nacatoch sand indicates a TDS between 3000 and 10,000 ppm or about 5000 ppm with resistivity on the order of one o-m/m. Water resistivity by SP curve indicates resistivity of about 1om/m at Nacatoch depth, or brackish water.

Thickness of limestone cap: at 2130ft

- o Distance between Lateral peak at 2132 and "reflection peak" at 2151, AO is 18.7ft, $t = [(2152-2132)-18.7] = 20-18.7=1.30\text{ft}$.
- o slope of reflection peak of Lateral at bottom = $(2151-2148) = 3\text{ft}$.
- o distance between LN "crater rims" at 2129 and 2136 for AM of 5.3ft is $(2136-2129)-5.3 = 7.0-5.3 = 1.7\text{ft}$.
- o SN: top at 2 times $R_s = 2*3=6\text{m/m}$ which happens at 2129. Peak is approximately bottom of LS or 2132 and $t = 2132-2129 = 3\text{ft}$.
- o Average thickness by is $(3+1.3+1.7+3)/4=2.2\text{ft}$.

The most likely thickness of hard Lime cap is 2 feet, with a top at 2131 and base at 2133.

Indication of hydrocarbon below limestone cap are:

- o high readings on 64" normal between 2136 and 2142;
- o the resistivity trailer on Lateral between 2152 and 2162 with constant SP and 16" normal
- o the rounded SP between 2132 and 2140;
- o increase in SP between 2138 and 2145,
- o decrease in LN between 2144 and 2166 in presence of constant SP and SN.

Calculation R_w from SSP

SSP is about -50, BHT is about 100F, or $K=75$, $R_{mf}/R_{we} = \text{alog}(-50/-75) = 4.7$, estimate $R_{mf}=0.67R_m = 4.5*.67= 3.0$, $R_{we}=3/4.7= 0.64$ & $R_w=1.0$ Fig 6-8 Pirson.

Porosity and S_w

Looking at the thin Limestone cap, depth of 2132ft: First correct the Short Normal for bed thickness, $R_{sn}/R_s=16,5/2=8.3$ ($e+am$)/ $am=40/16=2.5$ $cf=2.5$ $R_{16t}= 2.5*16.5=41.3$ (Fig 10-6 Guyod).

Next correct the lateral tool for bed thickness(Fig 6-19 Guyod) $t/ao= 2/18.7=0.12$, $R_a/R_s= 7.5/2=3.75$, $cf=2.3$ $R_{lt}=2.3*7.5=17$

Estimate porosity without invasion correction to see what the invasion effect may be. $R_m/R_m = 41.3/4.5 = 9.2$, and $F=13$, fig 7-13 Pirson. This indicates a high porosity and shallow invasion.

Use R16 and Lateral medium invasion chart (Fig 8.13 Pirson). $R_{16c}/R_m = 41/4.5=9.2$ and $R_{18'c}/R_m = 17/4.5=3.8$, $R_i/R_m=12$ $R_t/R_m=3.8$ $R_i/R_t= 12/3,8=3.2$, $F=17$

2140ft $R_{sn}/R_m=7.9/4.5=1.8$, $SP=-45$, $R_{ln}/R_m= 6/4.5=1.33$, $R_i/R_m=4$, $R_t/R_m=1.4$, $R_i/R_t=4/1.4=2.9$

