

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 39	Elevation (ground) 948	
WELL LOCATION (give footage from section lines) <u>10</u> ft. from (N) (S) sec. line <u>55</u> ft. from (E) (W) sec. line			
WELL LOCATION Section <u>14</u> Township <u>32N</u> Range <u>33W</u>			County <u>Barton</u>
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: <u>NA</u> feet	
Proposed depth: <u>175</u>	Rotary or Cable tools <u>Rotary (Air)</u>	Approx. date work will start	
Number of acres in lease: <u>NA</u>	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 _____ Address <u>NA</u>		No. of Wells: producing _____ inactive _____ abandoned _____	
Status of Bond Single Well <input type="checkbox"/> Amt. _____ Blanket Bond <input type="checkbox"/> Amt. _____ <input checked="" type="checkbox"/> ON FILE <input checked="" type="checkbox"/> 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.
_____	_____	<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: 20031
Approval Date: Sept 77
Approved By: Wallace B. Hauer

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

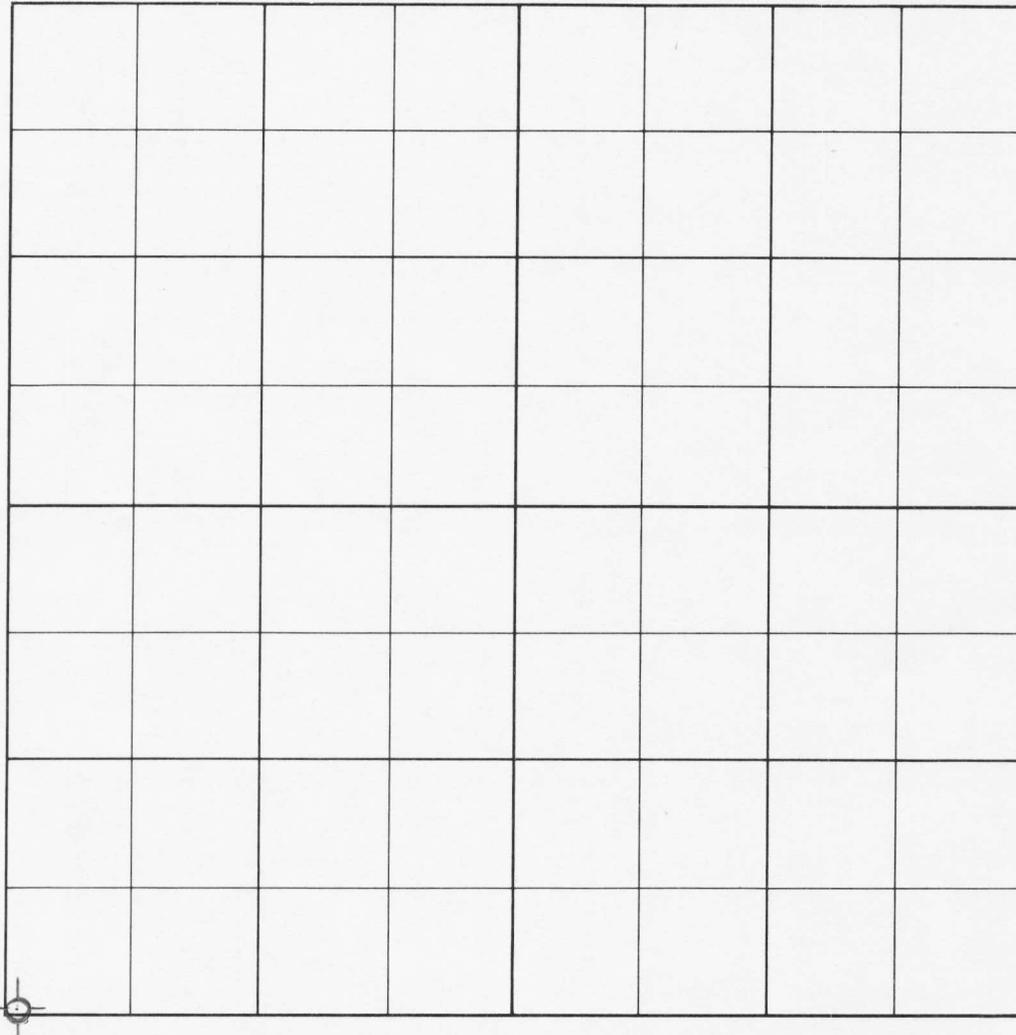
Form OGC - 4

Owner: DNR - Geol Survey

Lease Name: ERDA-TS No. 39 County, Barton

10 feet from (~~N~~ - S) line and 55 feet from (~~E~~ - W) line of Sec. 14 Twp. 32N 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. 14, T. 32N., R. 33W.
 Address _____
 City & State _____

