SCAL, Inc

30-015-33488

Drilled Sidewall Core Analysis Report

Company :	EOG Resources, Inc.	**Field:**	Shugart West
File No. :	04275	**Formation:**	Bone Spring
Well :	Sand "12" Federal No. 1	**County :**	Eddy County, New Mexico
Location :	1700' FNL & 330' FEL, Sec 12, T18S, R30E		

Sample Number	Depth	Air Permeability	Klinkenberg Permeability	Porosity	Grain Density	Sw	So	Gas Units	Fluorescence		Sample Description
	ft	mD	mD	%	g/cc	%	%		%	Description	
Confining Pressure 500psi											
1	6,811.0	3.53	3.12	7.63	2.73	62.3	0.0	8	0	Dl gld mf	Ls:tn-gry vuggy styl xln
2	6,815.5	474.77	468.60	9.53	2.75	57.9	0.0	61	tr	Brt gld sp	Ls:tn-gry vuggy peld xln
3	6,818.0	0.0012	0.0003	3.42	2.76	66.2	0.0	7	0	Dl gld mf	Ls:tn-gry sm sml vugs peld xln
4	6,820.0	0.0016	0.0005	2.29	2.73	64.5	0.0	5	0	Dl gld mf	Ls:tn-gry sm sml vugs peld styl xln
5	7,543.0	0.0129	0.0062	2.87	2.82	53.1	13.7	171	60	Gld-Brt gld sp	Anhy:wht sl sml vugs sm calc sm sh sl pyr xln
6	7,544.0	19.92	18.77	8.28	2.77	50.4	12.4	336	50	Brt gld sp	Dol:gry vuggy sm calc sm sh frac sl chty xln
7*	7,547.0	tbfa	tbfa	0.18	2.79	64.7	6.2	109	10	Dl gld-gld sp	Dol:tn-gry sm sml vugs chty xln
8	7,667.0	0.0093	0.0042	1.07	2.70	57.3	5.9	86	10	Dl gld lam	Ls:brn nvp sl cht xln
9	7,674.0	0.0500	0.0316	4.19	2.78	66.1	0.0	123	tr	Brt gld sp	Dol:brn intxln por sm cht styl sl anhy xln
10	7,692.0	0.0171	0.0088	1.59	2.82	52.2	9.8	126	30	Dl gld sp	Dol:gry-brn nvp sm cht mott xln
11	8,052.0	0.0700	0.0460	6.22	2.68	42.8	20.5	175	85	Brt yl lam	Ss:gry vfg wl srt md styl sm pyr
12	8,081.0	0.1048	0.0723	8.17	2.68	40.6	23.8	117	100	Brt yl	Ss:gry vfg wl srt md styl sm pyr
13	8,099.0	0.0765	0.0514	5.75	2.66	65.9	0.0	13	0		Ss:gry vfg wl srt md styl sm pyr
14	8,147.0	0.0638	0.0416	8.61	2.66	47.1	21.4	169	95	Brt yl	Ss:gry xf-vfg wl prly srt sbrnd styl sm pyr
15	8,154.0	0.0371	0.0222	4.59	2.70	65.6	0.0	21	0		Ss:gry vfg wl srt md sm dol sl sh sl pyr styl
16	8,160.0	0.0702	0.0463	8.06	2.67	48.3	19.6	335	90	Brt yl lam	Ss:ltn xf-vfg mod srt sbrnd sl sh sl pyr styl
17	8,208.0	0.1244	0.0888	9.21	2.65	66.7	0.0	121	0		Ss:ltbrn xf-vfg mod srt sbrnd sl dol sl pyr
18	8,212.0	0.0640	0.0418	6.55	2.69	52.3	10.0	93	40	Dl wht	Ss:ltbrn vfg wl srt md sm dol styl
19	8,218.0	0.0566	0.0361	6.49	2.67	50.1	19.4	137	90	Dl wht lam	Ss:tn-gry xf-vfg mod srt sbrnd styl sl sh
20	8,224.0	0.0502	0.0317	5.89	2.70	56.5	7.4	55	15	Dl wht lam	Ss:tn-gry xfg wl srt md sm dol sl pyr styl

