

30-19-21

TORP

15-135-00675

Memo

Post-It® Fax Note	7671	Date	4/1/97	# of pages	1
To	Tim Carr	From	Rodney Reynolds		
Co./Dept	KGS	Co.	TORP		
Phone #	cc: Paul G + Saibal	Phone #	4-4491		
Fax #	4-5317	Fax #	4-4967		

To: Paul Willhite
 Don Green
 Shapour Vossoughi

From: Rodney Reynolds

CC: Tim Carr
 Paul Gerlach
 Saibal Bhattacharya

Date: April 1, 1997

Re: Wellbore flowing pressures in the Schaben Field

I am in receipt of a copy of the recent fluid level data acquired by Ritchie Exploration on the wells they operate in the Schaben Field. From my experience as a production engineer, I am familiar with how this data is acquired, the instruments used to acquire this data, the accuracy limitations associated with these instruments, and how to interpret the data. My evaluation of the data indicates that of the 23 wells on which data was received, 15 of the wells are operating in a pumped off condition. This is the general practice of the oil industry, especially when dealing with marginal production. However, occasionally situations dictate that backpressure be held against the formation in wells that have high productivity, produce excessive amounts of water, to assist in reducing lifting costs, or in some instances may assist in maintaining some percentage in oil cut. I also spoke with Danny Biggs (production superintendent) and Jack Gurley (petroleum engineer) for Pickrell Drilling Company, concerning fluid levels on their wells. They indicated that they have not recently shot fluid levels, but in general they try to pump the wells off, however they have a few large water producers they cannot pump off. They said its time to shoot fluid levels and they will supply a copy of the results to me.

I have also compared the recently acquired fluid level data to the fluid level information acquired from the historic information contained in the well files, on which TORP based the model and simulation. The recent data correlates with the data we used, with 2 exceptions. The recent data indicates the Moore B-6 is carrying approx. 200' fluid above the perforations and the well files indicated it to be pumped off and the Moore D-4 which Ritchie field personnel indicated to me had "a lot of fluid in the hole" and the recent data indicates it is pumped off.

