

APPLICATION FOR PERMIT TO DRILL, DEEPEN OR PLUG BACK

APPLICATION TO DRILL DEEPEN PLUG BACK

NAME OF COMPANY OR OPERATOR DNR - Geol Survey DATE Sept 77
Box 250 Rolla Mo
Address City State

DESCRIPTION OF WELL AND LEASE

Name of lease ERDA - TS Well number 38 Elevation (ground) 861

WELL LOCATION (give footage from section lines)
2560 ft. from (N) (S) sec. line 2620 ft. from (E) (W) sec. line

WELL LOCATION Section 6 Township 33N Range 33W County Barton

Nearest distance from proposed location to property or lease line: _____ feet
Distance from proposed location to nearest drilling, completed or applied - for well on the same lease: NA feet

Proposed depth: 250 Rotary or Cable tools Rotary (air) Approx. date work will start _____

Number of acres in lease: NA Number of wells on lease, including this well, completed in or drilling to this reservoir: _____
Number of abandoned wells on lease: _____

If lease, purchased with one or more wells drilled, from whom purchased: Name NA No. of Wells: producing _____
Address _____ inactive _____
abandoned _____

Status of Bond Single Well Amt. _____ Blanket Bond Amt. NA ON FILE ATTACHED

Remarks: (If this is an application to deepen or plug back, briefly describe work to be done, giving present producing zone and expected new producing zone) use back of form if needed.
Strat Test

Proposed casing program:				Approved casing - To be filled in by State Geologist			
amt.	size	wt./ft.	cem.	amt.	size	wt./ft.	cem.
		<u>None</u>					

I, the undersigned, state that I am the _____ of the _____ (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.
Signature _____

Permit Number: 20030
Approval Date: Sept 1977
Approved By: Wallace R. Harris

SAMPLES REQUIRED
 SAMPLES NOT REQUIRED

Note: This Permit not transferable to any other person or to any other location.

WATER SAMPLES REQUIRED @:

Remit two copies to: Missouri Oil and Gas Council
P.O. Box 250 Rolla, Mo. 65401

One will be returned. Approval of this permit by the Oil and Gas Council does not constitute endorsement of the geologic merits of the proposed well nor endorsement of the qualifications of the permittee.

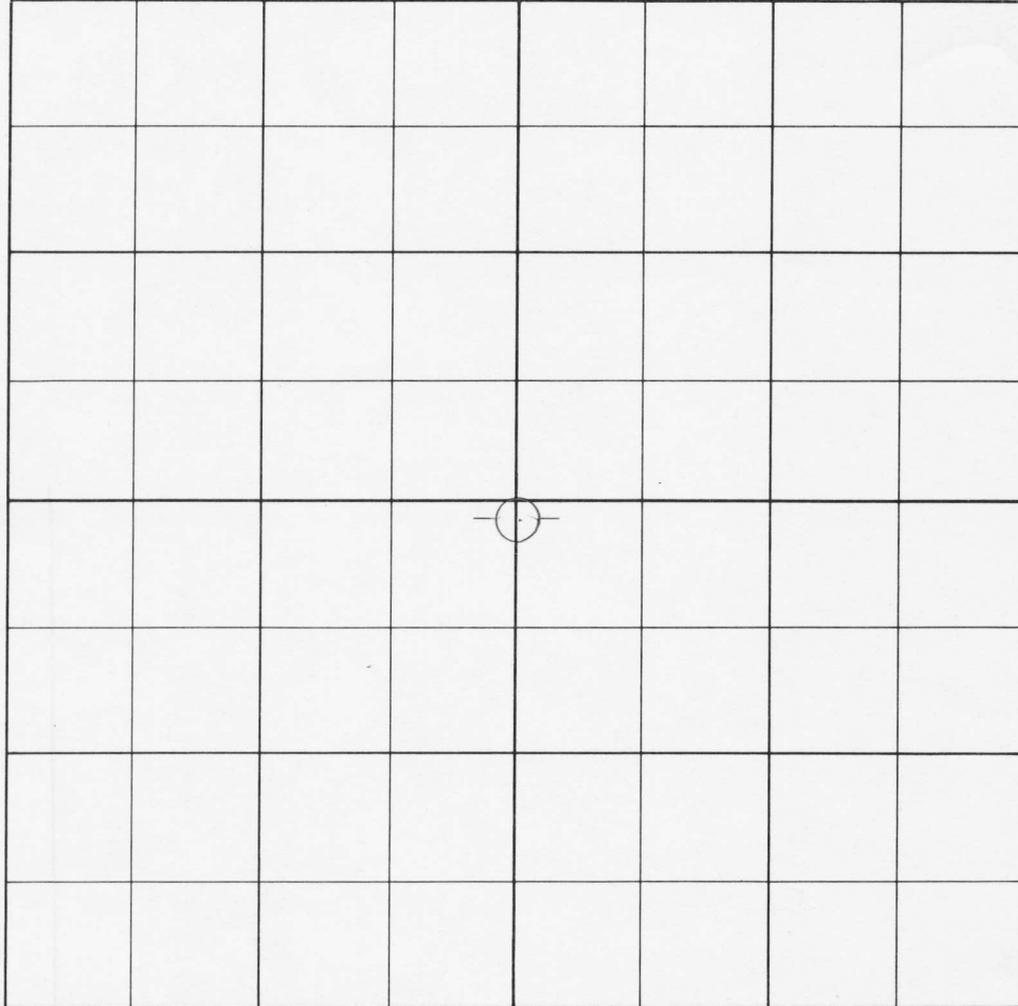
MISSOURI OIL AND GAS COUNCIL
WELL LOCATION PLAT

