

APPLICATION FOR PERMIT TO DRILL, DEEPEN OR PLUG BACK

APPLICATION TO DRILL DEEPEN PLUG BACK

NAME OF COMPANY OR OPERATOR DNR - GEOL SURVEY DATE 1 March 1977
P.O. Box 250 Rolla Mo.
Address City State

DESCRIPTION OF WELL AND LEASE

Name of lease ERDA TS Well number 22 Elevation (ground) 967

WELL LOCATION (give footage from section lines)
15 ft. from (N) 65 ft. from (E)

WELL LOCATION Section 14 Township 31N Range 31W County BARTON

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

Proposed depth: 125' Rotary or Cable tools Rotary Approx. date work will start 24 MARCH

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

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

Status of Bond Single Well Amt. _____ Blanket Bond Amt. _____
 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.

Proposed casing program: amt. size wt./ft. cem. Approved casing - To be filled in by State Geologist amt. size wt./ft. cem.

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: 20020
Approval Date: 1 March 1977
Approved By: Wallace B. Howe

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.

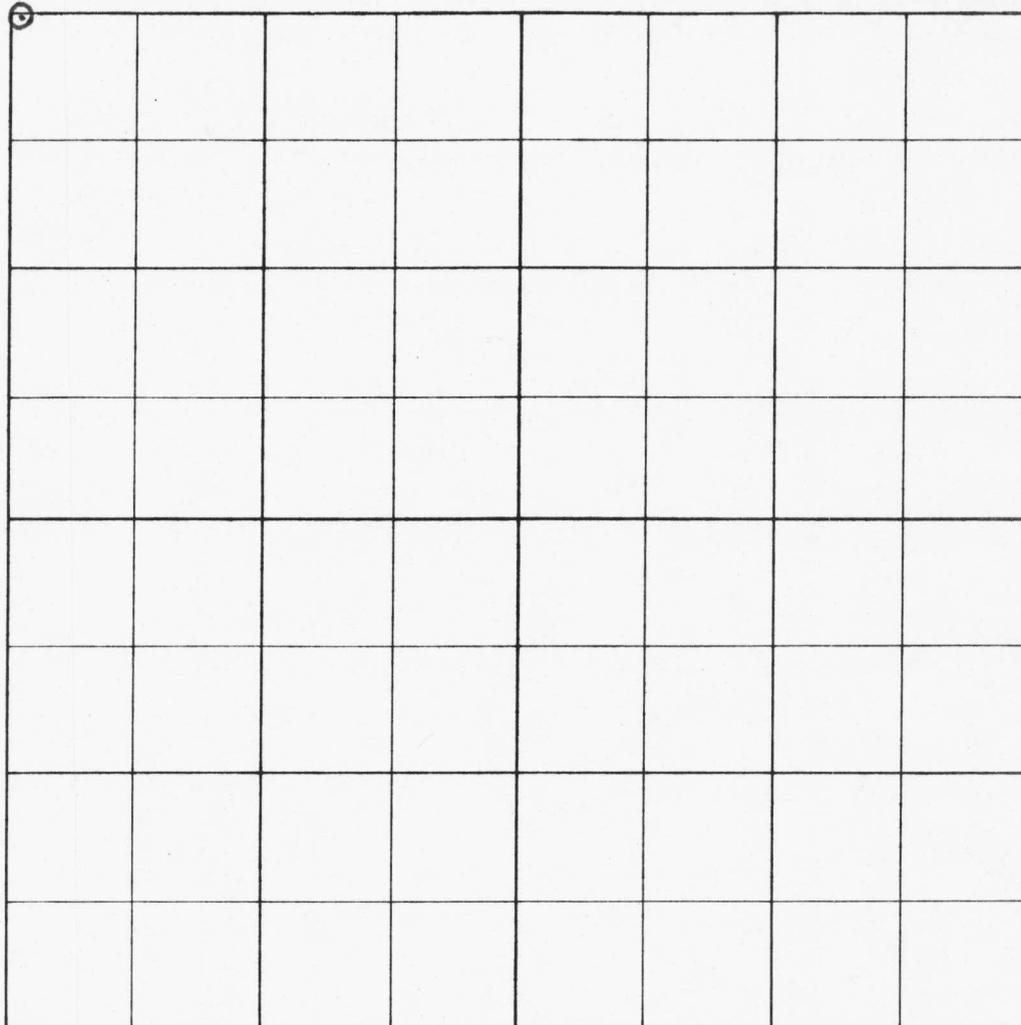
MISSOURI OIL AND GAS COUNCIL
WELL LOCATION PLAT