Boring No. 39 Sheet 1 of 3
 Surface Elevation 948' Offset _____
 Date Started 10/11/77 Completed _____
 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 COLOR-MATERIAL-MOISTURE-CLAY CONSISTENCY SAND DENSITY
FROM	TO		POCKET PENETRO-METER	NO. OF BLOWS		
0.0'	7.5'	WB				Brown & gray silty clay
7.5'	10.5'	WB				Brown & gray weathered shale, moist, med. hard
10.5'	17.0'	WB				Gray shale, med. hard
17.0'	17.5'	WB				Red shale, med. hard
17.5'	20.0'	WB				Dark gray shale, hard
20.0'	24.2'	CW1			4.2'	DARK gray shale, med. hard 1 piece
24.2'	25.0'	CW1			0.8'	Gray limestone, 1 piece
25.0'	26.9'	CW1			1.9'	Gray shale, med. hard 1 piece
26.9'	30.0'	CW1			3.1'	Black sandstone, dead oil 3 pieces
30.0'	34.0'	CW2			4.0'	Same 6 pcs.
34.0'	40.0'	CW2			6.0'	Gray shale, 11 pcs.
40.0'	41.3'	CW3			1.2'	Same 3 pcs.
41.3'	42.7'	CW3			1.4'	Black coal 6 pcs.
42.7'	49.1'	CW3			6.4'	Gray shale, med. hard 20 pcs.
49.1'	50.0'	CW3			0.9'	Black coal 4 pcs.
50.0'	50.3'	CW4			0.3'	Same 1 piece

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

TEST BORING LOG

 Project E. R. D. A.

 Boring No. 39 Sheet 3 of 3

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		
115.9'	120.0'	CW			4.1'	Gray shale 25 pcs. 0.1 to 0.4
120.0'	123.0'	CW			3.0'	Gray shale 20 pcs. 0.1 to 0.4
123.0'	130.0'	CW			7.0'	Dark gray shale 30 pcs. .05 to 0.5
130.0'	131.7'	CW			1.7'	Same 10 pcs. 0.1 to 0.3
131.7'	132.0'	CW			0.3'	Coal
132.0'	136.0'	CW			4.0'	Siltstone, light gray 14 pcs.
136.0'	140.0'	Cw			4.0'	Gray sandstone 25 pcs.
140.0	150.0'	CW			10.0'	Gray sandstone w/traces oil 15 pcs. 0.1 to 2.5
150.0'	154.8'	CW			4.8'	Same 9 pieces 0.1 to 1.3
154.8'	155.7'	CW			0.9'	Coal 3 pcs. Broken to 0.3
155.7'	160.0'	CW			4.3'	Gray shale broken to 0.4
160.0'	161.6'	CW			1.3'	Same 7 pcs. .05 to 0.3
161.6'	170.0'	CW			6.0'	Green shale w/chert 16 pcs. broken to 0.7
170.0'	171.0'	CW			1.0'	Same, broken
171.0'	Total depth					

REMARKS: (Casing, Water Loss, Etc.)