Form OGC - 4

Owner: DNR-Geol Survey

Lease Name: ERTA-TS NO. 38 County, Barton

2560 feet from (N) - (S) line and 2620 feet from (E) - (W) line of Sec. 6 Twp. 33N Range 33W



SCALE
1" = 1000'

REMARKS: _____

INSTRUCTIONS

On the above plat, show distance of the proposed well from the two nearest lease and section lines, and from the nearest well on the same lease completed in or drilling to the same reservoir. If the location requested is not in conformance with the applicable well-spacing rules, show all off-setting wells to the proposed well. Do not confuse survey lines with lease lines. See rule 7 - 3 (b) for survey requirements.

(SEAL)

Remit two copies to: Missouri Oil and Gas Council
P.O. Box 250 Rolla, Mo. 65401
One will be returned.

Registered Land Surveyor

TEST BORING LOG

Project E. R. D. A.
Sec. 6, T. 33N., R. 33W.
 Address _____
 City & State _____

Boring No. 38 Sheet 1 of 4
 Surface Elevation 861' Offset _____
 Date Started 10/4/77 Completed _____
 Driller E. Connor Rig _____

Abbreviations: A.O. - Auger Only R.B. - Rock Bit C.W. - Core Water
 H.A. - Hollow Auger S.S. - Split Spoon C.A. - Core Air
 W.B. - Wash Bore S.T. - Shelby Tube F.B. - Finger Bit

DEPTH		METHOD	PENETRATION RECORD		CORE RECOVERY	SAMPLE DESCRIPTION COLOR-MATERIAL-MOISTURE-CLAY CONSISTENCY SAND DENSITY
FROM	TO		POCKET PENETRO-METER	NO. OF BLOWS		
0.0'	1.0'	WB				Topsoil
1.0'	1.5'	WB				Brown silty clay
1.5'	8.0'	WB				Brown weathered sandy shale
8.0'	8.5'	WB				Red shale, soft
8.5'	10.0'	WB				Dark gray shale, med. hard
10.0'	13.6'	CW1			3.6'	Dark gray & brown shale, med.hard 10 pcs. 0.1 0.3
13.6'	14.0'	CW1			0.4'	Black coal, broken
14.0'	15.2'	CW1			1.2'	Gray shale, med. hard 1 piece
15.2'	20.0'	CW1			1.4'	Gray shale, hard 6 pcs. .05 to 0.2
20.0'	30.0'	CW2			10.0'	Gray shale w/soft seams, hard 32 pcs. 0.1 to 0
30.0'	36.2'	CW3			6.2'	Same 11 pieces 0.1 to 1.4
36.2'	37.4'	CW3			1.2'	Black coal 7 pcs. Broken to 0.3
37.4'	40.0'	CW3			2.6'	Gray shale, soft 6 pcs. 0.2 to 1.1
40.0'	46.0'	CW4			6.0'	Same 1 piece
46.0'	50.0'	CW4			4.0'	Gray shale, med. hard 1 piece
50.0'	55.3'	CW5			5.3'	Same 1 piece

REMARKS: (Casing, Water Loss, Etc.) _____ Water Level _____ Time _____ Date _____
 _____ (Completion)

TEST BORING LOG

 Project E. R. D. A.

