CHECK SHEET

Date	Novemb	er 20, 1974					
Company _	Croft	Petroleum Compa	any, PO Box	1284, Cut Bank, N	Montana 59	427	
Well Name	Two H	orseshoes				No. 2	
County	Toole		1 a	Field Wildcat			
Location _	1980'	fr N li & 1980	' fr W li	C SE NW	Sec3	Twp. 36N	Rge. ^{1E}
	Permit	No.		N6086			
	Receip	t No.		11497			
	Drilli	ng Fee		\$25.00			
	Intent	ion to Drill		X			
	API No			21337			
	Permit	Expiration Dat	e	February 17,	1975		
	Permit	Extended 90 da	ys From _		_ То		
	\$ 5,000	one well bond					
	\$10,000	blanket bond		X			
	\$20,000	blanket bond		Put well oup	roduction	6/15/05	
	Governm	ment well					
	Sundry	Notices					
	"	n .					
	"	n .					
	n	n .					
	Log of	Well		& Lev 24	7 1974	Dao U	ell
	Subsequ	ent Report of	Abandonment				
1	Electri	.c Log					
1	Radioac	tive Log					
							PLAINTIFFS'
							EXHIBIT

	PERFOR	ATIONS		ACIDIZE	D, SHOT, SAND FRACED, CEM	ENTED
Interv	al	Number and	Interv	al	Amount of	
rom	To	Size and Type	From	To	Material Used	Pressure
			Plug #1		25 sx	2025-2150
TO BE	SUBMITTE	D UPON COMPLETION			·	
						

INITIAL PRODUCTION

Well is	producing from	(p	pol) formation.
I. P		_barrels of oil perhours_	(pumping or flowing)
	b	Mcf of gas perhours. arrels of water perhours	

INITIAL PRODUCTION—(Continued)

Initial 10-day	average production	(bbl./day) (if taken)	
Pressures (if	neasured): Tubing	psi flowing;	psi shut-in
	Casing	psi flowing;	psi shut-ib
Gravity	API (corrected to 60°	F.)	

DRILL STEM TESTS

D.S.T. No.	From	To	Tool Open (Min.)	Shut-In	F.P.	S.I.P.	Recovery	Cushion
				SHH ATT	ACHED RI	CPCIRT		
				TIN MEIO	ROIDD III	51 01(1		
								
				·····				

CORES

LUG	KUNS

Vo	Interval	Recovered
	NONE	
<u>-</u> -		

Туре	From	То
IES	226	2320 2320
_FDC	750	2320
<u> </u>	<u> </u>	

FORMATION RECORD
(Need not be filled out if Geologist sample description filed with Commission)

From	To	SAMPLE AND CORE NO. AND DESCRIPTION	Top of Formation
·		SEE ATTACHED REPORT	
		(Use additional sheets where needed to complete description)	•

Form No. 2 GENERAL RULES 201, 202, 213, 216, 219, 233.1 (SUBMIT IN QUADRUPLICATE)

TO

NOV 1974 PER APP

NOTICE
THIS FORM BECOMES A
ERMIT WHEN STAMPED
PPROVED BY AN AGENT
F THE COMMISSION.

If production pipe is run, any fresh water sands above 2500 feet and not behind surface pipe must be isolated by cement to prohibit contamination.

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

OIL & BAS CUNS CO

SUNDRY NOTICES AND REPORT OF WELL

Notice of Intention to Drill	XXXX	Subsequent Report of Water Shut-off
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment
Notice of Intention to Pull or Alter Casing		Supplementary Well History
Notice of Intention to Abandon Well		Report of Fracturing

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data) November 18, 1974 notice of intention to do work on land) owned described as follows: REPORT OF THE PROPERTY OF THE P XXXXX LEASE TWO HORSESHOES Toole Wildcat MONTANA (County) (Field) C SEANWA Section 3-36N-IE (Range) ft. from $\begin{cases} N \\ XX \end{cases}$ line and 1980 ft. from $\begin{cases} XX \\ XY \end{cases}$ line of Sec. 3-36N-IE LOCATE ACCURATELY ON PLAT ON BACK OF THIS FORM THE WELL LOCATION, AND SHOW LEASE BOUNDARY The elevation of the derrick floor above the sea level is 4202.3 feet ground CBRAD AMBEGULTINGS TO BE DELIVERED DETAILS OF PLAN OF WORK FILING WITH THE COMMISSION AULIEUCS (Stand induces of and expected depths to objective sands; show size, weights, and lengths or proposed pasting. Andreate mudding joints, and all other important proposed work, particularly all details results Shooting, Academic, Practuring, and all other important proposed work, particularly all details results. BILLINGS, MONTANA IN ACCORDANCE WITH OR RUN IS REQUIRED IN ACCORDANCE W DETAILS OF WORK RULE NO 229. **RULE NO. 230.** RESULT It is the intent to drill a test to the top of the Madison Lime at an estimated depth of 2300 feet. It is the intent to run and cement, with 125 sks, approximately 200 feet of 7" 17# surface casing. If commercial production is found we intend to run and cement, with 100 sks, approximately 2300 feet of 42' 10.6# casing. AMOUNT RECEIVED #25 DRILLING PERMIT NO. Hole will be drilled with rotary tools RECEIPT NO. 11497 Spud date will depend upon availability of drilling rig and casing. Company Approved subject to conditions on reverse of form NOV 20 1974 W.S. CROFT, PRESIDENT P.O. BOX 1284 Address CUT BANK, MONT. 59427 COMMISSION USE ONLY

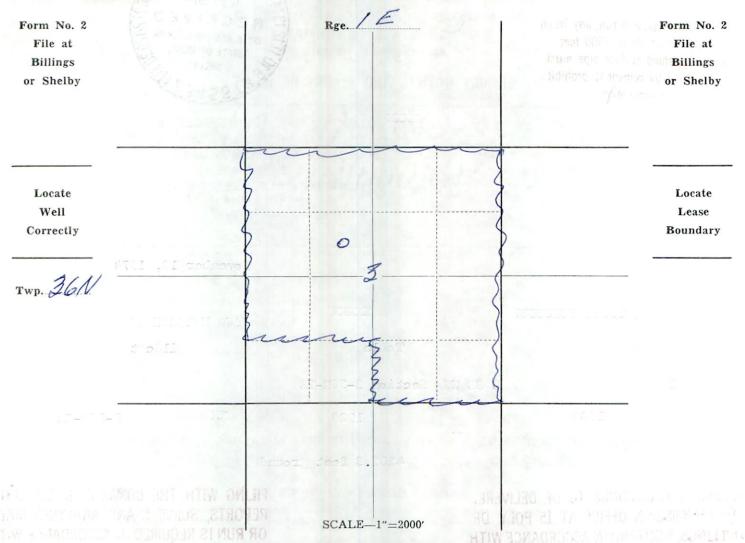
STATE COUNTY WELL

NOTE:-Reports on this form to be submitted to the District Agent for Approval in Quadruplicate

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

OVER

Locate well by footage measurement from legal subdivision line, lease or property line and nearest drilling or producible well, if any.



THE NOTICE OF INTENTION TO DRILL THIS WELL IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

- 1. Any person, before commencing the drilling of any oil or gas well, shall secure from the commission a drilling permit and shall pay to the commission therefor for the following amounts: for each well whose estimated depth is thirty-five hundred (3,500) feet or less, twenty-five dollars (\$25.00); from thirty-five hundred and one (3,501) feet to seven thousand (7,000) feet, seventy-five dollars (\$75.00); seven thousand (7,000) feet and deeper, one hundred fifty dollars (\$150.00).
- 2. No well is to be spudded in unless the proper surety drilling bond has been posted and approved by the Oil and Gas Conservation Commission of the State of Montana.
- 3. Cable tool operators must construct an adequate sump to contain all mud and water bailed from the hole.
- 4. Surface or conductor casing must be properly cemented by an approved method to act as a tie in case an unexpected flow of oil, gas, or water should be encountered, unless special permission has been granted for formation shut-off.
- 5. Any contemplated change in status of a well such as to plug and abandon, deepen, plug back, redrill, alter casing, etc., must be presented on Sundry Notices and Report of Wells form for approval by agent prior to commencement of work.
- All substantial showings of oil or gas must be tested for commercial possibilities before drilling ahead. Each such showing must be adequately protected by casing, mud or cement, as drilling progresses.
- 7. The production string must be cemented unless a formation shut-off or packer is approved by the agent. Sufficient cement must be used to protect the casing and possible productive formation exposed in the process of drilling not otherwise protected.
- 8. All production strings of casing must be tested by bailing or pressure to determine if there is a tight bond with the formation or possible leaks in the casing. The results of the test must be reported on Sundry Notices and Report of, Wells form, said report to include the size, weight, thread and length of casing, amount of cement used, and date work is done. If test shows failure, the defect must be corrected before any drilling operations are resumed.
- 9. A satisfactory drilling record must be kept for each tour, showing top and thickness of each and all formations drilled and all other information of value, one copy of which is to be kept at the rig while drilling is in progress for examination when an agent visits the well.
- 10. All producing wells must be marked with name of the operator, number of the well, and location, using reasonable precautions to preserve these markings at all times.
- 11. Copies of all directional surveys, electrical logs, or tops from electrical log if electric survey is run, formation tests, and cementing record, as furnished by the cementing company, etc., must be filed with the State Inspector of the district together with four copies of the log, upon completion of the well.
- 12. All work must be done in conformity with the regulations of the Oil & Gas Conservation Commission of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.