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File No. :	***04275***	***Formation:***	***Bone Spring***
Well :	***Sand "12" Federal No. 1***	***County :***	***Eddy County, New Mexico***
Location :	***1700' FNL & 330' FEL, Sec 12, T18S, R30E***		

Sample Number	Depth	Air Permeability	Klinkenberg Permeability	Porosity	Grain Density	Sw	So	Gas Units	Fluorescence		Sample Description
	ft	mD	mD	%	g/cc	%	%		%	Description	
21	8,234.0	0.0373	0.0225	4.75	2.69	60.8	0.0	35	0		Ss:gry xfg wl srt md sm dol sl sh styl sl pyr
22	8,236.0	0.0714	0.0470	8.53	2.67	46.1	20.1	115	90	Dl wht-yl lam	Ss:tn xfg wl srt md sm dol sl pyr styl
23	8,243.0	0.0746	0.0499	6.80	2.68	47.4	18.4	119	85	Brt wht-yl lam	Ss:tn xfg wl srt md sm dol sl sh styl
24	8,262.0	0.0576	0.0369	6.97	2.68	48.8	17.9	122	80	Dl yl lam	Ss:tn xfg wl srt md styl sl sh sm dol
25	8,271.0	0.0662	0.0434	6.39	2.68	45.7	17.3	138	80	Brt yl-gld lam	Ss:tn xfg wl srt md sl sh sm dol styl
26	8,280.0	0.0972	0.0669	8.03	2.67	57.6	tr	217	5	Brt yl-wht sp la	Ss:ltbrn xfg wl srt md sl dol sl sh sl pyr styl