 Boring No. 38 Sheet 2 of 4

Surface Elevation _____ Offset _____

Address _____

Date Started _____ Completed _____

City & State _____

Driller _____ Rig _____

Abbreviations:

A.O. - Auger Only	R.B. - Rock Bit	C.W. - Core Water
H.A. - Hollow Auger	S.S. - Split Spoon	C.A. - Core Air
W.B. - Wash Bore	S.T. - Shelby Tube	F.B. - Finger Bit

DEPTH		METHOD	PENETRATION RECORD		CORE RECOVERY	SAMPLE DESCRIPTION <small>COLOR-MATERIAL-MOISTURE-CLAY CONSISTENCY SAND DENSITY</small>
FROM	TO		POCKET PENETRO-METER	NO. OF BLOWS		
55.3'	56.6'	CW5			1.3'	Gray shale, hard 3 pcs. 0.2 to 0.9
56.6'	60.0'	CW5			3.4'	Gray shale, med. hard 3 pieces
60.0'	65.5'	CW6			5.5'	Same 6 pieces
65.5'	70.0'	CW6			4.5'	Dark gray shale, hard 11 pcs. 0.1 to 1.1
70.0'	80.0'	CW7			10.0'	Same 29 pcs. .05 to 1.3
80.0'	86.4'	CW8			6.4'	Same 12 pieces .05 to 1.0
86.4'	87.0'	CW8			0.6'	Black coal, broken 6 pieces
87.0'	90.0'	CW8			3.0'	Gray shale, med. hard 9 pcs. 0.1 to 0.6
90.0'	98.2'	CW9			8.2'	Gray shale, hard 30 pcs. .05 to 0.6
98.2'	100.0'	CW9			1.8'	Dark gray shale w/soft seams, ^{Broken to 0.4} hard 7 pcs.
100.0'	110.0'	CW10			10.0'	Same 28 pcs. broken to 1.1
110.0'	111.3'	CW11			1.3'	Gray sandstone 1 piece
111.3'	120.0'	CW11			8.7'	Gray sandstone w/oil 11 pcs. 0.2 to 2.1
120.0'	121.0'	CW12			1.0'	Same 1 piece
121.0'	122.6'	CW12			1.6'	Gray sandstone w/trace oil 6 pcs. 0.2 to 0.4
122.6'	127.5'	CW12			4.9'	Gray sandstone w/oil 10 pcs. 0.1 to 1.0

REMARKS: (Casing, Water Loss, Etc.)

Water Level _____

Time _____

Date _____

_____ (Completion)

TEST BORING LOG

 Project E. R. D. A.

 Boring No. 38 Sheet 3 of 4

Surface Elevation _____ Offset _____

Address _____

Date Started _____ Completed _____

City & State _____

Driller _____ Rig _____

Abbreviations: A.O. - Auger Only R.B. - Rock Bit C.W. - Core Water
 H.A. - Hollow Auger S.S. - Split Spoon C.A. - Core Air
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DEPTH		METHOD	PENETRATION RECORD		CORE RECOVERY	SAMPLE DESCRIPTION COLOR-MATERIAL-MOISTURE-CLAY CONSISTENCY SAND DENSITY
FROM	TO		POCKET PENETRO-METER	NO. OF BLOWS		
127.5'	128.8'	CW12			1.3'	Gray sandstone w/trace oil 6 pcs. 0.1 to 0.5
128.8'	130.0'	CW12			1.2'	Gray shaly sandstone 5 pcs. 0.1 to 0.7
130.0'	140.0'	CW13			10.0'	Same 18 pcs. 0.1 to 2.1
140.0'	147.5'	CW14			7.5'	Same 12 pcs. 0.2 to 1.8
147.5'	150.0'	CW14			2.5'	Gray green shaly siltstone 9 pcs. 0.1 to 0.7
150.0'	160.0'	CW15			10.0'	Same 5 pcs. 0.4 to 5.8
160.0'	165.4'	CW16			5.4'	Same 3 pcs. 0.2 to 2.8
165.4'	170.0'	CW16			4.6'	Gray shale w/sand seams 20 pcs. .05 to 0.4
170.0'	180.0'	CW17			10.0'	Same 56 pcs. .05 to 0.4
180.0'	183.0'	CW18			3.0'	Same 20 pcs. .05 to 0.3
183.0'	185.0'	CW18			2.0'	Gray sandstone 7 pcs. 0.1 to 0.6
185.0'	187.0'	RB				Gray sandstone, some coal
187.0'	190.0'	CW19			2.0'	Dark gray shale 12 pcs. broken to 0.5
190.0'	192.0'	CW20			2.0'	Same 11 pcs. broken to 0.7
192.0'	196.3'	CW20			4.3'	Light gray siltstone 17 pcs. 0.2 to 0.9
196.3'	200.0'	CW20			3.7'	Gray shale w/sand seams 20 pcs. 0.1 to 0.4

REMARKS: (Casing, Water Loss, Etc.) _____ Water Level _____ Time _____ Date _____ (Completion)

TEST BORING LOG

Project E. R. D. A.

