

CHECK SHEET

Date November 20, 1974

Company Croft Petroleum Company, PO Box 1284, Cut Bank, Montana 59427

Well Name Two Horseshoes No. 2

County Toole Field Wildcat

Location 1980' fr N li & 1980' fr W li C SE NW Sec. 3 Twp. 36N Rge. 1E

Permit No. N6086

Receipt No. 11497

Drilling Fee \$25.00

Intention to Drill X

API No. 21337

Permit Expiration Date February 17, 1975

Permit Extended 90 days From _____ To _____

\$ 5,000 one well bond _____

\$10,000 blanket bond X

\$20,000 blanket bond Put well on production 6/15/05

Government well _____

Sundry Notices _____

" " _____

" " _____

" " _____

Log of Well X Dev 29 1974 Gas Well

Subsequent Report of Abandonment _____

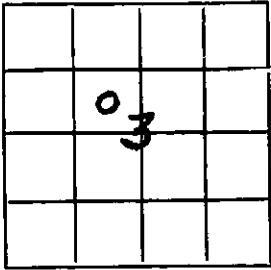
Electric Log _____

Radioactive Log _____

PLAINTIFFS'
EXHIBIT

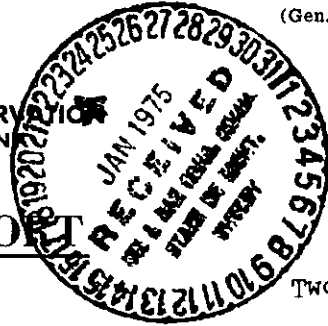
P266

LOCATE WELL CORRECTLY



(SUBMIT IN TRIPLICATE)

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



COMPLETION REPORT

Two Horseshoes # 2

Company Croft Petroleum Company Lease Croft Well No. Croft #2
Box 1284

Address Cut Bank, Montana Field (or Area) Wildcat

The well is located 1980 ft. from (N) line and 1980 ft. from (W) line of Sec. 3

Sec. 3; T. 36N; R. 1E; County Toole; Elevation 4212 KB
(D.F., R.B. or G.L.)

Commenced drilling December 19, 1974; Completed December 29, 1974

The information given herewith is a complete and correct record of the well. The summary on this page is for the condition of the well at the above date.

Completed as Cased gas well Signed Calvin W. Gaines
(oil well, gas well, dry hole)

Title Agent

Date January 22, 1975

IMPORTANT ZONES OF POROSITY

(denote oil by O, gas by G, water by W; state formation if known)

From _____	to <u>See attached report</u>	From _____	to _____
From _____	to _____	From _____	to _____
From _____	to _____	From _____	to _____
From _____	to _____	From _____	to _____

CASING RECORD

Size Casing	Weight Per Ft.	Grade	Thread	Casing Set	From	To	Sacks of Cement	Cut and Pulled from
7"	17#	J55		225 KB	0	225	100	
4 1/2"	10.6	K55		1262	0	1262	60	

TUBING RECORD

Size Tubing	Weight Per Ft.	Grade	Thread	Amount	Perforations

COMPLETION RECORD

Rotary tools were used from 0 to 2325
Cable tools were used from _____ to _____
Total depth 2325 ft.; Plugged back to 1262 T.D.; Open hole from _____ to _____

PERFORATIONS			ACIDIZED, SHOT, SAND FRACED, CEMENTED			
Interval		Number and Size and Type	Interval		Amount of Material Used	Pressure
From	To		From	To		
TO BE SUBMITTED UPON COMPLETION			Plug #1		25 sx	2025-2150

(If P&A show plugs above)

INITIAL PRODUCTION

Well is producing from _____ (pool) formation.

I. P. _____ barrels of oil per _____ hours (pumping or flowing)

_____ Mcf of gas per _____ hours.

_____ barrels of water per _____ hours, or _____ % W.C.

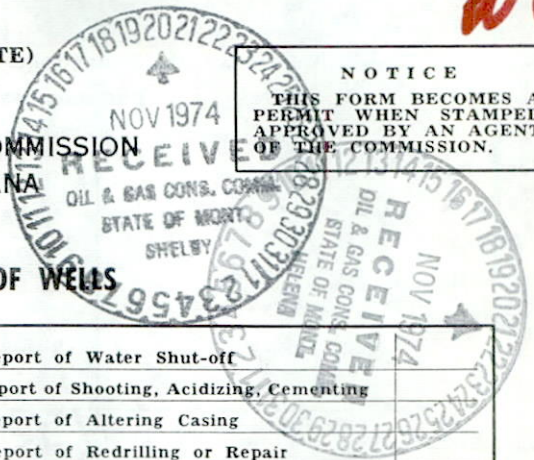
(OVER)

(SUBMIT IN QUADRUPPLICATE)
 TO

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

SUNDRY NOTICES AND REPORT OF WELLS

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

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

Following is a notice of intention to do work on land owned described as follows:

LEASE TWO HORSESHOES

MONTANA
 (State)

Toole
 (County)

Wildcat
 (Field)

Well No. 2

C SE 1/4 Section 3-36N-1E
 (m. sec.) (Township)

(Range) (Meridian) MPM

The well is located 1980 ft. from N line and 1980 ft. from W line of Sec. 3-36N-1E

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

COPIES AND CULLOGS TO BE DELIVERED TO COMMISSION OFFICE AT 110 POLY DR BILLINGS, MONTANA IN ACCORDANCE WITH RULE NO 229.

DETAILS OF PLAN OF WORK

FILING WITH THE COMMISSION ALL LOGS REPORTS, SURVEY AND ANALYSES MADE OR RUN IS REQUIRED IN ACCORDANCE WITH RULE NO. 230.

DETAILS OF WORK
 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 4 1/2" 10.6# casing.

Hole will be drilled with rotary tools

Spud date will depend upon availability of drilling rig and casing.

AMOUNT RECEIVED \$25.00
 DRILLING PERMIT NO. N6086
 RECEIPT NO. 11497

Approved subject to conditions on reverse of form

Date NOV 20 1974

By *Blaine L. Humphrey* Field Supervisor
 District Office Agent Title

Company CROFT PETROLEUM COMPANY
 By *W.S. Croft*
 Title W.S. CROFT, PRESIDENT
 Address P.O. BOX 1284
 CUI BANK, MONT. 59427

COMMISSION USE ONLY
 API WELL NUMBER

0	2	5	1	0	1	2	1	3	1	7
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



\$10,000 Bond

on well card 11-21-74 m.p. 25 fee

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

Form No. 2
File at
Billings
or Shelby

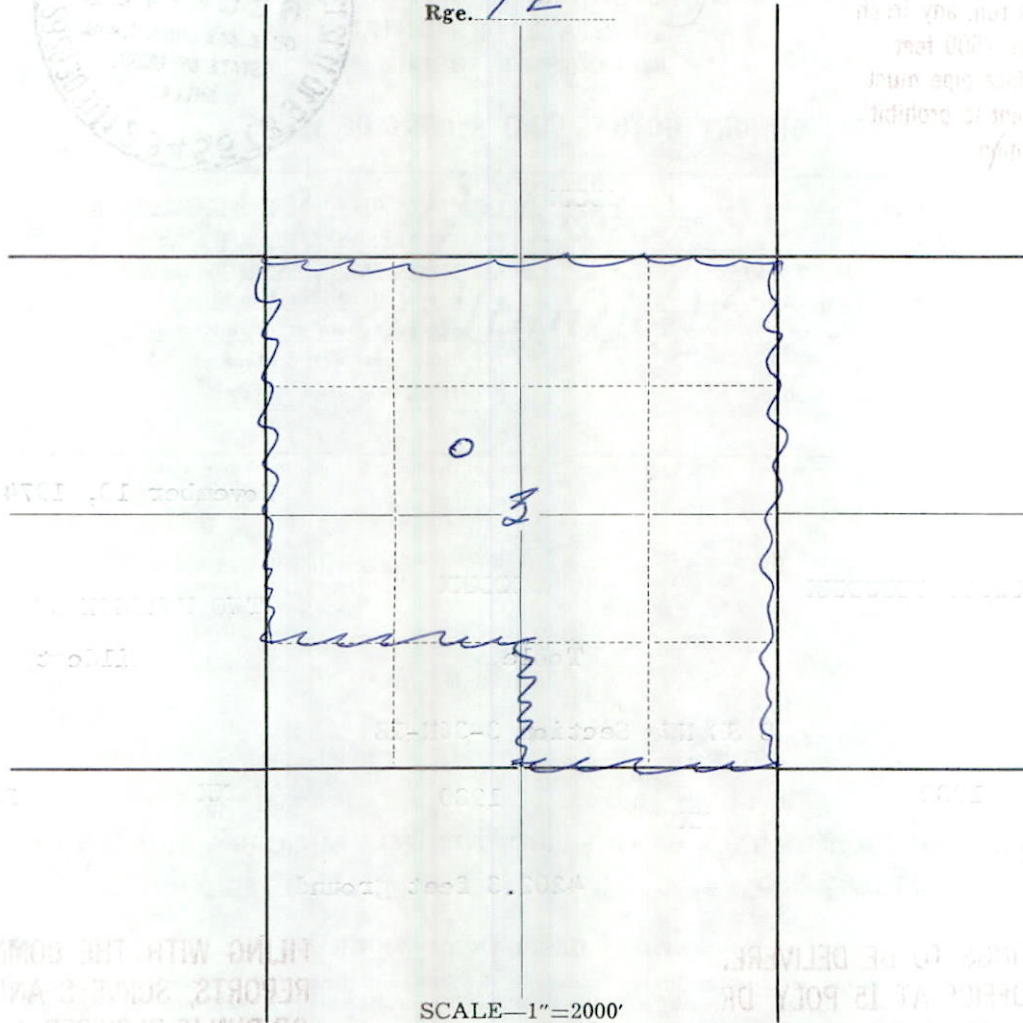
Rge. 1 E

Form No. 2
File at
Billings
or Shelby

Locate
Well
Correctly

Locate
Lease
Boundary

Twp. 36N



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.
6. 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.