15-135-30047

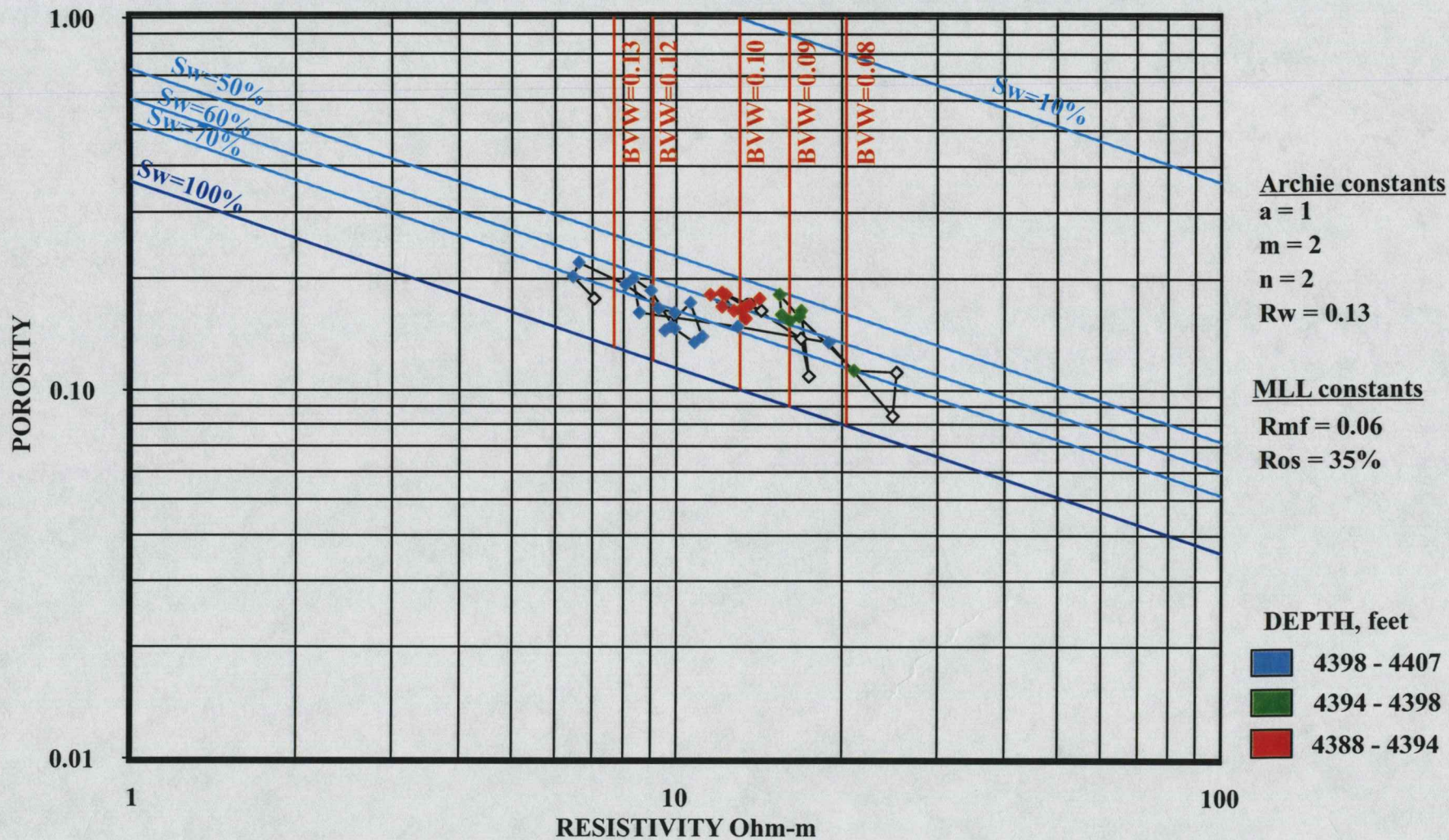


Figure --: Super-Pickett plot of Moore D#1 well. Porosity derived from micro-laterolog (MLL). Well produced from interval 4388-4394 feet. Initial production rates: 195 bopd and no water.

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Total diss
solids

Name	Interval	Vis.	Oil gr.	B= FVF	K	Phi	C	Skin	Final pr.	Temp	Water Sp gr.	Chlorides	Sulfates	Calcium	Magnesium	Kh/Vis.
	To From	cp			md		vol/vol/psi*10 ⁶			F						
Moore B5	4395 4405	3		1.2		0.15	10	6.87	1375	118						
15-135-30062	4385 4395	3		1.2	30	0.15	10	5.41	1382	118						
Moore B1	4430 4440										1.029	25800	2500	2140	300	
15-135-29844	4313 4325		39 @ 60							119						
	4380 4396									116						
	4330 4396									116						
	4396 4410	2.5	42.6	1.2	115	0.15	12	-3.96	665	120						
	4410 4420	2.5		1.2	13.65	0.15	10	2.02	1397	119						
	4420 4430	2.5		1.2	87	0.15	12	-2.91	1413	120						
	4430 4440									118						
Moore B4	4402 4412	3		1.2	11.45	0.15	10	0.353	1273	118						
15-135	4412 4422	3		1.2	216	0.15	10	20.8	1377	120						
30042	4393 4402									118						
Moore B6	4415 4427									112						
15-135	4427 4437									112						
19004	4437 4447		39 @ 60							118						
Moore C2	Prod. Int			38												
19003	4304 4319									110						
Moore C3	DST 7															21.75
21024	DST 6				3.45											9.19
Moore D1	4392		28 @ 77F									25000				
30047	4366 4383	3		1.2	1.17	0.15	10	0.727	1405	100						
	4383 4398	3	40.5-60	1.2	28	0.17	10	2.49	1377	100						
	4398 4410	3		1.2	13.8	0.13	10	3.195	1407	100						
Moore D2	4365 4386	2.5		1.2			10	0.5	1340	116						
30023	4386 4393									118						
Moore D3	4400 4410									119						
30030	4381 4388									118						
	4388 4400	3		1.15	21.1	0.15	10	8.08	1383	119						
	4400 4410	3		1.15	100	0.15	10	11.65	1372	119						
Moore D4	4408 4418									112						
	4418 4428		36							112						
	4428 4436		38							112						
Foos A2	4409 4414		36 @ 60							115	1.035	29200	3250	2000	250	
30025	4401 4409									115						
Humburg A2											1.04	29201	5000	1222	793	
19015	4391 4401	3		1.2	17.3	0.15	10	0.695	1370	110						
	4401 4411	3		1.2	20.4	0.15	10		1275	112						
	4295 4310									110						
Borger A1	4405 4422		38 @ 60							115						
19012	4308 4323									115						
Borger A2	4398 4410	3		1.2		0.15	10	0.435	1389							
30004	4389 4398	3		1.2	9.6	0.15	10	1.7	1456	100						
	4369 4378									100						