 Address _____
 City & State _____

Boring No. 38 Sheet 4 of 4
 Surface Elevation _____ Offset _____
 Date Started _____ Completed _____
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Abbreviations: A.O. - Auger Only R.B. - Rock Bit C.W. - Core Water
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DEPTH		METHOD	PENETRATION RECORD		CORE RECOVERY	SAMPLE DESCRIPTION COLOR-MATERIAL-MOISTURE-CLAY CONSISTENCY SAND DENSITY
FROM	TO		POCKET PENETRO-METER	NO. OF BLOWS		
200.0'	202.1'	CW1			2.1'	Dark gray shale 9 pcs. .05 to 0.4
202.1'	202.9'	CW1			0.8'	Black coal, broken
202.9'	210.0'	CW2			7.1'	Gray shale w/soft seams
210.0'	212.0'	CW2			2.0'	Same 11 pcs.
212.0'	220.0'	CW2			8.0'	Dark gray shale 38 pcs. .05 to 1.5
220.0'	226.0'	CW3			4.8'	Same 25 pcs. Broken to 0.4
226.0'	227.5'	CW3			1.5'	Black coal 6 pcs. Broken
227.5'	230.0'	CW3			2.5'	Gray shale, 12 pcs. Broken to 0.5
230.0'	236.5'	CW4			6.5'	Same 24 pcs. Broken to 0.6
236.5'	237.9'	CW4			1.4'	Gray sandstone w/oil 4 pcs. 0.2 to 1.0
237.9'	240.0'	CW4			2.1'	Light gray limestone w/chert 5 pieces 0.2 -1.0
240.0'	241.6'	CW5			1.6'	Same 6 pcs. 0.1 to 0.7
241.6'	Total depth					

REMARKS: (Casing, Water Loss, Etc.) _____ Water Level _____ Time _____ Date _____ (Completion)

QUADRANGLE: Garland

ERDA TS Core No. 38
 COUNTY: Barton

LOCATION: 2560 FSL; 2620 FEL SEC. 6 T.33N. R.33W. DATE: Logged 10/15/77 & 11/5/77
 center of east 1/2 of wide section

LOCATION DESCRIPTION: 1/2 mile north of Oskaloosa

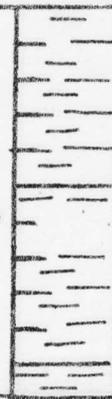
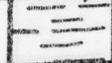
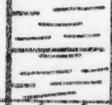
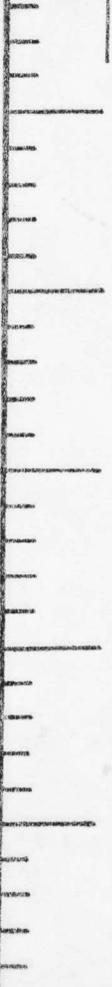
Elevation 861.0 topo. map

DEPTH		BED NO.	LITHOLOGY	
FROM	TO			
0.0	1.0	1	soil	1
1.0	3.0	2	ss., hard, weathered brown	2
3.0	8.0	3	shale, lt. greenish gray, soft, slick, brown iron oxide streaks	3
8.0	9.0	4	clay, bright red, soft	4
9.0	10.0	5	shale, med gray, firm	5
10.0	13.1	6	Rock chip samples to 10.0 ft. shale, dk. gray at top (N3, dry to black at bottom N1, dry, GSA Rock Color Chart) non calc.	6
13.1	13.3	7	ls, dk. gray, weathering red, fragments of brachiopod shells	7
13.3	13.6	8	shale, black; soft; fragments of brachiopod shells; <u>Mesolobus</u> ; in top half; calc. phosphatic nodules?; gypsum crystals, bottom non calc.	8
13.6	14.0	9	coal, bright, broken, iridescent	9
14.0	15.2	10	underclay, med. gray, poorly developed root impressions	10
15.2	16.9	11	ss., lt. gray, argillaceous, micaceous, clusters of sand-sized siderite concretions and pyrite nodules	11
16.9	19.6	12	lost core	12
19.6	35.4	13	shale, lt. gray (N7, dry); .05 ft. thick siderite concretion bed at 25.8 ft; non calc.	13
35.4	36.2	14	shale, lt. gray, silty, interlaminated with coal; paper thin to .03 ft thick, non calc.	14
36.2	37.4	15	coal, bright; pyritized plant material; .05 ft. thick pyritized clay band .05 ft. from top	15
37.4	38.6	16	claystone-shale, med. gray; no root impressions observed	16
38.6	52.0	17	claystone-shale, lt. gray, non calc; irregular blotches of dk. gray claystone at 42.6-43.7; sand sized siderite concretions 44.0-50.0	17