FORM NO. 2 R7/99

JUN 1 5 2005

Submit In Quadruplicate To:

ARM 36.22.307, 601, 605 1003, 1004, 1011, 1013, 1103, 1222, 1240, 1301, 1306, 1309, and 1417

MONTANA BOARD OF OIL AND GAS CONSERVATION

	2535 ST. JOHN BILLINGS, MON	NS AVÉN NTANA 5	NUE 9102	·	
	SUNDRY NOTICES AND	REPO	RT OF WEL	LS	
Operator Croft Petroleum Co	0		Lease Name:	2 Horseshoes	
Address P. O. Box 397		* *	Lease Type (P	Private/State/Federal):	
City Cut Bank State Telephone Number (406) 873-	MT Zip Code 59427 -5547 Fax Number (406) 8	73-5549	Well Number:	Private 2 Horseshoes #2	
Location of well (1/4-1/4 section a C-SE/NW, 1980' FNL & 1980 FW	nd footage measurements):	Unit Agreement Name: None			
			Field Name or	Wildcat: Kicking Horse	T
If directionally or horizontally drilled, s API Number:	how both surface and bottom hole loo Well Type (oil, gas, injection,		Section, Towns	ship, and Range: Section 3-T36N-R1E	
25 101 21337 State County Well	Gas	& 1	County:	Toole	
Indicate below with an X the nature	e of this notice, report, or other da	ata:	MALESTON	L. S. Legisland	
Notice of Intention to Run Mechan Notice of Intention to Stimulate or Notice of Intention to Perforate or Notice of Intention to Abandon We Notice of Intention to Pull or Alter (Notice of Intention to Change Well Supplemental Well History Other (specify)	to Chemically Treat	Subsequer Subsequer Subsequer Subsequer Subsequer Subsequer Subsequer	nt Report of Per nt Report of We nt Report of Pull nt Report of Dril nt Report of Pro nt Report of Cha nt Report of Gas	foration or Cementing II Abandonment led or Altered Casing ling Waste Disposal duction Waste Disposal ange in Well Status s Analysis (ARM 36.22.1222)	
Describe planned or completed wo necessary. Indicate the intended s	Describe Proposed or Co ork in detail. Attach maps, well-bo starting date for proposed operation	ore configu	ration diagrams	s, analyses, or other information a	as
The above well was drilled and of December 2004 a pipeline was no began selling gas. The spacing of	completed in December 1974. T un to the well connecting it to the	The well w he Kicking	as a noncomm Horse Gas Fi	nercial Bow Island gas well. In eld. On March 8, 2005 the well	
Approved IIIN a a goor			ned hereby cert	ifies that the information contained	
Approved JUN 2 0 2005 Date	_	6/14/	05	Signed (Agent)	

Title

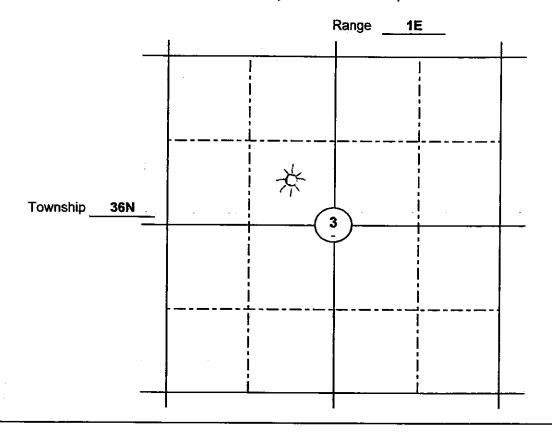
Jerry Croft, President

Print Name & Title

SUPPLEMENTAL INFORMATION

NOTE: Additional information or attachments may be required by Rule or by special request.

Plot the location of the well or site that is the subject of this notice or report.



BOARD USE ONLY CONDITIONS OF APPROVAL

The operator must comply with the following condition(s) of approval:

Failure to comply with the conditions of approval may void this permit.

Form No. 2 GENERAL RUL 201, 202, 213, 216, 219, 230, 231, 232

2 5

STATE

COUNTY

WELL

Notice of Intention to Drill

Notice of Intention to Change Plans Notice of Intention to Test Water Shut-off

(SUBMIT IN QUADRUPLICATE)

BOARD OF OIL AND GAS CONSERVATION OF THE STATE OF MONTANA JUL 1975

BILLINGS OR SHELBY RECEIVED

OIL & GAS CONS COMMA

Subsequent Report of Shooting, Acidizing, Cementing

Subsequent Report of Water Shut-off

Subsequent Report of Altering Casing

WHEN USED AS PERMIT TO DRILL, PERMIT EXPIRES 90 DAYS FROM DATE OF APPROVAL IF WELL NOT SPUDDED OR EXTENSION REQUESTED.

SUNDRY NOTICES AND REPORT OF WELLSMA

NOTICE THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE BOARD.

1	Notice of intention to Real of Repair wen	Subsequent Report of Rearining of Repair	
	Notice of Intention to Shoot, Acidize, or Cement	Subsequent Report of Abandonment	
111111	Notice of Intention to Pull or Alter Casing	Supplementary Well History	
	Notice of Intention to Abandon Well	Report of Fracturing & Perforating	X
		Con Motion of Perioraling	A
ı	(Indicate Above by Check Mark N	Vature of Report, Notice, or Other Data)	
		July 21,	, 19 7
Follow	ving is a motice of intention to do work on land	owned described as follows:	
	(report of work done		
	mool.	LEASE Two Horse Sh	
	MONTANA	Wildo	at
	2 C SEZNWZ Sec	County) C. 3-36N-1E MPM	ield)
Well 1	No.	S. S-SON-IE	
	(m. m.)	1020 (Township) (Range)	(Meridian)
The w	vell is located1980ft. from \{ \bigce_x \text{XX} \} \line and	ft. from \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	***************************************
LOCA	TE WELL SITE ACCURATELY ON PLAT ON BACK	OF THIS FORM.	
The el	levation of the ground or K.B. above the sea level is	4212 K.B.	
READ	CAREFULLY DETAILS OF	PLAN OF WORK RE	AD CAREFULLY
(S import	state names of and expected depths to objective sands; show si ant proposed work, particularly all details of Shooting, Acid	ze, weights, and lengths of proposed casings, cementingizing, Fracturing.)	g points, and all other
		S OF WORK	
	R	ESULT	
May	29, 1975 - Perforated above well with 3 per ft.		L-Jet
May	31. 1975 - Fraced well with 500 CO2	O Sand and treated with 80,00	00 SCF
Ju1	y 11, 1975 - Well tested at 64 M	CF AOF	
Anne	oved subject to conditions on reverse of form	Company Croft Petroleum	COMBANI
	WI 0.0 1075	MIGH	
Date	2 1 1 1 2 2	By	
Ву	District Office Agent Title	Title President	
	District Office 1-85-10	Address Box 1284, Cut Bank	
	POARD HEE ONLY	59	9427
	BOARD USE ONLY API WELL NUMBER NOTE:—Reports on	this form to be submitted to the appropriate District for	or approval

OVER

cum 66

Locate well by footage measurement from legal subdivision (Section) line and nearest drilling or producible well, if any.

Form No. 2 File at Billings or Shelby	Rg	. / E	Form No. 2 File at Billings or Shelby
Locate Well Correctly	3	*	
Twp. 36N		2-2 (20	
	sc	CALE—1"=2000'	

THE NOTICE OF INTENTION TO DRILL THIS WELL IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

- 1. Any person, before commencing the drilling of any oil or gas well or water source or injection well shall secure from the Board a drilling permit and shall pay to the Board the following amounts: for each well whose estimated depth is thirty-five hundred (3,500) feet or less, twenty-five dollars (\$25.00); from thirty-five hundred and one (3,501) feet to seven thousand (7,000) feet, seventy-five dollars (\$75.00); seven thousand and one (7,001) feet and deeper, one hundred fifty dollars (\$150.00).
- 2. No well is to be spudded in unless the proper surety drilling bond has been posted and approved by the Board of Oil and Gas Conservation of the State of Montana.
 - 3. Cable tool operators must construct an adequate sump to contain all mud and water bailed from the hole.
- 4. Surface or conductor casing must be properly cemented by an approved method and pressure tested to determine a tight bond with the surrounding formations in case an unexpected flow of oil, gas or water should be encountered, unless special permission has been granted for formation shut-off.
- 5. Any production casing must be cemented unless a formation shut-off or packer is approved by the Board. Sufficient cement must be used to protect the casing and all possible productive and fresh water bearing formations exposed in the process of drilling and not otherwise protected.
- 6. All production casing must be tested by bailing or pressure to determine if there is a tight bond with the surrounding formations or possible leaks in the casing. The results of the test must be reported on Form No. 2, said report to include the size, weight, thread and length of casing, amount of cement used, and date work is done. If test shows failure, the defect must be corrected before any drilling operations are resumed.
- 7. Any contemplated change in status of a well such as to plug and abandon, deepen, plug back, redrill, alter casing, etc. must be presented on Form No. 2 for approval by the Board prior to commencement of work.
- 8. A satisfactory drilling record must be kept for each tour, showing top and thickness of each and all formations drilled and all other information of value, one copy of which is to be kept at the rig while drilling is in progress for examination by any authorized agent of the Roard.
- 9. All producing wells must be marked with name of the operator, number of the well and location, using reasonable precautions to preserve these markings at all times.
- 10. Delivery to the Board of two copies of all surveys, reports, analyses, logs, tests, samples and core descriptions, etc., as described in Rule 230 and one copy of all cementing records as furnished by the cementing company and described in Rule 234.
- 11. All work must be done in conformity with the regulations of the Board of Oil and Gas Conservation of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.

Form No. 2 GENERAL RULES 201, 202, 213, 216, 219, 230, 231, 232 (SUBMIT IN QUADRUPLICATE) COMM

TO

975 BOARD OF OIL AND GAS CONSERVATION OF THE STATE OF MONTANA BILLINGS OR SHELBY BILLINGS OR SHELBY

NOTICE THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE BOARD.

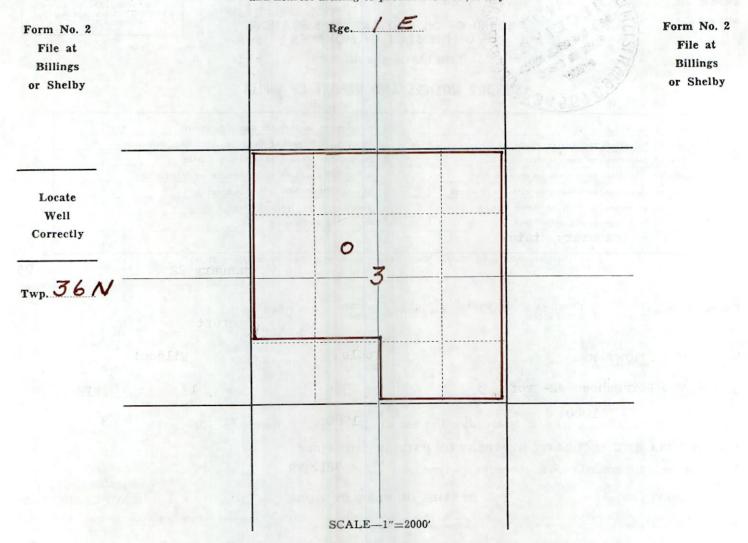
SUNDRY NOTIC	CES A	ND REPORT OF WELLS
299788		ESS130381818
Notice of Intention to Drill		Subsequent Report of Water Shut-off
Notice of Intention to Change Plans	5 m 5 m	Subsequent Report of Shooting, Acidizing, Cementing
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment
Notice of Intention to Pull or Alter Casing		Supplementary Well History
Notice of Intention to Abandon Well		Report of Fracturing
Temporary Status	Х	