RECEIVED

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

JUN 15 2005

Submit In Quadruplicate To:

MONTANA BOARD OF OIL AND GAS CONSERVATION
2535 ST. JOHNS AVENUE
BILLINGS, MONTANA 59102

SUNDRY NOTICES AND REPORT OF WELLS

Operator **Croft Petroleum Co**
Address **P. O. Box 397**
City **Cut Bank** State **MT** Zip Code **59427**
Telephone Number (406) 873-5547 Fax Number (406) 873-5549

Lease Name: **2 Horseshoes**

Lease Type (Private/State/Federal):
Private

Well Number: **2 Horseshoes #2**

Location of well (1/4-1/4 section and footage measurements):
C-SE/NW, 1980' FNL & 1980 FWL

Unit Agreement Name:
None

Field Name or Wildcat:
Kicking Horse

If directionally or horizontally drilled, show both surface and bottom hole locations

Section, Township, and Range:
Section 3-T36N-R1E

API Number:
25 **101** **21337**
State County Well

Well Type (oil, gas, injection, other):
Gas

County: **Toole**

Indicate below with an X the nature of this notice, report, or other data:

- | | | | |
|---|-------------------------------------|--|--------------------------|
| Notice of Intention to Change plans | <input type="checkbox"/> | Subsequent Report of Mechanical Integrity Test | <input type="checkbox"/> |
| Notice of Intention to Run Mechanical Integrity Test | <input type="checkbox"/> | Subsequent Report of Stimulation or Chemical Treatment | <input type="checkbox"/> |
| Notice of Intention to Stimulate or to Chemically Treat | <input type="checkbox"/> | Subsequent Report of Perforation or Cementing | <input type="checkbox"/> |
| Notice of Intention to Perforate or to Cement | <input type="checkbox"/> | Subsequent Report of Well Abandonment | <input type="checkbox"/> |
| Notice of Intention to Abandon Well | <input type="checkbox"/> | Subsequent Report of Pulled or Altered Casing | <input type="checkbox"/> |
| Notice of Intention to Pull or Alter Casing | <input type="checkbox"/> | Subsequent Report of Drilling Waste Disposal | <input type="checkbox"/> |
| Notice of Intention to Change Well Status | <input type="checkbox"/> | Subsequent Report of Production Waste Disposal | <input type="checkbox"/> |
| Supplemental Well History | <input checked="" type="checkbox"/> | Subsequent Report of Change in Well Status | <input type="checkbox"/> |
| Other (specify) _____ | <input type="checkbox"/> | Subsequent Report of Gas Analysis (ARM 36.22.1222) | <input type="checkbox"/> |

Describe Proposed or Completed Operations:

Describe planned or completed work in detail. Attach maps, well-bore configuration diagrams, analyses, or other information as necessary. Indicate the intended starting date for proposed operations or the completion date for completed operations.

The above well was drilled and completed in December 1974. The well was a noncommercial Bow Island gas well. In December 2004 a pipeline was run to the well connecting it to the Kicking Horse Gas Field. On March 8, 2005 the well began selling gas. The spacing unit for this well is the N/2 of Sec. 3. The well is in the Kicking Horse Field.

BOARD USE ONLY

Approved JUN 20 2005
Date
[Signature]
Name **CHIEF FIELD INSPECTOR**
Title

The undersigned hereby certifies that the information contained on this application is true and correct:

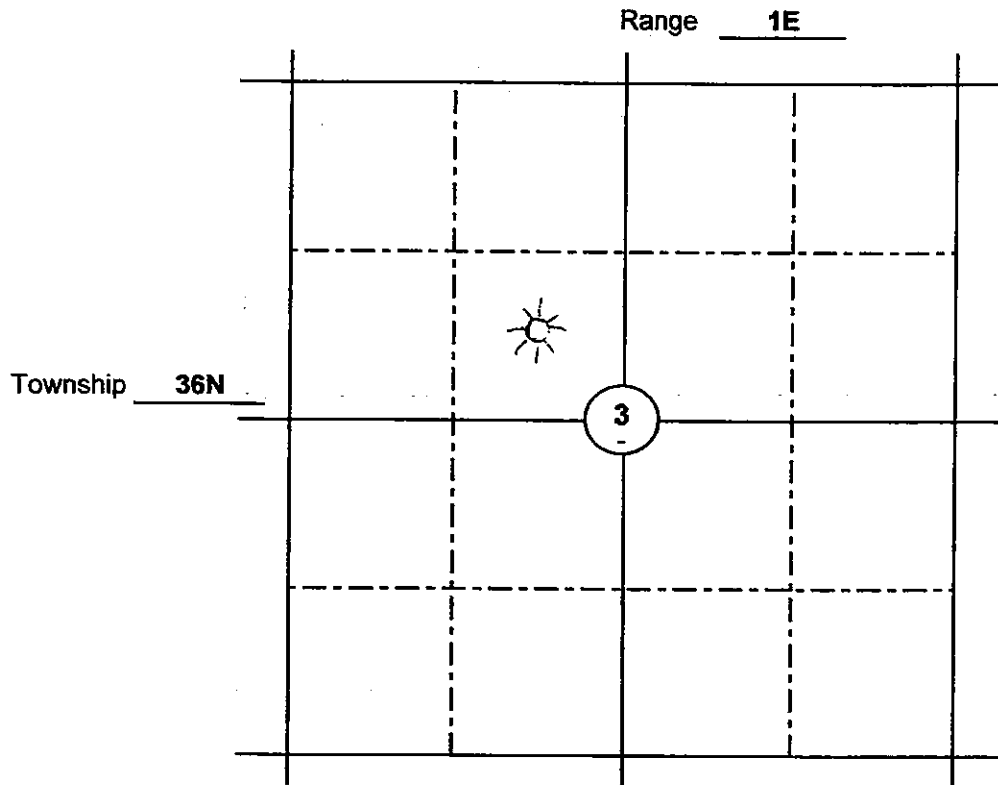
6/14/05
Date [Signature]
Signed (Agent)

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

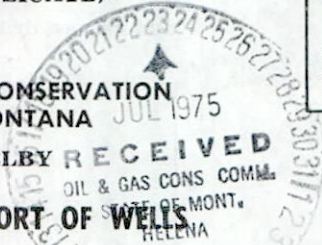
The operator must comply with the following condition(s) of approval:

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

GENERAL RULES
201, 202, 213,
216, 219, 230,
231, 232

(SUBMIT IN QUADRUPPLICATE)
TO

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



BOARD OF OIL AND GAS CONSERVATION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY
SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		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 & Perforating	X

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

July 21, 1975

Following is a ~~notice of intention to do work~~ report of work done on land ~~owned~~ described as follows:

LEASE Two Horse Shoes Wildcat

Toole

MONTANA (State)

(County)

(Field)

2

C SE 1/2 NW 1/4 Sec. 3-36N-1E

MPM

Well No.

(m. sec.)

(Township)

(Range)

(Meridian)

1980

3

The well is located 1980 ft. from N line and 1980 ft. from W line of Sec.

LOCATE WELL SITE ACCURATELY ON PLAT ON BACK OF THIS FORM.

The elevation of the ground or K.B. above the sea level is 4212 K.B.

READ CAREFULLY

DETAILS OF PLAN OF WORK

READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings, cementing points, and all other important proposed work, particularly all details of Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

May 29, 1975 - Perforated above well from 1184'-1189' with Densi-Jet with 3 per ft.

May 31, 1975 - Fraced well with 5000 Sand and treated with 80,000 SCF CO2 ^{water}

July 11, 1975 - Well tested at 64 MCF AOF

Approved subject to conditions on reverse of form

Company Croft Petroleum Company

Date JUL 22 1975

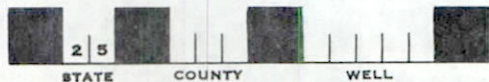
By [Signature]

By [Signature] District Office Agent Title

Title President

Address Box 1284, Cut Bank, Montana 59427

BOARD USE ONLY
API WELL NUMBER



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

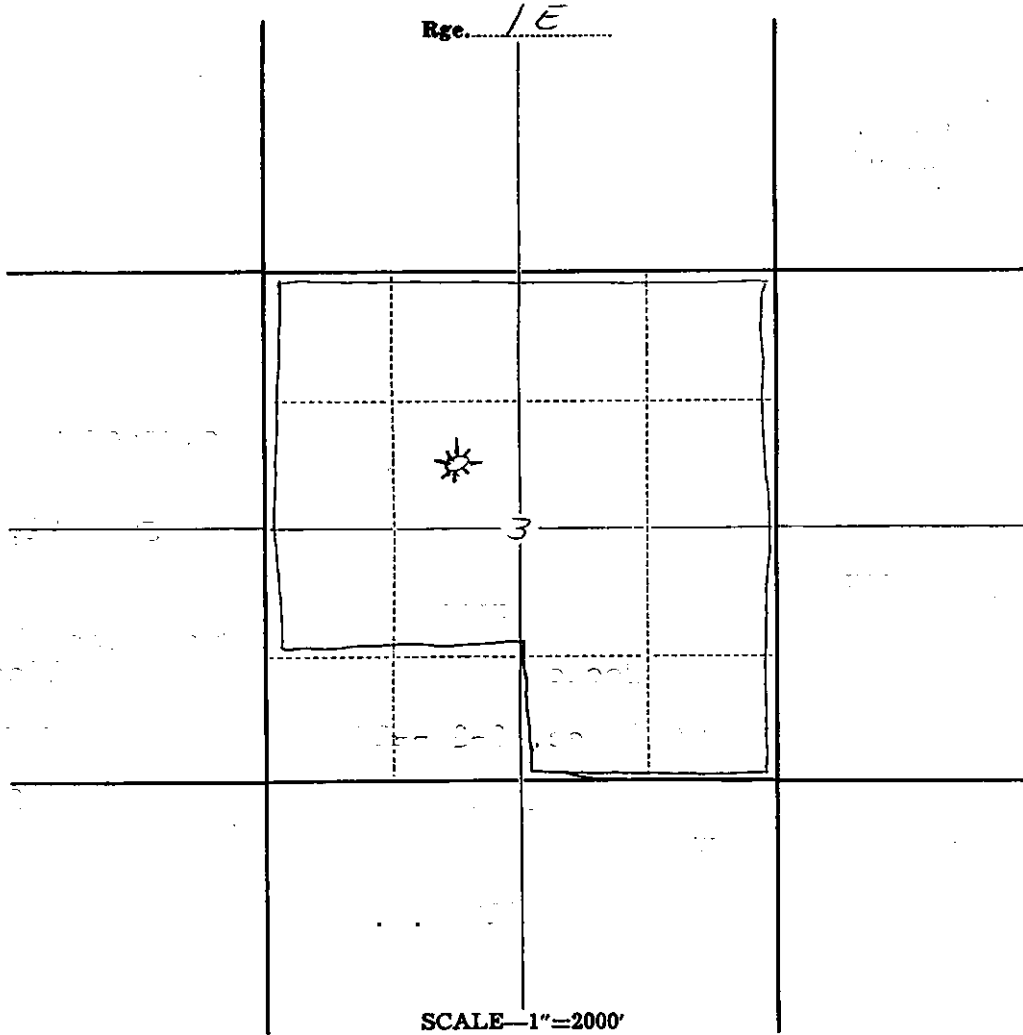
**Locate well by footage measurement from legal subdivision (Section) line
and nearest drilling or producible well, if any.**

Form No. 2
File at
Billings
or Shelby

Form No. 2
File at
Billings
or Shelby

Locate
Well
Correctly

Twp. 36N



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.

GENERAL RULES
201, 202, 213,
216, 219, 230,
231, 232



(SUBMIT IN QUADRUPPLICATE)

TO

BOARD OF OIL AND GAS CONSERVATION
OF THE STATE OF MONTANA

BILLINGS OR SHELBY

SUNDRY NOTICES AND REPORT OF WELLS

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

Notice of Intention to Drill		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	
Temporary Status	X		

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

January 22

75

Following is a notice of intention to do work on land owned leased described as follows:
 report of work done

LEASE Croft

_____ MONTANA _____ Toole _____ Wildcat _____
(State) (County) (Field)

Well No. Two Horseshoes #2-Croft, 3 _____ 36N _____ 1E _____ MPM _____
#2 (n. sec.) (Township) (Range) (Meridian)

The well is located _____ 1980 ft. from N W line and _____ 1980 ft. from N W line of Sec. _____ 3

LOCATE WELL SITE ACCURATELY ON PLAT ON BACK OF THIS FORM.