Note: 500+ gas reading represents a saturated detector filament

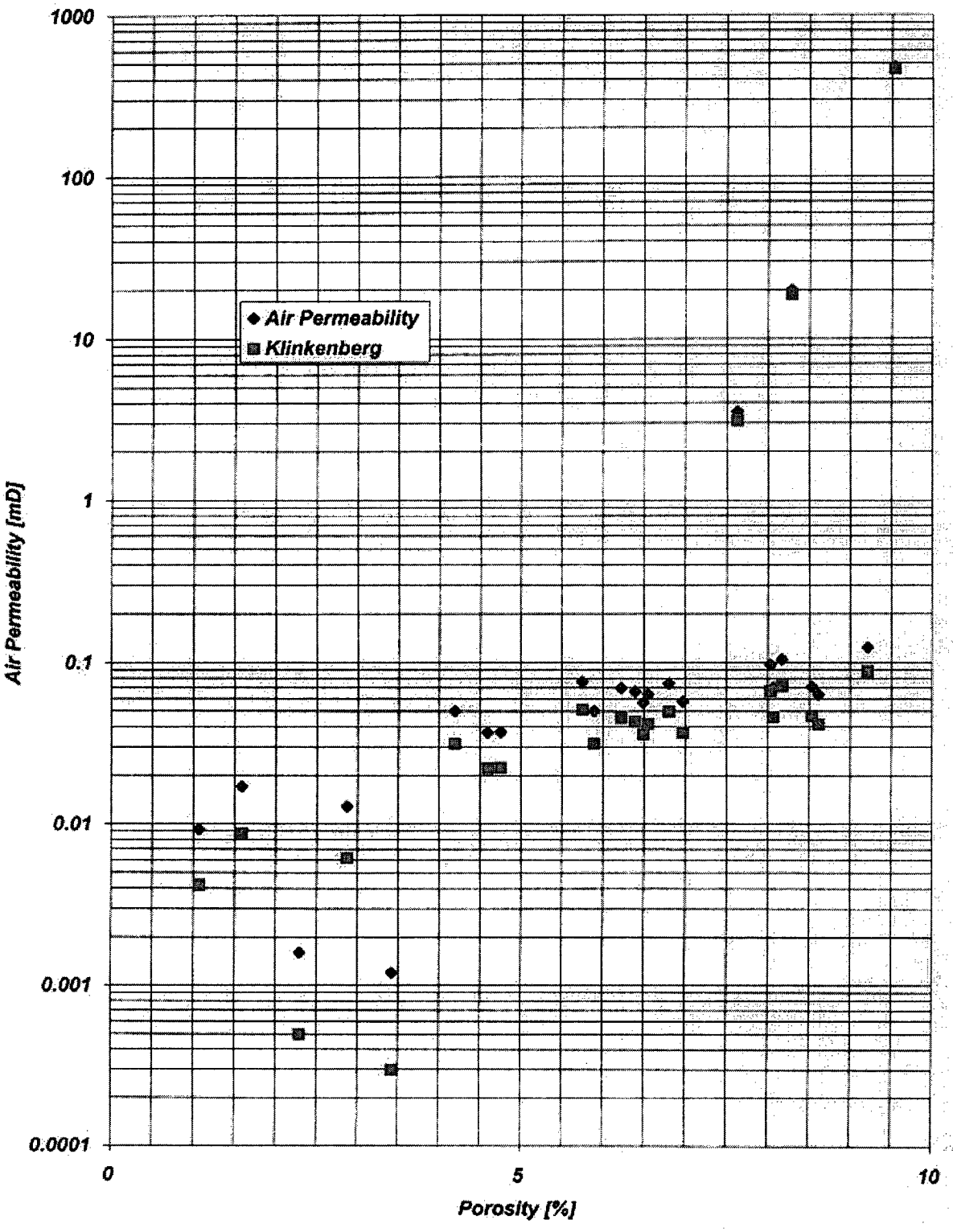
1% CH4 in air = 100 gas units

Note: Analysis for samples with an asterisk was performed at ambient conditions

Core Description Abbreviations

ang	angular
anhy	anhydrite
ark	arkosic
arg	argillaceous
bl	blue
bldgg	bleeding gas
bldgo	bleeding oil
blk	black
blky	blocky
brn	brown
brt	bright
bf	buff
calc	calcareous
carb	carbonaceous
cem	cement
cg	coarse grain
cgl	conglomerate
chky	chalky
chrty	cherty
com	common
conch	conchoidal
cnsl	consolidated
crm	cream
cslt	coarse siltstone
dk	dark
dns	dense
dol	dolomite
dolic	dolomitic
dru	drusy
dul	dull
fg	fine grain
fiss	fissile
foss	fossiliferous
frac	fractured
fri	friable
gil	gilsonite
glauc	glauconite
grn	green
grst	grainstone
gry	gray
gyp	gypsum
h/frac	horizontally fractured
hal	halite
incl	inclusion
intrgr	intergranular
intrxln	intercrystalline
ip	in part
lam	lamina(-ated)
ls	limestone
lt	light
md	medium
mf	mineral fluorescence
mg	medium grain
micr	micritic
mod	moderate
mott	mottled
mdst	mudstone
n/a	not available
n/r	not recovered
nod	nodules
nvp	no visible porosity
o	oil
ool	oolitic
orng	orange
peld	peloid
pisol	pisolitic
pk	pink
pkst	packstone
por	porosity
poss	possible
ppp	pinpoint porosity
pr(-ly)	poor(-ly)
ptg	parting
pyr	pyrite
rnd	round
sbang	subangular
sc	surface contamination
sh	shale
strgr	stringer
sbrnd	subround
scat	scattered
sd(y)	sand(y)
sh	shale
shy	shaley
sil	siliceous
sl	slight(ly)
slty	silty
sm	some
sml	small
sp	spotty
ss	sandstone
sltst	siltstone
srt	sorted
strks	streaks
styl	styolite
suc	sucrosic
tbfa	too broken for analysis
tn	tan
tr	trace
v	very
vis	visible
vtfrac	vertically fractured
vfg	very fine grain
vug	vug(gy)
w/	with
wht	white
wk(-ly)	weak(-ly)
wkst	wackestone
wl	well
xln	crystalline
xfg	extremely fine grained
xl	crystal
yl	yellow