52.0	55.2	18	shale, med. gray grading to dk. gray downsection, non calc.	17	
55.2	55.4	19	shale, black, non calc., sooty, bits of coal	18	
55.4	56.8	20	shale, lt. gray sandy at bottom, few poorly developed root impressions	19	→
56.8	64.4	21	shale, lt. gray, top few inches med. gray, clusters of sand-sized siderite concretions 58.0-58.8 ft; siderite concretion bed 61.6-61.8, 63.3-63.6; shale, med. gray, sand-sized siderite concretions dispersed throughout to bottom of unit	20	→
64.4	67.1	22	shale, dk. gray (N2, dry) non calc.; approx. 5% of unit is lt. gray, lenticular laminae of ss. (starved ripples)	21	
67.1	68.1	23	shale, grayish black (N2, dry) darker at top; non calc.	22	
68.1	86.1	24	shale, med. gray (N4, dry) to dk. gray (N3, dry) below 84.6 ft.; approx. 10% of unit is lt. gray lenticular paper-thin laminae of ss.; siderite zone at 68.6-68.9, additional zones about .1 ft thick at 70.7, 71.4, 74.7, 79.2 and 81.0	23	
86.1	86.4	25	shale, black, pyritiferous, bits of lt. gray fossil fragments	24	
86.4	86.9	26	coal, shiny, pieces of pyritized plant material	25	→
86.9	87.0	27	shale, black, pyritiferous	26	→
87.0	90.0	28	underclay, med. gray at top to lt. gray at bottom; root impressions	27	→
90.0	94.4	29	shale, lt. greenish gray, very sandy with ss. lenses; clusters of tan sand-sized siderite concretions dispersed throughout unit	28	
94.4	95.5	30	shale, greenish gray (5GY 6/1, wet); approx. 5% of unit is lenticular, paper-thin lt. gray ss. units	29	
95.5	98.2	31	shale, lt. greenish gray and lt. gray ss. (ripples), interlaminated, lenticular	30	
98.2	98.7	32	shale, med. dk. gray, sharp contact with overlying unit	31	
98.7	99.1	33	siderite, sand sized siderite concretion bed; dk. gray to brown	32	→
99.1	105.9	34	shale lt. to med. gray, sideritic	33	→
				34	

				34	
				35	
				36	
105.9	105.9	35	shale, sandy, calc.		
105.95	106.3	36	shale, med gray, non calc.		
106.3	107.4	37	shale, black, non calc.; .1 ft. thick brown siderite zone .3 ft. from top		
107.4	108.5	38	ls, dk. gray, argillaceous; very fossiliferous mostly with fragments of thin shelled convex brachiopods, (small productids) few gastropods, crinoid columnals		
108.5	108.5	39	coal, shiny, pyritized compressed stems (.005 ft. thick)		
108.55	109.6	40	underclay, silty, carbonized roots; clusters of sand sized siderite concretions		
109.6	110.2	41	shale, greenish gray, sandy		
110.2	111.3	42	ss, lt. gray, fine grained, cross-bedding accentuated by greenish gray clay along cross sets, micaceous		
111.3	121.0	43	ss., fine grained (1/8 mm), cross-bedded, saturated with brownish black asphalt; 2 or 3 greenish gray micaceous clay partings between foresets (unit sampled at intervals)		
121.0	122.5	44	ss., lt gray, cross bedded to cross laminated; abundant thin greenish gray shale laminae; moderate asphalt staining of ss; (unit sampled at intervals)		
122.5	127.4	45	ss., fine grained, micaceous; stained with dk. brown asphalt; cross-bedded to cross-laminated		
127.4	128.0	46	ss., lt. gray and dk. gray shale, interlaminated		
128.0	128.7	47	ss., lt gray, fine grained, localized staining with asphalt; conglomeratic with tan clay clasts near bottom		
128.7	129.7	48	shale, med. dk. gray (N4 dry); lt. gray ss., ripple laminated, comprises 40% of unit		
129.7	145.9	49	same as above but lt. gray ss. laminae comprise approx. 10% of unit, plant fragments along bedding planes; soft clay bed 139.7-139.9 ft.		
145.9	147.5	50	same as above but ss. laminae comprise approx. 50% of unit		
147.5	147.6	51	shale, dk. gray		
147.6	148.2	52	underclay, med. gray, carbonized root impressions		
148.2	148.5	53	clay, soft; brownish gray (not representative of section)		
148.5	150.2	54	shale, greenish gray, very sandy; clusters of brown sand sized siderite concretions, carbonized roots		
150.2	164.7	55	ss., lt. gray, greenish gray clay in distorted "wispy" laminae to disseminated throughout unit; sand sized siderite concretions		