The elevation of the ground or K.B. above the sea level is _____ 4212 KB _____

READ CAREFULLY

DETAILS OF PLAN OF WORK

READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings, cementing points, and all other important proposed work, particularly all details of Shooting, Acidizing, Fracturing.)

**DETAILS OF WORK
RESULT**

1. Drilled and logged well to 2325.
2. Set plug from 2025 to 2150 as per verbal approval from Mr. Haughey.
3. Ran production casing as noted on Form 4
4. Plan to attempt completion in Bow Island sandstone at a later date.

Approved subject to conditions on reverse of form

Date _____ JAN 24 1975 _____

By _____
District Office Agent Title

Company _____ CROFT PETROLEUM COMPANY _____

By _____
Agent

Title _____ Box 1284 _____

Address _____ Cut Bank, Montana 59427 _____

BOARD USE ONLY
API WELL NUMBER

STATE	COUNTY	WELL
25		

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

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

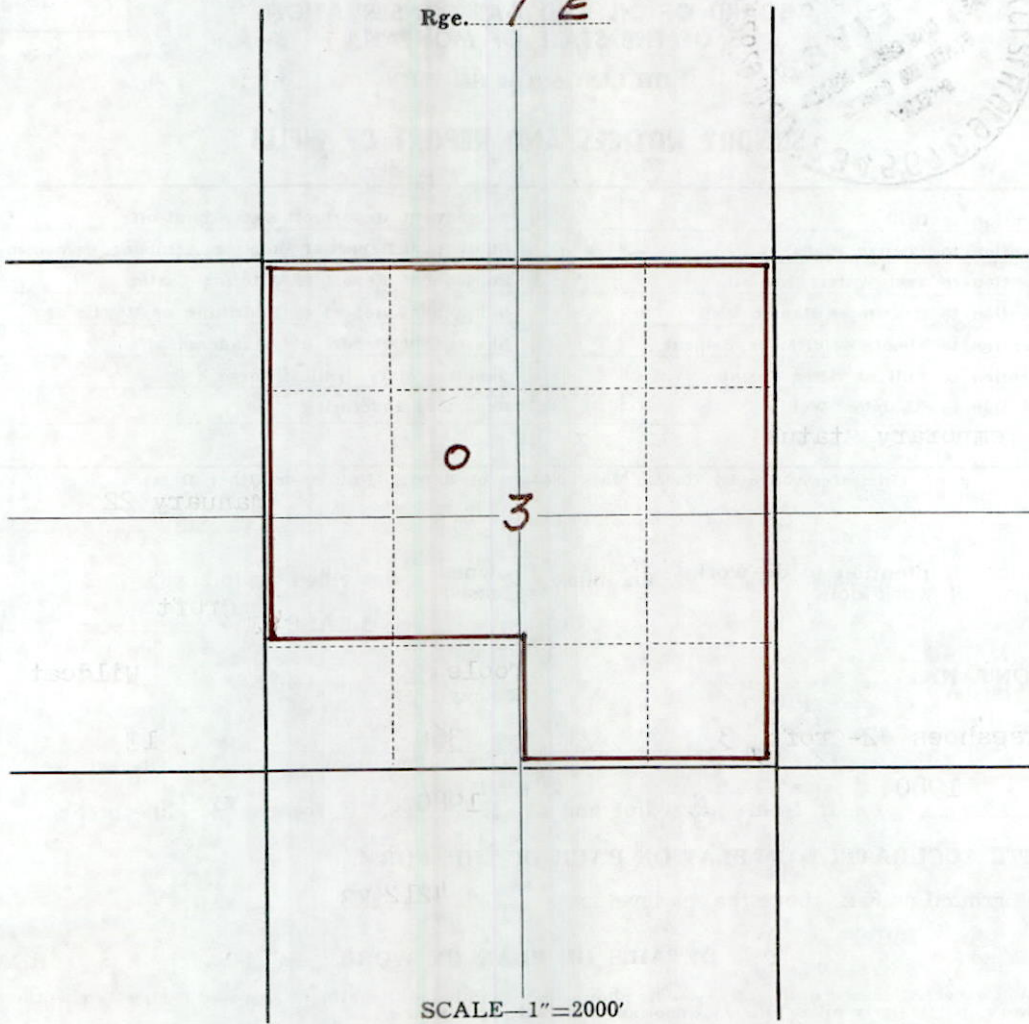
Form No. 2
File at
Billings
or Shelby

Form No. 2
File at
Billings
or Shelby

Locate
Well
Correctly

Twp. 36 N

Rge. 1 E



SCALE—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).
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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	Rank wildcat
Spud	6:30 P.M. 12/19/74
Drilled out	12:30 P.M. 12/20/74
Completed Drilling	7:15 P.M. 12/28/74
Status	Bow Island gas well
Total Depth	2325 Driller, 2321 Schl.
Elevation	4202 G.R., 4212 K.B.
Surface casing	7" set at 225 K.B. w/100 sacks
Hole size	6 $\frac{1}{4}$ "
Bits used	7
Mud Program	Native to 1650, Chem-Gel 1650 to T.D.
Sample Intervals	30'-0 to 1950, 10'-1950 to T.D.

Cores None

Drill Stem Testing #1-Bow Island-1155 to 1200,
#2-Sunburst-2044 to 2058
#3-Sawtooth-2254 to 2284

Contractor Comanche Drilling Co.
Rig #1 Ideco Rambler
Drill pipe 3 $\frac{1}{2}$ " I.F.
Drill collars 18-5 $\frac{1}{4}$ " x 2 $\frac{1}{4}$ "
Pump D-300, 14 x 5 $\frac{1}{2}$ "

ELECTRIC LOGGING

I.E.S.	226 to 2320
F.D.C. with G.R. & Cal.	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 soda	1 sack
Caustic lignite	1 sack	Caustic lignite	1 sack
Soda Ash	1 sack		

Checks

<u>Depth</u>	<u>Weight</u>	<u>Viscosity</u>	<u>Water Loss</u>	<u>Filter Cake</u>	<u>PH</u>
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	9

BIT RECORD

<u>NR</u>	<u>SIZE</u>	<u>TYPE</u>	<u>JETS</u>	<u>FOOTAGE</u>	<u>TIME</u>
1	6 $\frac{1}{4}$	OSC3	REG	904	10 $\frac{1}{2}$
2	6 $\frac{1}{4}$	OSC3	REG	66	3/4
3	6 $\frac{1}{4}$	Y12	REG	500	9
4	6 $\frac{1}{4}$	OSC1G	REG	80	4 3/4
5	6 $\frac{1}{4}$	OSC1G	REG	200	6
6	6 $\frac{1}{4}$	J55	3-18	110	8 3/4 rerun
7	6 $\frac{1}{4}$	OSC1G	REG	173	12
8	6 $\frac{1}{4}$	J55	3-18	62	8 rerun

Accumulated drilling time 72 $\frac{1}{4}$ hrs.

GEOLOGIC DATA (Elev. logs)

<u>Age</u>	<u>Formation</u>	<u>Elevation</u>
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>	<u>Time</u>	<u>Pressure</u>
I.F.	15	18-28
I.C.U.	30	111
Flow	120	28-66
F.C.I.	60	111
IH	500	
FH	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

<u>Event</u>	<u>Time</u>	<u>Pressure</u>
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

<u>Event</u>	<u>Time</u>	<u>Pressure</u>
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. Balance 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.
980	as above
1010	shale, dk gray, blocky, firm, with siltstone, lt gray, S&P, firm, sl calc.
1040	shale, gray-dk gray, minor siltstone as above, influx of bentonite,

- lt gray-green, chunky, soft.
- 1070 siltstone, lt gray-gray, S&P, very firm, non calc, finely 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, lt 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, lt gray, S&P, poor sorting, clay matrix, 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

- 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
- 1500 shale, gray, blocky, firm, sl silty
- 1530 as above, grading to very sandy & glauc.
- 1560 shale, gray, very sandy, glauc, firm.
- 1590 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 lt 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
- 2080 as above grading to siltstone, lt gray-cream, few tan inclusions, 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, lt gray-gray-tan, earthy, dense, few fossil frags, some anhydrite, 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 matrix, scarce dull fluor, no odor or stain, no apparent porosity, clay infill, trace of dark residual stain

- 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 frags, 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.

Phones: 938-4211
938-2628
Mobile: 938-4702
938-4874

MONTANA OIL WELL CEMENTERS, INC. N° 8615
P. O. Box 226 Cut Bank, Montana 59427
WORK ORDER & INVOICE

District Date 12-30-74 Order No. Req. No.
Company Craft Pet Co Address
Contractor Comanche Rig #1
Lease and Well No. Two Horse Sheds #2 Job Started 4:00 P.M. Job Comp. 4:30 P.M.
County and State Teale Mont. Field W/C Section Twp. Range
Mail Invoice To
Address

Type of Well: Workover, Exploratory, Development, Other,
Type of Job: Sur., Inter., Prod., Squeeze Pumping P & A
P. B., Other (Write In)
Casing: New Used Size 7" Weight Depth 215 Type
Hole Data: Bore Size: 9 7/8; Total Depth 230, Rotary Cable Tool
Tubing Or Drill Pipe: Size Type Weight Total Depth
Cementing Packer: Size Type Weight Depth Set
Make Float Equipment: Float Collar Guide Shoe Float Shoe
Other Equipment

P & A Data:	No. Sacks	No. Sacks
Plug No. 1 - From To	Plug No. 5 - From To
Plug No. 2 - From To	Plug No. 6 - From To
Plug No. 3 - From To	Plug No. 7 - From To
Plug No. 4 - From To	Plug No. 8 - From To
Others

Cement Data: Bulk; Sacked Mixed Wt. Per. Gal. Admix.
.....; Sacks 100, Type I Brand Deal, % Gel. 3% Pacl
Plugs & Heads: Bottom Plug Type; Top Plug Type; Type Head
Pressure: Circulating Minimum; Maximum

Remarks:
Cement did Cir

CONDITIONS, WARRANTY AND RESPONSIBILITY: It is expressly understood and agreed that the above-described work shall be done under the exclusive control, direction and supervision of the owner or contractor.

It is expressly understood that Montana Oil Well Cementers shall not be responsible for damages or losses, direct, indirect, special, consequential, or of any kind whatsoever, occasioned by or incident to the use of Montana Oil Well Cementers products and accessory equipment, or part thereof, whether resulting from the negligence of Montana Oil Well Cementers or any of its agents, servants or employees.

The entire warranty or guarantee and responsibility, either expressed or implied, by Montana Oil Well Cementers is expressed above and no agent, dealer or representative, connected with or employed directly or indirectly by Montana Oil Well Cementers has authority to verbally or in written form alter, extend or exceed the warranties or guarantees and responsibilities expressed herein.

I have read, understand and accept the foregoing conditions, warranty or guarantee and responsibility and represent that I am authorized to sign this order as agent of the owner or contractor.

BEFORE WORK IS COMMENCED THIS ORDER MUST BE SIGNED Owner or Contractor _____ By _____

Phones: 938-4211
938-2628
Mobile: 938-4702
938-4874

MONTANA OIL WELL CEMENTERS, INC.