Permeability versus Porosity @ 500psi Confining Pressure



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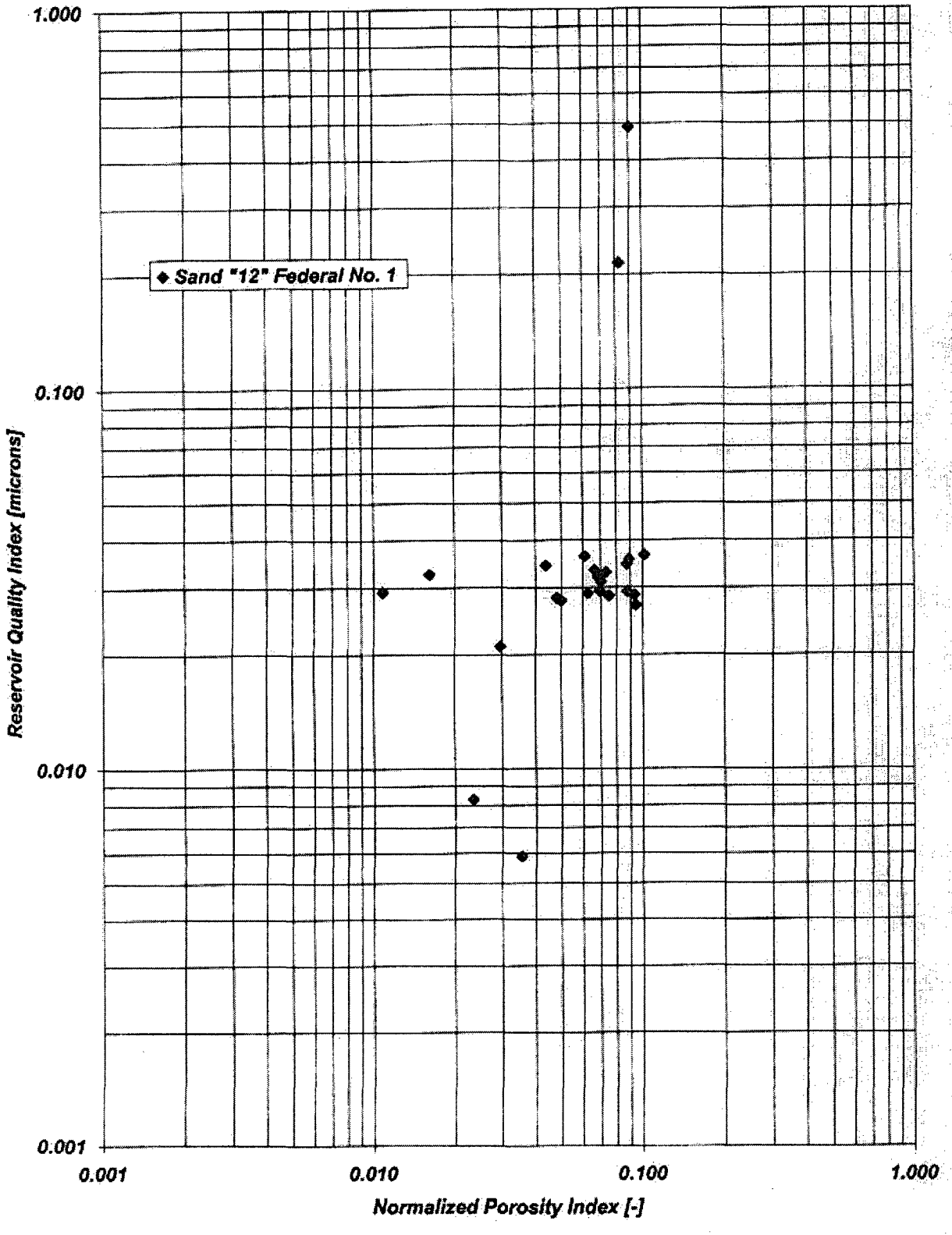
Reservoir Quality Index versus Normalized Porosity