					55	
164.7	167.3	56	conglomerate, clasts mostly granule size of coal, lt. gray shale, dk. gray shale, spherical to lens-like shape, aligned; lt. gray to brown ss. matrix		56	
167.3	168.9	57	ss., lt. gray, cross laminated ripples and med. dk. gray shale intercalated in units to approx. .1 ft thick in equal amounts		57	
168.9	170.4	58	ss., lt. gray, few tan claystone clasts		58	
170.4	170.9	59	ss., lt. gray, cross-laminated ripples and med. dk. gray shale intercalated in equal amounts, units to .1 ft thick, wavy		59	
					60	
170.9	171.5	60	conglomerate, clasts to .05 ft. dia. consist of tan woody material, dk. gray shale and clay ironstone, inter-laminated lt. gray ss. and dk. gray shale from 171.0-171.3 ft		61	
171.5	172.9	61	ss., lt. gray, fine grained; 10% of unit is dk. gray wavy shale laminae		62	
172.9	179.1	62	ss., lt. gray, cross-laminated ripples and dk. gray shale interlaminated in approx. equal amounts; wavy; similar to 170.4-170.9 ft.		63	
179.1	180.0	63	ss., lt. gray, fine grained, dk. gray shale laminae comprise approx. 10% of unit; few clasts of tan woody material		64	
180.0	182.9	64	ss., lt. gray (N7 to N8 dry) fine grained, ripple cross-laminated; approx. 40% of unit is med. gray (N5, dry) shale, laminae .01 to .02 ft. thick wavy, micac. along bedding planes		65	
182.9	185.3	65	ss., lt. gray, fine grained, micaceous, few paper thin, wavy, med. gray shale laminae		66	
185.3	186.9	66	no core, roller bit drilled interval		67	
186.9	187.0	67	coal, shiny, pyritiferous		68	
187.0	187.3	68	shale, dk. gray, slick, gradational with overlying unit		69	
187.3	189.2	69	underclay, med. gray, carbonized roots		70	
189.2	191.7	70	shale, black, pyrite nodules .01 ft. dia. throughout interval		71	
191.7	192.0	71	coal, bright, pyrite		72	
192.0	194.2	72	underclay, med gray, carbonized and pyritized roots and other plant material; sand sized siderite concretions		73	
194.2	196.4	73	shale, med. gray; sand sized siderite concretions and pyrite nodules		74	
196.4	202.1	74	shale, dk. grayish black (N2, dry); approx. 10% of unit to 200.0 ft. depth is lt. gray, lenticular ss. cross laminae (starved ripples)		75	
202.1	202.8	75	coal, bright, fractured; pyrite laminae .01 ft. thick; calcite filled cleats		76	
202.8	204.0	76	underclay, med. gray, soft; carbonized roots		77	
204.0	209.6	77	shale, med. gray; tan sand sized siderite concretions dispersed throughout form clusters near bottom of unit		78	
					78	

209.6	225.9	78	shale, black, non calc; approx. 1% lt. gray paper thin ss. laminae (starved ripples) equally spaced throughout unit; tan clay ironstone zones at 210.3-210.4, 211.05-211.1, 204.0-204.2, 205.9-205.95, 207.5-207.6 ft. lost core 220.2-221.6 ft.	78	
225.9	227.2	79	coal, bright with pieces of fusain forming dull bands; approx. 1% of unit is pyrite mostly forming cleat fill, also calcite cleat fill	79	
227.2	230.0	80	underclay, med. gray, carbonized roots	80	
230.0	232.0	81	shale, dk. gray to grayish black (dry); pieces carbonized and pyritized stems	81	
232.0	232.6	82	coal, bright to dull, pyritized plants and pyrite fill cleats	82	
232.6	236.3	83	shale, slickensided, dk. grayish black (N2, dry to black (N1, wet) pyrite nodules .01 ft. dia., sharp contact with underlying unit	83	
236.3	241.6	84	dolomite, sugary texture, lt. olive gray (5Y 6/1) vuggy, porous saturated with brownish black asphalt from 236.3-238.2 ft. becoming randomly dispersed in pores throughout remainder of unit, also pyrite in pores; bluish gray chert nodule .1 ft dia. at 241.2 ft	84	
					TOP MISS.
					
			T. D. 241.6		



OILFIELD RESEARCH LABORATORIES

536 NORTH HIGHLAND - CHANUTE, KANSAS 66720 - PHONE (316) 431-2650

April 14, 1978

Missouri Department
of Natural Resources
P.O. Box 250
Rolla, Missouri 65401

Gentlemen:

Enclosed herewith are the results of tests run on the rotary core samples taken from the ERDA-TS Lease, Well No. 38, Barton County, Missouri, and submitted to our laboratory on February 23, 1978.