Nº 8593

P. O. Box 226 Cut Bank, Montana 59427

WORK ORDER & INVOICE

District Date 12-13-74 Order No. Req. No.
 Company ELIOT PETRO Address
 Contractor Comanche Drilling Co #1
 Lease and Well No. TWQ 54955 #2 Job Started A.M. Job Comp. 4:30 P.M.
 County and State Moore Mt. Field W/C Section Twp. Range
 Mail Invoice To Comanche Drilling Co.
 Address

Type of Well: Workover, Exploratory, Development, Other,
 Type of Job: Sur., Inter., Prod., Squeeze Pumping P & A
 P. B., Other (Write-In)
 Casing: New Used Size 7" Weight 12" Depth 207 Type
 Hole Data: Bore Size: 9 7/8; Total Depth 323 Rotary Cable Tool
 Tubing Or Drill Pipe: Size Type Weight Total Depth
 Cementing Packer: Size Type Weight Depth Set
 Make Float Equipment: Float Collar Guide Shoe Float Shoe
 Other Equipment

P & A Data:	No. Sacks	No. Sacks
Plug No. 1 - From To		Plug No. 5 - From To
Plug No. 2 - From To		Plug No. 6 - From To
Plug No. 3 - From To		Plug No. 7 - From To
Plug No. 4 - From To		Plug No. 8 - From To
Others		
Cement Data: Bulk; Sacked <input checked="" type="checkbox"/> Mixed Wt. Per. Gal. <u>16#</u> Admix. <u>370 ee</u>		
.....; Sacks Type <u>T</u> Brand <u>IDEAL</u> % Gel.		
Plugs & Heads: Bottom Plug Type; Top Plug Type; Type Head		
Pressure: Circulating Minimum <u>0</u> Maximum <u>0</u>		

Remarks: 11.5' CEMENT IN ESJ.
good Returns

CONDITIONS, WARRANTY AND RESPONSIBILITY: It is expressly understood and agreed that the above described work shall be done under the exclusive control, direction and supervision of the owner or contractor.

It is expressly understood that Montana Oil Well Cementers shall not be responsible for damages or losses, direct, indirect, special, consequential, or of any kind whatsoever, occasioned by or incident to the use of Montana Oil Well Cementers products and accessory equipment, or part thereof, whether resulting from the negligence of Montana Oil Well Cementers or any of its agents, servants or employees.

The entire warranty or guarantee and responsibility, either expressed or implied, by Montana Oil Well Cementers is expressed above and no agent, dealer or representative, connected with or employed directly or indirectly by Montana Oil Well Cementers has authority to verbally or in written form alter, extend or exceed the warranties or guarantees and responsibilities expressed herein.

I have read, understand and accept the foregoing conditions, warranty or guarantee and responsibility and represent that I am authorized to sign this order as agent of the owner or contractor.

BEFORE WORK IS COMMENCED Owner or
 THIS ORDER MUST BE SIGNED Contractor _____ By _____

MONTANA OIL WELL CEMENTERS, INC.

Nº 8601

P. O. Box 226 Cut Bank, Montana 59427

WORK ORDER & INVOICE

938-4211
938-2628
Mobile: 938-4702
938-4874

District Date 12-30-77 Order No. Req. No.
 Company Prof. Pet. Co. Address
 Contractor Edmanch Dr. Co. P.O. #1
 Lease and Well No. Two Horse Shoes #2 Job Started 10:00 AM Job Comp. 1:30 AM
 County and State Toole Mt Field W/E Section Twp Range
 Mail Invoice To Prof. Pet. Co.
 Address

Type of Well: Workover, Exploratory, Development, Other,
 Type of Job: Sur., Inter, Prod., Squeeze Pumping P & A
 P. B., Other (Write in)

Casing: New Used Size 4 1/2" Weight 9.50 Depth 206 Type
 Hole Data: Bore Size: 6 7/8"; Total Depth 2325 Rotary Cable Tool
 Tubing Or Drill Pipe: Size Type Weight Total Depth
 Cementing Packer: Size Type Weight Depth Set
 Make Float Equipment: Float Collar INSFIT; Guide Shoe BAKER Float Shoe
 Other Equipment 3 1/2" valves HOSE

P & A Data:		No. Sacks			No. Sacks
Plug No. 1 - From	..... To	.....	Plug No. 5 - From	..... To	.....
Plug No. 2 - From	..... To	.....	Plug No. 6 - From	..... To	.....
Plug No. 3 - From	..... To	.....	Plug No. 7 - From	..... To	.....
Plug No. 4 - From	..... To	.....	Plug No. 8 - From	..... To	.....

Others
 Cement Data: Bulk; Sacked Mixed Wt. Per. Gal. 15.6 Admix.
 Sacks 60 Type F Brand TOPAL % Gel.
 Plugs & Heads: Bottom Plug; Type; Top Plug Type Butter; Type Head Linker

Pressure: Circulating Minimum; Maximum
 Remarks: 10 B.B. WATER AHEAD OF CEMENT
Band Plug: 500 PSI FROM PIPE

CONDITIONS, WARRANTY AND RESPONSIBILITY: It is expressly understood and agreed that the above described work shall be done under the exclusive control, direction and supervision of the owner or contractor.

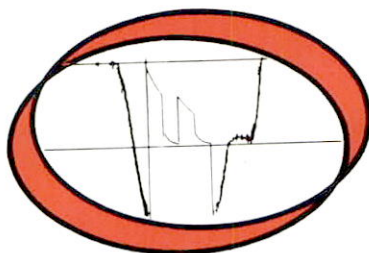
It is expressly understood that Montana Oil Well Cementers shall not be responsible for damages or losses, direct, indirect, special, consequential, or of any kind whatsoever, occasioned by or incident to the use of Montana Oil Well Cementers products and accessory equipment, or part thereof, whether resulting from the negligence of Montana Oil Well Cementers or any of its agents, servants or employees.

The entire warranty or guarantee and responsibility, either expressed or implied, by Montana Oil Well Cementers is expressed above and no agent, dealer or representative, connected with or employed directly or indirectly by Montana Oil Well Cementers has authority to verbally or in written form alter, extend or exceed the warranties or guarantees and responsibilities expressed herein.

I have read, understand and accept the foregoing conditions, warranty or guarantee and responsibility and represent that I am authorized to sign this order as agent of the owner or contractor.

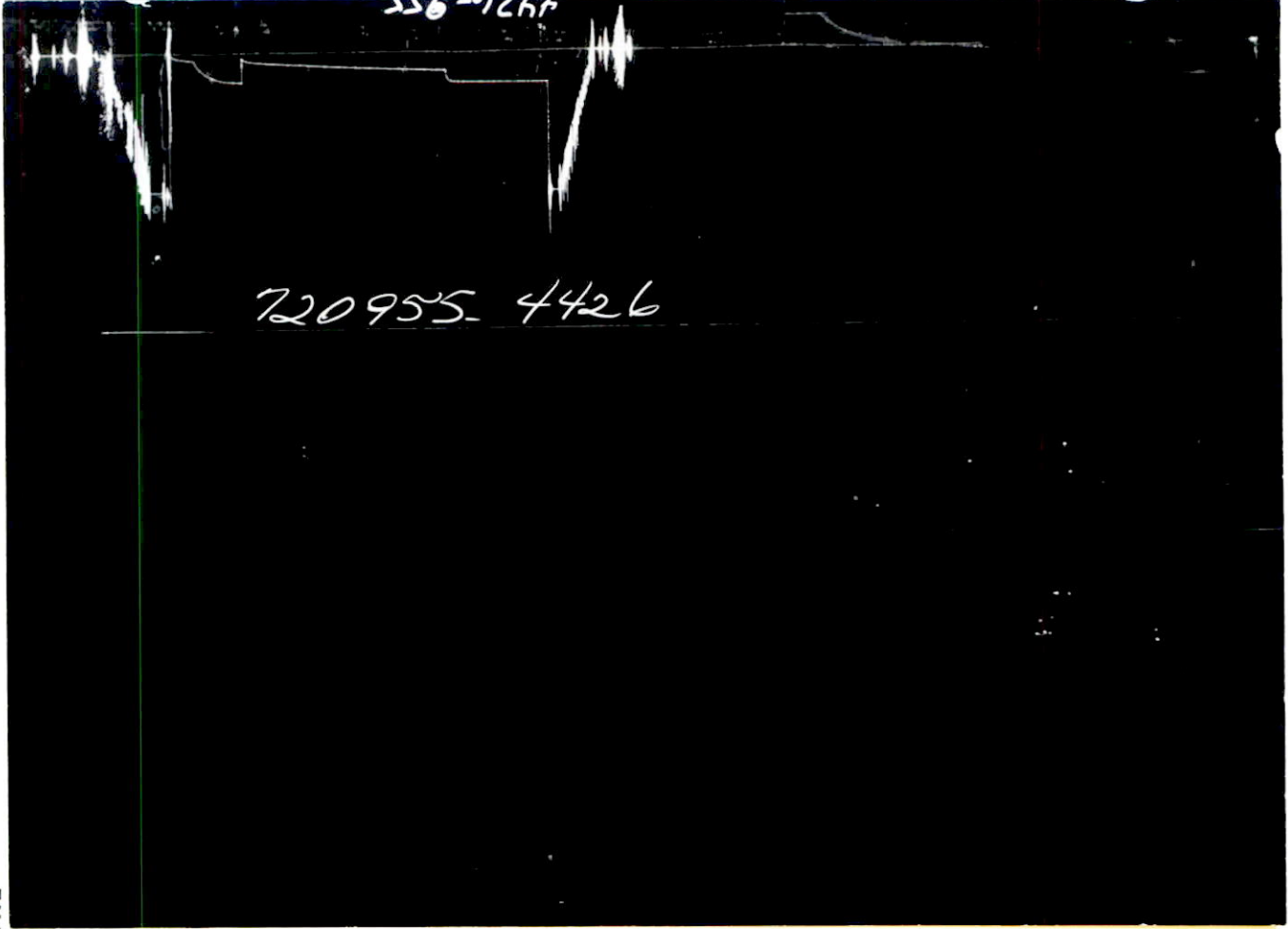
BEFORE WORK IS COMMENCED Owner or
 THIS ORDER MUST BE SIGNED Contractor _____ By _____