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Well : Sand "12" Federal No. 1
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Field: Shugart West
Formation: Bone Spring
County : Eddy County, New Mexico

Sample Number	Depth	Grain Density	Porosity	Air Perm	Kk Perm	Porosity	Air Perm	Kk Perm	Porosity	Air Perm	Kk Perm
	ft	g/cc	%	mD	mD	%	mD	mD	%	mD	mD
			Confining Pressure 500psi			Confining Pressure 2,400psi			Confining Pressure 2,700psi		
1	6,811.0	2.73	7.63	3.53	3.12	4.98	3.46	3.05			
2	6,815.5	2.75	9.53	474.77	466.60	6.92	30.09	27.78			
3	6,818.0	2.76	3.42	0.0012	0.0003	1.68	0.0000	0.0000			
4	6,820.0	2.73	2.29	0.0016	0.0005	0.20	0.0000	0.0000			
5	7,543.0	2.82	2.87	0.0129	0.0062	1.68	0.0016	0.0004			
6	7,544.0	2.77	8.28	19.92	18.77	6.28	16.81	14.24			
7	7,547.0	2.79	tbfa	tbfa	tbfa	tbfa	tbfa	tbfa			
8	7,667.0	2.70	1.07	0.0093	0.0042	0.00	0.0002	0.0000			
9	7,674.0	2.78	4.19	0.0500	0.0316	1.49	0.0025	0.0008			
10	7,892.0	2.82	1.59	0.0171	0.0088	0.38	0.0019	0.0005			
11	8,052.0	2.68	6.22	0.0700	0.0480				4.63	0.0120	0.0053
12	8,081.0	2.66	8.17	0.1048	0.0723				6.52	0.0204	0.0102
13	8,099.0	2.66	5.75	0.0765	0.0514				4.39	0.0063	0.0025
14	8,147.0	2.66	8.61	0.0638	0.0416				6.91	0.0158	0.0074
15	8,154.0	2.70	4.59	0.0371	0.0222				3.24	0.0040	0.0014
16	8,160.0	2.67	8.06	0.0702	0.0463				6.90	0.0193	0.0094
17	8,208.0	2.65	9.21	0.1244	0.0888				8.32	0.0564	0.0348
18	8,212.0	2.69	6.55	0.0640	0.0418				5.39	0.0141	0.0063
19	8,218.0	2.67	6.49	0.0566	0.0361				5.18	0.0112	0.0049

