

HELMERICH AND PAYNE, INC.

RIGGS B-1

4540' FSL AND 4290' FEL

SECTION 5-T26N-R33W

FINNEY COUNTY, KANSAS

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CONTRACTED BY G.E.O., INC.

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RESUME

OPERATOR: Helmerich & Payne, Inc.
WELL NAME: Riggs B-1
LOCATION: 4540' FSL & 4290' FEL, Sec. 5-T26S-R33W
COUNTY: Finney
STATE: Kansas
FIELD: Wildcat
SPUD DATE: April 16, 1988
COMPLETION DATE (TD): April 27, 1988
ELEVATIONS: GL:2931' KB:2940'
TOTAL DEPTH: DRLR:5292' E-LOG:5290'
CONTRACTOR: Service Drilling Company
RIG #: 10
PUMP: Great American GA-550 14" X 5 1/2"
GEOLOGIST: K. Renee Davis
COMPANY FOREMAN: Ken Jehlik
TOOLPUSHER: E. R. Comer
MUD TYPE: Native/Chem Gel
MUD COMPANY: NL Baroid
MUD ENGINEER: Tom Bradford
HOLE SIZE: 12 1/4" (Surface - 804');
7 7/8" (804' - TD)
MUDLOGGING: G.E.O., Inc., FID Total Hydrocarbon
Analyzer and Gas Chromatograph
DST COMPANY: Deans Testers, Inc.
TESTING ENGINEER: R. L. Young
DST INTERVALS: DST #1 4905'-5057' (Morrow);
DST #2 4543'-4588' (Marmaton 'C');
DST #3 4542'-4602' (Marmaton 'C');
DST #4 3964'-3991' (Lansing 'A')
WIRELINE TOOL COMPANY: Atlas Wireline Services
LOGGING ENGINEER: Dirk Becker
LOG SUITE: Dual Induction: TD - Base Surface
Casing; Compensated Neutron - Formation
Density: TD - 2500', w/ Caliper run to
BSC; Microlog, Dielectric
BOTTOM HOLE FORMATION: St. Louis
WELL STATUS: Plugged back for Hugoton pay completion

SUMMARY AND CONCLUSIONS

Helmerich and Payne, Inc. spudded the Riggs B-1 well on April 16, 1988 with Service Drilling Company's Rig #10. Drilling progressed well with only minor delays and a total depth of 5290' was reached on April 27, 1988. The primary zones of interest for the well were the Lansing "F", Marmaton "C", Marmaton "E", Morrow, Chester, St. Louis "B" and St. Louis "C".

Geologic supervision of the well began at 2200' in the Red Cave Formation on April 20, 1988. FID gas detection and detail sample examination commenced at 3400' in the Wabaunsee Formation on April 22, 1988, and were continued to total depth in the St. Louis Formation. Intervals of interest during drilling of the well were based on drilling time, FID hydrocarbon detection and sample shows. These intervals were subsequently evaluated with wireline log and drillstem test information.

Few sample and gas shows were detected during drilling of the Riggs B-1 below 3400'. Excellent sample shows were encountered in a Lower Morrow sand at 5018' to 5023', however, wireline log evaluation, drillstem test results and gas ratio plot analysis (See Show Report #2) indicate this zone has insufficient permeability for a commercial completion. Other zones of interest with shows include trace sample and fair gas shows from the Marmaton "C" at 4568' to 4574' (See Show Report #1) and fair to good sample shows and no gas show from the St. Louis "B" at 5109' to 5115'. These zones were also condemned due to low porosity and permeability with wireline log analysis and drillstem test results of the Marmaton "C" zone (See DST Report #3).

FORMATION SUMMARY

NOTE: All depths and rate of penetration data were taken from the drilling contractor's geolograph. Tops and reported zones of interest are base on this consultant's interpretation of samples, penetration rate, FID hydrocarbon detection and correlation with data from offset wells. Sample quality was very poor until water loss and other mud parameters were improved at approximately 4150', thereafter, sample quality was fair to good.

Topeka: 3484' (-544') Sample; 3498' (-558') E-Log

As with most Pennsylvanian tops, the Topeka is a difficult lithologic pick. Clean cream to white limestone and various shades of grey shale becoming dominant in samples was the main lithologic distinction for this top. Most if not all red-orange to red-brown shales are believed to be cavings.