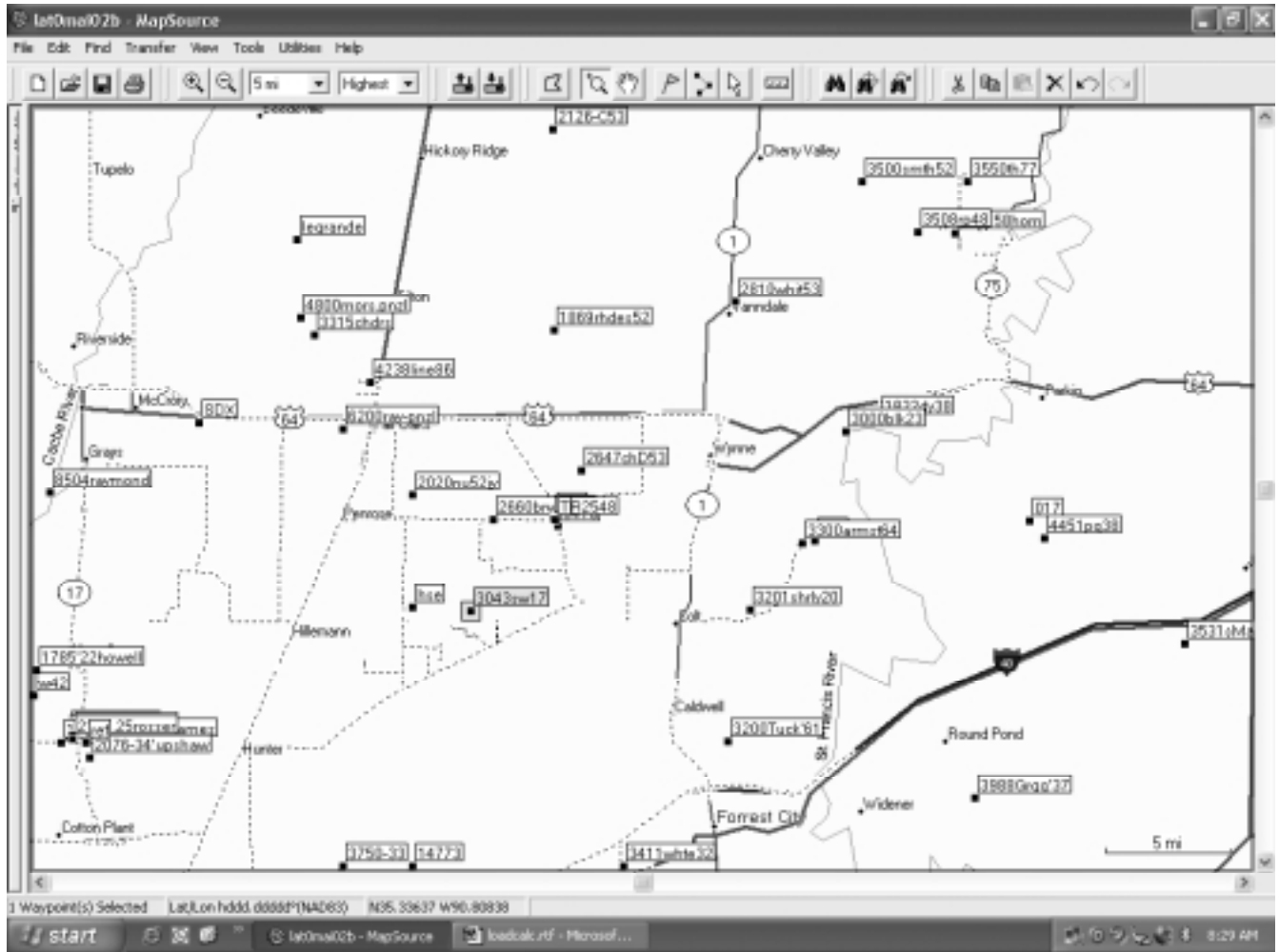
$F=8*4.5/1.5 =24$ (approximately 20% porosity)

2142 no correction for bed thickness, shallow invasion or high porosity

$R_{64}=5.7$ $R_{16}=7.5$ $R_{64}/R_m=1.3$ $R_{16}/R_m=1.7$ $R_i/R_m=3.5$ $R_t/R_m=1.3$ $R_i/R_t=2.7$ $S_w=2.7/3=0.90$

On this basis, the Limestone cap, depth of 2132ft does not have good possibilities of acting as a seal for hydrocarbon accumulations immediately below the limestone. This is indicated by the 90% water saturation at 2132feet depth, although quantitative analysis of curve shapes between 2136 and 2166 would indicate to the contrary.

Other Drillings in the Area are detailed in the below map.



The above map shows drillings in this area of Riley Surrat well 1, RS2548. Typically, well depth is given first, followed by abbreviated name and last is year of well drilling. This map does not show wells recently permitted and or drilled in this area for Fayetteville Shale Gas. The pace of permitting such wells would quickly out date any published map. FSG well information can be obtained of the AO&G records for Cross, Lee, St.Francis, and Woodruff counties. Not less than 12 wells were permitted in 2006.

opa Review of Riley-Surrat Well of Cross Co. AR N35.1924 W90.899 10/22/2006

Below is drillers log of the Engler 1 well, located 20.5 miles Southwest of RS-2. This drillers log should give some indication of formations to be encountered in drilling of RS-2. However, formation tops are likely to be encountered some 100 feet higher in RS-2.