= 30740

25000

↓
Avg:
1.035

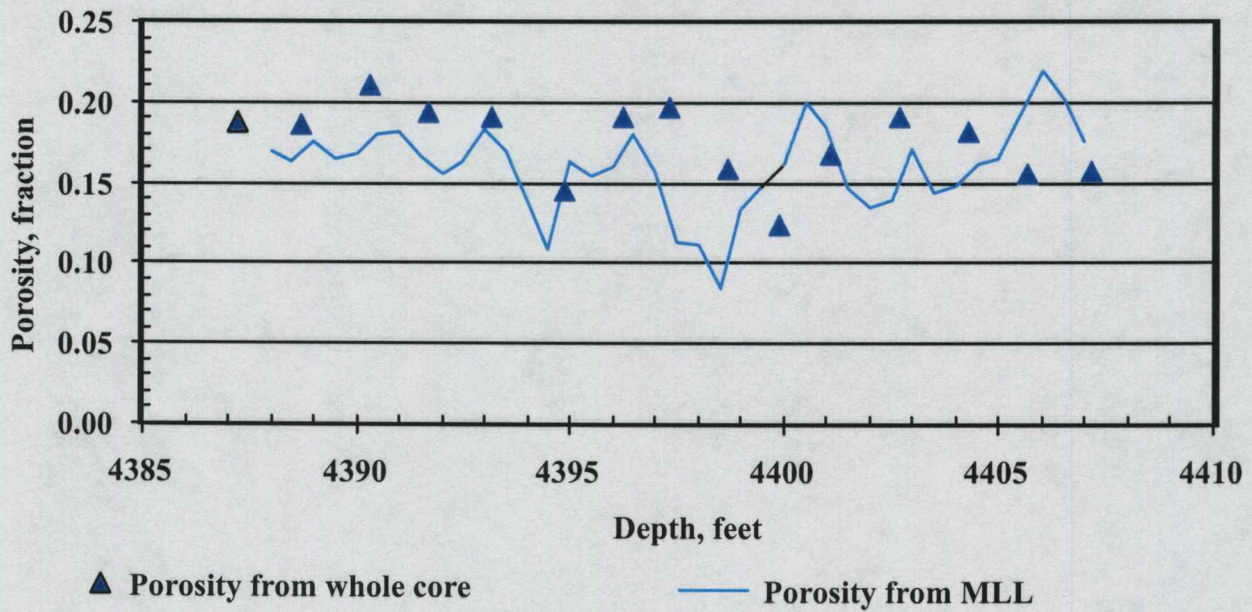


Figure --: Compare porosity measured on whole core and that derived from micro-laterolog (MLL) using $R_{mf} = 0.06$ and $R_{os} = 35\%$ for well Moore D#1.