Heebner: 3896' (-956') Sample; 3916' (-976') E-Log

The shales of the Heebner formation typically drill faster than the adjacent carbonates. Thus the sample top of this unit was picked at the drilling break from 2-3 minutes/foot to less than 1 minute/foot at 3896'. Wireline log correlations however show the shales actually drilled at much slower rates, over 4 minutes/foot. Lithology of the unit consisted of shale, medium to dark grey to black, subblocky to subplaty, occasionally platy with some splintery pieces, and carbonaceous in part. No gas increase was associated with the top of the formation.

Toronto: 3916' (-976) Sample; 3939' (-999') E-Log

The sample top of this formation was based on drill time where the rate decreased at the sample base of the Heebner. Lithology of the Toronto was cream to white, light brown to tan, firm, cryptocrystalline to microcrystalline limestone which was dense and tight with occasional fossil fragments and a trace of chert. There was no visible porosity or show in the samples.

Lansing "A": 4049' (-1190') Sample; 4056' (-1196') E-Log

A reverse drilling break from 1.6 to 4 minutes/foot was picked as the top of this formation. Wireline logs provide a top with no significant associated drilling break. Lithology is a cream to white, occasionally light grey, firm to occasionally hard cryptocrystalline to microcrystalline limestone. A trace of poor intercrystalline porosity was present but no shows were noted. Only a 5 unit total gas increase over a background of 10 units was recorded.

This zone was drill stem tested from 3964' to 3991' with sulfur water with no shows of oil or gas recovered. Wireline log analysis indicates water saturations in the range of 39% to 62% and indicates a non-productive reservoir. (See DST Report #4)

Lansing "F": 4249' (-1309') Sample; 4238' (-1298') E-Log

The sample top of this formation was again based on correlation to offset wells which produced reverse drilling breaks at the top. Lithology of the Lansing "F" consists of cream to white to light brown, firm to hard and dense limestone with no visible porosity or shows. There were no gas shows associated with this zone.

Kansas City "A": 4384' (-1444') Sample; 4380' (-1440') E-Log

The top of this zone was marked by a sharp drilling break from 5.0 to .8 minutes/foot and the reappearance of cream-buff, predominantly microcrystalline oolitic limestone with occasional poor to fair oomoldic porosity and poor to very poor intercrystalline porosity. No sample shows were noted. A total gas increase of 30 units over a background of 10 units was observed at 4390', this is believed to be a recirculated gas from a carbonaceous shale immediately above this zone.

Kansas City "B": 4434' (-1492') Sample; 4426' (-1486') E-Log

The top of this zone was indicated by a drilling break from 5.4 to 2.2 minutes/foot. No shows were recorded from this zone and the lithology is not distinctively different from the Kansas City "A"

Base Kansas City: 4524' (-1582') Sample; 4510' (-1570') E-Log

Very slow (3.5-5 minutes/foot) erratic drill time and an increase in light to medium grey-green and light to medium brown, subplaty to platy shale marked the base of the Kansas City

Marmaton: 4539' (-1599') Sample; 4530' (-1590') E-Log

A continued erratic penetration rate and increase of white to cream, firm to occasionally hard predominantly microcrystalline limestone helped mark the top of the Marmaton. A trace of oomoldic porosity was noted but no shows were present.

Marmaton "C": 4557' (-1617') Sample 4549' (-1609') E-Log

A trip for bit was coincident with the top of this formation. An immediate improvement in penetration rate was noted, however, no background penetration rate had been established. The top of this zone was picked where the drill rate increased from 5.0 to 1.7 minutes/foot and appearance of cream to white, buff, firm, predominantly cryptocrystalline to microcrystalline, very chalky in part, moderately fossiliferous limestone with a trace of fair to good oomoldic porosity and a trace of poor to fair intercrystalline porosity. A trace of very light brown oilstain, was noted in the moldic porosity. Less than 5% of the sample exhibited yellow-green hydrocarbon florescence. Chlorothene cuts were a trace of slow streaming cut from oomoldic porosity and a predominant slow milky cut which left a bright yellow residual ring.

An increase in total gas from 10 to 34 units was also noted, however, a chromatographic ratio plot indicates the zone to probably not be productive (See Show Report #1).

Drillstem test #2 from 4543' to 4588' across this zone was misrun due to a lower packer seat failure (See DST Report #2). Drillstem test #3 was subsequently run from 4542' to 4602', this test recovered only drill mud with no show of oil or gas (See DST Report #3) indicating this zone to have low permeability and be non-productive.

Wireline log evaluation yielded water saturations (Sw) ranging from 48% to 63% and confirm the results of DST #3 and the chromatographic ratio plot.

Marmaton "E": 4621' (-1681') Sample 4624' (-1684') E-Log

The top of this zone was distinguished by a reverse drill break from 2.3 to 5.2 minutes/foot and the appearance of black to very dark grey, platy to subplaty, occasionally fissile, carbonaceous shale.