Engler 1 St Fran Co. driller log

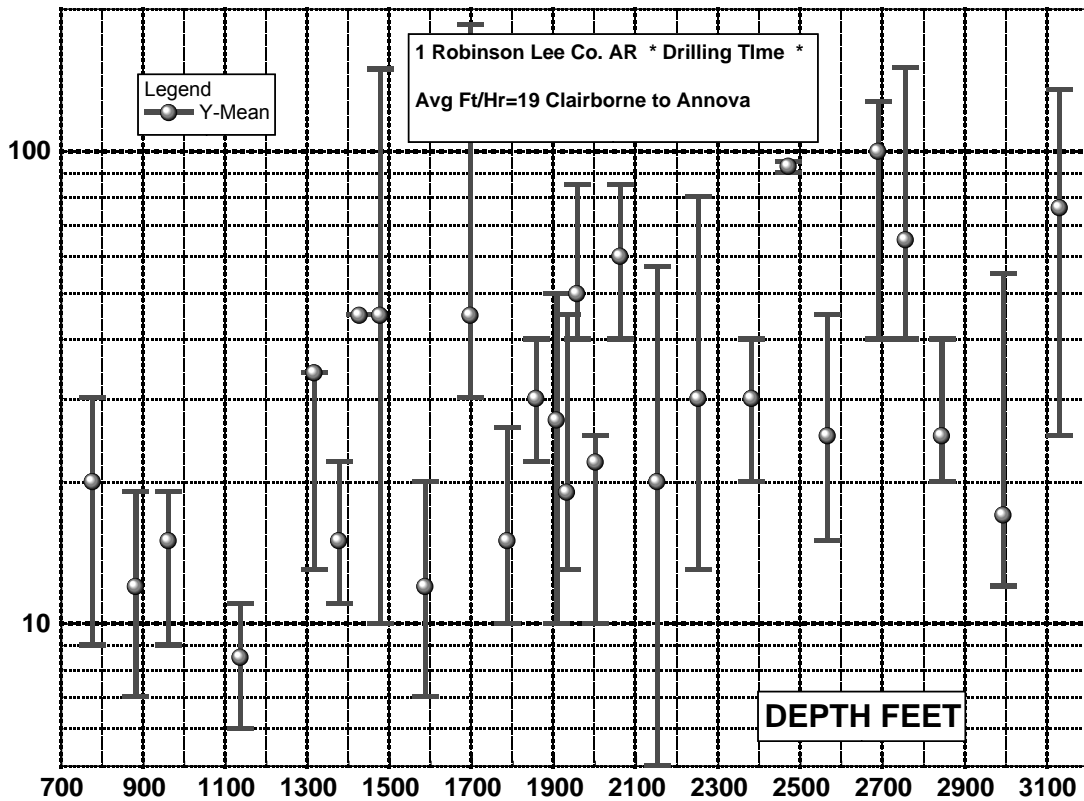
d, ft	description	d, ft	description
Claiborne 135?	Claiborne Top	<i>Wilcox</i> 1170	med ss trc por dead stain
	260		layered slty ss & shle
	cement drilling plug		1385
	gry flaky clay lignite trace		faint stain tight laminar ss
	300		1405
	gray gritty fissle shale		as 1385 w/thk lign at base
	330		1435
	sandy cly		slty ss
	350		1445
	fissle ligntic shle		thk lignite
	360		1530
	poorly fissle shale		angular ss trace por
	370		1540
	fg p/sort shly tight snd		slty ss
	395		1590
	poorly fissile shle		sandy shle w/ trc lign
	440	<i>Midway</i> 1645	PORTERS CREEK frmnTop
	loose sand trace chert		1655
	460		sandy shle
	sandy clay		1670
	495		slty ss
	loose sand trace lignite		1700
	510		gritty shle
	gritty brown clay. possible dead stain		
	555	<i>Midway</i> 2100	fissle shle CLAYTON top
	shly ss	<i>Arkadelphia</i> 2180	calcrs shle
	565		2212
	fissle ligntic shale		calcrs shle
	590		2236
	siderite ss w/shly matrix		shale
	610	<i>Nacatoch</i> 2240	frmn top
	plastic cly few sandy spots		2243
	650		drk gry sd
	silt clay trace lignite		2246
	680		drk gry limy sd
	poorly fissle shale		
	700		2248
	shaly ss		drk gry limy sd
	705		2250
	plastic clay		drk gry limy sd por=25%
	740		2252
	shly ss		drk gry limy sd 245 md
	750		2256
	poorly fissle shale		shaly sd 219md
	800		2268
	vfg ss w/shly mtrx		drk gry limy sd 47md
	810		2294
	poorly fissle shle		gry sd 34%p 504md
	925	2347--55	gry shly med grnd ss
	fg ss shly matrix	2367-87	crse grained ss
	930	2387-	2/2/2 gy.sh.ss/clc.ss/shly
	plastic shle	2407	ss
	930		2400
	plastic shle		ss w/layers dense l/s
	1070	<i>Saratoga</i> 2510	calc shale
	fine2crse ss in shly mtrx		2600
	1088	<i>Marlbroo</i> 2690	calc shale
<i>Claiborne</i> 1088	CANE RIVER Frmn top	k	
	1100		2698
	sandy shle w/gravel Top SW		calc snd pyrite
	1110		basal s/s 2690
	plastic shale		ss w/quartz basal ss
	1120	<i>Atoka</i> 2705	Atoka
	gravelly snd		2725
	1143		TD
	vfg ss w/shly mtrx		
	1155		
<i>Wilcox</i> 1155	formation top		
	1160		
	med ss trc por		