Formation Testing Service Report

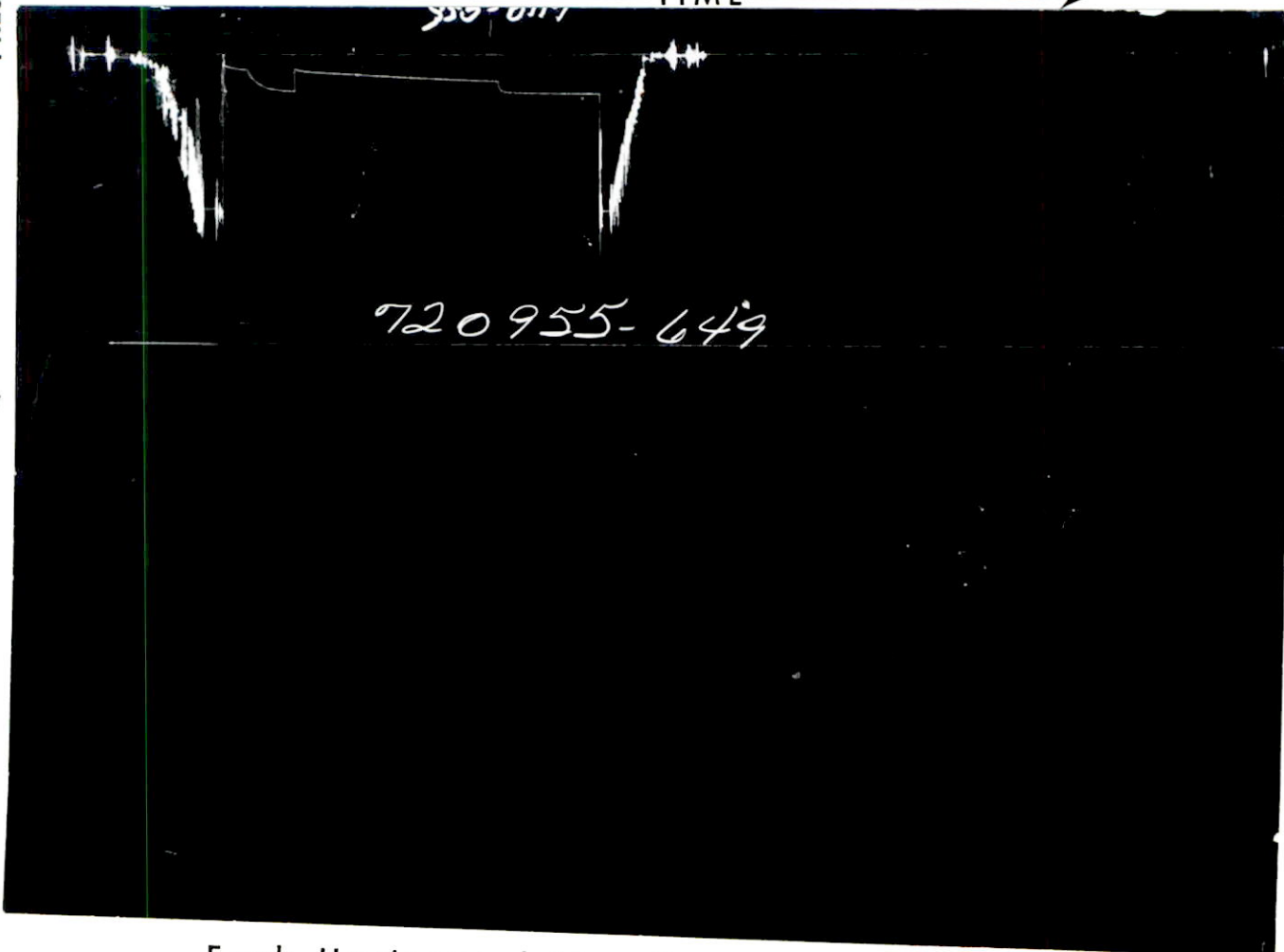


HALLIBURTON SERVICES
DUNCAN, OKLAHOMA

PRESSURE



TIME



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

FLUID SAMPLE DATA				Date 12-21-74		Ticket Number 720955			
Sampler Pressure _____ P.S.I.G. at Surface				Kind of Job OPEN HOLE		Halliburton District CUT BANK			
Recovery: Cu. Ft. Gas _____				Tester MR. BOURNE		Witness MR. GAINES			
cc. Oil _____				Drilling Contractor COMANCHE DRILLING COMPANY #1 IC S					
cc. Water _____				EQUIPMENT & HOLE DATA					
cc. Mud _____				Formation Tested Bow Island					
Tot. Liquid cc. _____				Elevation 4202.3' GL Ft.					
Gravity _____ ° API @ _____ ° F.				Net Productive Interval 5' Ft.					
Gas/Oil Ratio _____ cu. ft./bbl.				All Depths Measured From Kelly Bushing					
RESISTIVITY _____ CHLORIDE CONTENT _____				Total Depth 1200' Ft.					
Recovery Water @ _____ ° F. _____ ppm				Main Hole/Casing Size 6 1/4"					
Recovery Mud @ _____ ° F. _____ ppm				Drill Collar Length 524' I.D. 2 1/4"					
Recovery Mud Filtrate @ _____ ° F. _____ ppm				Drill Pipe Length 606' I.D. 2.764"					
Mud Pit Sample @ _____ ° F. _____ ppm				Packer Depth(s) 1149' - 1155' Ft.					
Mud Pit Sample Filtrate @ _____ ° F. _____ ppm				Depth Tester Valve 1137' Ft.					
Mud Weight WATER vis cp				Cushion TYPE AMOUNT Depth Back Pres. Valve Surface Choke Bottom Choke					
				1/4" - 1/8" .75"					
Recovered 118 Feet of Drilling fluid				Field Area WILDCAT					
Recovered Feet of				Meas. From Tester Valve					
Recovered Feet of				County TOOLE					
Recovered Feet of				State MONTANA					
Recovered Feet of				Lease Owner/Company Name CROFT PETROLEUM COMPANY					
Remarks Opened tool for 14 minute first flow with a weak blow - 1" increasing to off bottom of 5 gallon bucket in 8 minutes. Closed tool for 28 minute initial closed in pressure. Reopened tool for 122 minute second flow with good blow off bottom of bucket - gas to surface in 30 minutes - turned to 2" line. Changed to 1/8" choke in 35 minutes. Closed tool for 61 minute second closed in pressure.									
TEMPERATURE		Gauge No. 4426		Gauge No. 649		Gauge No.		TIME	
Depth: 1138' Ft.		Depth: 1196' Ft.		Depth: Ft.					
12 Hour Clock		12 Hour Clock		Hour Clock				Tool A.M.	
Est. ° F. Blanked Off NO		Blanked Off YES		Blanked Off				Opened 03:28 P.M.	
Actual 67 ° F.		Pressures		Pressures		Pressures		Opened A.M.	
		Field Office		Field Office		Field Office		Bypass 07:13 P.M.	
		Field Office		Field Office		Field Office		Reported Computed	
		Field Office		Field Office		Field Office		Minutes Minutes	
Initial Hydrostatic		500 504		521 532					
Flow Initial		19 4		44 37					
Flow Final		28 27		53 57				15 14	
Closed in		111 103		133 129				30 28	
Flow Initial		28 24		53 54					
Flow Final		70 67		88 95				120 122	
Closed in		111 109		133 133				60 61	
Flow Initial									
Flow Final									
Closed in									
Final Hydrostatic		500 504		521 532					

Legal Location Sec. - Twp. - Rng. 3 - 36N - 1E
 Lease Name TWO HORSE SHOES
 Well No. 2
 Test No. 1
 Tested Interval 1151' - 1200'
 County TOOLE
 State MONTANA
 Lease Owner/Company Name CROFT PETROLEUM COMPANY

Gauge No.		4426		Depth		1138'		Clock No.		2814		12 hour		Ticket No.		720955	
First Flow Period		Closed In Pressure		Second Flow Period		Closed In Pressure		Third Flow Period		Closed In Pressure		Third Flow Period		Closed In Pressure		Third Flow Period	
Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log } t + \frac{\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	$\text{Log } t + \frac{\theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	$\text{Log } t + \frac{\theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	$\text{Log } t + \frac{\theta}{\theta}$
0	.000	4	.000	27	.000	24	.000	.000	67								
1	.0141	13*	.0068	41**	.1452	40***	.0066	.0066	94								
2	.0354	19	.0270	61	.2771	46	.0132	.0132	102								
3	.0566	22	.0473	76	.4091	53	.0198	.0198	104								
4	.0778	24	.0675	86	.5411	57	.0264	.0264	106								
5	.0990	27	.0878	92	.6730	62	.0330	.0330	106								
6			.1080	96	.8050	67	.0396	.0396	106								
7			.1283	99			.0462	.0462	107								
8			.1485	101			.0529	.0529	107								
9			.1688	102			.0595	.0595	107								
10			.1890	103			.0661	.0661	107								
11							.1321	.1321	108								
12							.1981	.1981	108								
13							.2643	.2643	109								
14							.3303	.3303	109								
15							.4030	.4030	109								

Gauge No.		649		Depth		1196'		Clock No. 2411		12 hour		Minutes		
First Flow Period		Closed In Pressure		Second Flow Period		Closed In Pressure		Third Flow Period		Closed In Pressure		Third Flow Period		
Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log } t + \frac{\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	$\text{Log } t + \frac{\theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	$\text{Log } t + \frac{\theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.
0	.000	37	.000	57	.000	54	.000	.000	95					
1	.0134	45*	.0066	70**	.1455	69***	.0066	.0066	118					
2	.0336	49	.0265	92	.2778	75	.0131	.0131	125					
3	.0537	53	.0463	106	.4100	80	.0197	.0197	127					
4	.0739	55	.0661	114	.5422	86	.0263	.0263	128					
5	.0940	57	.0860	120	.6746	90	.0329	.0329	129					
6			.1058	124	.8070	95	.0394	.0394	130					
7			.1257	126			.0460	.0460	130					
8			.1455	127			.0526	.0526	131					
9			.1653	128			.0592	.0592	131					
10			.1850	129			.0657	.0657	131					
11							.1315	.1315	132					
12							.1972	.1972	132					
13							.2630	.2630	133					
14							.3287	.3287	133					
15							.4010	.4010	133					
Reading Interval	3		3				20		***					

REMARKS: *First interval equal to 2 minutes **First interval equal to 1 minute ***First interval equal to 22 minutes
 ****First 10 intervals equal to 1 minute each; next 4 intervals equal to 10 minutes each and last interval equal to 11 minutes.

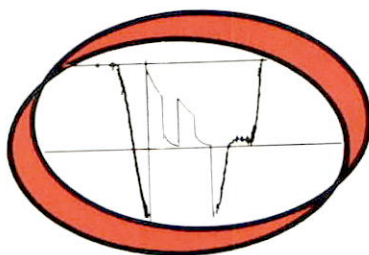
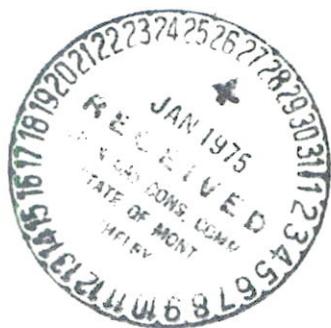
	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing	5"	2.10"	1'	
Reversing Sub				
Water Cushion Valve				
Drill Pipe	3 1/2"	2.764"	606'	
Drill Collars	5 1/4"	2 1/4"	524'	
Handling Sub & Choke Assembly	4 3/4"	2 1/2"	1' DOUBLE	PIN
Dual CIP Valve	5"	.89"	5'	1132'
Dual CIP Sampler				
Hydro-Spring Tester	5"	.75"	5'	1137'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5"	2.37"	4'	1138'
Hydraulic Jar				
VR Safety Joint	5"	1"	3'	
Pressure Equalizing Crossover				
Packer Assembly NR	5 1/2"	1.53"	6'	1149'
Distributor				
Packer Assembly NR	5 1/2"	1.53"	6'	1155'
Flush Joint Anchor	5"	2.37"	6'	
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
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	5"	2 1/2"	.83' SUB	
Blanked-Off B.T. Running Case	5"	2.37"	4'	1196'
Total Depth				1200'