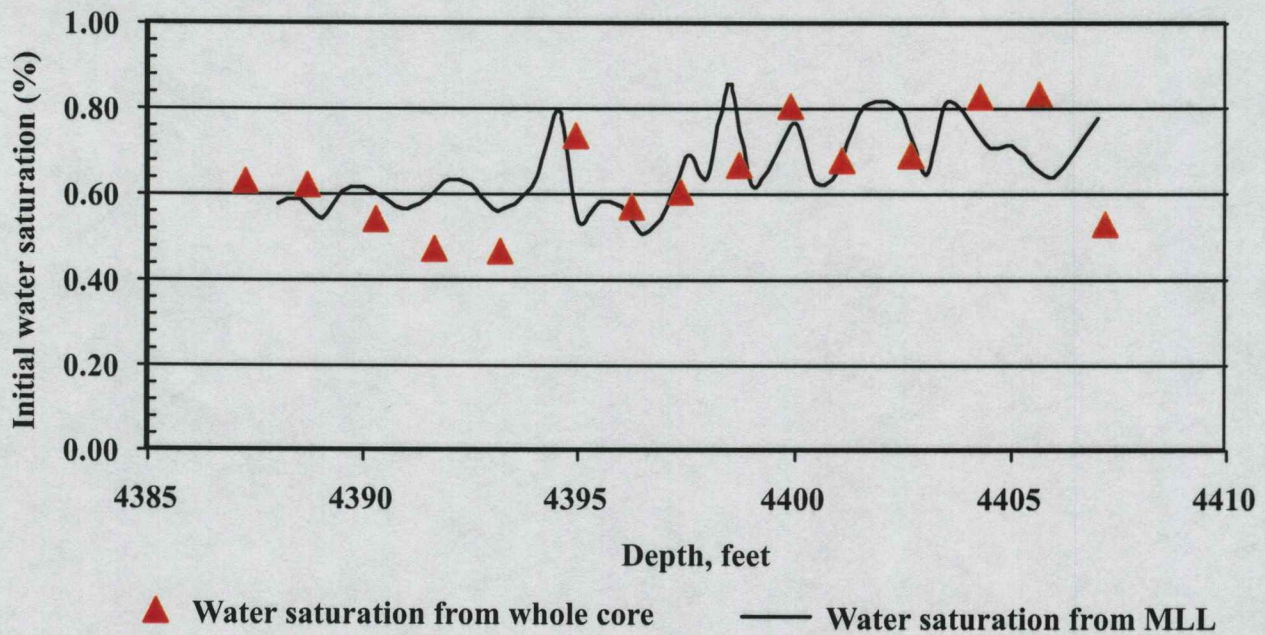
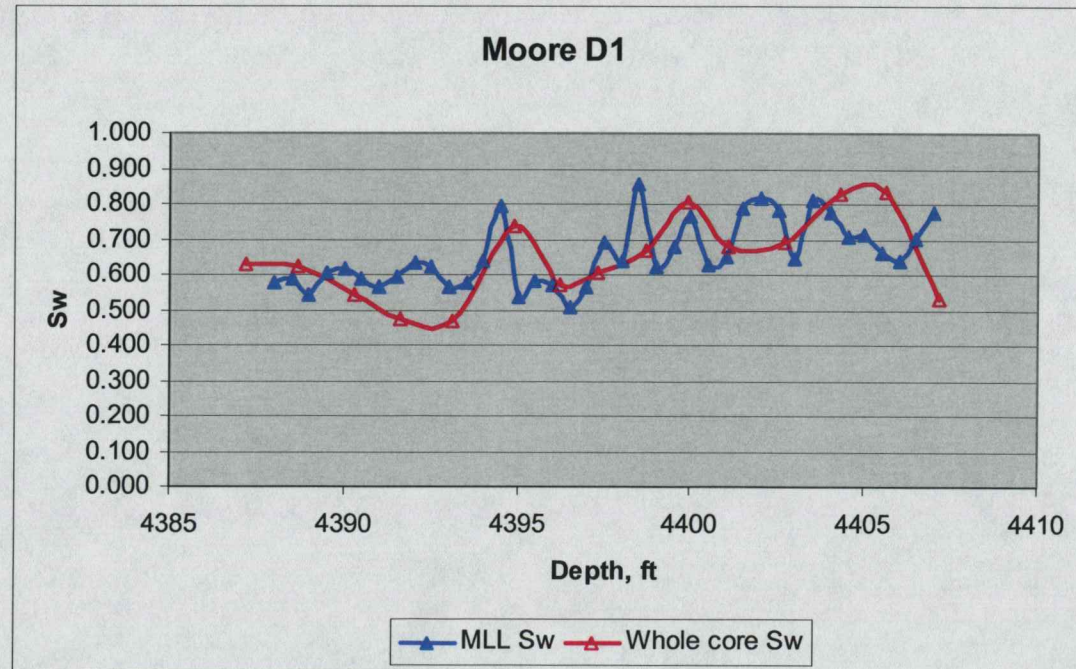