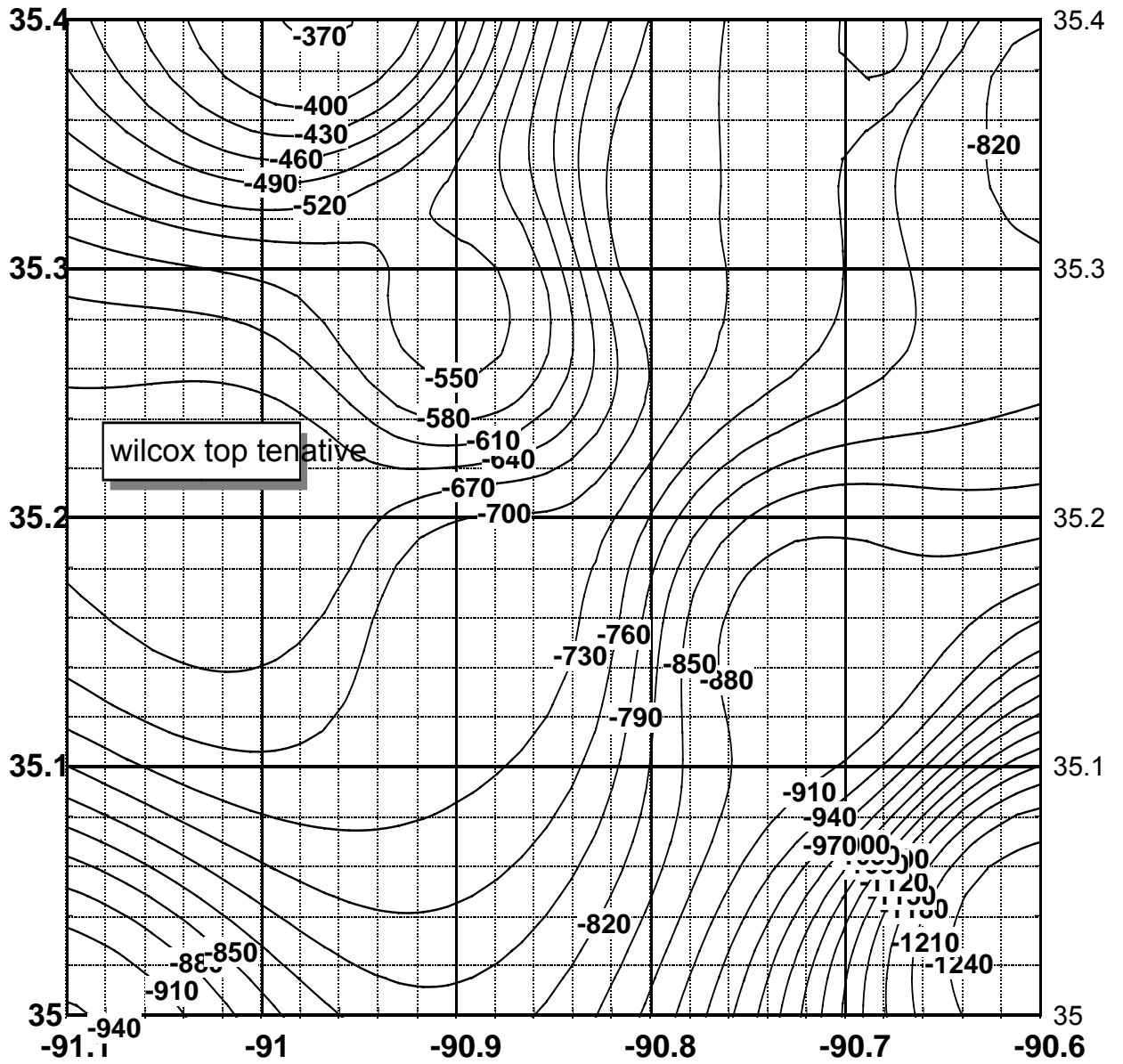
Start June 1947, complete Aug24 1947, 209Ft El datum, .Rmud 3.1/ 77F 127F bht