Water Level

Time

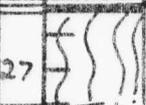
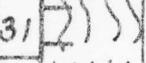
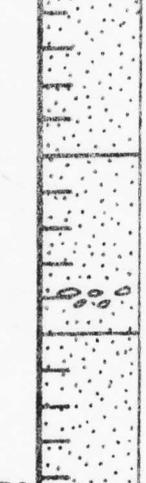
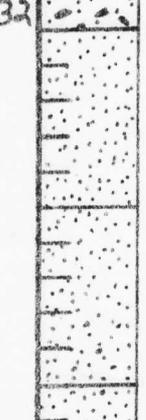
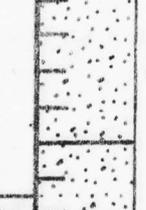
Date

_____ (Completion)

QUADRANGLE: Liberal

ERDA TS Core No. 39
 COUNTY: BARTON

LOCATION:			SEC. 14	T. 32N	R. 33W	DATE: <i>SPUDED 10-77</i>
SW1/4 SW1/4 SW1/4 10 FSI 55FWI						Completed 10-14-77
LOCATION DESCRIPTION: <i>1 MILE WEST AND 2 1/2 MILES SOUTH OF LIBERAL</i>						Logged 10-16-77
Elev. 948.0 Topo map						
DEPTH		BED NO.	LITHOLOGY			
FROM	TO					
0.0	10.0	1	soil and shale weathered brown to lt. gray, soft			
10.0	17.0	2	shale, med. lt. gray, soft, slick			
17.0	20.0	3	shale, dk. gray, soft, firm; lenses of red shale at 18.5 ft.			
20.0	24.2	4	shale, dk. gray (GSA Rock Color Chart, N3 dry) non calc, soft; .1 ft. thick clay ironstone beds at 21.0 and 23.4 ft.			
24.2	25.0	5	ls, med. gray (N5, dry) to dk. gray (N3, dry) at bottom, fossiliferous, small productids, biconvex brachiopods (.01 ft. in cross sectional shape), high sp. AND gastropods, crinoid columnals	6 →		
25.0	25.05	6	shale, dk. gray, non calc; almost a coal			
25.05	26.9	7	underclay, lt gray (N7, dry), carbonized root impressions; small irregular patches of siderite in bottom 1 ft.			
26.9	32.4	8	ss., fine grained, micaceous, cross-bedded, stained brownish black with asphalt; samples removed at selected intervals			
32.4	34.0	9	ss., med. gray, specks gilsonite, micaceous	10 →		
34.0	34.05	10	clay ironstone, med. brownish gray			
34.05	35.95	11	shale, med. dk gray, approx. 25% of unit is lt. gray laminae and pods of ss.; evenly spaced throughout, horizontal	12 →		
35.95	36.0	12	shale, black, non calc.			
36.0	37.0	13	claystone, med. dk. gray, poorly developed roots			
37.0	40.0	14	claystone, soft, med. greenish gray; sand-sized siderite concretions dispersed throughout unit	16 →		
40.0	40.7	15	shale, dk. gray, non calc.			
40.7	41.0	16	clay ironstone, med. brownish gray, dense, hard			
41.0	41.6	17	shale, grayish black, (N2, dry) laminae of white re-crystallized shale fragments, brachiopods?			
41.6	42.7	18	coal, bright, 1 or 2% pyrite in the form of compressed stems, leaves			
42.7	45.0	19	underclay, med. gray, carbonized roots	22 →		
45.0	46.2	20	claystone, greenish gray			

46.2	47.9	21	shale, dk. gray, 5% of unit is lt. gray lenticular laminae of ss. (starved ripples) evenly spaced throughout unit	26	
47.9	48.1	22	clay ironstone, med. gray, hard, dense		
48.1	49.2	23	lost core		
49.2	50.0	24	coal, bright to dull; pyritized plant material	28	
50.0	50.1	25	claystone, hard, non calc.		
50.1	50.2	26	coal, bright to dull		
50.2	53.0	27	underclay, med. gray, silty, clusters of sand-sized siderite concretions in bottom half		
53.0	57.3	28	shale, med. greenish gray, silty to fine sand-disturbed in top half (bioturbite structure) to interlaminated with lt. gray ss. in bottom half; sand-sized siderite concretions in clusters and disseminated throughout	29	
57.3	61.0	29	shale, med. dk. gray, approx. 10% of unit is lt. gray ss. lenses (paper thin) equally spaced throughout unit	30	
61.0	61.05	30	coal, bright		
61.05	63.4	31	underclay, lt. greenish gray, carbonized roots, sandy, disturbed bioturbite appearance; brown clusters of sand-sized siderite concretions in bottom half		
63.4	101.6	32	ss., fine grained, micaceous, dk. gray to grayish black from abundant dispersed specks of shiny brittle asphalt (gilsonite) throughout unit; conglomerate from 78.9-79.2 ft of tan clasts to .1 dia (clayey plant pith material) rounded to flattened comprise 10% of unit with grayish black ss. matrix; paper thin crinkly laminae of coaly material also randomly oriented pieces of coal, sand sized from 84.5-85.0, 92.8-95.4, 98.4-101.0 comprise small percentage of unit most abundant below 98.4 ft.; sections removed for asphalt sampling at selected intervals		
101.6	103.0	33	ss., fine grained, gilsonite but not as abundant as in overlying unit; distorted shiny laminae of coal to .01 ft. thick and randomly oriented granule-sized flattened clasts for about 5% of unit, dispersed throughout	32	
103.0	105.6	34	ss., fine grained dk, gray with gilsonite		
				33	
				34	