Background gas was erratic through this interval due to carbonaceous shales and recirculation of gas from previously drilled zones.

A drilling break from 4.5 to 1.4 minutes/foot at 4632' was circulated out, however, no shows were present and there was no associated gas increase noted.

Cherokee: 4682' (-1742') Sample 4680' (-1740') E-Log

A reverse drilling break from 2.5 to 4.5 minutes/foot and erratic penetration rates mark the top of this formation. Lithology consists of increasing carbonaceous shale and increasingly argillaceous limestones as the formation was drilled.

Background gas remained somewhat elevated and erratic throughout the zone. No shows were encountered in the Cherokee.

Atoka: 4872' (-1932) Sample; 4880' (-1940') E-Log

Top of the Atoka is defined by the appearance of medium to dk grey to grey-brown, firm, cryptocrystalline to occasionally microcrystalline limestone which is very argillaceous in part slightly dolomitic and has abundant chert. Penetration rate is erratic continuing from the Cherokee, however, this sample top was picked on a reverse break from 4.2 to 5.8 minutes/foot. No shows were encountered in the Atoka.

Morrow: 4919' (-1979') Sample; 4934' (-1994') E-Log

Sample top of the Morrow is normally expressed by a reverse drilling break into a shale at the top of the formation. Thus the sample top was picked at such a break and a slight increase in medium to dark grey to black carbonaceous shale was noted.

A minor drilling break from 3.6 to 2.0 minutes/foot at 4934', gas increase from 10 to 39 units was the first show in the Morrow. Samples had a trace of clear to white, poor to unconsolidated very fine to medium grained sandstone with fair to good intergranular porosity, light brown oilstain, and a trace of slow bright yellow cut and weak yellow residual. This zone was subsequently proven to be the carbonaceous shale associated with the top of the Morrow.

The second break in the Morrow was encountered at 4974' where penetration rate went from 4.3 to 1.5 minutes/foot. Samples were circulated for this zone with only a trace of clear to white, poorly to moderately consolidated very fine to fine grained sandstone with a trace of very poor intergranular porosity and no shows being recovered. There was no gas increase associated with this interval. Wireline logs indicate this zone also was predominantly shale.

The only significant show in the Morrow occurred at 5018' with a drilling break from 4.2 to 1.0 minutes/foot (See Show Report #2). Samples were predominantly white to light grey, clear, occasionally salt and pepper, poorly to unconsolidated fine to occasionally very fine grained sandstone with some apparent clay matrix. The sandstone had abundant even light brown oilstain and an instantaneous bright yellow, streaming chlorothene cut and heavy, bright yellow residual. No hydrocarbon fluorescence was observed until after samples dried, then there was an even bright yellow fluorescence.

Wireline log evaluation indicate water saturation (S_w) to range from 42% to 55%. The zone was drillstem tested (See DST Report #1) with drill mud without shows of oil or gas recovered. The observed clay matrix and lack of formation fluid recovery on the drillstem test indicate a low permeability reservoir which is probably not producible.

Chester: 5036' (-2096') Sample; 5042' (-2102') E-log

The appearance of cream, light grey to white, firm, predominantly cryptocrystalline to microcrystalline fossiliferous limestone mark the top of the Chester. Penetration rate through the Chester was erratic and slowed to 5 to 6 minutes/foot. No porosity or shows were encountered in the Chester.

Ste. Genevieve: 5065' (-2123') Sample; 5063' (-2123') E-log

The top of the Ste. Genevieve was marked by a penetration rate change from 6.3 to 3.0 minutes/foot. Lithology changes were more subtle with cream to white, light grey moderately firm to firm, cryptocrystalline limestone with a trace of glauconite and pellets becoming dominant in samples. There was only a trace of very poor intercrystalline porosity observed with no shows.

St. Louis "B": 5109' (-2169') Sample; 5109' (-2169') E-Log

A penetration rate change from 4.6 to 2.6 minutes/foot and lithologic change to light to medium grey, light brown microcrystalline to occasionally very fine crystalline, occasionally oolitic limestone marked the top of the St. Louis.

A trace of fair to good oolitic porosity with dark brown oilstain, bright yellow-green hydrocarbon fluorescence, good streaming bright yellow cut and weak yellow-white residual was observed in samples from the top of the formation. There was no gas increase related to these sample shows, however, wireline logs indicate a 2' porosity zone at 5112' with $S_w = 21\%$. No other shows were observed in this interval.