NOMENCLATURE

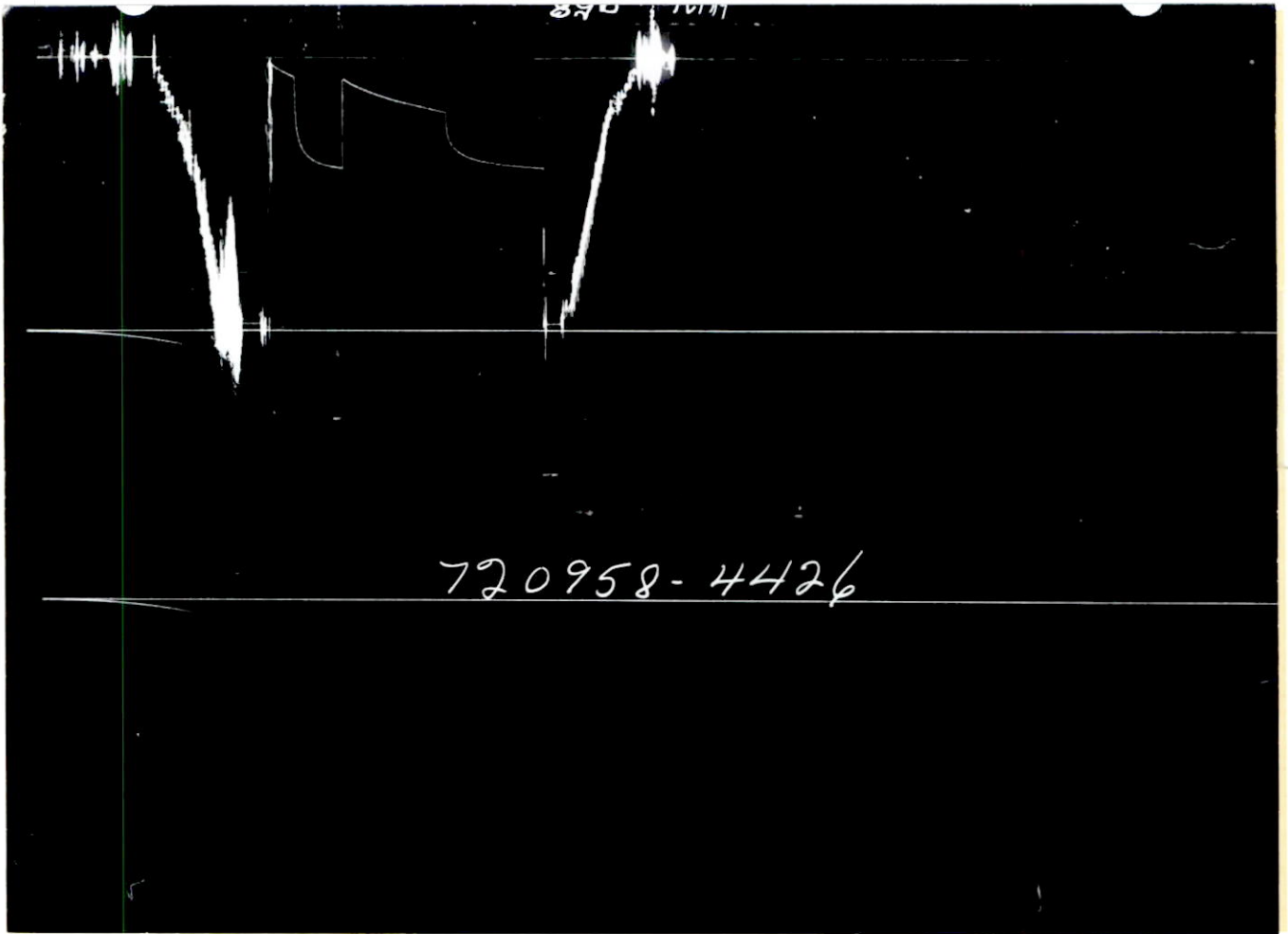
b	= Approximate Radius of Investigation	Feet
b₁	= Approximate Radius of Investigation (Net Pay Zone h ₁)	Feet
D.R.	= Damage Ratio	—
EI	= Elevation	Feet
GD	= B.T. Gauge Depth (From Surface Reference)	Feet
h	= Interval Tested	Feet
h₁	= Net Pay Thickness	Feet
K	= Permeability	md
K₁	= Permeability (From Net Pay Zone h ₁)	md
m	= Slope Extrapolated Pressure Plot (Psi ² /cycle Gas)	psi/cycle
OF₁	= Maximum Indicated Flow Rate	MCF/D
OF₂	= Minimum Indicated Flow Rate	MCF/D
OF₃	= 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_{oi}	= Potentiometric Surface (Fresh Water *)	Feet
Q	= Average Adjusted Production Rate During Test	bbls/day
Q₁	= Theoretical Production w/Damage Removed	bbls/day
Q_g	= Measured Gas Production Rate	MCF/D
R	= Corrected Recovery	bbls
r_w	= Radius of Well Bore	Feet
t	= Flow Time	Minutes
t_o	= Total Flow Time	Minutes
T	= Temperature Rankine	°R
Z	= Compressibility Factor	—
μ	= Viscosity Gas or Liquid	CP
Log	= Common Log	

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

Formation Testing Service Report

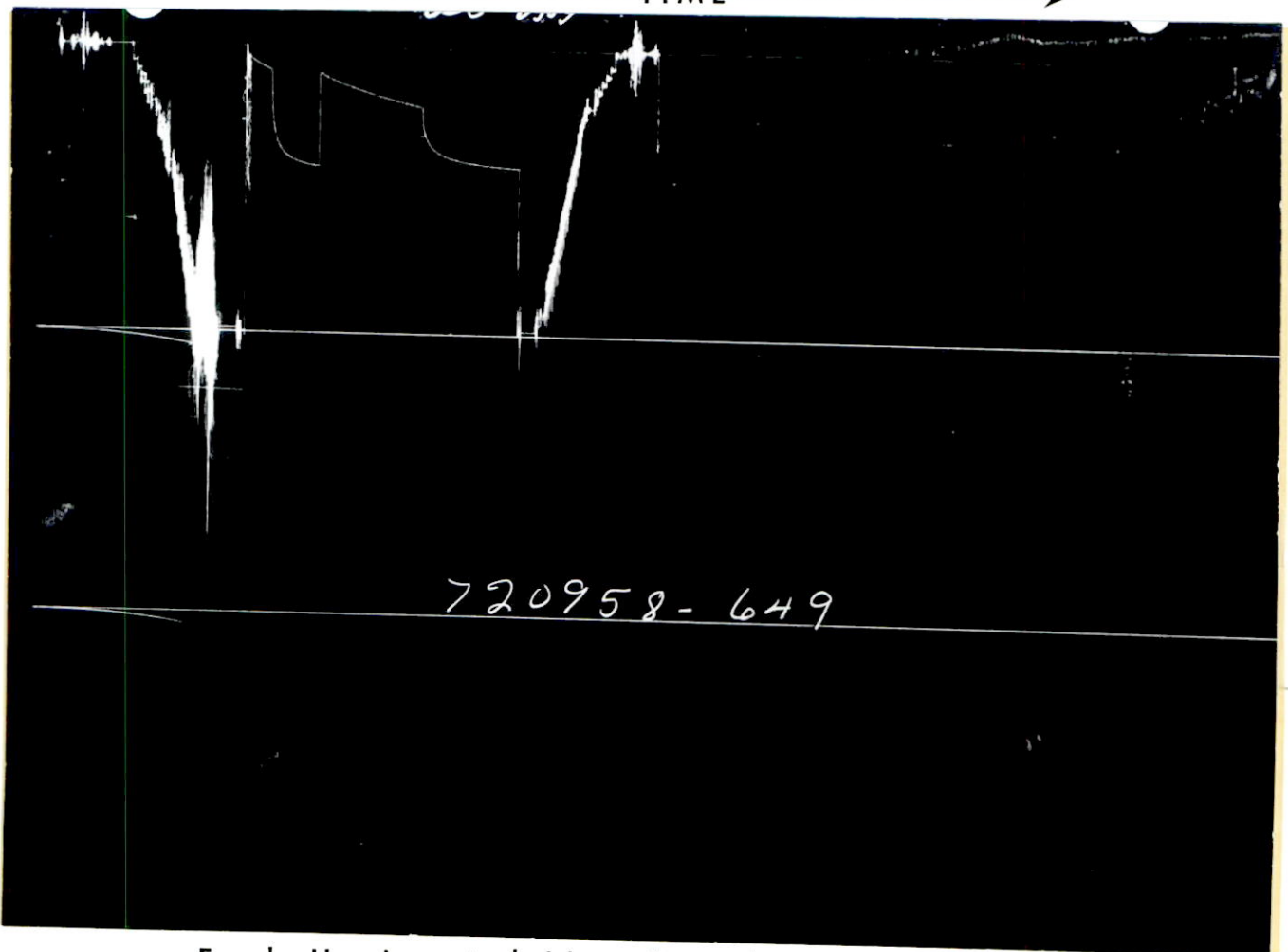


HALLIBURTON SERVICES
DUNCAN, OKLAHOMA



PRESSURE

TIME



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

FLUID SAMPLE DATA			Date 12-27-74	Ticket Number 720958
Sampler Pressure _____ P.S.I.G. at Surface			Kind of Job OPEN HOLE	Halliburton District CUT BANK
Recovery: Cu. Ft. Gas _____			Tester MR. BOURNE	Witness MR. GAINES
cc. Oil _____			Drilling Contractor COMANCHE DRILLING COMPANY # 1 DR S	
cc. Water _____			EQUIPMENT & HOLE DATA	
cc. Mud _____			Formation Tested Sunburst	
Tot. Liquid cc. _____			Elevation _____ Ft.	
Gravity _____ ° API @ _____ °F.	RESISTIVITY _____		Net Productive Interval 5' Ft.	
Gas/Oil Ratio _____ cu. ft./bbl.	CHLORIDE CONTENT _____		All Depths Measured From Kelly Bushing	
Recovery Water _____ @ _____ °F. _____ ppm	Recovery Mud _____ @ _____ °F. _____ ppm		Total Depth 2058' Ft.	
Recovery Mud Filtrate _____ @ _____ °F. _____ ppm	Mud Pit Sample _____ @ _____ °F. _____ ppm		Main Hole/Casing Size 6 1/4"	
Mud Pit Sample Filtrate _____ @ _____ °F. _____ ppm	Mud Weight 9.3 vis 37 cp		Drill Collar Length 524' I.D. 2 1/4"	
			Drill Pipe Length 1499' I.D. 2.764"	
			Packer Depth(s) 2044' Ft.	
			Depth Tester Valve 2032' Ft.	

TYPE	AMOUNT	Depth Back Ft.	Surface Choke	Bottom Choke
Cushion			1/4"	.75"

Recovered 273	Feet of muddy gas cut water
Recovered 150	Feet of clear gas cut water-very slight specks of oil
Recovered	Feet of
Recovered	Feet of
Recovered	Feet of

On location @ 04:30-Picked up and started tools in hole @ 6:30-Hit bridge 150' off bottom at tight spot 90' off bottom. +10 opened tool for 15 minute first flow with a weak blow 1 1/2" increasing to off bottom of 5 gallon bucket in 6 minutes. Closed tool for 62 minute first closed in pressure. Reopened tool for 62 minute second flow (1 1/2" off bottom.) Closed tool for 60 minute second closed in pressure.