105.6	107.8	35	claystone, lt. greenish gray, poorly developed root impressions, sand-sized siderite concretions near middle	35	
107.8	113.7	36	shale, dk. gray with about 10% of unit lt. gray paper-thin lenticular ss. laminae, distorted laminations in top 1 ft. horizontal below	36	
113.7	115.5	37	shale, dk. gray, non calc., pyritiferous; dk. gray clay ironstone bed, dense, hard from 114.2-114.4 ft.	37	
115.5	115.8	38	coal, bright	38 →	
115.8	117.0	39	underclay, med. gray, carbonized roots	39	
117.0	119.8	40	claystone, med. greenish gray, irregular patches of dk. gray clay which may be carbonized roots especially near top, few sand-sized siderite concretions	40	
119.8	123.1	41	shale, med. greenish gray; .3 ft. thick siderite zone at top	41	
123.1	131.7	42	shale, dk. gray grading downsection into grayish black at bottom, non calc.; .1 ft. thick brownish gray clay ironstone zone at 130.2 ft.	42	
131.7	132.0	43	coal, bright, fractured	43	
132.0	133.7	44	underclay, lt. gray, sandy; abundant carbonized-pyritized roots	44	
133.7	135.4	45	ss., fine-grained, dk. gray clay ironstone clasts to .05 ft. dia. in top .5 ft.; 0.5 ft. dia, nodules pyrite, lt. gray to tan with slight asphalt stain	45	
135.4	139.5	46	ss., tan with slight asphalt stain; paper thin dk. gray, micaceous shale laminae comprise approx. 20% of unit, evenly spaced throughout	46	
139.5	140.0	47	shale, med. gray, micaceous	47 →	
140.0	141.0	48	ss., lt. gray, fine grained	48	
141.0	155.0	49	ss., grayish black to 144.0 ft, cross bedded and med. dk. gray to bottom of unit, asphaltic staining and gilsonite particles, thin crinkly coal laminae (paper thin) inclined to horizontal, form about 10-20% of unit from 145.3-145.6, 149.5-149.7, 152.2-152.3, 152.7-153.7 ft; few flattened granule sized clasts of tan woody material dispersed throughout unit below 150.0 ft; samples removed at selected intervals below 151.0 ft.	49	
155.0	155.7	50	coal, bright, pyritized plant material	50 →	
155.7	156.0	51	shale, dk. gray, hard	51 →	
156.0	160.5	52	shale, dk. gray to grayish black, soft, less than 2% of unit is lt. gray ss., laminae and pods, root impressions in top half	52	

160.5	161.0	53	lost core	52		
161.0	161.7	54	shale, grayish black, fractured slickensided	53		
161.7	161.9	55	shale, grayish black, white angular chert clasts to .03 ft. across	54	50-00	RESIDUAL
161.0	163.7	56	breccia, white to bluish gray, white angular chert clasts to .1 ft. across; greenish gray clay matrix (5G 6/1 dry) slickensided comprises about 50% of unit; sandy (some clear round quartz grains); localized asphalt staining, pyrite	55		CHERT
163.7	166.2	57	lost core	56		ZONE
166.2	171.0	58	same as from 161.9-163.7 but predom. fractured chert in bottom 2 ft, pyrite nodules to .05 ft. dia. at 168.3 ft, asphalt stain at bottom	57		OVERLY
				58		MISS. L