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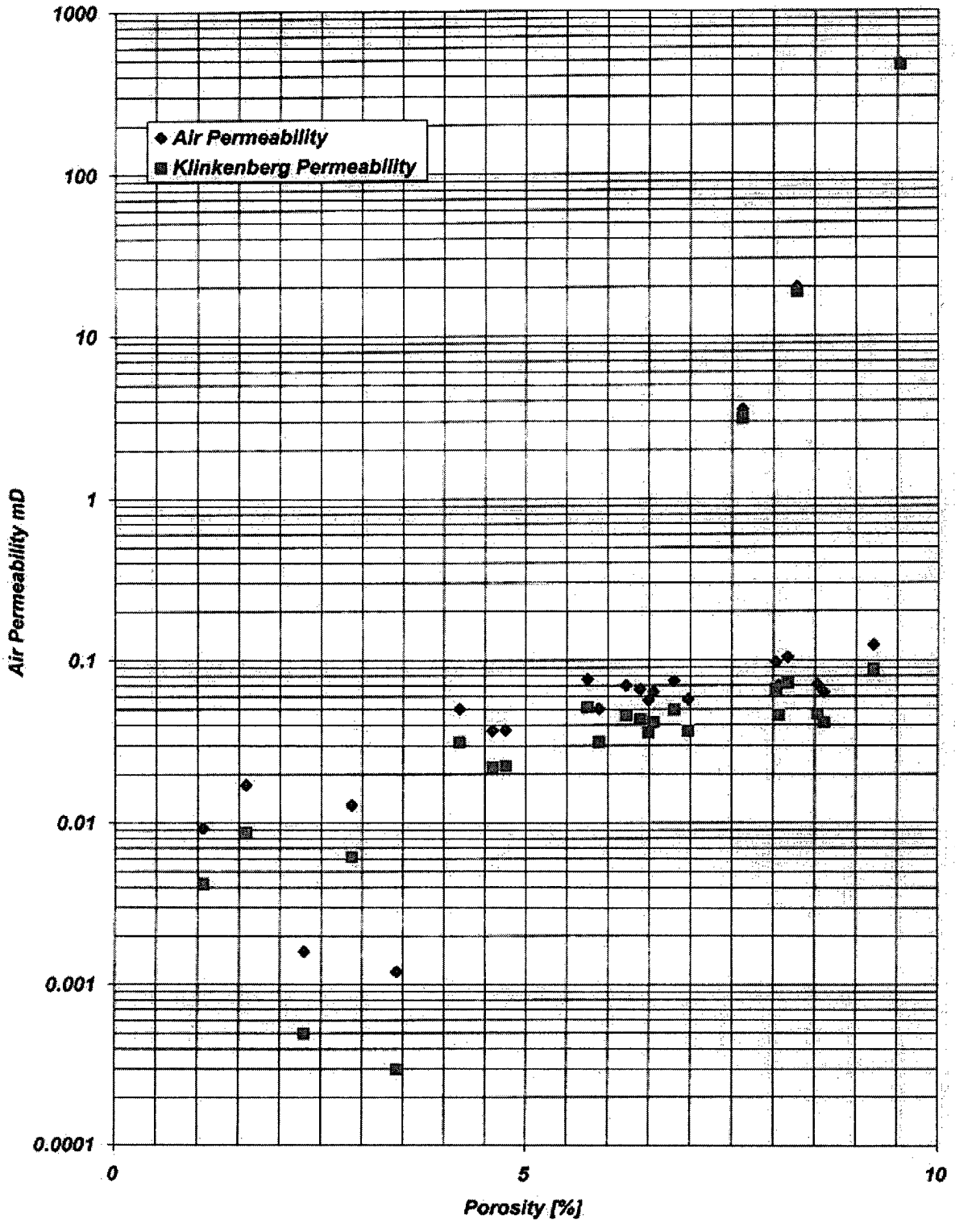
Field: Shugart West
Formation: Bone Spring
County : Eddy County, New Mexico

Sample Number	Depth	Grain Density	Porosity	Air Perm	Kk Perm	Porosity	Air Perm	Kk Perm	Porosity	Air Perm	Kk Perm
	ft	g/cc	%	mD	mD	%	mD	mD	%	mD	mD
			Confining Pressure 500psi			Confining Pressure 2,400psi			Confining Pressure 2,700psi		
20	8,224.0	2.70	5.89	0.0502	0.0317				4.65	0.0074	0.0029
21	8,234.0	2.69	4.75	0.0373	0.0225				3.55	0.0039	0.0013
22	8,236.0	2.67	8.53	0.0714	0.0470				7.24	0.0293	0.0156
23	8,243.0	2.68	6.80	0.0746	0.0499				5.65	0.0185	0.0090
24	8,262.0	2.68	6.97	0.0576	0.0369				5.78	0.0144	0.0065
25	8,271.0	2.68	6.39	0.0662	0.0434				5.04	0.0172	0.0081
26	8,280.0	2.67	8.03	0.0972	0.0668				6.90	0.0325	0.0177