Form OGC - 4

Owner: DNR - GEOL SURVEY

Lease Name: ERDA TS # 22 County, BARTON

15 feet from (N) - 5 line and 65 feet from (E) - 10 line of Sec. 14 Twp. 31N Range 31W



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)

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Registered Land Surveyor

TEST BORING LOG

Project State of Missouri
E.R.D.A.
 Address Barton
Vernon County
 City & State Nevada, Missouri

Boring No. 22 C Sheet 1 of 2
 Surface Elevation _____ Offset _____
 Date Started 3/25/77 Completed 3/28/77
 Driller J. Wright Rig CME 750

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

Sec. 14, T. 31N., R. 31W.

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'	8.0'	WB				Soil, brown sandy clay
8.0'	18.0'	CW1			10.0'	Sandstone, brown
18.0'	20.0'	CW2			2.0'	Same
20.0'	30.0'	CW3			10.0'	Sandstone, dark gray, shale streaks
30.0'	37.0'	CW4			10.0'	Shale, dark gray, sandy
37.0'	38.0'					Coal, shaly
38.0'	40.0'					Underclay, light gray, soft
40.0'	46.0'	CW5			10.0'	Shale, dark gray
46.0'	46.6'					Coal, bright
46.6'	50.0'					Underclay, light gray, soft
50.0'	60.0'	CW6			10.0'	Shale, light gray, banded
60.0'	70.0'	CW7			10.0'	Same
70.0'	80.0'	CW8			10.0'	Same
80.0'	88.0'	CW9			10.0'	Same
88.0'	88.5'					Coal, shaly
88.5'	90.0'					Underclay, light gray

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

QUADRANGLE: Lamar South

ERDA-TS core hole 22
 COUNTY: Barton

LOCATION: NE1/4 NE1/4 NE1/4 SEC. 14 T. 31N. R. 31W.			DATE: 5/20/77 logged at Rolla Survey
LOCATION DESCRIPTION: 15' FNL and 65' FEL; 3-1/2 miles south of Lamar on gravel T-road west from old Hwy 71 now west outer road spudded March 24, compl. March 28, 1977 surface elev. 967.0 T.D. 105.			0.0
DEPTH (FEET)	BED NO.	LITHOLOGY	
0.0 - 10.0	1	no core	
10.0 - 28.0	2	ss., fine-grained lt. gray, non calc., quartzose, brown iron stain in top 2 ft., tight; .1 ft. thick lt. gray shale lenses with thin carbonaceous stringers at 12.4, 17.5 and 18.2 ft.	2
28.0 - 30.0	3	ss., lt. gray, interlaminated with dk. gray, micaceous horizontal, crinkly laminae <i>OF SHALE</i>	3
30.0 - 32.3	4	ss., lt. gray; bottom half contains dk. gray, carbonaceous shale with broken pieces of fusain; pods of lt. gray ss. to .1 ft. dia. near middle	4
32.3 - 32.4	5	congl., flat clasts of shale, lt. to dk. brown woody material; pyrite nodules	5 → 6
32.4 - 34.1	6	shale, med. gray non calc.; top half interbedded with lenticular laminae (starved ripples) of lt. gray ss.	7
34.1 - 35.0	7	coal, bands of vitrain; flattened nodules of pyrite to grape-size comprise 2 or 3% of unit	8
35.0 - 38.6	8	underclay, lt. gray with dk. gray carbonized root impressions	9
38.6 - 41.8	9	shale, dk. gray with cross laminae and pods of sand-sized siderite concretions that weather red; some quartz sand grains with the siderite	10