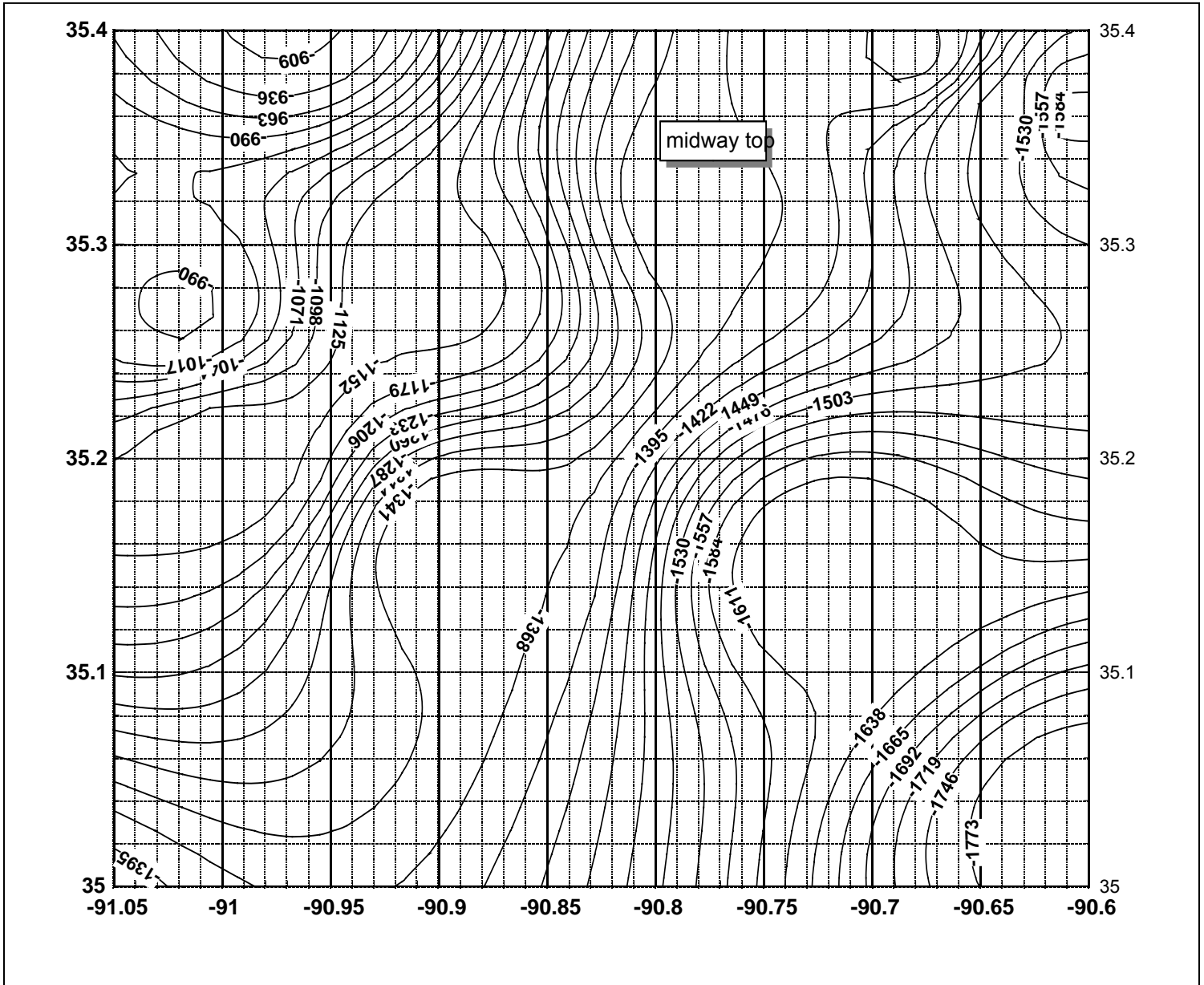
No.1 LW Robinson Lee Co. AR

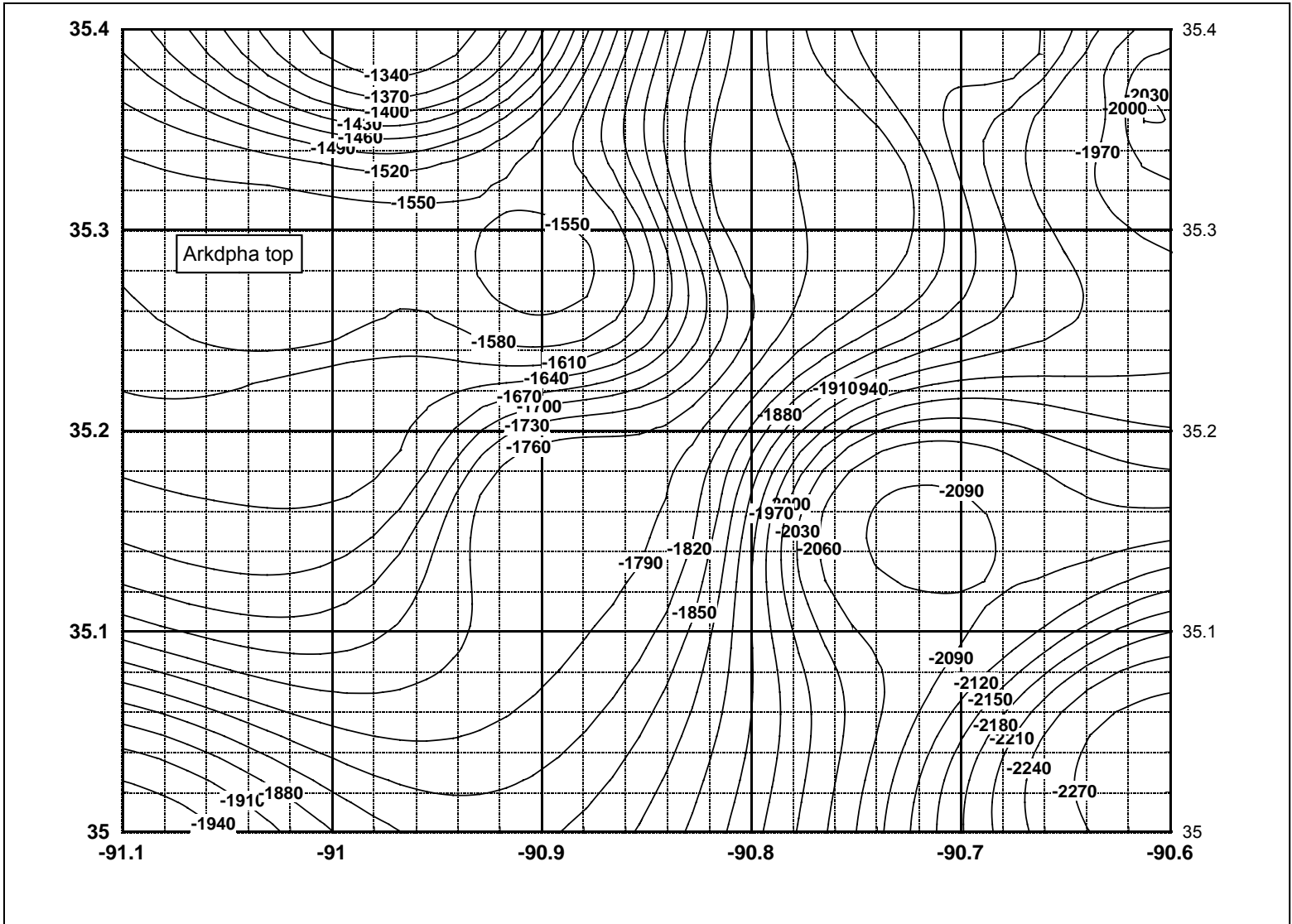
Drilling time in feet/hr for the No.1 LW Robinson drilled 1948, in Lee Co. AR. Is provided below. The average drill time was 19 feet/hour. The median variance range was max time of 45f/h and minimum of 13f/h.