Permeability versus Porosity @ 500psi



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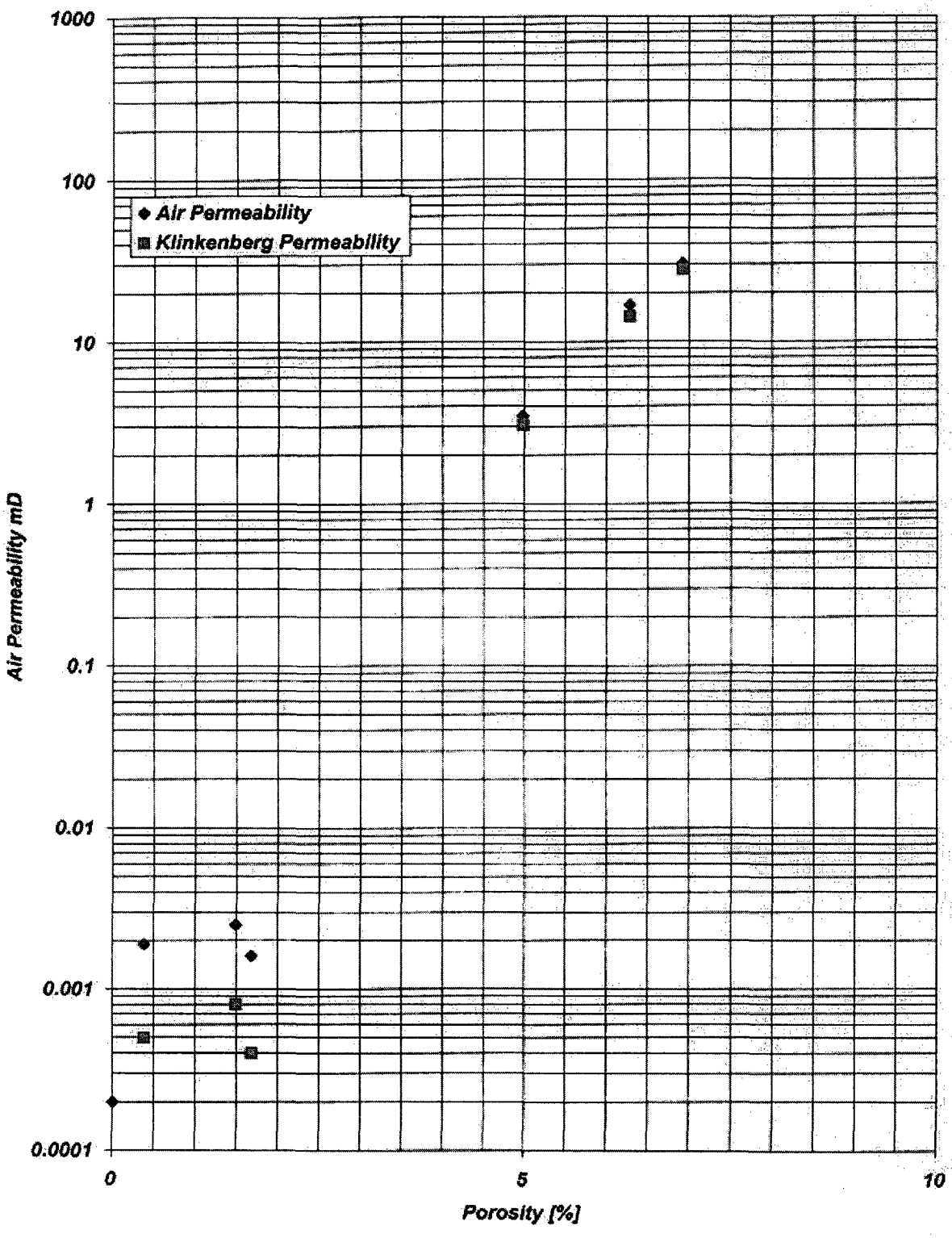
Permeability versus Porosity @ 2,400psi