St. Louis "C": 5197' (-2257') Sample; 5192' (-2252') E-Log

The top of the St. Louis "C" was expressed by a drill break from 6.3 to 2.3 minutes/foot. No significant lithologic changes were noted in samples coinciding with this top. No shows were observed in the St. Louis "C".

St. Louis "D": 5233' (-2293') Sample; 5230' (-2290') E-Log

A drill rate change from 4.8 to 1.8 minutes/foot marked the top of the St. Louis "D". Again no significant lithologic changes were noted. Cream to white, buff, firm to hard cryptocrystalline to microcrystalline limestone with some chalk and a trace of chert and glauconite persisted to total depth. No shows were observed in this interval.

CORRELATION SUMMARY

H & P
Riggs B-1
Sec 5-26S-33W
KB: 2940'

Mobil Oil Corp.
Jones 1-J Well #
SESESE 30-25S-33W
KB: 2952'

Shell Oil Co.
Stone 2-17
CNWNW 17-26S-33W
KB: 2921'

FORMATION	DEPTH	DATUM	DEPTH	DATUM	+/-	DEPTH	DATUM	+/-
Herington	2563	+377	2550	+402	-25	2575	+346	+31
Winfield	2619	+321	2605	+347	-26	2629	+292	+29
Council Grove	2841	+99	2826	+96	-27	2853	+68	+31
Topeka	3498	-558	3478	-526	-32	3497	-576	+18
Heebner	3916	-976	3885	-933	-43	3914	-993	+17
Toronto	3939	-999	3903	-951	-48	3931	-1010	+11
Lansing "A"	3971	-1031	3934	-982	-49	3959	-1038	+7
Lansing "F"	4238	-1298	4206	-1254	-44	4237	-1316	+18
Kansas City "A"	4380	-1440	4337	-1385	-55	4381	-1460	+20
Kansas City "B"	4426	-1486	4390	-1438	-48	4438	-1517	+31
Base Kansas City	4510	-1570	4474	-1522	-48	4516	-1595	+25
Marmaton	4530	-1590	4488	-1536	-54	4536	-1615	+25
Marmaton "C"	4549	-1609	4512	-1560	-49	4555	-1634	+25
Marmaton "E"	4624	-1684	4574	-1622	-62	4632	-1711	+27
Cherokee	4680	-1740	4640	-1688	-52	4682	-1771	+31
Atoka	4880	-1940	4824	-1872	-68	4886	-1965	+25
Morrow	4934	-1994	4872	-1920	-74	4928	-2007	+13
Chester Unc.	5042	-2102	4989	-2037	-65	5026	-2105	+3
Ste. Genevieve	5063	-2123	5024	-2072	-51	5067	-2146	+23
St. Louis "B"	5109	-2169	5064	-2112	-57	5122	-2201	+32
St. Louis "C"	5192	-2252	5135	-2183	-69	5212	2291	+39
St. Louis "D"	5230	-2290	5174	-2222	-68	5246	-2325	+35
TOTAL DEPTH	5292' DTD, 5290' LTD							

WIRELINE LOG TOPS

<u>FORMATION</u>	<u>DEPTH</u>	<u>DATUM</u>
Base Stone Corral	1912	+1028
Herington	2563	+377
Winfield	2619	+321
Council Grove	2841	+99
Topeka	3498	-558
Heebner	3916	-976
Toronto	3939	-999
Lansing "A"	3971	-1031
Lansing "F"	4238	-1298
Kansas City "A"	4380	-1440
Kansas City "B"	4426	-1486
Base Kansas City	4510	-1570
Marmaton	4530	-1590
Marmaton "C"	4549	-1609
Marmaton "E"	4624	-1684
Cherokee	4680	-1740
Atoka	4880	-1940
Morrow	4934	-1994
Chester Unc.	5042	-2102
Ste. Genevieve	5063	-2123
St. Louis "B"	5109	-2169
St. Louis "C"	5192	-2252
St. Louis "D"	5230	-2290