These core samples were sampled by a representative of the client.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Benjamin R. Pearman
Benjamin R. Pearman

BRP:cb
5 c to Rolla, Missouri

Oilfield Research Laboratories

GENERAL INFORMATION & SUMMARY

Company Missouri Department of Natural Resources Lease ERDA-TS Well No. 38
 Location 2560' FSL & 2620' FEL
 Section 6 Twp. 33N Rge. 33W County Barton State Missouri
 Name of Sand - - - - -
 Top of Core - - - - - 111.0
 Bottom of Core - - - - - 128.0
 Top of Sand - - - - - 111.0
 Bottom of Sand - - - - - 128.0
 Total Feet of Permeable Sand - - - - - 15.1
 Total Feet of Floodable Sand - - - - -
 Distribution of Permeable Sand:

Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 50	4.1	4.1
50 - 200	6.2	10.3
200 - 300	2.8	13.1
300 & Above	2.0	15.1

 Average Permeability Millidarcys - - - - - 150.3
 Average Percent Porosity - - - - - 21.2
 Average Percent Oil Saturation - - - - - 42.6
 Average Percent Water Saturation - - - - - 27.7
 Average Oil Content, Bbls./A. Ft. - - - - - 706.
 Total Oil Content, Bbls./Acre - - - - - 10,668.
 Average Percent Oil Recovery by Laboratory Flooding Tests - - - - -
 Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft. - - - - -
 Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre - - - - -
 Total Calculated Oil Recovery, Bbls./Acre - - - - -
 Packer Setting, Feet - - - - -
 Viscosity, Centipoises @ - - - - -
 A. P. I. Gravity, degrees @ 60 °F - - - - - (Reported) 19.
 Elevation, Feet - - - - - (Ground Level) 861.

OILFIELD RESEARCH LABORATORIES

- LOG -

Company Missouri Department of Natural Resources Lease ERDA-TS Well No. 38

<u>Depth Interval, Feet</u>	<u>Description of Samples Only</u>
111.0 - 121.0	Brown sandstone.
121.0 - 122.0	Gray and brown laminated sandstone and shale.
123.0 - 128.0	Brown and gray laminated sandstone.

RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Lease ERDA-TS

Missouri Department of Natural Resources

Company

Sample No.	Depth, Feet	Effective Porosity Percent	% Permeable Saturation		Oil Content Bbls / A Ft.	Pore Vol. M.D.
			Oil	Water		
1	111.8	21.6	34	15	570	80
2	112.8	21.8	27	66	444	118
3	113.9	21.6	21	93	1,019	101
4	115.1	20.3	30	78	786	132
5	115.9	22.9	31	91	985	138
6	116.9	21.0	22	87	1,010	104
7	117.9	23.2	43	82	1,774	107
8	118.5	21.5	43	82	883	112
9	119.9	22.1	38	70	1,493	112
10	120.9	20.9	12	45	650	113
11	121.9	19.3	2	50	259	113
12	122.1	21.3	46	74	759	117
13	126.6	19.8	44	65	379	121
14	128.0	20.8	40	68	344	121
15	127.0	21.0	28	70	456	121

Oilfield Research Laboratories

RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Missouri Department
of Natural Resources

Company _____ Lease ERDA-TS Well No. 38

Sample No.	Depth, Feet	Effective Porosity Percent	Percent Saturation			Oil Content Bbls. / A Ft.	Perm., Mill.	Feet of Sand		Total Oil Content	Perm. Capacity Ft. X md.
			Oil	Water	Total			Ft.	Cum. Ft.		
1	111.9	21.6	34	1	35	570	80.	1.0	1.0	570	80.00
2	112.9	21.2	27	39	66	444	118.	1.0	2.0	444	118.00
3	113.9	21.6	62	30	92	1,039	191.	1.0	3.0	1039	191.00
4	115.1	20.3	50	28	78	786	132.	1.2	4.2	943	158.40
5	115.9	22.9	51	40	91	905	324.	1.0	5.2	905	324.00
6	116.9	21.0	62	25	87	1,010	377.	1.0	6.2	1010	377.00
7	117.9	23.2	43	39	82	774	208.	1.1	7.3	851	228.80
8	118.5	21.5	53	29	82	883	277.	0.7	8.0	618	193.90
9	119.9	22.1	58	12	70	993	292.	1.0	9.0	993	292.00
10	120.9	20.9	42	3	45	680	119.	1.0	10.0	680	119.00
11	121.9	19.7	2	48	50	31	1.6	1.0	11.0	31	1.60
12	123.1	21.3	46	28	74	759	71.	1.0	12.0	759	71.00
13	124.6	19.9	44	21	65	679	37.	1.0	13.0	679	37.00
14	125.9	20.8	40	28	68	644	49.	1.0	14.0	644	49.00
15	127.0	21.0	28	42	70	456	26.	1.1	15.1	502	28.60