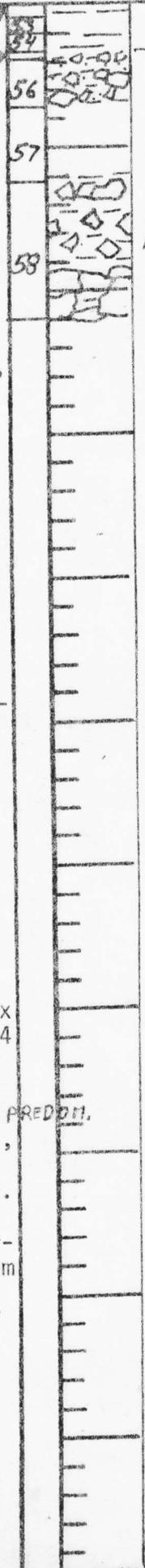
T.D. 171.0 ft.

NOTE: The size of the grains composing the lt. gray cross-laminated ripples in the ERDA cores ranges from silt to fine sand. Generally the thinner the laminae, the finer the grain size. Many of the paper-thin laminae are classified as siltstone being composed predominately of silt with the grain size less than 1/16 mm. but a high percentage of these grains is very fine (1/16 to 1/8 mm in dia.) to fine sand (1/8 to 1/4 mm. in dia.). Sorting is fair to poor with many angular grains. Many of these laminae range in thickness from paper thin (about 1/10 mm) to 1 cm. and are mostly silty sandstones or sandy siltstones. In field descriptions these units have been listed as sandstones because of the difficulty in distinguishing silt and very fine sand.

Sediments deposited from high velocity currents including massive cross-stratified units and the matrix of conglomerates is predominately fine sand (1/8 to 1/4 mm dia of grains). Rarely is sand over 1/4 mm dia. encountered.

The coarse siltstone and sandstone are micaceous, quartz, and composed of angular to subrounded grains, poor to fair sorting, flakes and bits of carbonaceous material of predominately coalified leaves, twigs, etc. are common as well as disseminated pyrite.

The dark gray and black shale consist of very carbonaceous, pyritiferous clay but the lt. gray and medium gray shales contain appreciable silt and fine sand. Clay, flakes of mica, and carbonaceous material are of sufficient quantity to give these units fissility.





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. 39, 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.	39	
Location	10' FSL & 55' FWL					
Section	14	Twp.	32N	Rge.	33W	
		County	Barton		State	Missouri
Name of Sand - - - - -						
Top of Core	- - - - -				27.0	
Bottom of Core	- - - - -				155.0	
Top of Sand	- - - - -				27.0	
Bottom of Sand	- - - - -				155.0	
Total Feet of Permeable Sand	- - - - -				30.4	
Total Feet of Floodable Sand	- - - - -					
Distribution of Permeable Sand:						
	Permeability Range Millidarcys	Feet		Cum. Ft.		
	0 - 12	10.0		10.0		
	12 - 24	6.0		16.0		
	24 - 48	5.2		21.2		
	48 - 96	5.2		26.4		
	96 & Above	4.0		30.4		
Average Permeability Millidarcys	- - - - -				38.2	
Average Percent Porosity	- - - - -				19.6	
Average Percent Oil Saturation	- - - - -				22.9	
Average Percent Water Saturation	- - - - -				46.2	
Average Oil Content, Bbls./A. Ft.	- - - - -				337.	
Total Oil Content, Bbls./Acre	- - - - -				10,248.	
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)		948.	

OILFIELD RESEARCH LABORATORIES

- LOG -

Company Missouri Department of Natural Resources Lease ERDA-TS Well No. 39

<u>Depth Interval, Feet</u>	<u>Description of Samples Only</u>
27.0 - 32.0	Brown sandstone.
32.5 - 33.5	Dark carbonaceous sandstone.
65.0 - 78.0	Light brown sandstone.
78.0 - 89.0	Dark gray sandstone.
89.0 - 97.0	Gray sandstone.
151.0 - 155.0	Dark carbonaceous sandstone.