W ARNER SS

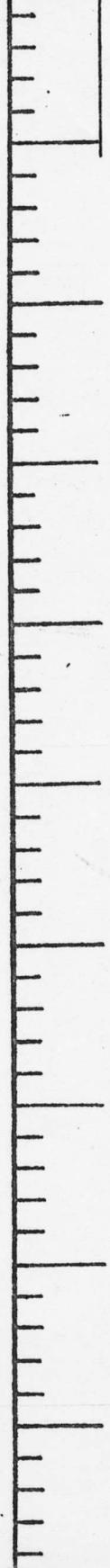
RIVEGTON FM

41.8	46.1	10	shale, dk. gray (dry) black (wet); parallel cross laminae of ss.; ss. also fills in vertical burrows in top 1 ft.	10	
46.1	46.6	11	coal, bands vitrain; pyrite nodules .02 ft. thick and .1 ft. wide	11	
46.6	48.0	12	underclay, med. gray (dk. gray wet), slickensided, carbonized and pyritized roots	12	
48.0	52.0	13	shale, black, lt. gray; ss. cross-laminae with grains of siderite; siderite evenly distributed throughout bottom 1 ft.	13	
52.0	54.0	14	shale, black; ironstone concretions .1 ft. dia. near middle	14	
54.0	60.0	15	shale, slickensided; med. dk. gray zones of sand-sized siderite in shale matrix to 1 ft. thick at top and near middle; coal lenses at 55.5 ft. appear discontinuous	15	
60.0	88.1	16	shale, black; 10% of unit is "starved" lt. gray ss. ripples to 80.0 ft.; lost core 71.0-72.0 ft.; sparse .1 ft. thick bands of brown clay ironstone in bottom 4 ft.	16	
88.1	88.5	17	coal, pyrite nodules	17	
88.5	88.7	18	shale; clay ironstone at top	18	
88.7	88.9	19	coal	19	
88.9	90.0	20	underclay, slickensided; dk. gray clusters of pyrite nodules in bottom .2 ft.	20	
90.0	98.3	21	shale, black; clusters of pyrite nodules 90.0 to 90.4 ft. and at 92.2 ft.; .1 ft. thick clay ironstone band at 97.0 ft.	21	
		22		22	

RIVERTON FM

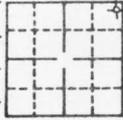
MISS.

98.3	100.9	22	clay, dk. gray to green at bottom; lt. gray contorted ss.; fragments of lt. gray angular chert	22		MISS.
100.9	105.0	23	chert, mottled lt. gray, pink and dk. gray; angular, brecciated appearance. 40% of unit is greenish gray clay and pyrite filling cavities in the chert	23		
			T.D. 105.0 ft.			



WILDCAT

STATE	FR & COMP MISSOURI	9-2-103	MAP NO.	S-T-R	14-31N-31W	S
OPER	MISSOURI GEOL SURVEY			SPOT	APP NE NE NE	INIT
	P O BOX 250, ROLLA, MO			CO	BARTON	S
WELL	22 ERDA-TS			ELEV	967 GR	FIN
CONTR	LAYNE WESTERN			15' fnl, 75' fel, Sec		
FIELD	WC					
IP	D&A					
	API 24-011-20020					



GR SPL TOPS:

RIVERTON	34 + 933
MISS LM	100 + 867
RTD	105 + 862
TD IN MISS	

SPUD 3-24-77, no surf csg
 RTD 105, log
D&A FIRST REPORTED AND COMPLETED 3-25-77

COMP ISSUED 9-12-77