MUD RECORD

<u>DATE</u>	<u>DEPTH</u>	<u>WT</u>	<u>FV</u>	<u>PV</u>	<u>YP</u>	<u>WL</u>	<u>pH</u>	<u>Cl</u>	<u>Ca</u>	<u>LCM</u>	<u>SOL</u>	<u>NO3</u>	<u>COST</u>
4/17	700	10.3	36	6	12	48.0	7.5	800	160	6	14.4	-	\$ 493
4/18	828		W A T E R				500	80				493	
4/19	1890	9.6	29	2	3	n/c	7.5	23000	1640	tr.	8.0	-	679
4/20	2300	8.9	34	4	6	n/c	7.5	16000	1200	4	4.4	-	1,459
4/21	2980	9.0+	33	4	5	n/c	7.5	11000	1200	5	4.8	-	2,381
4/22	3546	9.5	35	7	11	40.2	7.0	5300	820	2	8.2	-	3,273
4/23	4075	9.2	32	5	3	36.0	8.0	2800	440	2	6.0	-	3,273
4/23	4160	9.0	36	9	5	10.4	10.5	2300	120	1	5.0	-	4,259
4/24	4525	9.0	43	16	10	9.6	10.5	2000	40	1	5.0	100	5,696
4/25	4715	9.2	45	18	10	9.2	10.5	2000	40	1	6.0	100	6,154
4/26	5050	9.1	43	16	11	12.8	9.0	1500	80	2	5.6	60	6,819
4/27	5287	9.2	57	20	17	10.4	9.5	1300	80	2	6.0	n/c	7,319
4/28	5287	9.1	40	15	7	11.2	9.0	1000	60	2	5.6	n/c	7,319
4/29	5287	9.0	66	18	21	11.2	9.0	1400	80	1	5.0	55	7,319
4/30	5287	9.0	59	20	26	11.2	9.0	1100	160	1	5.0	100	7,372
5/1	5287	8.8	51	18	9	13.6	8.5	2200	200	1	4.0	90	7,427
5/2	5287	8.8	49	13	11	14.4	9.0	2700	160	1	4.0	55	\$7,479

BIT RECORD

<u>BIT NO.</u>	<u>SIZE</u>	<u>MAKE</u>	<u>TYPE</u>	<u>DEPTH OUT</u>	<u>FOOTAGE</u>	<u>HOURS</u>
1	12 1/4"	STC	SDS	804'	804'	7 1/2
2	7 7/8"	SEC	53S	1860'	1056'	12 1/4
3	7 7/8"	W-M	52CF	4548'	2688'	103 1/2
4	7 7/8"	W-M	53F	5292'	744'	52 1/2

DEVIATION RECORD

<u>DEPTH</u>	<u>DEVIATION</u>
825	3/4
1860	1 1/4
4548	2 1/4
5292	3/4

LOG INTERPRETATION

<u>DEPTH</u>	<u>NEU POR</u>	<u>DEN POR</u>	<u>XPLOR POR</u>	<u>Rt</u>	<u>Rw</u>	<u>Sw</u>	<u>REMARKS</u>
Lansing "A"							
3972	16.0	13.0	14.4	5.0	0.04	62.1%	Wet
3974	18.0	18.0	18.0	8.0	0.04	39.3%	Wet
3976	12.0	12.0	12.0	10.0	0.04	52.7%	Wet
4184	26.0	28.0	27.0	9.0	0.04	24.7%	No sample or gas shows
4186	25.0	25.0	25.0	7.0	0.04	30.2%	No sample or gas shows
4188	27.0	27.0	27.0	7.0	0.04	28.0%	No sample or gas shows
4190	24.0	24.0	24.0	6.0	0.04	34.0%	No sample or gas shows
Lansing "F"							
4262	29.0	21.0	25.0	2.2	0.04	53.9%	Wet
4264	20.0	14.0	17.0	2.8	0.04	70.3%	Wet
4312	21.0	21.0	21.0	7.0	0.04	36.0%	No sample or gas shows
4314	22.0	22.0	22.0	6.5	0.04	35.7%	No sample or gas shows
Kansas City "A"							
4384	20.0	20.0	20.0	6.0	0.04	40.8%	Wet
4386	18.0	18.0	18.0	4.0	0.04	55.6%	Wet
4388	14.0	14.0	14.0	4.0	0.04	71.4%	Wet
Kansas City "B"							
4436	17.0	17.0	17.0	4.5	0.04	55.5%	Wet
4438	14.0	14.0	14.0	6.0	0.04	58.3%	Wet
Marmaton "C"							
4566	10.0	10.0	10.0	10.0	0.04	63.2%	Wet/Tite
4568	12.0	12.0	12.0	12.0	0.04	48.1%	Wet/Tite
4570	11.0	11.0	11.0	11.0	0.04	54.8%	Wet/Tite
4572	10.0	10.0	10.0	12.0	0.04	57.7%	Wet/Tite
Marmaton "E"							
4634	14.5	15.5	15.0	5.0	0.04	59.6%	Wet
Lower Morrow							
5018	19.0	15.0	17.0	8.0	0.04	41.6%	Wet/Tite
5020	16.0	17.5	16.5	8.0	0.04	42.9%	Wet/Tite
5022	12.5	13.5	13.0	8.0	0.04	54.4%	Wet/Tite
St. Louis "B"							
5112	10.0	15.5	13.0	55.0	0.04	20.7%	Oil?
5114	4.0	8.0	6.0	60.0	0.04	43.0%	Wet
St. Louis "C"							
5198	6.0	7.0	6.5	8.0	0.04	108.8%	Wet
St. Louis "D"							
5232	25.0	17.0	21.0	1.0	0.04	95.2%	Wet