The called tops follow as: Unspecified alluvial at less than 250ft., Jackson 250 ft, Claiborne 740ft. Cain River member of Claiborne 1220ft, Wilcox 1430, Midway top Porter Creek member 2205, top Clayton member and base Porter creek Arkadelphia top 2725, Nacatoch top 2785, Saratoga Top 3075, Annova Marlbrook top 3175, Ozan top 3448 Atoka top 3545ft measured from elevation of 203ft. The well start was May10 and completed June 14 in Pennsylvanian Atoka at TD of 3643.









	Analysis by R64 Shallow Invasion Chart						
depth	2138	2140	2142	2150	2160	2170	2184
SP	-45	-45	-45	-50	-50	-50	-50
Rm	4.5	4.5	4.50	4.50	4.50	4.50	4.50
R16	7.75	7.75	7.50	8.00	8.00	7.30	6.00
R64	6.00	5.90	5.75	5.00	5.00	4.90	4.75
R16/Rm	1.72	1.72	1.67	1.78	1.78	1.62	1.33
R64/Rm	1.33	1.31	1.28	1.11	1.11	1.09	1.06
Ri/Rm	3.43	3.54	3.42	4.91	4.91	4.19	2.75
Rt/Rm	1.37	1.34	1.31	1.12	1.12	1.10	1.06
Ri/Rt	2.51	2.64	2.62	4.38	4.38	3.82	2.59
Sw(SP)	0.96	0.97	0.96	1.00	1.00	0.90	1.00

	Analysis by R18-8		Shallow Invasion					
2150ft no correction for bed thickness, shallow invasion or high porosity	Depth	2132	2152	2155	2158	2165	2220	2502
R64=5 R16=8 R64/Rm=1.1	SP	-49	-49	-49	-49	-49	-49	-49
R16/Rm=1.8 Ri/Rm=5 Rt/Rm=1.1	Rs	2.00		7.75	8.00	7.00	5.00	4.30
Ri/Rt=4.5 Sw>1	e	4.00		20.00	20.00	20.00	4.00	5.00
	e+am/am	4		16	16	16	4	4.75
	R16	16.50	8.00	8.00	8.10	8.00	12.00	6.70
	R16/Rs	8.25		1.0323	1.0125	1.143	2.4	1.56
2160 ft no correction for bed thickness, shallow invasion or high porosity	CF16	1.70	1.00	1.00	1.25	1.25	1.25	1.03
R64=4.9 R16=8, divided by Rm=4.5	R16c	28.05	8	8	10.125	10	15	6.87
R64/Rm=1.1 R16/Rm=1.8 Ri/Rm=5	R18.8	7.5	8	6.25	7	6.5	14	9.00
Rt/Rm=1.1 Ri/Rt=5/1.1=4.5 Sw>1	R18/Rs	3.75		0.81	0.88	0.93	2.80	2.09
	e/AO	0.21		1.07	1.07	1.07	0.21	0.27
	CF18.8	2.6	1	1	1	1	1.75	1.25
2170 no correction for bed thickness	R18.8t	19.5	8	6.25	7	6.5	24.5	11.25
R64=5 R16=7 R64/Rm=1.1	Rmud	4.5	4.5	4.5	4.5	4.5	4.5	4.50
R16/Rm=1.6 Ri/Rm=4 Rt/Rm=1.1	R16c/Rm	6.23	1.78	1.78	2.25	2.22	3.33	1.53
Ri/Rt=3.6 Sw=3.6/3= 1.2	R188c/Rm	4.33	1.78	1.39	1.56	1.44	5.44	2.50
	Ri/Rm	12.00	1.39	3.08	4.16	4.54	12.00	2.91
2184 use Lateral	Rt/Rm	4.33	1.78	1.39	1.56	1.44	3.40	2.40
R188=6 R16=6 R/Rm=1.7 Ri/Rm=1.7	Ri/Rt	2.77	0.78	2.22	2.67	3.14	3.53	1.21
Rt/Rm=1.7 Ri/Rt=1 Sw=1/1.7=0.59	Sw(SP)	0.94	0.27	0.75	0.91	1.07	1.20	0.41
	F	20.84	4.69	6.72	8.25	9.08	20.61	4.54
	Rt	19.5	8	6.25	7	6.5	15.3	10.80
	Sw	1.03	0.77	1.04	1.09	1.18	1.16	0.65
	Sw(R16)	0.64	1.11	2.50	1.85	1.69	0.64	2.64
	Rz	2.38	1.92	2.08	2.15	2.19	2.38	1.91
	F(Rz)	22.7	3.3	6.7	8.7	9.3	22.7	6.87
	Rxo	58.1	8.3	17.1	22.3	24.0	58.1	17.6
	bbl/acft	-127	1557	-97	-299	-506	-354	600
	Rw	1.00	1.00	1.00	1.00	1.00	1.00	1.00
	PSP	-49	-49	-49	-49	-49	-22	-22
	alpha	1	1	1	1	1	0.449	0.449
	Swshale	0.65	0.75	0.89	0.87	0.88	0.29	0.54