Temporary Status x			
(Indicate Above by Check Mark		ther Data) anuary 22	75
Following is a notice of intention to do work on land	d owned described as	follows: Croft	, 19
MONTANA	Toole	Wildcat	
(State) CSENW	(County)	(1	Field)
Well No. Two Horseshoes #2-Croft 3 #2 (h. sec.)	36N (Township)	LE (Range)	MPM (Meridian)
The well is locatedft. from $\left\{\begin{array}{c}N\\XX\end{array}\right\}$ line and	d 1980 ft. from	W line of Sec	3
LOCATE WELL SITE ACCURATELY ON PLAT ON BACK	K OF THIS FORM.		
The elevation of the ground or K.B. above the sea level is	4212 KB		
	F PLAN OF WORK		AD CAREFULLY
(State names of and expected depths to objective sands; show simportant proposed work, particularly all details of Shooting, Act	idizing, Fracturing.)	posed casings, cementin	g points, and all other
	LS OF WORK RESULT		
1. Drilled and logged well to 2325.			
2. Set plug from 2025 to 2150 as per verb	oal approval from Mr.	Haughey.	
3. Ran production casing as noted on Form	n 4		
4. Plan to attempt completion in Bow Isla	and sandstone at a la	ter date.	
Approved subject to conditions on reverse of form	Company CROFT	PETROLEUM COM	PANY
Date JAN 2 4 1975	By fatre	i an I	aines
By Pain I Wante Field Reserve	Z Title Agent		
The state of the s	Address Cut B	ank, Montana 5	9427

BOARD USE ONLY API WELL NUMBER COUNTY

NOTE:-Reports on this form to be submitted to the appropriate District for approval

WHEN USED AS PERMIT TO DRILL, PERMIT EXPIRES 90 DAYS FROM DATE OF APPROVAL IF WELL NOT SPUDDED OR EXTENSION REQUESTED. OVER CHRISTING 66 Locate well by footage measurement from legal subdivision (Section) line and nearest drilling or producible well, if any.



THE NOTICE OF INTENTION TO DRILL THIS WELL IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

- 1. Any person, before commencing the drilling of any oil or gas well or water source or injection well shall secure from the Board a drilling permit and shall pay to the Board the following amounts: for each well whose estimated depth is thirty-five hundred (3,500) feet or less, twenty-five dollars (\$25.00); from thirty-five hundred and one (3,501) feet to seven thousand (7,000) feet, seventy-five dollars (\$75.00); seven thousand and one (7,001) feet and deeper, one hundred fifty dollars (\$150.00).
- 2. No well is to be spudded in unless the proper surety drilling bond has been posted and approved by the Board of Oil and Gas Conservation of the State of Montana.
 - 3. Cable tool operators must construct an adequate sump to contain all mud and water bailed from the hole.
- 4. Surface or conductor casing must be properly cemented by an approved method and pressure tested to determine a tight bond with the surrounding formations in case an unexpected flow of oil, gas or water should be encountered, unless special permission has been granted for formation shut-off.
- 5. Any production casing must be cemented unless a formation shut-off or packer is approved by the Board. Sufficient cement must be used to protect the casing and all possible productive and fresh water bearing formations exposed in the process of drilling and not otherwise protected.
- 6. All production casing must be tested by bailing or pressure to determine if there is a tight bond with the surrounding formations or possible leaks in the casing. The results of the test must be reported on Form No. 2, said report to include the size, weight, thread and length of casing, amount of cement used, and date work is done. If test shows failure, the defect must be corrected before any drilling operations are resumed.
- 7. Any contemplated change in status of a well such as to plug and abandon, deepen, plug back, redrill, alter casing, etc. must be presented on Form No. 2 for approval by the Board prior to commencement of work.
- 8. A satisfactory drilling record must be kept for each tour, showing top and thickness of each and all formations drilled and all other information of value, one copy of which is to be kept at the rig while drilling is in progress for examination by any authorized agent of the Board.
- 9. All producing wells must be marked with name of the operator, number of the well and location, using reasonable precautions to preserve these markings at all times.
- 10. Delivery to the Board of two copies of all surveys, reports, analyses, logs, tests, samples and core descriptions, etc., as described in Rule 230 and one copy of all cementing records as furnished by the cementing company and described in Rule 234.
- 11. All work must be done in conformity with the regulations of the Board of Oil and Gas Conservation of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.



CROFT PETROLEUM CO.
Two Horseshoes #2- Croft #2
C SE NW SEC. 3, T 36 H-R1E
TOOLE COUNTY, MONTANA

A.P.I. 25-101-21337

PATRIC W GAINES Box 814 Shelby, Montana

59474

RESUME *

Classification
Spud
Drilled out
Completed Drilling
Status
Total Depth
Elevation
Surface casing
Hole size
Bits used
Mud Program
Sample Intervals

Rank wildcat
6:30 P.M. 12/19/74
12:30 P.M. 12/20/74
7:15 P.M. 12/28/74
Bow Island gas well
2325 Driller, 2321 Schl.
4202 G.R., 4212 K.B.
7" set at 225 K.B. w/100 sacks
6\frac{1}{4}
7
Native to 1650, Chem-Gel 1650 to T.D.
30'-0 to 1950, 10'-1950 to T.D.

Cores

Drill Stem Testing

Contractor
Rig
Drill pipe
Drill collars
Pump

None

#1-Bow Island-1155 to 1200, #2=Sunburst-2044 to 2058 #3-Sawtooth-2254 to 2284 Comanche Drilling Co. #1 Ideco Rambler $3\frac{1}{2}$ " I.F. $18-5\frac{1}{4} \times 2\frac{1}{4}$ D-300, 14 x $5\frac{1}{2}$

ELECTRIC LOGGING

I.E.S. F.D.C. with G.R. & Cal.

226 to 2320 750 to 2320

PRODUCTION CASING & PLUGGING

 $4\frac{1}{2}$ "-J55-9 $\frac{1}{2}$ #-new casing set at 1260 K.B. with 60 sacks Plug N.R. 1-2025 to 2150-25 sacks

MUD PROGRAM

Additives

Gel 50 sacks
Caustic lignite 1 sack
Soda Ash 1 sack

Caustic soda 1 sack
Caustic lignite 1 sack

Checks

Depth	Weight	Viscosity	Water Loss	Filter Cake	PH
1760	9	35	6	2/32	9

1990	9.3	37	6.1	2/32	8
2300	9.6	36	6	2/32	9
2325	9•7	49	6	2/32	á

BIT RECORD

NR	SIZE	TYPE	<u>JETS</u>	FOOTAGE	TIME
1 2 3 4 5 6 7 8	614141414141414141414141414141414141414	0SC3 0SC3 Y12 0SC1G 0SC1G J55 0SC1G J55	REG REG REG REG 3-18 REG 3-18	904 66 500 80 200 110 173 62	10½ 3/4 9 4 3/4 6 8 3/4 rerun 12 8 rerun

Accumulated drilling time 72 hrs.

GEOLOGIC DATA (Elev. logs)

Age	Formation	Elevation
Cretaceous	Blackleaf	+3456
	Bow Island	+3028
	Dakota	+2598
	Kootenai	+2524
	Sunburst	+2176
Jurassic	Swift	+2122
	Rierdon	+2067
	Sawtooth	+1951
Mississippian	Madison	+1918

DRILL STEM TESTING

No. 1-1155 to 1200, Bow Island

<u>Event</u>	Time	Pressure
I.F.	15	18-28
I.C.U.	30	111
Flow	120	28-66
F.C.I.	60	111
IH	500	
FН	500	•

PERFORMANCE

Tool opened with weak blow-increased to good in 8 min. Reopened with good blow-G.T.S. in 30 min. Rate increased from 5MCFPD to 7 MCFPD steadily over one hour test period.

RECOVERY

118 feet of drilling fluid

No. 2

Event	<u>Time</u>	Pressure
I.F.	15	27-74
I.C.I.	30	407
Flow	62	83-194
F.C.I.	. 60	398
I.H.	973	
F.H.	973	•

Performance

Tool opened with weak blow-increased to good in 6 min. Reopened with weak blow-increased to good then steadily deminished.

Recovery

273 ft of muddy gas cut water
150 ft of clean gas cut water-sl oil flecked
423 ft total fluid

No. 3 2254 to 2284 Sawtooth

Event	Time	Pressure
I.F.	15	18
I.C.I.	30	361
FLOW	120	18-37
F.C.I.	60	370
I.H.	1122	
F.H.	1122	

Performance

Tool opened with weak blow-increased to good in 5 min. Reopened with fair blow-slowly died. No G.T.S.

Recovery

Recovered 64 ft. of drilling, slightly water cut

LITHOLOGY Samples were examined wet and dry through prospective zones. of samples were examined wet only. Sample depths are not adjusted for circulation time delay. 230-60 shale, gray, chunky, soft, non calc. 260-90 shale, gray-dk gray, calc in culsions, firm 310 shale, as above, very silty, firm, non calc. 340 shale, gray, very silty, firm, trace of siltstone, lt gray, S&P, firm, calc. 370 shale, gray, silty, med soft, non calc. 400 as above 430 as above, pyritic. 460 shale, gray-dk gray, sl silty, med firm. 530 shale, gray, S&P in part, soft, chunky, non calc. 560 as above, trace of siltstone, lt gray, S&P, firm. 590 as above 620 as above 650 shale, gray, soft, micaceous, chunky, silty in part. 680 shale, gray, micaceous, silty, med firm, locally very silty & calc. 710 as above, with siltstone, gray, S&P, calc. 740 shale, gray, micaceous in part, silty, non calc, med soft. 770 as above, trace of siltstone, lt gray, firm, calc. 800 shale, gray-lt gray, mottled, non calc, silty in part, soft. 830 as above, locally siltstone. 860 as above 890 as above, with siltstone, lt gray, S&P, firm, non calc. 920 as above, siltstone, locally calc. 950 siltstone, gray-dk gray, S&P, carbonaceous, firm, non calc.

shale, dk gray, blocky, firm, with siltstone, lt gray, S&P, firm, sl calc.

shale, gray-dk gray, minor siltstone as above, influx of bentonite, .

980

1010

1040

as above

1070 siltstone, lt gray-gray, S&P, very firm, non calc, firely interbedded with shale, gray, silty, blocky, firm. 1070 15 minute circulation sample. as above. 1100 shale, gray-dk gray, micaceous, silty, firm, non calc 1110 siltstone, gray, S&P, grades to very fine sandstone, poor sorting. well cemented-calc, tite, no show 1120 as above, with shale, steel gray, blocky, firm 1130 as above 1140 trip sample-cavings. 1150 shale, gray-steel gray, blocky, firm, with siltstone, gray-lt gray. S&P, very firm, calc 1160 as above, influx of bentonite, gray, soft, chunky, 1170 shale, gray, silty, med soft, chunky to blocky, non calc. 1180 as above, trace of shale, brown, firm, non calc. 1190 sandstone, It gray-gray, S&P, fine, trace of glauc, subang to subrnd. poor to fair sorting, friable in part, non calc, some clay infill, good golden fluor on wet sple no apparent stain, good milky cut, trace of porosity, sl sple odor, 50% of fluor remains on dry sple. 1200 as above, show quality equal, increase in clay infill. 1200 10 minute circulation sple as above, heavily clay filled. 1230 shale, gray, med soft, chunky to blocky, influx of bentonite, lt gray soft. 1260 shale, gray, blocky, firm. 1290 sandstone, It gray, S&P, poor sorting, clay matnix, poor cementing. mineral fluor only, no apparent porosity. 1320 as above, with shale, tan, waxy, blocky, firm, trace of green glauconitic sandstone. 1350 as above

It gray-green, chunky, soft.