Oilfield Research Laboratories

RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Missouri Department of Natural Resources Lease ERDA-TS Well No. 39

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	27.7	18.0	43	41	84	601	75.	1.0	1.0	601	75.00
2	29.1	20.1	48	31	79	748	73.	1.0	2.0	748	73.00
3	30.5	17.8	53	20	73	731	32.	1.0	3.0	731	32.00
4	31.7	18.4	52	43	95	741	46.	1.0	4.0	741	46.00
5	33.0	16.7	59	9	68	764	0.86	1.0	5.0	764	0.86
6	65.55	19.7	12	46	58	183	18.	0.8	5.8	146	14.40
7	65.85	16.8	18	57	75	234	19.	1.2	7.0	281	22.80
8	67.85	21.4	14	77	91	232	69.	1.0	8.0	232	69.00
9	69.4	20.6	16	79	95	256	145.	1.0	9.0	256	145.00
10	70.75	23.0	12	55	67	214	97.	1.0	10.0	214	97.00
11	71.9	23.4	9	61	70	163	107.	1.0	11.0	163	107.00
12	73.1	20.2	11	63	74	172	88.	1.2	12.2	206	105.60
13	74.1	23.8	8	51	59	148	75.	1.0	13.2	148	75.00
14	75.9	21.6	10	50	60	168	32.	1.2	14.4	202	38.40
15	77.1	20.2	10	49	59	157	19.	1.0	15.4	157	19.00
16	78.5	20.9	17	48	65	275	4.3	1.0	16.4	275	4.30
17	80.3	19.8	13	70	83	200	2.5	1.0	17.4	200	2.50
18	82.5	20.0	28	51	79	434	9.5	1.0	18.4	434	9.50
19	83.9	20.2	22	49	71	345	17.	1.0	19.4	345	17.00
20	85.5	18.3	38	39	77	539	19.	1.0	20.4	539	19.00
21	86.9	20.0	30	30	60	465	12.	1.0	21.4	465	12.00
22	88.1	19.7	24	50	74	366	9.4	1.0	22.4	366	9.40
23	89.8	15.4	16	59	75	191	2.0	1.0	23.4	191	2.00
24	91.0	18.5	17	46	63	244	11.0	1.0	24.4	244	11.00
25	92.9	19.1	9	56	65	134	24.	1.0	25.4	134	24.00
26	94.7	21.0	10	49	59	163	97.	1.0	26.4	163	97.00
27	96.8	20.2	9	73	82	141	25.	1.0	27.4	141	25.00
28	151.55	17.6	24	9	33	328	2.6	1.0	28.4	328	2.60
29	152.7	19.0	30	10	40	443	3.6	1.0	29.4	443	3.60
30	154.2	17.9	28	10	38	390	2.7	1.0	30.4	390	2.70