TEMPERATURE	Gauge No. 4426		Gauge No. 649		Gauge No.		TIME	
	Depth:	2033 Ft.	Depth:	2054 Ft.	Depth:	Ft.	Hour Clock	
Est. 72 °F.	12 Hour Clock		12 Hour Clock		Blanked Off		Tool	A.M.
	Blanked Off No		Blanked Off Yes		Blanked Off		Opened 8:17	-P.M.
Actual °F.	Pressures		Pressures		Pressures		Opened	A.M.
	Field	Office	Field	Office	Field	Office	Bypass 11:04	-P.M.
Initial Hydrostatic	973.1	980	990.3	992			Reported	Computed
							Minutes	Minutes
Flow Initial	27.8	24	35.4	35			15	15
Flow Final	74.1	72	88.4	83			30	30
Closed in	407.5	405	415.2	415			62	62
Flow Initial	83.4	81	88.4	93			60	60
Flow Final	194.5	197	203.2	207				
Closed in	398.2	402	415.2	413				
Flow Initial								
Flow Final								
Closed in								
Final Hydrostatic	973.1	978	990.3	989				

Legal Location: 3-36N-1E
 Lease Name: 2
 Well No.: 2
 Test No.: 2
 Tested Interval: 2044-2058'
 County: TOOLE
 State: MONTANA
 Lease Owner/Company Name: CROFT PETROLEUM COMPANY

Gauge No. 4426		Depth 2033'		Clock No. 2814		12 hour		Ticket No. 720958	
First Flow Period		First Closed In Pressure		Second Flow Period		Second Closed In Pressure		Third Flow Period	
Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log } \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log } \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.
0 .000	24	.000	72	.000	81	.000			
1 .0202	34	.0195	298	.0809	113*	.0263			197
2 .0404	46	.0390	342	.1483	133	.0526			319
3 .0606	57	.0585	364	.2157	152	.0789			344
4 .0808	67	.0780	376	.2831	168	.1052			358
5 .1010	72	.0975	384	.3505	183	.1315			369
6		.1170	391	.4180	197	.1578			376
7		.1365	396			.1841			381
8		.1560	399			.2104			384
9		.1755	402			.2367			388
10		.1950	405			.2630			392
11						.2893			394
12						.3156			396
13						.3419			398
14						.3682			399
15						.3950			401
									402

Gauge No. 649		Depth 2054'		Clock No. 2411		hour 12	
Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log } \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.
0 .000	35	.000	83	.000	93	.000	207
1 .020	43	.0197	312	.0805	125*	.0263	330
2 .040	55	.0394	352	.1476	145	.0526	355
3 .060	64	.0591	374	.2147	163	.0789	369
4 .080	74	.0788	386	.2818	178	.1052	379
5 .100	83	.0985	396	.3489	193	.1315	385
6		.1182	401	.4160	207	.1578	390
7		.1379	406			.1841	395
8		.1576	410			.2104	398
9		.1773	413			.2367	301
10		.1970	415			.2630	403
11						.2893	405
12						.3156	407
13						.3419	409
14						.3682	411
15						.3950	413

Reading Interval	3	3	10	4	Minutes
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REMARKS: * First interval equal to 12 minutes.

SPECIAL PRESSURE DATA

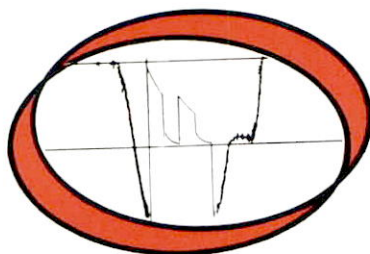
	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Reversing Sub	5"	2.12'	1'	
Water Cushion Valve				
Drill Pipe	3 1/2"	2.764"	1499'	
Drill Collars	5 1/4"	2 1/2"	524'	
Handling Sub & Choke Assembly	5 3/4"	2 1/2"	.90' Double pin	
Dual CIP Valve	5"	.89"	5'	2027'
Dual CIP Sampler				
Hydro-Spring Tester	5"	.75"	5'	2032'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5"	2.37"	4'	2033'
Hydraulic Jar				
VR Safety Joint	5"	1"	3'	
Pressure Equalizing Crossover				
Packer Assembly	5 1/2"	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				
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor	5"	2.37"	8'	
Blanked-Off B.T. Running Case	5"		4'	2054'
Total Depth				2058'

NOMENCLATURE

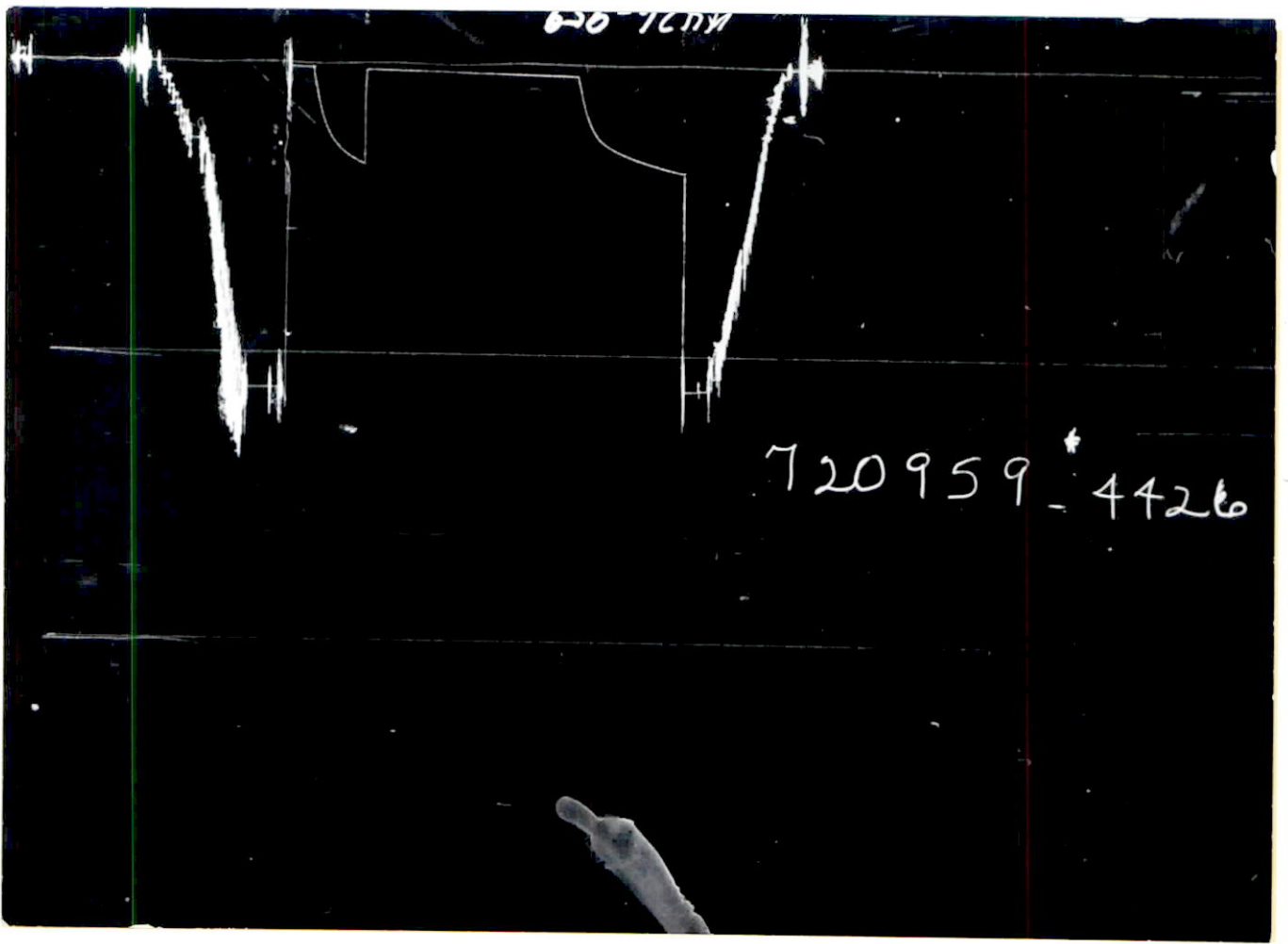
b	= Approximate Radius of Investigation	Feet
b₁	= Approximate Radius of Investigation (Net Pay Zone h)	Feet
D.R.	= Damage Ratio	—
EI	= Elevation	Feet
GD	= B.T. Gauge Depth (From Surface Reference)	Feet
h	= Interval Tested	Feet
h₁	= Net Pay Thickness	Feet
K	= Permeability	md
K₁	= Permeability (From Net Pay Zone h)	md
m	= Slope Extrapolated Pressure Plot (Psi ² /cycle Gas)	psi/cycle
OF₁	= Maximum Indicated Flow Rate	MCF/D
OF₂	= Minimum Indicated Flow Rate	MCF/D
OF₃	= 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
Q₁	= Theoretical Production w/Damage Removed	bbls/day
Q_g	= Measured Gas Production Rate	MCF/D
R	= Corrected Recovery	bbls
r_w	= Radius of Well Bore	Feet
t	= Flow Time	Minutes
t_o	= Total Flow Time	Minutes
T	= Temperature Rankine	°R
Z	= Compressibility Factor	—
μ	= Viscosity Gas or Liquid	CP
Log	= Common Log	