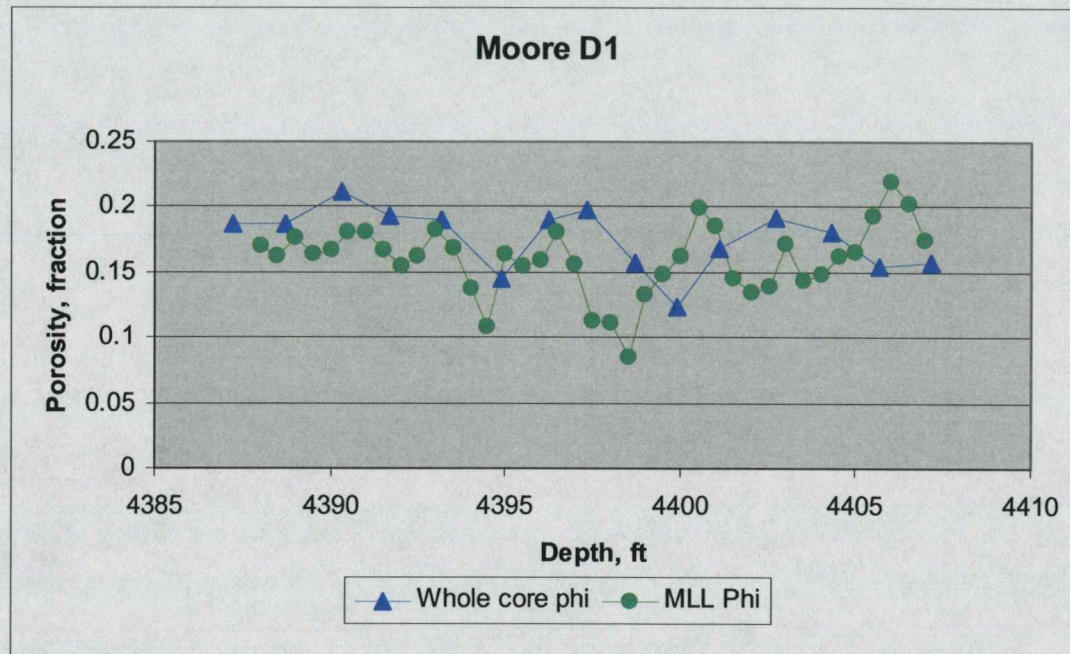
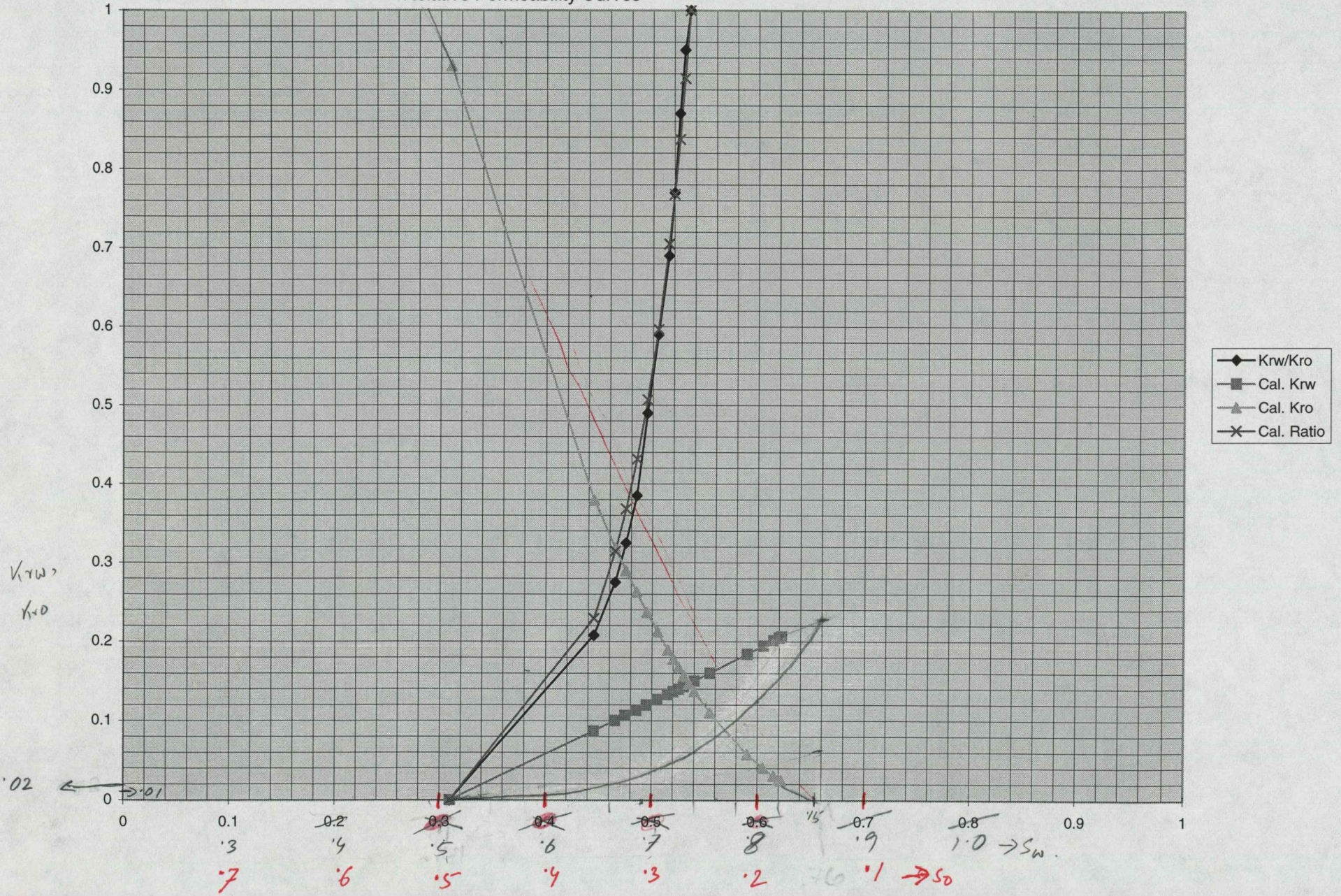