DAILY CHRONOGRAPHY

<u>DATE</u>	<u>TIME/DEPTH</u>	<u>ACTIVITY</u>
4/17	0'-198'	
	7:00am-3:00pm	Rig up
	3:00pm-5:00pm	Rig up rathole driller and drill rathole
	5:00pm	Spud well
	5:30pm-6:15pm	Work on pump engine
	6:15pm-8:45pm	Drilling, P00H
	8:45pm-9:15pm	Trip
	9:15pm-11:00pm	Wait on mechanic, work on starter and pump engine
4/18	198'-410'	
	11:00pm-4:40am	WO pump motor and starter
	4:30am-5:45am	Drilling
	5:45am-6:15am	Jet #1 and #2 pits
	6:15am-7:00am	Drilling
	410'-804'	
	7:00am-7:45am	Drilling
	7:45am-8:00am	Connection and service rig, jet #1 pit
	8:00am-11:15am	Drilling
	11:15am-11:30am	Connection 800', jet #2 pit
	11:30am-11:45am	Drilling
	11:45am-12:00pm	Circulate hole
	12:00pm-12:15pm	Survey
	12:15pm-3:00pm	Trip to unplug bit
	804'	
	3:00pm-3:30pm	TOH for surface casing
	3:30pm-6:00pm	Rig up and run 19 joints 8 5/8", 24lb. J-55, total with shoe: 809', set @ 804 KB, Halco cement with 175 sx C.zl.W., 2% cc, 1/4 fs tail, 125 sx cement 2% cc, plug down @ 6:00pm
	6:00pm-11:00pm	WOC
4/18	804'	
	11:00pm-4:00am	WOC
	4:00am-6:00am	WO casing head
	6:00am-7:00am	Nipple up
	804'-996'	
	7:00am-9:00am	Finish nippling up BOP
	9:00am-10:am	TIH
	10:00am-11:15am	Redo flowline
	11:15am-12:00pm	Drilling cement and plug
	12:00pm-12:30pm	Go through pump
	12:30pm-3:00pm	Drilling new hole

	996'-1649'	
	3:00pm-3:45pm	Drilling
	3:45pm-4:00pm	Service rig
	4:00pm-6:30pm	Drilling
	6:30pm-7:30pm	Go through pump
	7:30pm-9:00pm	Drilling
	9:00pm-9:30pm	Jet pits
	9:30pm-10:30pm	Drilling
	10:30pm-11:00pm	Go through pump
4/19	1649'-1860'	
	11:00pm-12:15am	Drilling
	12:15am-12:30am	Service rig
	12:30am-3:00am	Drilling
	3:00am-6:00am	Service rig and trip for drill collar
	6:00am-7:00am	WO Mud Pump
	1860'-1916'	
	7:00am-8:00am	WO pump and service rig
	8:00am-10:00am	TIH wash from 1750'-1860'
	10:00am-11:30am	Drilling
	11:30am-12:30am	TOH to 718'
	12:30pm-3:00pm	WO mechanic for Drilling Engine, jet all pits and mud up
	1916'-1989'	
	3:00pm-6:45pm	WO mechanic and repair Drill Engine
	6:45pm-7:15pm	TIH
	7:15pm-7:45pm	WO pump, pulled suction seat with welder
4/20	1989'-2275'	
	11:00pm-11:30pm	Repair Mud Pump
	11:30pm-12:15am	Drilling
	12:15am-12:30am	Service rig
	12:30am-7:00am	Drilling
	2275'-2506'	
	7:00am-7:15am	Connection at 2297'
	7:15am-8:00am	Drilling
	8:00am-8:15am	Connection at 2328, jet #1 and #2 pits
	8:15am-1:30pm	Drilling
	1:30pm-1:45pm	Connection at 2484 and jet #3 pit and run Premix
	1:45pm-3:00pm	Drilling
	2506'-2711'	
	3:00pm-3:15pm	Service rig
	3:15pm-6:30pm	Drilling
	6:30pm-7:15pm	Repack rod on pump, jet #1 and #3 pits
	7:15pm-11:00pm	Drilling