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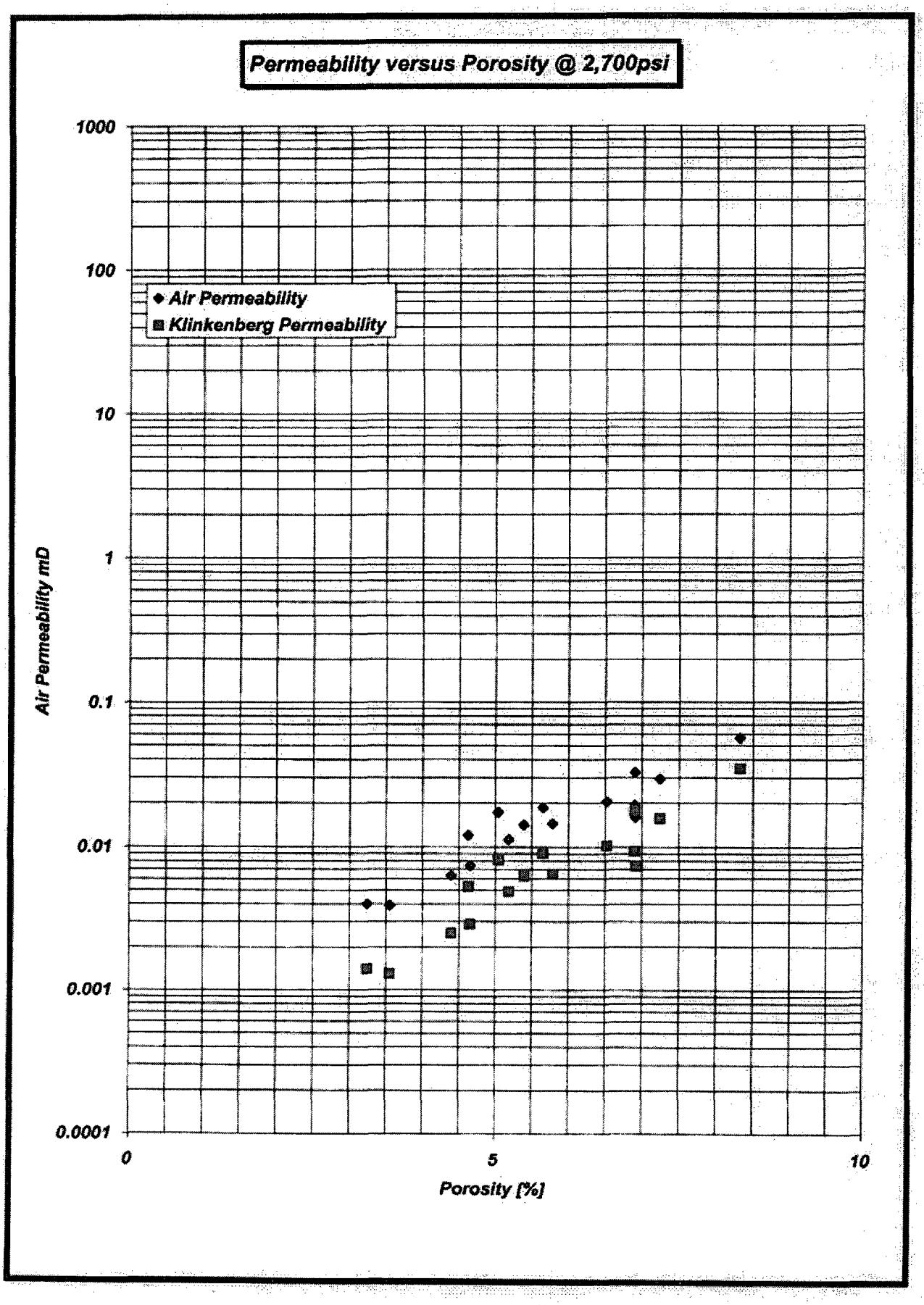
Permeability versus Porosity @ 2,700psi
1000
100
10
1
0.1
0.01
0.001
0.0001
Air Permeability mD
Air Permeability
Klinkenberg Permeability
0
5
10
Porosity [%]