Another method of analysis is by Archie's' similar rock method, which stated in math terms is by ratio:

$S^2 = FRw/Rt$ if F & Rz are identical between two sections and section a is at unity water saturation gives: $(1 \cdot Rt)_a = (S^2 \cdot Rt)_b \Rightarrow S_b = \sqrt{(R_a/R_b)}$, another guideline when using Lateral curve is to choose a section where the correction for bed shoulder effects and invasion are similar. For this reason the section at 2132 is selected, where R18-8 is 7.75.

For section 2220 then $S \leq \sqrt{(7.75/14)} \leq 0.744$

At depths 2355 2502, $S \leq \sqrt{(7.75/9)} \leq 0.93$

When Formation factors are not identical the ratio of F may be considered as simply $Si^2 = FRz/Ri \Rightarrow (RiSi^2/F)_a = Rz = (RiSi^2/F)_b$

Which gives $(Ri^2/F)_a = Rz = (Ri \cdot 0.7^2/F)_b$ $Fa/Fb = 2Ria/Rib$ and using section at 2132 as the "a" section then $2 \cdot 16.5/Rib = Fa/Fb$ and

$(1 \cdot Rt/F)_a = S^2 \cdot Rt/F)_b \Rightarrow S_b = \sqrt{(R_a/R_b)(Fb/Fa)} = \sqrt{(R_a/R_b)(Rib/33)}$

At 2220 then $S \leq \sqrt{(7.75/14)(11.75/33)} \leq 0.44$

At depth 2355, then $S \leq \sqrt{(7.75/9)(9.25/33)} \leq 0.49$

At depth 2502, then $S \leq \sqrt{(7.75/9)(6.75/33)} \leq 0.42$

Analysis by	Pirson	Method
MD	2220	2502
SSP	-49	-49
ASP	-22	-22
Rm	4.9	4.9
R16	12	6.7
R18	14	9
e	4	5
CF-R18	1.75	1.25
CF-R16	1.25	1.03
Ro=R18t	24.5	11.3
Rxo=R16t	15	6.9
Rw	1	1
alpha	0.45	0.45
Rmf/Rwa	1.96	1.96
Rwa	1.42	1.42
Fa	5.38	2.47
Rmf/Rw	4.50	4.50
Fa/Ft	0.44	0.44
Ft	12.31	5.66
Sw	0.71	0.71
Sh	0.37	0.37
Swm	0.34	0.34
Soil	0.29	0.29

	Analysis by R64 Shallow Invasion Chart								
depth	2137	2138	2140	2142	2150	2160	2170	2180	2184
SSP	-50	-50	-50	-50	-50	-50	-50	-50	-50
Rm	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90
R16	7.80	7.75	7.75	7.50	8.00	8.00	7.30	6.00	6.00
R64	7.00	6.00	5.90	5.75	6.00	5.00	4.90	4.60	4.75
R16/Rm	1.59	1.58	1.58	1.53	1.63	1.63	1.49	1.22	1.22
R64/Rm	1.43	1.22	1.20	1.17	1.22	1.02	1.00	0.94	0.97
Ri/Rm	2.22	3.23	3.34	3.22	3.51	4.63	3.95	2.77	2.59
Rt/Rm	1.47	1.25	1.22	1.19	1.25	1.02	1.00	0.93	0.97
Ri/Rt	1.51	2.59	2.73	2.71	2.82	4.52	3.95	2.97	2.68
Rt	7.21	6.11	6.00	5.84	6.11	5.01	4.90	4.57	4.74
Ri	10.90	15.84	16.38	15.80	17.22	22.67	19.34	13.55	12.71
Rxo	13.63	20.54	21.32	20.69	22.32	30.85	26.48	18.91	17.56
Rw	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Rz	2.23	2.15	2.14	2.13	2.15	2.05	2.04	2.00	2.02
Rmf	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79	2.79
Sw(SP)	0.50	0.86	0.91	0.90	0.94	1.50	1.31	0.99	0.89
Sw(A)	0.99	0.99	0.99	0.99	0.99	1.00			