1380	as above, sandstone becoming very calc
1410	shale, gray, silty & sandy, firm, sl glauc
1440	shale, as above, glauconitic, strong influx of bentonite, lt gray to greenish gray, soft chunky.
1470	shale, gray, silty & sandy, some glauc and bentonite
1 <i>5</i> 00	shale, gray, blocky, firm, sl silty
1 <i>5</i> 30	as above, grading to very sandy & glauc.
1560	shale, gray, very sandy, glauc, firm.
1 <i>5</i> 90	as above, locally shaly sandstone.
1620	shale, gray, blocky, firm, non calc
1650	as above, influx of siltstone, gray, sl glauc firm, non calc.
1680	as above, strong influx of bentonite, micaceous in part, soft, chunky.
1710	shale, green alive green, blocky, firm, non calc, sl silty.
1740	as above
1780	as above, influx of shale, red, silty, firm.
1810	as above, with sandstone, lt gray, S&P, glauc, ang to subrnd, poor sorting, fair cementing-calc, tite, no show
1840	shale & siltstone, green, firm, non calc
1870	as above, with shale, red-brown, firm, blocky, non calc.
1900	as above.
1930	siltstone, gray, S&P, non calc, firm.
1950	as above, with shale, gray-tan, blocky, waxy.
1960	shale, brown, waxy, blocky, few disseminated sand grains.
1970	as above, with shale, red, blocky, med soft.
1980	med shale as above, with shale, brown, blocky, waxy, a few disseminated sand grains.
1990	shale, gray-greensih gray-tan, waxy, firm, abundant disseminated sand grains, few orange, some rounded & frosted.
2000	as above, with siltstone, gray, S&P, firm, non calc.
2010	siltstone grading to very fine sandstone, lt gray, S&P, glauc, ang to subrnd, poor sorting, well cemented-calc, few tan inclusions.

2020 as above, with shale, gray-green, blocky, firm, non calc. 2030 shale, gray-brown, waxy, med soft, non calc. 2040 metabentonite, gray-lt gray, blocky, med soft, disseminated sand grains, fine to med, some rounded & frosted, finely veined with 1t red. 2050 sandstone, cream, fine to med, ang to subrnd, orange-amber-gray acc grains, poor sorting, well cemented-siliceous, tite, no show, mineral fluor only. 2058 10 minute circulation sample sandstone, lt gray, fine to med, ang to rounded, milky chert acc. local fair sorting, clay infill in part, friable in part-non calc. trace of porosity, fair golden fluor, good streaming cut, fair to spotty stain, some tarry residue, sl odor, fluor & cut retained on dry sple. 2060 as above 2070 as above as above grading to siltstone, lt gray-cream, few tan inclusions, 2080 non calc, firm. 2090 shale, brown, silty, firm, finely interbedded with siltstone, tan, S&P. firm, some sandstone, tan, S&P, fine, subang to subrnd, poor sorting, good cementing, non calc, tite, no odor-stain or fluor. 2100 as above, sandstone is med in part, tan to dk gray, S&P, good fluor & cut, good stain on med grain clusters, generally tite. 2110 as above, siltstone & shale dominant. 2120 as above, trace of shale, black-dk gray, blocky, firm. 2130 shale, gray-dk gray, non calc, firm, local concentration of med glauc grains. 2140 as above, with shale, tan sideritic, very firm, blocky. 2150 as above, trace of marl, gray-tan, martled, earthy, dense, 2160 marl, gray-lt gray, martled, earthy, dense, few fossil fragments. 2170-2260 marl, 1t gray-gray-tan, earthy, dense, few fossil frags, some anhydnite, silty & pyritic near base of interval. 2270 as above, with sandstone, lt gray-white, few gray chert grains, very fine. local fair sorting, well cemented-white calc natrix, scarce dull fluor, no odor or stain, no apparent porosity, clay infill, trace of dark residual stain

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2280	limestone, dk gray, microxtalline, sandy, siliceous grading to sandstone, fine, lt gray-gray, sl S&P, poor sorting, well cemented-calc & siliceous in part, tite, no show.
2285	limestone, tan, coarse clastic, microxtalline matrix, no show.
2290	limestone, tan-brown, microxtalline, minor anhydrite?, few healed fracs, minor ls as above.
2295	as above, some fine clastic & sandy, grading to tite calc sandstone.
2300	limestone, lt gray-white, microxtalline, minor sucrosic, few pin point vugs & fractures, lined with tarry residue, chalky in part, some med clastic-no show.
2305	limestone, white-cream, med to fine clastic, matrix microxtalline, minor smoky chert, some porosity, spotty fluor on tarry residue, no live show.
2310	as above, increase in chalk fraction.
2315	as above
2320	as above.
2325	limestone, cream-tan, med to fine clastic, matrix microxtalline & chalky, rare smoky & milky chert, some porosity, spotty fluor on tarry residue, no apparent live stain.
2325	Drillers T.D.



SEND ALL HEMITTANCES TO

P. O. DRAWER 1431 DUNCAN, OKLAHOMA 73533 ·

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s NO.	720959

FORM 1906-R2	·												
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P. O. DRAWER 1431 DUNCAN, OKLAHOMA 73533

PAGES

No. 720955

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Halliburton Operator

Customer

Phones: 938-4211 938-2628

MONTANA OIL WELL CEMENTERS, INC.

Nº 8615

Mobile: 938-4702 938-4874 P. O. Box 226 Cut Bank, Montana 59427

WORK ORDER & INVOICE

District	Days 12-207401	der No	Req. No	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Company (Yoty Fox		A ddrace		
Contractor ConachCh	e RIC #	/		
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CONDITIONS, WARRANTY AND	RESPONSIBILITY: 1	t is expressly understood	and agreed that the chan-	
shall be done under the exclusive control, It is expressly understood that Monta	na Oil Well Cementers sha	ill not be responsible for	damages or looses disnot	indirect exected
ment, or part thereof, whether resulting from	occasioned by or incident to om the negligence of Monts	to the use of Montana Oil ' ana Oil Well Cementers or	Well Cementers products and any of its agents, servants	accessory equip- or employees.
The entire warranty or guarantee and and no agent, dealer or representative, converbally or in written form alter, extend or	nected with or employed di exceed the warranties or g	lrectly or indirectly by M guarantees and responsibili	iontana Oil Well Cementers ties expressed herein.	has authority to
I have read, understand and accept th to sign this order as agent of the owner or	e foregoing conditions, war contractor.	ranty or guarantee and res	ponsibility and represent that	I am authorized
BEFORE WORK IS COMMENCED	Owner or			
THIS ORDER MUST BE SIGNED	Contractor	***************************************	Ву	

Fiones: 938-4211 938-2628

MONTANA OIL WELL CEMENTERS, INC.

N9 8593

Mobile: 938-4702 938-4874 P. O. Box 226 Cut Bank, Montana 59427

WORK ORDER & INVOICE

District	Date 12-13-7 Order	r No	Req. No
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Contractor Com unche	del es	BY	***************************************
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The entire warranty or guarantee and and no agent, dealer or representative, conn verbally or in written form alter, extend or	ected with or employed dire	ectly or indirectly by Montana Oil	Well Cementers has authority to
I have read, understand and accept the to sign this order as agent of the owner or	e foregoing conditions, warra		
BEFORE WORK IS COMMENCED	Owner or		
THIS ORDER MUST BE SIGNED	Contractor	В	y

938-2628

MONTANA OIL WELL CEMENTERS, INC.

Nº 8601

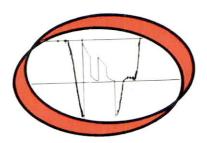
Mobile: 938-4702 938-4874

P. O. Box 226 Cut Bank, Montana 59427 WORK ORDER & INVOICE

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Pressure: Circulating	Minimum/	; Maximum		•
Remarks: LO D Co + Co	3A+E/	DAFEDS OF	comost :	444>>444>>
Just Plus: 5	OPSI FE	0.15		***********************
	γ·	***************************************	; ··	*****************
:				
CONDITIONS, WARRANTY AND	PESPONSIBILITY			
shall be done under the exclusive control,	direction and supervision	on of the owner or contractor.		
It is expressly understood that Monta consequential, or of any kind whatsoever, ment, or part thereof, whether resulting fr	occasioned by or incide om the negligence of M	nt to the use of Montana Oil Vontana Oil Well Cementers or	Well Cementers products and any of its agents, servants	accessory equip- or employees.
The entire warranty or guarantee an and no agent, dealer or representative, converbally or in written form alter, extend or	d responsibility, either onected with or employed	expressed or implied, by Month	tana Oil Well Cementers is	expressed above
I have read, understand and accept to sign this order as agent of the owner or	ne foregoing conditions,	warranty or guarantee and res	ponsibility and represent that	t I am authorized
BEFORE WORK IS COMMENCED THIS ORDER MUST BE SIGNED	Owner or Contractor		Ву	
				·

Formation Testing Service Report









TIME-

720955-649

Each Horizontal Line Equal to 1000 p.s.i.