4/21	2711'-2950'	
	11:00pm-11:15pm	Drilling
	11:15pm-11:30pm	Service rig
	11:30pm-7:00am	Drilling
	2950'-3132'	
	7:00am-7:30am	Drilling
	7:30am-7:45am	Connection
	7:45am-3:00pm	Drilling at 2977, service rig, jet #3 pit
	3132'-3303'	
	3:00pm-3:15pm	Service rig, jet #4 pit
	3:15pm-8:15pm	Drilling
	8:15pm-8:30pm	Jet #1 and #2 pits
	8:30pm-11:00pm	Drilling
4/22	3303'-3480'	
	11:00pm-11:15pm	Drilling
	11:15pm-11:30pm	Service rig
	11:30pm-7:00am	Drilling
	3480'-3640'	
	7:00am-7:45am	Drilling
	7:45am-8:15am	Connection at 3502', service rig, jet #1, #2, #3 pit
	8:15am-11:15am	Drilling
	11:15am-11:45am	Connection at 3564', jet #4 and #5 pits
	11:45am-3:00pm	Drilling
	3640'-3872'	
	3:00pm-3:15pm	Service rig, jet #1 and #2 pits
	3:15pm-6:00pm	Drilling
	6:00pm-6:15pm	Repair mud valve on pump
	6:15pm-11:00pm	Drilling
4/23	3872'-4030'	
	1:00pm-11:30pm	Drilling
	11:30pm-11:45pm	Service rig
	11:45pm-4:30am	Drilling
	4:30am-4:45am	Jet pits
	4:45am-7:00am	Drilling
	4030'-4200'	
	7:00am-7:45am	Drilling
	7:45am-8:15am	Connection at 4058', service rig, jet #4 pit
	8:15am-11:15am	Drilling
	11:15am-11:30am	PU at 4137', jet #1, #2, #3 pits for mud man to run premix
	11:30am-2:00pm	Drilling
	2:00pm-2:45pm	Circulate samples at 4189'
	2:45pm-3:00pm	Drilling

	4200'-4352'	
	3:00pm-3:30pm	Drilling
	3:30pm-3:45pm	Connection at 4214', service rig, jet #5 pit
	3:45pm-4:45pm	Pack road on premix side ?
	4:45pm-11:00pm	Drilling
4/24	4352'-4475'	
	11:00pm-11:45pm	Drilling
	11:45pm-12:00am	Service rig, jet #1 and #2 pits
	12:00am-7:00am	Drilling
	4475'-4548'	
	7:00am-7:15am	Drilling
	7:15am-7:30am	Connection at 4493', service rig, jet #3 pit
	7:30am-11:30am	Drilling
	11:30am-11:45am	Run Survey
	11:45am-3:00pm	Trip out for bit, SLM 4547.37', correct pipe board to SLM, SLM 2.63' short
	4548'-4597'	
	3:00pm-3:30pm	Service rig
	3:30pm-7:15pm	Trip in hole, lay down two washed joints, washed 93', 12' fill
	7:15pm-11:00pm	Drilling
4/25	4597'-4695'	
	11:00pm-12:15am	Drilling
	12:15am-12:30am	Service rig, jet #1 pit
	12:30am-1:45am	Drilling
	1:45am-2:45am	Circulate samples at 4637'
	2:45am-7:00am	Drilling
	4695'-4800'	
	7:00am-7:30am	Drilling
	7:30am-7:45am	Connection, service rig, jet #2 pit
	7:45am-12:15pm	Drilling
	12:15pm-12:30pm	Connection, jet #3 pit
	12:30pm-3:00pm	Drilling
	4800'-4897'	
	3:00pm-3:15pm	Service rig, jet #1 pit
	3:15pm-11:00pm	Drilling
4/26	4897'-5015'	
	11:00pm-12:30am	Drilling
	12:30am-12:45am	Service rig, jet #2 pit
	12:45am-4:00am	Drilling
	4:00am-5:00am	Circulate samples at 4977'
	5:00am-7:00am	Drilling