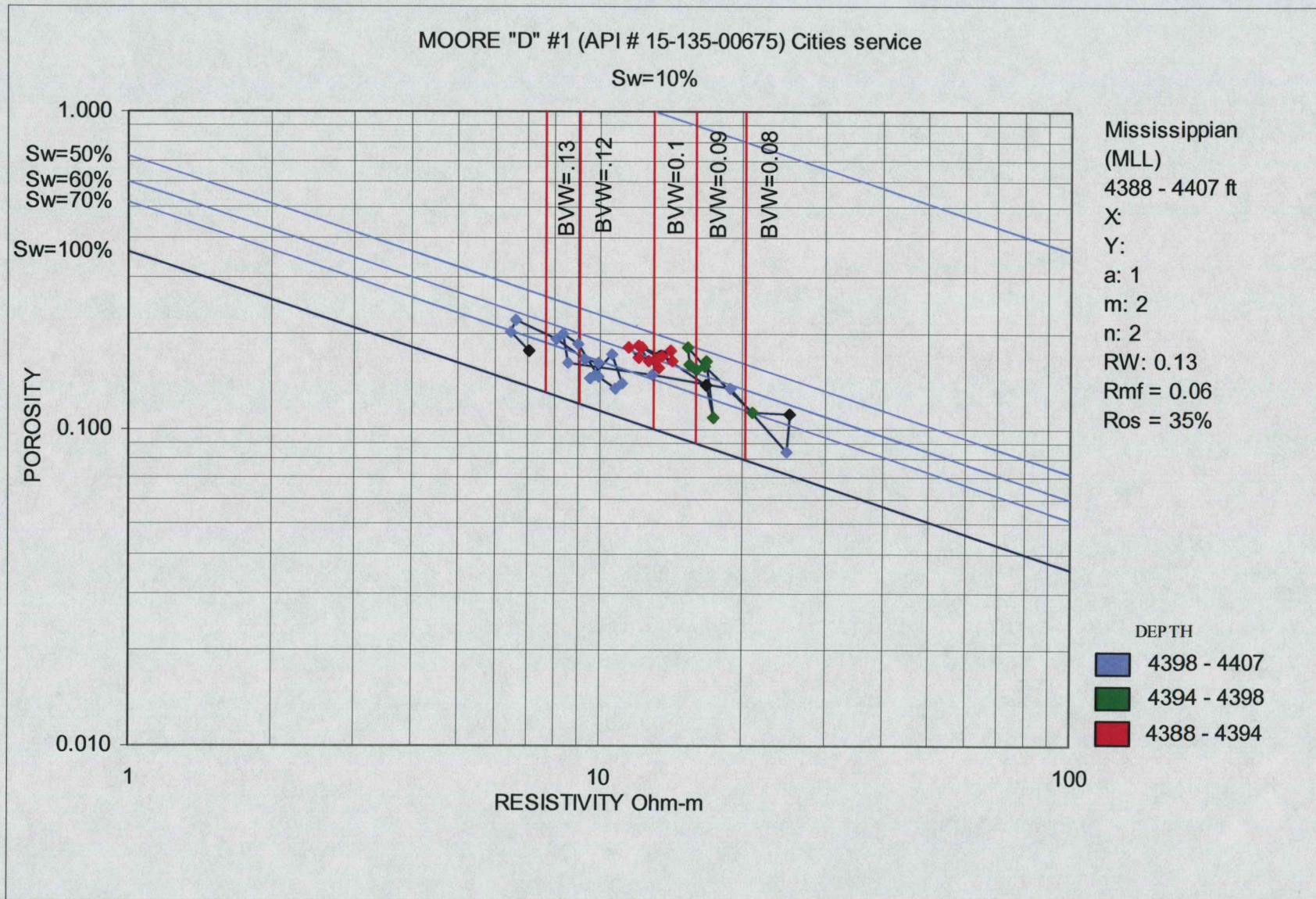
Figure --: Compare water saturation measured on whole core and that derived from micro-laterolog (MLL) using $R_{mf} = 0.06$ and $R_{os} = 35\%$ for well Moore D#1.