	D SAMPL	E DAT	^	Date 12-	-21-74	Ticket Number	72095	55	Sec
Sampler Pressure_		P.S.1.	G. at Surface	Kind		Halliburt	on		Twp Rng.
Recovery: Cu. Ft.	Gas			of Job OPE	N HOLE	District	CUT E	<u>SANK</u>	ģġ
cc. Oil				Tester MR.	n ormani	Witness			,
cc. Wa cc. Mu					BOURNE	AA IIII622	MR. C	<u>AINES</u>	⊣ພ
	o quid cc	 -		Drilling Contractor CON	אר שעט או	RILLING COMPA	A 2157 - 11-1	70 0	Ι.
Gravity		API @	•F.	E O	UIPMEN	IT & HOLE	DATA	IC S	اس
Gas/Oil Ratio		e	cu. ft./bbl.	Formation Tested		Bow Island			12
	RESISTI	IVITY (CHLORIDE	Elevation		4202.3 GL		Ft.	- ,
		(CONTENT	Net Productive I	•	5 t			<u> </u>
Recovery Water	@	۰ ۴ .	ppm			Kelly Bushin			_ [-]
Recovery Mud	<u> </u>		ppm	Total Depth		L200 °		Ft.	-
Recovery Mud Fil	trate @	•F.	ppm	Main Hole/Casii		5 1/4"		'	
Mud Pit Sample	<u> </u>		ppm	Drill Collar Leng		524 ¹ I.D.	2 1/4	11	ر ر
Mud Pit Sample F	iltrate @	°F	ppm	Drill Pipe Lengt		606 I.D.			- (r ₁
				Packer Depth(s)		L149' - 1155		Ft.	2
Mud Weight	WATER	2 vis	ср	Depth Tester Va		137'		Ft.	
TYPE	AMOUNT		Depth Back			L/4" - Bott	tom .		٦
Cushion		F	t. Pres. Valve	-		[/811 Ch		1	
									1
Recovered	118 Feet	of Drill:	ing fluid					Mea	PE SE
									1
Recovered	Feet o	of						From	'
									. ≥
Recovered	Feet o	of						Tester	
Recovered	Feet o	of						Valve	H
Recovered	Feet o	of							
Remarks Opene	d tool for	14 minut	e first f	:low with a	weak blo	ow - 1tt incre	easing t	:o	_ Լ
- <i>E.C.</i> b - to to	- C F 11 .	• • •							1
OII DOCTOM	or 5 gallon	bucket	in 8 minu	ites. Close	d tool f	or 28 minute	₃ initia	11	
alasad in m	waaarma T		41	100 5.1		-4 4			ı
crosed In p	ressure. K	teobenea	COOL FOR	122 minute	second i	low with goo	od blow	~££	-
			enn- d- 20	.				011	
bottom of b	ucket - gas	to suri	race in su			011 - 1			Count
bottom of b				minutes -	turned t	o 2" line.			υπŧγ
	4n 35 min	ing 01 -					Changed	l to	υπŧγ
	in 35 minut	es. Clo	osed tool	for 61 minu	te secon	o 2" line.	Changed	l to	υπŧγ
	Gauge No. 44	26	Gauge No.	for 61 minu 649	te secon Gauge No.	d closed in	Changed	l to	lë.
1/8" choke	Gauge No. 44 Depth: 11	:26 .38 ¹ _F	Gauge No.	for 61 minu 649 1196' Ft.	te secon Gauge No.	d closed in	Changed pressur	to e.	unty TOOLE
1/8" choke	Gauge No. 44 Depth: 11	26 .381 _F Hour Cloc	Gauge No.	for 61 minu 649 1196 Ft. 12 Hour Clock	te secon Gauge No. Depth:	ed closed in Ft. Hour Clock	Changed pressur	to e. ME	unty TOOLE
1/8" choke	Gauge No. 44 Depth: 11	26 .381 _F Hour Cloc	Gauge No.	for 61 minu 649 1196 Ft. 12 Hour Clock	te secon Gauge No.	ed closed in Ft. Hour Clock	Changed pressur Tool Opened 03	to e. A.M. 228 P.M.	unty TOOLE
1/8" choke TEMPERATURE	Blanked Off NO	126 138	Gauge No. t. Depth:	for 61 minu 649 1196 fr. 12 Hour Clock f YES	Gauge No. Depth:	ed closed in Ft. Hour Clock	Changed pressur Ti Tool Opened 03 Opened	A.M. 4:28 P.M. A.M.	unty TOOLE
1/8" choke TEMPERATURE	Blanked Off NO	+26 -38	Gauge No. t. Depth: Blanked Of	for 61 minu 649 1196 fr. 12 Hour Clock f YES	Gauge No. Depth: Blanked Of	ed closed in Ft. Hour Clock ff ressures	Changed pressur Ti Tool Opened 03 Opened Bypass 07	A.M. 4:28 P.M. A.M. 4:13 P.M.	unty TOOLE
1/8" choke TEMPERATURE Est. °F, Actual 67 °F.	Blanked Off NO Pressu Field	26 38 F Hour Cloc)	Gauge No. t. Depth: Blanked Of Field	for 61 minu 649 1196 Ft. 12 Hour Clock f YES ressures Office	Gauge No. Depth:	ed closed in Ft. Hour Clock	Changed pressur Tool Opened 03 Opened Bypass 07 Reported	A.M. 4.28 P.M. A.M. Computed	unty TOOLE
1/8" choke TEMPERATURE ist. °F. Actual 67 °F.	Blanked Off NO Pressu Field 500	26 38 ¹ F Hour Cloc) ures Office 504	Gauge No. Gauge No. Depth: Blanked Of Field 521	for 61 minu 649 1196 Ft. 12 Hour Clock f YES ressures Office 532	Gauge No. Depth: Blanked Of	ed closed in Ft. Hour Clock ff ressures	Changed pressur Ti Tool Opened 03 Opened Bypass 07	A.M. 4:28 P.M. A.M. 4:13 P.M.	unty TOOLE
1/8" choke TEMPERATURE st. °F.	Blanked Off NO Pressu Field 500 19	Hour Cloc Hour Cloc Office 504	Gauge No. Gauge No. Blanked Of Field 521 44	for 61 minu 649 1196† Ft. 12 Hour Clock f YES ressures Office 532 37	Gauge No. Depth: Blanked Of	ed closed in Ft. Hour Clock ff ressures	Changed pressur Ti Tool Opened 03 Opened Bypass 07 Reported Minutes	A.M. 4.28 P.M. A.M. Computed Minutes	unty TOOLE
1/8 ¹¹ choke TEMPERATURE st. °F. Actual 67 °F. Initial Hydrostatic Flow Initial Final	Gauge No. 44 Depth: 11 12 Blanked Off NO Pressu Field 500 19 28	26 38	Gauge No. Gauge No. Blanked Of Field 521 44 53	for 61 minu 649 1196	Gauge No. Depth: Blanked Of	ed closed in Ft. Hour Clock ff ressures	Changed pressur Til Tool Opened 03 Opened Bypass 07 Reported Minutes 15	A.M. 228 P.M. A.M. Computed Minutes 14	unity TOOLE State
1/811 choke TEMPERATURE st. °F, Actual 67 °F, pitial Hydrostatic Final Closed in	Gauge No. 44 Depth: 11 12 Blanked Off NO Pressu Field 500 19 28 111	26 38	Gauge No. Gauge No. Blanked Of Field 521 44 53 133	for 61 minu 649 1196 Ft. 12 Hour Clock f YES ressures	Gauge No. Depth: Blanked Of	ed closed in Ft. Hour Clock ff ressures	Changed pressur Ti Tool Opened 03 Opened Bypass 07 Reported Minutes	A.M. 4.28 P.M. A.M. Computed Minutes	unity TOOLE State
1/811 choke TEMPERATURE st. °F, ctual 67 °F, citial Hydrostatic Flow Initial Closed in	Sauge No. 44 Depth: 11 12 Blanked Off NO Pressu Field 500 19 28 111 28	26 .38	Gauge No. Gauge No. Blanked Of Field 521 444 53 133 53	for 61 minu 649 1196 Ft. 12 Hour Clock f YES ressures	Gauge No. Depth: Blanked Of	ed closed in Ft. Hour Clock ff ressures	Tool Opened 03 Opened Bypass 07 Reported Minutes 15 30	A.M. 28 P.M. A.M. Computed Minutes 14 28	unity TOOLE State
1/811 choke TEMPERATURE st. °F. Actual 67 °F. mitial Hydrostatic Flow Initial Closed in Flow Initial Final Final Final Final	Sauge No. 44	26 .38	Gauge No. Gauge No. Blanked Of Field 521 44 53 133 53 88	for 61 minu 649 1196 Ft. 12 Hour Clock f YES ressures	Gauge No. Depth: Blanked Of	ed closed in Ft. Hour Clock ff ressures	Changed pressur Til Tool Opened 03 Opened Bypass 07 Reported Minutes 15	A.M. 28 P.M. A.M. Computed Minutes 14 28 ———————————————————————————————————	unity TOOLE State
1/8" choke TEMPERATURE Sst. °F, Actual 67 °F, mitial Hydrostatic Flow Initial Closed in Final Closed in Closed in Closed in	Sauge No. 44 Depth: 11 12 Blanked Off NO Pressu Field 500 19 28 111 28	26 .38	Gauge No. Gauge No. Blanked Of Field 521 444 53 133 53	for 61 minu 649 1196 Ft. 12 Hour Clock f YES ressures	Gauge No. Depth: Blanked Of	ed closed in Ft. Hour Clock ff ressures	Tool Opened 03 Opened Bypass 07 Reported Minutes 15 30	A.M. 28 P.M. A.M. Computed Minutes 14 28	unty TOOLE
1/8" choke TEMPERATURE ist. °F, Actual 67 °F, nitial Hydrostatic Flow Initial Closed in Closed in Closed in	Sauge No. 44	26 .38	Gauge No. Gauge No. Blanked Of Field 521 44 53 133 53 88	for 61 minu 649 1196 Ft. 12 Hour Clock f YES ressures	Gauge No. Depth: Blanked Of	ed closed in Ft. Hour Clock ff ressures	Changed pressur Tool Opened 03 Opened Bypass 07 Reported Minutes 15 30 120	A.M. 28 P.M. A.M. Computed Minutes 14 28 ———————————————————————————————————	unity TOOLE State
1/8" choke TEMPERATURE st. °F, Actual 67 °F, mitial Hydrostatic Flow Initial Closed in Closed in Closed in Flow Initial Final Closed in Initial Final Closed in Initial Final Sauge No. 44	26 .38	Gauge No. Gauge No. Blanked Of Field 521 44 53 133 53 88	for 61 minu 649 1196 Ft. 12 Hour Clock f YES ressures	Gauge No. Depth: Blanked Of	ed closed in Ft. Hour Clock ff ressures	Changed pressur Tool Opened 03 Opened Bypass 07 Reported Minutes 15 30 120	A.M. 28 P.M. A.M. Computed Minutes 14 28 ———————————————————————————————————	unity TOOLE State	
1/8" choke TEMPERATURE ist. °F. Actual 67 °F. nitial Hydrostatic Flow Initial Final Closed in Closed in Flow Flow Initial Final Closed in Closed in Closed in Closed in Closed in	Sauge No. 44	26 .38	Gauge No. Gauge No. Blanked Of Field 521 44 53 133 53 88	for 61 minu 649 1196 Ft. 12 Hour Clock f YES ressures	Gauge No. Depth: Blanked Of	ed closed in Ft. Hour Clock ff ressures	Changed pressur Tool Opened 03 Opened Bypass 07 Reported Minutes 15 30 120	A.M. 28 P.M. A.M. Computed Minutes 14 28 ———————————————————————————————————	unity TOOLE State
1/8" choke TEMPERATURE St. °F. Actual 67 °F. Initial Hydrostatic Flow Initial Final Closed in Closed in Flow Flow Initial Final Closed in Closed in Closed in Closed in Closed in	Sauge No. 44	26 .38	Gauge No. Gauge No. Blanked Of Field 521 44 53 133 53 88	for 61 minu 649 1196 Ft. 12 Hour Clock f YES ressures	Gauge No. Depth: Blanked Of	ed closed in Ft. Hour Clock ff ressures	Changed pressur Tool Opened 03 Opened Bypass 07 Reported Minutes 15 30 120	A.M. 28 P.M. A.M. Computed Minutes 14 28 ———————————————————————————————————	unity TOOLE State
1/811 choke TEMPERATURE Est. °F, Actual 67 °F, nitial Hydrostatic Plow Initial Final Closed in Closed in Closed in Initial Final Closed in Initial Final Closed in Initial Final Final Final Final Final Final Final Final	Gauge No. 44 Depth: 11 12 Blanked Off NO Pressu Field 500 19 28 111 28 70 111	26 .38	Dsed too1 Gauge No. Gauge No. Blanked Of Field 521 44 53 133 53 88 133	for 61 minu 649 1196 Ft. 12 Hour Clock f YES ressures Office 532 37 57 129 54 95 133	Gauge No. Depth: Blanked Of	ed closed in Ft. Hour Clock ff ressures	Changed pressur Tool Opened 03 Opened Bypass 07 Reported Minutes 15 30 120	A.M. 28 P.M. A.M. Computed Minutes 14 28 ———————————————————————————————————	unity TOOLE State