	5015'-5137'	
	7:00am-8:30am	Drilling
	8:30am-8:45am	Connection, service rig, jet #3 pit
	8:45am-10:30am	Drilling
	10:30am-10:45am	Connection at 5082', jet #4 pit
	10:45am-3:00pm	Drilling
	5137'-5231'	
	3:00pm-3:15pm	Drilling
	3:15pm-3:30pm	Service rig
	3:30pm-8:30pm	Drilling
	8:30pm-8:45pm	Jet #1 pit, run premix
	8:45pm-11:00pm	Drilling
4/27	5231'-5287'	
	11:00pm-11:30pm	Drilling
	11:30pm-11:45pm	Service rig, fill the mix with mud out system
	11:45pm-4:15am	Drilling, T.D. 5287 at 4:15am 4/27/88
	4:15am-5:15am	Circulate and condition
	5:15am-6:15am	14 stand short trip, no fill
	6:15am-7:00am	Circulate
	5287'	
	7:00am-7:30am	Service rig, pack rod on pump
	7:30am-8:30am	Circulate for logs, unload 5 1/2" casing
	8:30am-8:45am	Survey
	8:45am-1:15pm	TOH, SLM 5292.69, tite hole at 1134', 1197', 3425', 3671'
	1:15pm-3:00pm	Rig up Dresser, run wireline logs to 5290, log well
	5292' (corrected to SLM)	
	3:00pm-11:00pm	Wireline logs with Dresser
4/28	5292'	
	11:00pm-7:00am	Logging
	5292'	
	7:00am-11:00am	Logging, finished at 11:00am 4/28/88, rig down
	11:00am-12:00pm	Run drill collars in hole
	12:00pm-3:00pm	Wait to 3:00pm to run drillpipe in hole, slip and cut 160' drilling line
	5292'	
	3:00pm-6:45pm	TIH, broke circulation at 2205', 3256', 4180', 4928', trip on in 5292', washed 4'
	6:45pm-9:00pm	Circulate and condition hole for DST #1
	9:00pm-11:00pm	TOH for DST #1

4/29	5292'	
	11:00pm-12:00am	Finish TOH for DST #1
	12:00pm-5:00am	Pickup test tool, strap in hole slow
	5:00am-7:00am	Test tool open 30 minutes, closed 1 hour, testing hook set at 5060', packers at 4905' and 5057', testing 152', first open with weak blow
	5292'	
	7:00am-9:30am	DST #1, tools open to 7:30, 7:30-9:30 tools closed
	9:30am-2:00pm	TOH with DST #1, break down tool
	2:00pm-2:30pm	Washed up, loaded out tools
	2:30pm-3:00pm	Service rig
4/30	5292'	
	11:00pm-12:00am	Finish TOH for DST #2
	12:00am-5:00am	Pickup test tool, TIH slow
	5:00am-7:00am	Testing, tool open 30 minutes, tool shut in 1 hour, test hook set at 4591', packers at 4543' and 4588', testing 45', first open with weak blow, second open with weak blow building
	5292'	
	7:00am-9:30am	Testing, 7:00-7:30 tools open, 7:30-9:30 tools closed
	9:30am-12:00pm	TOH with DST #2
	12:00pm-1:00pm	Break down DST tools, wash up, load out
	1:00pm-3:00pm	WO time interval to trip in to rerun DST, bottom packer failure, recovered 600' drilling mud, change oil and filters on pump engine
	5292'	
	3:00pm-3:15pm	Service rig
	3:15pm-6:45pm	TIH with bit to circulate and condition hole
	6:45pm-9:00pm	Circulate
	9:00pm-11:00pm	TOH for DST #2 rerun
5/1	5292'	
	11:00pm-12:00am	TOH for DST #3
	12:00am-4:00am	Pickup test tool, TIH slow
	4:00am-7:00am	Testing, tool open 30 minutes, shut in 60 minutes, test hook set at 4610', packers at 4546' - 4602', 60' anchor

5292'
 7:00am-8:30am DST #3 on final shutin
 8:30am-12:00pm TOH with DST #3, recovered 180' drilling mud
 12:00pm-3:00 WOO, loaded out test tools, service rig, change oil and filters on Drilling Engine, work on grease hose and draw works

5292'
 3:pm-7:45pm TIH for DST #4, broke circulation at 2200', 3200', 4200' on trip to bottom 5292'
 7:45pm-9:45pm Circulate
 9:45pm-11:00pm TOH for DST #4

5/2 5292'
 11:00pm-1:00am Finish TOH for DST #4
 1:00am-5:00am Pickup test tools and TIH
 5:00am-6:00am Trying to set hook
 6:00am-7:00am Set hook at 5:50am, shutin at 6:10am, 30 minute open with strong blow

5292'
 7:00am-10:30am Testing DST #4
 10:30am-1:45pm TOH, break tool down, recovered 300' muddy water, 2050' sulfur water, total recovery 2350'
 1:45pm-2:15pm Load out test tools
 2:15pm-3:00pm WOO
 3:00pm Geologist released