Oilfield Research Laboratories

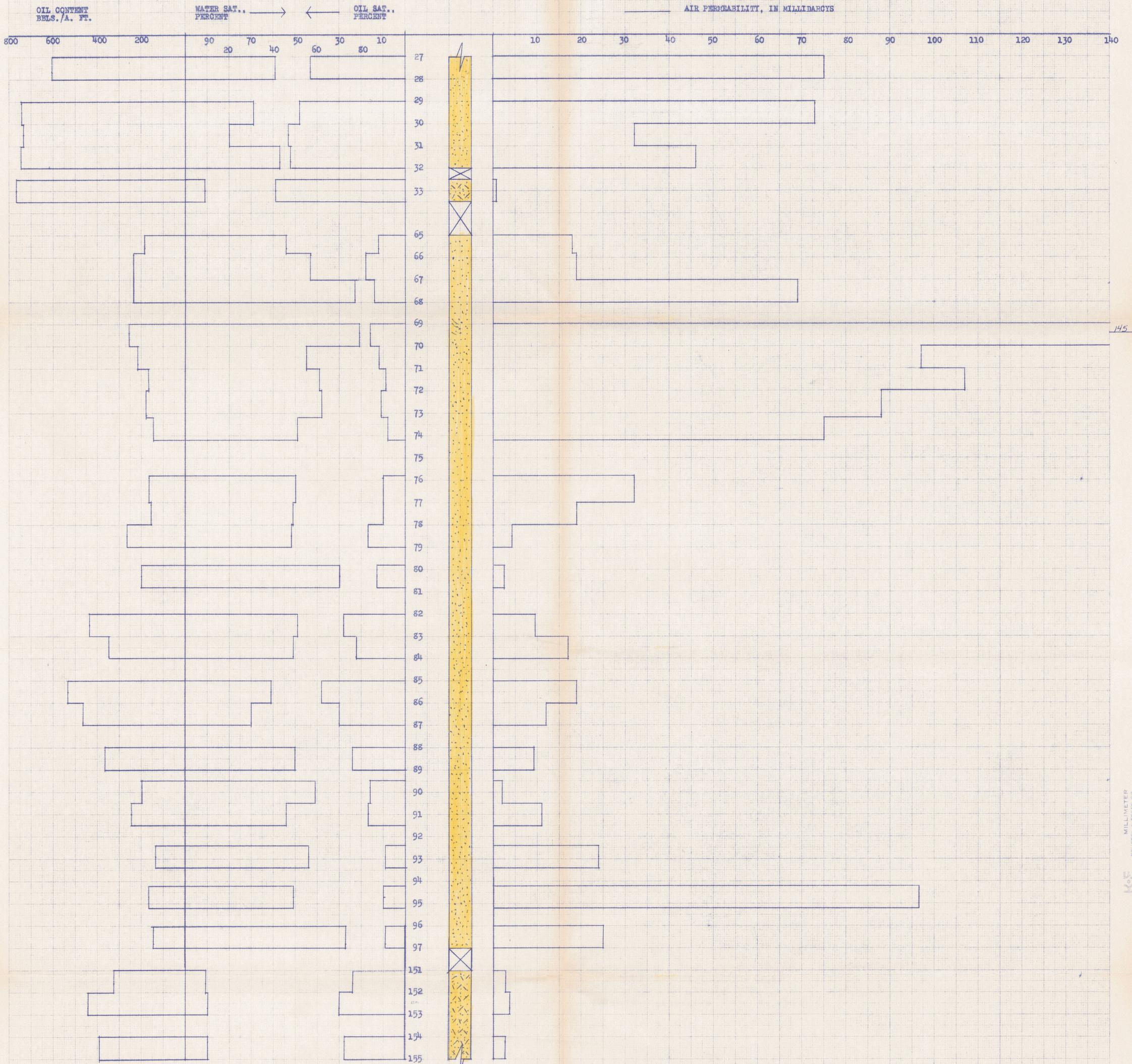
SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company Missouri Department of Natural Resources Lease ERDA-TS Well No. 39

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
27.0 - 33.5	5.0	45.4	226.86
65.0 - 97.0	22.4	41.3	925.90
151.0 - 155.0	3.0	3.0	8.90
27.0 - 155.0	30.4	38.2	1161.66

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
27.0 - 33.5	5.0	18.2	51.0	28.8	717	3,585
65.0 - 97.0	22.4	20.2	16.0	55.0	246	5,502
151.0 - 155.0	3.0	18.2	27.3	9.7	387	1,161
27.0 - 155.0	30.4	19.6	22.9	46.2	337	10,248



KEY:

SANDSTONE

CORE NOT RECEIVED

CARBONACEOUS SANDSTONE

MISSOURI DEPARTMENT OF NATURAL RESOURCES

ERDA-TS LEASE

BARTON COUNTY, MISSOURI

WELL NO. 39

DEPTH INTERVAL FEET	FEET OF CORE ANALYZED	AVERAGE PERCENT POROSITY	AVG. OIL SATURATION PERCENT	AVG. WATER SATURATION PERCENT	AVG. OIL CONTENT BLS./A. FT.	TOTAL OIL CONTENT BLS./ACRE	AVG. AIR PERMEABILITY MILLIDARCY
27.0 - 33.5	5.0	18.2	51.0	28.8	717	3,585	45.4
65.0 - 97.0	22.4	20.2	16.0	55.0	246	5,502	41.3
151.0 - 155.0	3.0	18.2	27.3	9.7	387	1,161	3.0
27.0 - 155.0	30.4	19.6	22.9	46.2	337	10,248	38.2

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
APRIL, 1978.