Gas gravity Spec. gravity		Oil gro	vity	ppn	OR n Res		F Ticket No. 720955
INDICATE TYPE	AND SIZE	OF GAS MEA	SURING DEVICE U	SED - UKIFILE	WELL IE	21FK	
Date Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD			Remarks
		ALL RAT	ES ESTIMATED	ONLY			
04:55	1/8"	1	2.76	none			
05:05	1/8"	2	3.92	none		• • • • • • • • • • • • • • • • • • • •	
05:15	1/8"	3	4.84	none		-	
05:25	1/8"	3½	5.26	none			
05:35	1/8"	4	5.64	none			
05:45	1/8"	45	6.01	none			
05:55	1/8"	5.	6.39	none			
06:05	1/8"	5½	6.72	none			
06:13	1/8"	6	7.06	none			
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720955	Third Closed In Pressure	Time Defi. $\log \frac{t+\theta}{\theta}$ PSIG. 1.000".																																			Minutes	equal to 22 minutes	last interval		LITTLE'S 96072 73C 0/74	
Ticket No.	Third Flow Period	PSIG Temp. Corr.															-																					nterval	es each and			
12 hour	T. Flow	Time Defl. .000"																		Jnou 71																		**First	10 minutes			
	ire	PSIG Temp. Corr.	29	94	102	104	106	106	901	107	107	107	107	108	108	109	109	109			95	118	125	127	128	129	130	130	131	131	131	132	132	133	133	133		Te Fe	equal to 1		DATA	
. 2814	Second Closed in Pressure	$\frac{\theta}{\theta+1}$ 607																		. 2411										-							****	to 1	intervals eq			
Clock No.	င်	Time Defl. .000"	000°	• 0066	.0132	0198	,0264	.0330	•0396	.0462	.0529	.0595	.0661	.1321	.1981	2643	,3303	.4030	14	CIOCK 140. 24 1.1	0000	9900.	.0131	.0197	.0263	.0329	.0394	0970°	.0526	。0592	.0657	.1315	.1972	.2630	.3287	.4010		31	4		PRESSURE	- !
	Second low Period	PSIG Temp. Corr.	24	***0*	46	53	57	62	67												54	***69	75	80	86	06	95											t Interval	each; next			
1138	Seco Flow P	Time Defl. .000"	000°	.1452	°2771	.4091	.5411	°6730	.8050											1196.	000	.1455	.2778	,4100	.5422	97/9.	.8070										20	**F1	l minute ea		SPECIAL	- - -
Depth		PSIG Temp. Corr.	27	41**	61	16	86	92	96	66	101	102	103			-			-	Depth	57	**O/	92	106	114	120	124	126	127	128	129	=						ntu	ಚಿ		(1)	
	First Closed In Pressure	$\log \frac{t+\theta}{\theta}$																		ŀ																	3	ţ	als equal			
4426	ວັ	efi.	000°	• 0068	0220	.0473	.0675	.0878	.1080	,1283	.1485	.1688	,1890							049	000°	9900°	0265	.0463	.0661	.0860	,1058	.1257	.1455	.1653	.1850							interval eq		minutes.		
	poj	PSIG Temp. Corr.	7	13*	19	22	24	27													37	45*	67	53	55	57	,										1 3	in i	irst	al to ll	5 IN U.S.A.	
Gauge No.	First Flow Period	Time Defl. .000"	L			_		0660°				1				1			2	71-	_	\rightarrow	-		_	9760•											Reading Interval	REMARKS: *First	**	equal	FORK 181-RI-PRINTED IN U.S.A.	
	j		0		2	က	4	S	9	7	&	6	10	11	12	13	14	15			0	_	2	m	4	2	9	7	∞	^	10	=	12	13	14	15	Re		-0(⊋ ≨∠	- 291	1

TICKET	NO.	720955
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<u> </u>			7: TCICET 110. 7:	20955
A -	0. D.	-I. D.	LENGTH	DEPTH
Drill Pipe or Tubing	Ştî	2 1011	1'	
Reversing Sub		2.10"	- <u>i</u> ,	
Water Cushion Valve Drill Pipe Drill Collars Handling Sub & Choke Assembly		·		
Drill Pipe	3 1/2"	2.764"	<u>606'</u>	
Drill Collars		2 1/4"	524 [†]	
Handling Sub & Choke Assembly	4 3/4"	2 1/2"	1' DOUBLE	PIN
Dual CIP Valve	5"	.89"	5'	1132
Dual CIP Sampler				
Hydro-Spring Tester	511	.75"	51	1137'
Multiple CIP Sampler	····			
Extension Joint				
AP Running Case	5"	2.37"	4*	1138'
Hydraulic Jor		 		
VR Sofety Joint	5"	1"	31	
Pressure Equalizing Crossover	·			
Packer Assembly NR		1.53"	61	1149 '
Distributor				
Packer Assembly NR	5 1/2"	1.53"	61	1155*
Flush Joint Anchor	51t	2.37"	6 1	
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				****
Fig. Datt Calling				
Drill Collars				
Packer Assembly				
Distributor				
Packer Assembly	·			
Anchor Pipe Safety Joint				
Side Wall Anchor			 .	
Drill Collars	3 1/2"	2.764"	31' DRILL	PIPE .
Flush: Joint Anchor	511	2 1/2"	83¹ SUB	
Blanked-Off B.T. Running Cose	511	2,37"	41	1196
Total Depth			•	1200

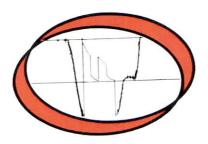
NOMENCLATURE

b	=	Approximate Radius of Investigation	eet
bı	=	Approximate Radius of Investigation (Net Pay Zone hi)	eet
D.R	=	Damage Ratio	
Εl	=	Elevation	eet
GD	=	B.T. Gauge Depth (From Surface Reference)	eet
h	=	Interval TestedF	eet
h,	=	Net Pay ThicknessF	eet
K	=	Permeability	nd
Κı	=	Permeability (From Net Pay Zone h1)	nd
m	=	Slope Extrapolated Pressure Plot (Psi²/cycle Gas)	osi/cycle
OF,	=	Maximum Indicated Flow Rate	MCF/D
OF ₂	=	Minimum Indicated Flow Rate	MCF/D
OF₃	=	Theoretical Open Flow Potential with/Damage Removed Max	MCF/D
OF ₄	=	Theoretical Open Flow Potential with/Damage Removed Min	MCF/D
P _s	=	Extrapolated Static Pressure	Psig.
P۶	=	Final Flow Pressure	osig.
P or	=	Potentiometric Surface (Fresh Water*)	eet
Q	=	Average Adjusted Production Rate During Test	obls/day
\mathbf{Q}_1	=	Theoretical Production w/Damage Removed	obls/day
Q _g	=	Measured Gαs Production Rate	MCF/D
R	=	Corrected Recovery	abls
r w	=	Radius of Well Bore	Feet
t	=	: Flow Time	Minutes
t.	=	: Total Flow Time	Minutes
T	=	Temperature Rankine	°R
Z	=	Compressibility Factor	
ע	=	Viscosity Gas or Liquid	СР
Log	=	Common Log	

^{*} Potentiometric Surface Reference to Rotary Table When Elevation Not Given, Fresh Water Corrected to 100° F.

Formation Testing Service Report











Each Horizontal Line Equal to 1000 p.s.i.