Oilfield Research Laboratories

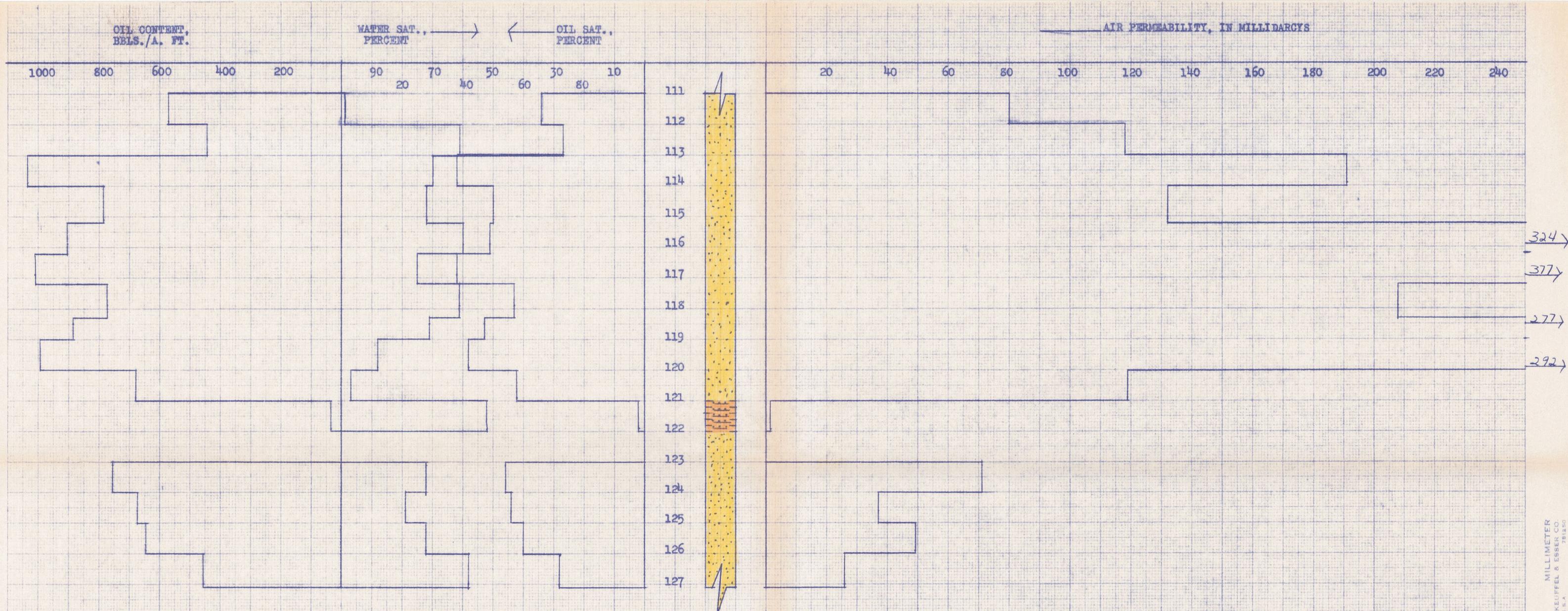
SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company Missouri Department of Natural Resources Lease ERDA-TS Well No. 38

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
111.0 - 121.0	10.0	208.2	2082.10
121.0 - 127.1	5.1	36.7	187.20
111.0 - 127.1	15.1	150.3	2269.30

Depth Interval, Feet	Feet of Core Analyzed	Average Percent Porosity	Average Percent Oil Saturation	Average Percent Water Saturation	Average Oil Content Bbl./A. Ft.	Total Oil Content Bbls./Acre
111.0 - 121.0	10.0	21.6	48.0	24.7	805	8,053
121.0 - 127.1	5.1	20.5	31.9	33.6	513	2,615
111.0 - 127.1	15.1	21.2	42.6	27.7	706	10,668



KEY:
 SANDSTONE
 LAMINATED SANDSTONE AND SHALE

MISSOURI DEPARTMENT OF NATURAL RESOURCES
 ERDA-TS LEASE
 BARTON COUNTY, MISSOURI
 WELL NO. 38

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE PERCENT POROSITY	AVG. OIL SATURATION, PERCENT	AVG. WATER SATURATION PERCENT	AVG. OIL CONTENT, BBLs./A. FT.	TOTAL OIL CONTENT, BBLs./ACRE	AVG. AIR PERMEABILITY, MILLIDARCYS
111.0 - 121.0	10.0	21.6	48.0	24.7	805	8,053	208.2
121.0 - 127.1	5.1	20.5	31.9	33.6	513	2,615	36.7
111.0 - 127.1	15.1	21.2	42.6	27.7	706	10,668	150.3

OILFIELD RESEARCH LABORATORIES
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 APRIL, 1978
 S. S.

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