Figures 5a & 5b

Relative Permeability Curves



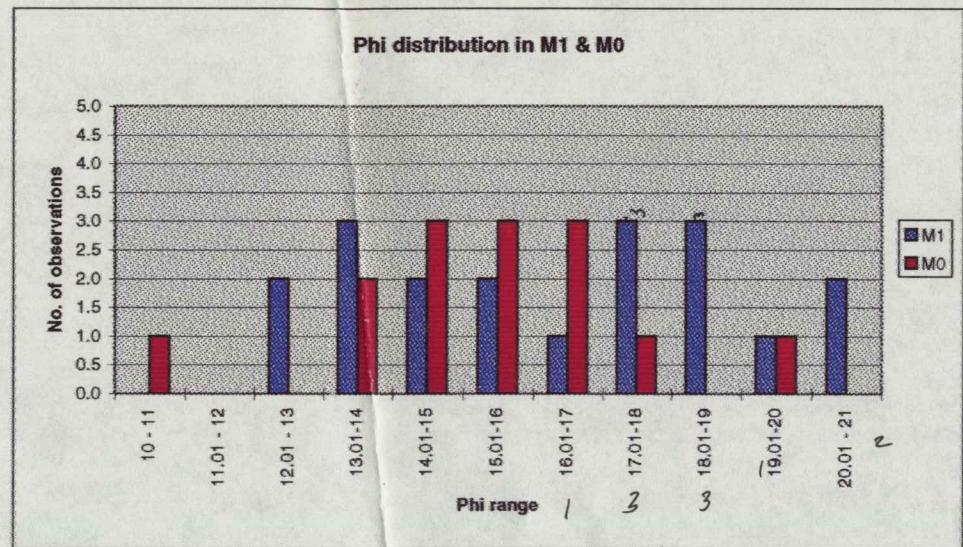


DST 2 4383-4398: 750' SMCO & 100' OCM & nw. DST 3 4398-4410: 180' GIP, 210' SGCMO & 45' OCM. Prod 4388-94: IP 195 bopd, nw. Allowed 36 bopd.

Figure 4

		Range												
		10 - 11	11.01 - 12	12.01 - 13	13.01-14	14.01-15	15.01-16	16.01-17	17.01-18	18.01-19	19.01-20	20.01 - 21		
M1 Por.	M0 Por.	M1	0	0	2	3	2	2	1	3	3	1	2	19
		M0	1	0	0	2	3	1	3	1	0	1	0	14

- 15.7
- 17.5
- 17.3
- 17.9
- 14.8
- 18.4
- 12.4
- 12.4
- 13.5
- 20.4
- 20.8
- 17.1
- 13.9
- 13.7
- 13.2
- 16.1
- 18.8
- 13.3
- 14.3
- 19.5
- 15.1
- 18.4



$M_1 = 16.3$ - Blue - Better unit
 $M_0 = 15.3$ Red
~~_____~~
 M_1
 M_0
 M_0
 M_0
 M_{sub}