FLUII	D SAMPL	E DAT	\	Dote 12-	27-74	Ticket Number	720958	3	c go	
Sampler Pressure_		P.\$.1.G	, at Surface	Kind		Hallibur	CUT BA		Location Twp Rn	
Recovery: Cu. Ft.	Gas			of Job OPE	N HOLE	District	CUT BA	<u>INK</u>	35	ΙĿ
cc. Oil cc. Wat		 	 [Tester MR	ROURNE	. Witness	MR. GA	INFS	ľ	Lease I
cc. Mud				Drilling	DOUNTE		71111 W	111111111111111111111111111111111111111	<u>ا</u>	CIVINATE PASSE Name
Tot. Liq	ممالية			Contractor CON		RILLING COMP			ြို့	\$2
Gravity	• ,	API @	°F.	. EQ		AT & HOLE	DATA		P	
Gas/Oil Ratio			cu. ft./bbl.	Formation Teste	-				Ħ	VIIIV.
	RESIST	IVITY CH	LORIDE NTENT	Elevation		- 5'		Ft.		
Recovery Water	Ø.	°F.	000	Net Productive I	· · · · · · · · · · · · · · · · · · ·			Ft.		
Recovery Mud	@					<u>Kelly Bushin</u> 2058'	y	Pro.	6	
Recovery Mud Filt						6 1/4"		Ft.	S	١.
Mud Pit Sample			ppm	Drill Collar Len			. 2½"		i)	
Mud Pit Sample F	iltrate @		ppm	Drill Pipe Lengt		1499' i.d	2.764	F	26	Well No.
				Packer Depth(s)	***************************************	2044'	·	Ft,	5	8
Mud Weight	9.3	vis	37 CP	-		2032'		Ft.	1	
TYPE	AMOUNT		Depth Back		Surface		ttom]	l i
Cushion		Ft.	Pres. Valve	•	Choke	1/4" ^{Ch}	oke.75"		┦	
Baroward 070	East	of		. 4					≥₽	Test No.
Recovered 273	reet	^{of} muddy ga	as cut wa	iter					Area	
Recovered 150	Feet	of closm as	ac cut wa	ton vory cl	liaht en	ecks of oil			1	١.
130		- Clear ya	15 Cut Wa	(cer-very 5)	right sp	ecks of off		I -	Ξ	
Recovered	Feet	of						Tester	ILD	l I,
		·							DCAT	
Recovered	Feet	of						Valve	-	
						•]*	1	- I
Recovered	Feet								1	ᆲ
On location									1	Fested
Remarks botto	m <u>satight ś</u>	ot 901 o	<u>ff::botteri</u>	<u>n.†10pened t</u>	tool for	<u>15 minute f</u>	<u>irst flo</u>	ow with	4	Interva
.	- •						67		1	3
<u>a weak blow</u>	過" increas	sing to o	rr bottom	1 of 5 gallo	on bucke	<u>t in 6 minut</u>	es. Clo	os <u>ea</u>	┨	
+001 fon 62	minuta fin	74 Alasa	4 4	LOUING DOOR	anad ta	al fan 62 mi	nuto co	aand		∤
tool for 62	minute ire:	SIC CTOSE	i ni hu e z	zurekeoi	Jeneu Lo	OI TOP BE IIII	Huce Set	JUILU_	-Įδ	
flow (기술" of	f hottom)	Closed	tool for	60 minute	second c	locad in arc	ccura		7	li
1 10W (12 UI		UIUSEU	LOO L TOT	oo minate .	SECOND. C	ivaca in pic	. <u> </u>		1	1 !
]	'
TEMPERATURE	Gauge No. 4/	426	Gauge No.	649	Gauge No	•	т	IME	100LE	lι
12W CONTONE		033 Ft.		2054 Ft.	† 	Ft.	·		. [-	واا
70		2 Hour Clock		12 Hour Clock		Hour Clock	T∞l	A.M.	1	
Est. 72 •F.	Blanked Off No	<u> </u>	Blanked Of	fYes	Blanked O	off	Opened 8		:	-
	_		_		_		Opened	A.M.	.	;
Actual *F.	Press		1	ressures		Pressures	Bypass 1 .	Computed	·l	إي
Internal Contractor	Field	Office	Field	Office	Field	Office			<u> </u>	
Initial Hydrostatic	973.1	980	990.3	992	ļ		Minutes	Minutes	State	95
Flow Final	27.8	24	35.4	35		 	7.5	3.5	ન્યૂ	Lease Owner/Company Name
Closed in	74.1	72 405	88.4 415.2	83 415	<u> </u>	 	15	15	-	8
 	407.5 83.4	<u>405</u> 81	88.4	93		-	30	30	┨ _┻	8
Flow Final	194.5	197	203.2	207		 	62	62 .	MONTANA	Ž
Closed in	398.2	402	415.2	413			60	60	甘	ME
Initial	3,0.2	704	11.046	1		- 			K	
Flow Final			1	 					1	
Closed in			†				· -		1	
Final Hydrostatic	973_1	978	990.3	989					1	
			1]		1	1	1	1

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	e S	PSIG Temp. Corr.									_																									Min	
	Third Closed In Pressur	$\frac{\theta}{\theta}$ for		:																								I									
720958	ŏ	Time Defl. .000"																																			
Ticket No.	Third Flow Period	PSIG Temp. Corr.																	12																		
12 hour	Tow I	Time Deft. .000"																	hour									-									
2814	1	PSIG Temp. Corr.	197	319	344	358	369	376	381	384	388	392	394	396	398	399	401	402		207	330	355	369	379	385	390	395	398	301	403	405	407	409	411	413		
	Second Closed in Pressure	$\frac{1}{\theta}$ Fod $\frac{1}{\theta}$													-				2411																	4	
Clock No.	Ŏ	Time Defi.	000	.0263	.0526	.0789	.1052	.1315	.1578	.1841	.2104	.2367	. 2630	. 2893	.3156	.3419	.3682	.3950	Clock No.	000	.0263	.0526	.0789	.1052	.1315	.1578	.1841	.2104	.2367	. 2630	. 2893	.3156	.3419	. 3682	.3950		
	Second Flow Period	PSIG Temp. Corr.	81	113*	133	152	168	183	197											93	125*	145	163	178	193	207										10	utes.
2033	Sec Flow	Time Defl. .000"	000.	.0809	.1483	.2157	.2831	.3505	.4180										2054	000	.0805	.1476	.2147	.2818	.3489	.4160											12 minut
Depth		PSIG Temp Corr.	72	298	342	364	376	384	391	396	399	402	405						Depth	83	312	352	374	386	396	401	406	410	413	415							equal to
	First Closed In Pressure	$\frac{\theta}{\theta}$ for		,																					_											33	<u>interval e</u>
4426	<u> </u>	Time Deff. .000"	000.	.0195	.0390	.0585	.0780	.0975	.1170	.1365	.1560	.1755	.1950							000	.0197	.0394	.0591	.0788	.0985	.1182	.1379	.1576	. 1773	1970							First in
	riod	<u> </u>	24	34	46	57	67	72											. 649	35	43	55	64	74	83											ار س	*
Gauge No.	First Flow Period	Time Defl. .000"	000.0	-		3 .0606	4 .0808	5 1010	9	7	8	6	10	=	12	13	14	15	Gauge No.	000.10		2 .040	3 .060	4 .080	5 .100	9	7	8	6	10	111	12	13	14	15	Reading Interval	REMARKS:

TICKET NO.

720958

<u> </u>	O. D.	1. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Reversing Sub	<u>5"</u>	2.12'	1'	
Water Cushion Valve				
Drill Pipe	<u>31</u> 5"	2.764"	1499'	
Drill Collars	<i></i> <u>5 1/4"</u>	21211	524'	
	<u>5 3/4"</u>	21/4"	<u>.90' Do</u> ul	
Dual CIP Valve	<u>5"</u>	.89"	<u> </u>	2027'
Dual CIP Sampler				
Hydro-Spring Tester	5"	<u></u>	5'	<u>2032'</u>
Multiple CIP Sampler				
Extension Joint				
AP Running Case	<u>5"</u>	2.37"	4 1	2033'
Hydraulic Jar				
VR Safety Joint	5"		31	
Pressure Equalizing Crossover				
<u> </u>				
Packer Assembly	<u>5½"</u>	1.53"	6'	2044'
Distributor				
Packer Assembly	·····	-		
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly				
Distributor	·····	-		١
Packer Assembly				<u> </u>
Anchor Pipe Safety Joint		<u> </u>		
Side Wall Anchor			 	
Drill Collars				•
Flush Joint Anchor	5"	2.37"	8'	
Blanked-Off B.T. Running Case	<u>5"</u>	· · · · · · · · · · · · · · · · · · ·	4'	2054'
Total Depth				2058'

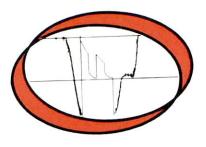
NOMENCLATURE

b	= Approximate Radius of Investigation Feet	
\mathbf{b}_1	= Approximate Radius of Investigation (Net Pay Zone h.) Feet	
D.R.	— Damage Ratio	
Εl	= ElevationFeet	
GD	== B.T. Gauge Depth (From Surface Reference) Feet	
h	= Interval TestedFeet	
h ₁	= Net Pay Thickness Feet	
K	= Permeabilitymd	
K 1	= Permeability (From Net Pay Zone h.)	
m	= Slope Extrapolated Pressure Plot (Psi²/cycle Gas) psi/c	ycle
OF ₁	= Maximum Indicated Flow Rate	/D
OF ₂	= Minimum Indicated Flow Rate	/D
OF ₃	= Theoretical Open Flow Potential with/Damage Removed Max MCF,	/D
OF ₄	= Theoretical Open Flow Potential with/Damage Removed Min MCF,	/D
\mathbf{P}_{s}	= Extrapolated Static Pressure	
P _F	= Final Flow Pressure	
P or	= Potentiometric Surface (Fresh Water*)Feet	
Q	= Average Adjusted Production Rate During Test bbls/	/day
Q,	= Theoretical Production w/Damage Removed	/day
Q,	= Measured Gas Production Rate	/D
R	= Corrected Recovery	
r "	= Radius of Well Bore	
t	= Flow TimeMinu	ıtes
t.	= Total Flow TimeMinu	ıtes
Т	= Temperature Rankine°R	
Z	= Compressibility Factor	
ىر	= Viscosity Gas or LiquidCP	
Log	= Common Log	

^{*} Potentiometric Surface Reference to Rotary Table When Elevation Not Given, Fresh Water Corrected to 100 $^\circ$ F.

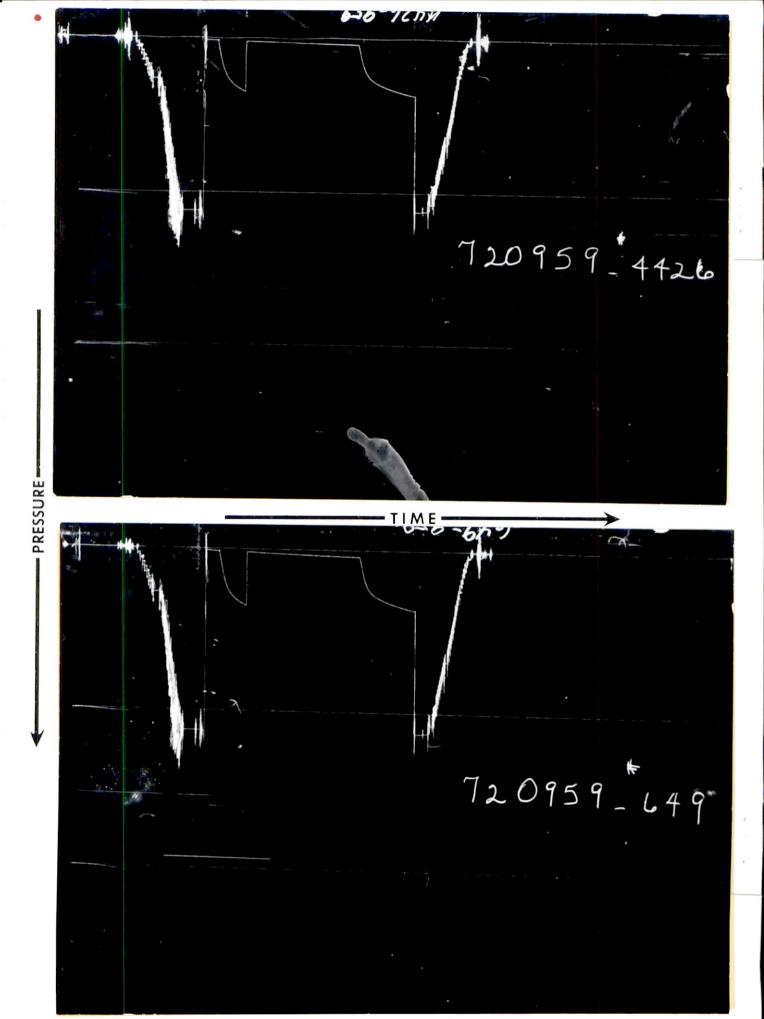
Formation Testing Service Report











Each Horizontal Line Equal to 1000 p.s.i.