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

Formation Testing Service Report

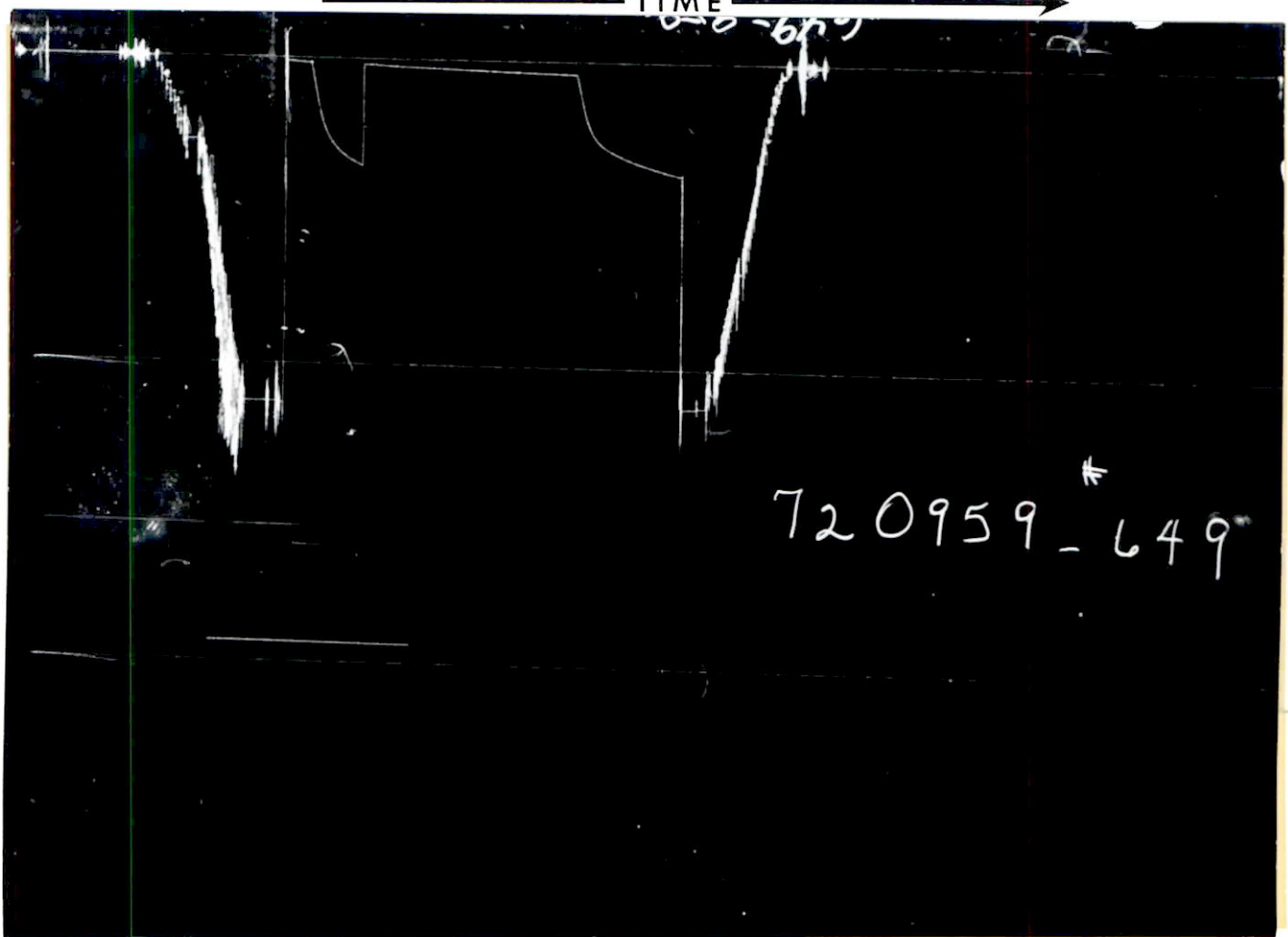


HALLIBURTON SERVICES
DUNCAN, OKLAHOMA



PRESSURE

TIME



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

FLUID SAMPLE DATA				Date	Ticket Number		
Sampler Pressure _____ P.S.I.G. at Surface				12-29-74	720959		
Recovery: Cu. Ft. Gas _____				Kind of Job	Halliburton District		
cc. Oil _____				STRADDLE TEST	CUT BANK		
cc. Water _____				Tester	Witness		
cc. Mud _____				BOURNE	GAINES		
Tot. Liquid cc. _____				Drilling Contractor			
Gravity _____ ° API @ _____ °F.				COMANCHE DRILLING COMPANY # 1 NM S			
Gas/Oil Ratio _____ cu. ft./bbl.				EQUIPMENT & HOLE DATA			
RESISTIVITY _____ CHLORIDE CONTENT _____				Formation Tested	Sawtooth		
Recovery Water @ _____ °F. _____ ppm				Elevation	4202' G.L. _____ Ft.		
Recovery Mud 4.76 @ 43 °F. _____ ppm				Net Productive Interval	5' _____ Ft.		
Recovery Mud Filtrate 5.40 @ 400 °F. _____ ppm				All Depths Measured From	Kelly Bushing		
Mud Pit Sample @ 35 °F. _____ ppm				Total Depth	2325' _____ Ft.		
Mud Pit Sample Filtrate @ _____ °F. _____ ppm				Main Hole/Casing Size	6 1/4"		
Mud Weight 9.7 vis 49 cp				Drill Collar Length	524' I.D. 2 1/4"		
				Drill Pipe Length	1702' I.D. 2.764"		
				Packer Depth(s)	NR set @ 2254 - ESA Set @ 2284' _____ Ft.		
				Depth Tester Valve	2232' _____ Ft.		
Cushion		TYPE	AMOUNT	Depth Back Pres. Valve	Surface Choke	Bottom Choke	
		NONE	NONE	NONE	1/4"	.75"	
Recovered	64'	Feet of	drilling fluid - slightly water cut				
Recovered		Feet of					
Recovered		Feet of					
Recovered		Feet of					
Recovered		Feet of					
Remarks On location @ 5:30 - picked up tool - at 0600 started in the hole - opened tool @ 8:18 with a weak blow - 2" - increased to off the bottom of the 5 gallon pale in 5 minutes. At 08:33 closed tool for a 29 minute first closed in pressure. Tool reopened @ 09:03 - (4" to the bottom of the bucket in 1 minute). Closed tool after 121 minutes for a 60 minute second closed in pressure. No gas to the surface. Came off bottom @ 12:03.							
TEMPERATURE	Gauge No. 4426	Gauge No. 649	Gauge No.	TIME			
	Depth: 2233' Ft.	Depth: 2237' Ft.	Depth: _____ Ft.				
Est. 73 °F.	12 Hour Clock	12 Hour Clock	Hour Clock	Tool _____ A.M.			
	Blanked Off NO	Blanked Off NO	Blanked Off	Opened 08:18 P.M.			
Actual 67 °F.	Pressures		Pressures		Pressures		
	Field	Office	Field	Office	Field	Office	
Initial Hydrostatic	1122.0	1128	1123.5	1133	Reported	Computed	
First Period	Flow Initial	18.6	14	8.9	15	Minutes	Minutes
	Flow Final	18.6	18	17.7	19	15	14
	Closed in	361.2	347	344.6	350	30	29
Second Period	Flow Initial	18.6	25	17.7	27	120	121
	Flow Final	37.1	40	35.4	43	60	60
	Closed in	370.4	366	371.1	369		
Third Period	Flow Initial						
	Flow Final						
	Closed in						
Final Hydrostatic	1122.0	1124	1123.5	1128			

Lead Location Sec. - Twp. - Rng. 3 - 36N - 1E (S-5-N-1)

Well No. 2

Test No. 3

Field Area WILDCAT

County TOOLE

State MONTANA

TWO HORSE SHOES

Lease Name

2254' - 2284'

Tested Interval

CROFT PETROLEUM COMPANY

Lease Owner/Company Name

Gauge No.		4426		Depth		2233'		Clock No.		2814		12 hour		Ticket No.		720959	
First Flow Period		Closed In Pressure		Second Flow Period		Closed In Pressure		Second Flow Period		Closed In Pressure		Third Flow Period		Closed In Pressure		Third Flow Period	
Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log } \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log } \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log } \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log } \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.
0	.000	14		.000	18	.000	25	.000	40	.000		.000		.000			
1	.013	15		.0134	99*	.1399	25**	.0405	187	.0405		.0810		.0405			
2	.026	15		.0336	173	.2731	27	.0810	256	.0810		.1215		.0810			
3	.039	16		.0538	227	.4063	31	.1215	284	.1215		.1620		.1215			
4	.052	16		.0740	262	.5395	34	.1620	303	.1620		.2025		.1620			
5	.065	17		.0942	285	.6727	37	.2025	317	.2025		.2430		.2025			
6	.078	17		.1144	304	.8060	40	.2430	329	.2430		.2835		.2430			
7	.091	18		.1346	319			.2835	341	.2835		.3240		.2835			
8				.1548	330			.3240	350	.3240		.3645		.3240			
9				.1750	339			.3645	359	.3645		.4050		.3645			
10				.1950	347			.4050	366	.4050							
11																	
12																	
13																	
14																	
15																	
Reading Interval		2					20										Minutes
REMARKS:		* INTERVAL = 2 MINUTES.		** INTERVAL = 21 MINUTES.													

Gauge No.		649		Depth		2237'		Clock No.		2411		12 hour	
First Flow Period		Closed In Pressure		Second Flow Period		Closed In Pressure		Second Flow Period		Closed In Pressure		Third Flow Period	
Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log } \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log } \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log } \frac{t + \theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.
0	.000	15		.000	19	.000	27	.000	43	.000		.000	
1	.0136	13		.0135	90*	.1400	27**	.0402	187	.0402		.0804	
2	.0272	14		.0338	172	.2734	30	.0804	258	.0804		.1206	
3	.0408	15		.0541	228	.4068	34	.1206	285	.1206		.1608	
4	.0544	16		.0744	266	.5402	37	.1608	304	.1608		.2010	
5	.0680	17		.0947	290	.6736	40	.2010	318	.2010		.2412	
6	.0816	18		.1150	307	.8070	43	.2412	331	.2412		.2814	
7	.0950	19		.1353	322			.2814	343	.2814		.3216	
8				.1556	333			.3216	352	.3216		.3618	
9				.1759	343			.3618	362	.3618		.4020	
10				.1960	350			.4020	369	.4020			
11													
12													
13													
14													
15													
Reading Interval		2					20						
REMARKS:		* INTERVAL = 2 MINUTES.		** INTERVAL = 21 MINUTES.									

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing	5"	2.12"	7'	
Reversing Sub				
Water Cushion Valve				
Drill Pipe	3½"	2.764"	1702'	
Drill Collars	5¼"	2¼"	524'	
Handling Sub & Choke Assembly	4 3/4"	2¼"	.90'	
Dual CIP Valve	5"	.89"	5'	2227'
Dual CIP Sampler				
Hydro-Spring Tester	5"	.75"	5'	2232'
Multiple CIP Sampler				
***** AP CASE	5"	2.37"	4'	2233'
AP Running Case	5"	2.37"	4'	2237'
Hydraulic Jar	5"	2.37"	5'	
VR Safety Joint	5"	1"	3'	
Pressure Equalizing Crossover	5"	.75"	1'	
Packer Assembly	5½"	1.53"	6'	2254'
Distributor				
Packer Assembly				
Flush Joint Anchor	5"	2.37"	25'	
Pressure Equalizing Tube	1"	.75"	32'	
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly	"O" RING SUB	5"	1"	
Distributor	DOUBLE BOX	5"	2½"	.80'
Packer Assembly	E S A	5½"	1.53"	4.50'
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars	DOUBLE PIN	5"	2½"	.60'
Flush Joint Anchor		5"	2.73"	5'
Blanked-Off B.T. Running Case	DRILL PIPE SUB	5"	2½"	.83'
		3½"	2.76"	31.35'
Total Depth				2325'

NOMENCLATURE

b	= Approximate Radius of Investigation	Feet
b₁	= Approximate Radius of Investigation (Net Pay Zone h ₁)	Feet
D.R.	= Damage Ratio	—
E_l	= Elevation	Feet
GD	= B.T. Gauge Depth (From Surface Reference)	Feet
h	= Interval Tested	Feet
h₁	= Net Pay Thickness	Feet
K	= Permeability	md
K₁	= Permeability (From Net Pay Zone h ₁)	md
m	= Slope Extrapolated Pressure Plot (Psi ² /cycle Gas)	psi/cycle
OF₁	= Maximum Indicated Flow Rate	MCF/D
OF₂	= Minimum Indicated Flow Rate	MCF/D
OF₃	= 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_{ot}	= Potentiometric Surface (Fresh Water *)	Feet
Q	= Average Adjusted Production Rate During Test	bbls/day
Q₁	= Theoretical Production w/Damage Removed	bbls/day
Q_g	= Measured Gas Production Rate	MCF/D
R	= Corrected Recovery	bbls
r_w	= Radius of Well Bore	Feet
t	= Flow Time	Minutes
t_o	= Total Flow Time	Minutes
T	= Temperature Rankine	°R
Z	= Compressibility Factor	—
μ	= Viscosity Gas or Liquid	CP
Log	= Common Log	

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