FLUII	D SAMPL	E DATA		ate 1.2	-29-74	Ticket Number	720959	1	ega!	
Campias Brossusa		.P.S.I.G.		ТО	RADDLE TES				ĭ K C	
Sampler Pressure		P.3.1.G.			EN HOLE	Halliburte District	n cut ba	NK	atio	
Recovery: Cu. Ft.				<u> </u>					ã,	- WE
cc. Wate			т	ester BO	URNE	Witness	GAINES	5	ſ	
cc. Mud									1	HORSE
1	uid cc.			Irilling Contractor CC	MANCHE DRI	LLING COM	PANY # 1	I NM S		g Z
Gravity					JIPMENT		DATA		Lu	1
Gas/Oil Ratio				ormation Tested		wtooth			1. 1	SHOES
Gus/Oir Rulloi_	RESIST			levation		02' G.L.		E+	i. l	ᇛ
	(LSIS)	CON	KICINI	let Productive II				Ft.		S
Recovery Water	@	°F.		II Depths Meas		11y Bushi	na		[
Recovery Mud	4.76 @			otal Depth		25'			_	1
Recovery Mud Filt	7.70 @	<u>-43</u>		Nain Hole/Casir		11		Ft.	m	
Mud Pit Sample	5 .40 @	490°F.		orill Collar Leng		4' I.D.	21/4"	1	ا م ا	
Mud Pit Sample F	iltrate @	~F. —		Prill Pipe Lengt		02 I.D.		764"	5	2 Well No.
					NR set @					공
Mud Weight	9.7	vis		Depth Tester Va		32'	on oco e	Ft.	ζ.	. [
TYPE	AMOUNT		Depth Back	•	Surface	Bott	om		[C	ŧ
	NONE	Ft.	Pres. Valve	NONE	Choke	指 Che		.75"]	a
									\	Test No.
Recovered	64' Feet	of drill	ing fluid	- slight	y water cu	t	<u>.</u>		red	ᅙ
		-						1.	i l	1
Recovered	Feet	of						From	<u> </u>	1
										- 1
Recovered	Feet	of						Tester	WILDCAT	
								\ \frac{1}{8}	Ä	
Recovered	Feet	of						Volve	1 1	
1										
Recovered	Feet	of							1	리♡
										# I I ₩
		A. 1	a r.a	مامند ۵	1 un +001	a+ 0600	ctavtod	in the		# 155 14
Remarks		On locat	ion @ 5:3	0 - picked	up tool -	at 0600	started	in the		254 '
							_	•		254 ' -
	ened tool @						_	•		terval 2
hole - ope	· · · · · ·	8:18 with	n a weak b	olow - 2" ·	- increased	l to off t	he bott	om of		11/0
hole - ope	on nale in	8:18 with	n a weak b	10w - 2" ·	- increased	l to off t	he botto e first	om of		254' - 2284'
hole - ope the 5 gall	on pale in	8:18 with 5 minutes	a weak b . At 08: 09:03 - (olow - 2" · 33 closed 4" to the	- increased tool for a	to off to 29 minut	he botto	om of closed	Count	11/0
hole - ope the 5 gall in pressur Closed to	on pale in re. Tool r	8:18 with 5 minutes eopened @ 21 minutes	n a weak b s. At 08: 09:03 - (s for a 60	olow - 2" 33 closed 4" to the) minute so	- increased tool for a	to off to 29 minut	he botto	om of	County	11/0
hole - ope the 5 gall in pressur Closed to	on pale in	8:18 with 5 minutes eopened @ 21 minutes	n a weak b s. At 08: 09:03 - (s for a 60	olow - 2" 33 closed 4" to the) minute so	- increased tool for a	to off to 29 minut	he botto	om of closed	₹	11/0
hole - ope the 5 gall in pressur Closed to	on pale in re. Tool r ool after l urface. Ca	8:18 with 5 minutes eopened @ 21 minutes me off bot	n a weak b s. At 08: 09:03 - (s for a 60 ctom @ 12:	33 closed 4" to the minute so	tool for a bottom of econd close	to off to 29 minut	he botto	om of closed	₹	11/0
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	Third Closed In Pressure	$\frac{\theta}{\theta}$ tool																																				PL/A 252 82998 32C 0/24
720959	ΰ	Time Defl. .000"																																				
licket No.	rd eriod	PSIG Temp. Corr.																	12																			
14our	Third Flow Period	Time Defl.																	hour														-					
2814	- 1	PSIG Temp. Corr.	40	187	526	284	303	317	329	341	350	359	366						2411	43	187	258	285	304	318	331	343	352	362	369							i	۲ ۲ ۲
	Second Closed in Pressure	$\frac{\theta}{\theta + 1}$ for																																		٥		
Clock No.	ŏ	Ę,	000	.0405	.0810	.1215	.1620	.2025	.2430	.2835	.3240	.3645	.4050						Clock No.	. 000	.0402	.0804	.1206	. 1608	.2010	.2412	. 2814	. 3216	3618	.4020						MINUTES.		
2233	nd eriod	PSIG Temp. Corr.	25	25**	27	31	34	37	40							•			2237	27	27**	30	34	٤/	40	43										= 21		
77	Second Flow Period	Time Defl. .000"	000.	.1399	.2731	.4063	. 5395	.6727	.8060			:			i					000.	.1400	.2734	.4068	. 5402	.6736	0/08:							•			2 INTERVAL		
Depth	9	PSIG Temp. Corr.	8	*66	173	227	292	285	304	319	330	339	347				İ	1	Depth	19	*06	172	228	266	290	307	322	333	343	320						LES. **		<u>'</u>
	First Closed In Pressure	$\frac{\theta}{\theta}$ for																																		3 = 2 MINUTES		
4426	Ö	Time Defl. .000"	000.	.0134	.0336	.0538	.0740	.0942	1144	.1346	.1548	.1750	.1950						649	000.	.0135	8280	.0541	.0744	.0947	.1150	. 1353	1556	.1759	.1960						II INTERVAL		
7		PSIG Temp. Corr.	14	15	15	16	91	17	77	81										15	13	14	15	16	17	18	19									2 * ·		
Gauge No.	First Flow Period	Time Deft. .0c3"	000.	.013	.026	.039	.052	.065	.078	160			-						Gauge No.	000.	.0136	.0272	.0408	.0544	0890	.0816	.0950									Reading Interval REMARKS:		
ď			0	~	7	ო	4	S	0	7	∞	٥	2	Ξ	12	13	4	2		0	-	7	က	4	2	\$	7	∞	٥	2	=	12	13	<u>-</u>	15	REA		

TICKE1 NO. 720959

3	0. D.	1. D.	LENGTH	DEPTH
Drill Pipe or Tubing =	5 11	2.12"		
Reversing Sub	<u> </u>	2.12	'	
Water Cushion Valve Drill Pipe Drill Collars DOUBLE				
Drill Pipe	3½"	2.764"	1702	
Drill Collars	54"	21411	524	
Handling Sub & Choke AssemblyPIN_	4 3/4"	21/4"	.90	00071
Dual CIP Valve	5"	.89"	5'	2227'
Dual CIP Sampler	<u> </u>	.75"	5' -	2232'
Hydro-Spring Tester	<u> </u>			
Multiple CIP Sampler				
				00001
******** AP CASE	5"	2.37"	4'	22331
╣`	5"	2.37"	4'	2237'
AP Running Case	5	2.3/		
Hydraulic Jar	5"	2.37"	5'	
Hydraulic Jar				
VR Safety Joint	5"	1"	3'	
Pressure Equalizing Crossover	5"	.75"		
<u> </u>	51 ()	1 500	6'	22541
Pocker Assembly NR	5½"	1.53"		2254'
7				
Distributor				
Distributor				
1				
Packer Assembly				
	•			
	5"	2.37"	25'	
Flush Joint Anchor	<u> </u>		32'	
Pressure Equalizing Tube	.			
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint			 .	
<u> </u>				
Packer Assembly "O" RING SUB	5"	ייך	1'	
Packer Assembly				
Distributor DOUBLE BOX	5"	21211	.801	
<u></u>		- co#	A 501	_
Packer Assembly E. S. A	5½"	1.53"	4.50'	2284 ^t
d i		•		
Anchor Pipe Safety Joint				
4				
Side Wall Anchor				
<u>u</u>	E #I	212"	.60'	
Drill Collars DOUBLE PIN	5"	4.2	.00	•
Study Jaim Andrew	5"	2.73"	5'	
Flush Joint Anchor	5"	2½"	.83'	
DRILL PIPE Blanked-Off B.T. Running Case	312"	2.76"	31.35'	
				02051
Total Depth				2325'

NOMENCLATURE

b	=	Approximate Radius of Investigation	Feet
b _i	=	Approximate Radius of Investigation (Net Pay Zone $h_1)\ \dots \dots$	Feet
D.R.	=	Damage Ratio	
Εł	=	Elevation	Feet
GD	=	B.T. Gauge Depth (From Surface Reference)	Feet
h	=	Interval Tested	Feet
h,	=	Net Pay Thickness	Feet
K	=	Permeability	md
Κı	=	Permeability (From Net Pay Zone hı)	md
m	=	Slope Extrapolated Pressure Plot (Psi²/cycle Gas)	psi/cycle
OF,	=	Maximum Indicated Flow Rate	MCF/D
OF ₂	=	Minimum Indicated Flow Rate	MCF/D
OF ₃	=	Theoretical Open Flow Potential with/Damage Removed Max	MCF/D
OF₄	=	Theoretical Open Flow Potential with/Damage Removed Min	MCF/D
P _s	=	Extrapolated Static Pressure	Psig.
P _F	=	Final Flow Pressure	Psig.
P or	=	Potentiometric Surface (Fresh Water*)	Feet
Q	=	Average Adjusted Production Rate During Test	bbls/day
Q۱	=	Theoretical Production w/Damage Removed	bbls/day
Q,	=	Measured Gas Production Rate	MCF/D
R	=	Corrected Recovery	bbls
r "	=	Radius of Well Bore	Feet
t	=	Flow Time	Minutes
t.	=	Total Flow Time	Minutes
T	=	Temperature Rankine	°R
Z	=	Compressibility Factor	
μ	_	: Viscosity Gas or Liquid	СР
Log	=	: Common Log	

^{*} Potentiometric Surface Reference to Rotary Table When Elevation Not Given, Fresh Water Corrected to 100° F.