1044b UIC - EAST POPLAR OIL FIELD
ENFORCEMENT CASE SDWA 1431
Folder ID: 13671 1961 Privileged

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Region 8
13671

HISTORY

EAST POPLAR UNIT WELL NO. 61

ROOSEVELT COUNTY, MONTANA

MURPHY CORPORATION--OPERATOR

PRODUCTION DEPT.
FILE COPY

WELL HISTORY

WELL NO.:	East Poplar Unit No. 61
LOCATION:	SW NE Section 12, Township 28 North, Range 51 East
ELEVATION:	2151' Ground - 2162' K.B.
CONTRACTOR:	Zach Brooks Drilling Company
SPUDDED:	July 23, 1955
COMPLETED:	December 19, 1955 (temporarily abandoned)
TOTAL DEPTH:	5943' Schlumberger equals 5937' Driller
CASING:	10-3/4" @ 1057.52' with 700 sacks of cement 5-1/2" @ 5942.00' with 300 sacks of cement
TUBING:	2-3/8" @ 5631.72'
PERFORATIONS:	"A" Zone - 5606'-5612' "A" Zone - 5603'-5609' "A" Zone - 5612'-5617'
PACKER:	None
ACID TREATMENT:	"A" Zone - 700 gallons acid "A" Zone - 500 gallons acid "A" Zone - 300 gallons acid
INITIAL POTENTIAL:	Temporarily Abandoned
TYPE COMPLETION:	Temporarily Abandoned

EAST POPLAR UNIT WELL NO. 61

ROOSEVELT COUNTY, MONTANA

MURPHY CORPORATION--OPERATOR

HISTORY----------Page 1

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DRILLING BIT & TOTCO RECORDS
& DIAMOND CORE BIT RECORDS----------Page 8

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File #61

A.F.E. No. 56-10

AUTHORITY FOR EXPENDITURE
MURPHY CORPORATION - EAST POPLAR UNIT NO. 61
SW NE Section 12-T28N-R51E, Roosevelt County, Montana

WELL DRILLING & CONSTRUCTION EXPENSE:	TO CSG. PT.	COMP. & EQUIP.	TOTAL COST
Drilling - Footage - 5941' @ $5.25/ft.	$ 31,190	$	$ 31,190
Daywork - 4 days @ $850/day &	3,400		3,400
2 days @ $775/day		1,550	1,550
Loc. survey, permit & prep.	350		350
Roads, fences, cattleguard, etc.	500	750	1,250
Mud mat. & chem. incl. oil & gas	4,000		4,000
Cementing casing	1,600	950	2,550
Coring materials & services	800		800
Testing services incl. swabbing	1,200		1,200
Other logs, surveys & analysis	1,200		1,200
Perforating services		600	600
Hydrafrac, acidize, etc. incl. oil		650	650
Float equip., centralizers, etc.	175	650	825
Trucking, welding & other labor	500	500	1,000
Supervision & Miscellaneous	250	250	500
Total Est. Well Drlg. & Const. Exp.	$ 45,165	$ 5,900	$ 51,065
WELL EQUIPMENT COSTS:			
Casing: 1000' of 10 3/4" O.D.	$ 4,000	$	$ 4,000
Casing: 5941' of 5 1/2" O.D.		9,330	9,330
Tubing: 5941' of 2 3/8" O.D.		3,420	3,420
Casing head & connections	300		300
Xmas tree and connections		1,300	1,300
Total Est. Well Equip. Costs	$ 4,300	$ 14,050	$ 18,350
Total Est. Cost of Well	$ 49,465	$ 19,950	$ 69,415
LEASE EQUIPMENT:			
Flow lines	$	$ 5,000	$ 5,000
Other line pipe, valves & fittings		200	200
Trucking, welding & other labor		500	500
Total Est. Cost of Lease Equip.	$	$ 5,700	$ 5,700
TOTAL EST COST OF WELL & LEASE EQUIP.	$ 49,465	$ 25,650	$ 75,115

APPORTIONMENT OF TOTAL ESTIMATED COSTS

	%			
Murphy Corporation - Unit Operator	31.448470	$ 15,556	$ 8,067	$ 23,623
Munoco Company	2.096565	1,037	538	1,575
Placid Oil Company	33.545035	16,593	8,604	25,197
The Carter Oil Company	16.335860	8,081	4,190	12,271
Phillips Petroleum Company	16.335860	8,081	4,190	12,271
C. F. Lundgren	.238210	118	61	179

APPROVAL OF EXPENDITURE

Requested by:

Harold Milam 7-12-55
Division Production Sup't. Date

Recommend Approval:

General Production Sup't. Date

Recommend Approval:

Division Manager Date

Budget Supervisor Date

Approved:

Vice President-Operations Date

HM/me
7-8-55

EPU # 61

File EPU #61

Pat File

AUTHORITY FOR ABANDONMENT
MURPHY CORPORATION - EAST POPLAR UNIT NO. 61
Roosevelt County, Montana
East Poplar Unit

Authority is requested to plug and abandon the above named well located as described below:

SE NE Section 12-T28N-R51E.

JUSTIFICATION:

Completed as a dry hole December 19, 1955. Total Depth was 5943' in the Madison "C" Zone. 5-1/2" casing was set at 5942' with 300 sacks of cement. The well was tested as follows:

"C" Zone, 5909'-5925' DM, open hole, DST recovered 10' oil & 285' salt wtr,
"B-2" Zone, 5751'-5765' DM, open hole, DST recovered 85' oil-&-gas-cut mud & 3100' salt wtr,
"B-1" Zone 5738'-5754' DM, open hole, DST recovered 30' oil-&-gas-cut mud & 335' salt wtr,
"A-3" Zone 5604'-5615' DM, open hole, DST recovered 2980' oil & 50' salt wtr,
"A-3" Zone 5606'-5612' SM, production test flowed salt wtr w/trace oil,
"A-3" Zone 5603'-5609' SM, production test flowed salt wtr w/10% oil,
"A-3" Zone 5612'-5617' SM, on approximately 3 months of production tests, the well pumped 72 BOPD & 31 BWPD at beginning of the period & 7 BOPD & 6 BWPD at end of period. Reacidized w/500 gallons, then recovered 840 BFPD, swabbing 100% salt water.
"A-1", "A-2", & "B-4" Zones have not been tested.

OTHER FACTORS:

The reservoir water drive is believed to be sufficient in this area. No secondary recovery program anticipated.

ESTIMATES:

Cost of plugging hole and pulling casing is estimated as follows:

	Plugging	$ 450.00
	Pulling casing 3000' @ 30¢	900.00
	Total	$1,350.00
Salvage--		
	3000' of 5-1/2" (75% of new price)	$4,350.00
	Csg head & Xmas tree (75% of new price)	1,200.00
	Total	$5,550.00

WORKING INTEREST OWNERS:

		Cost	Salvage
Murphy Corporation	31.448470%	$ 425	$ 1745
Munoco Company	2.096565%	28	116
Placid Oil Company	33.545035%	453	1862
The Carter Oil Company	16.335860%	221	907
Phillips Petroleum Co.	16.335860%	221	907
C. F. Lundgren	.238210%	3	13

APPROVAL OF ABANDONMENT

Requested by:

Donald Milan — Division Production Superintendent — DEC 18 1957 Date

Recommend Approval:

Div. Land — Div. Geol. — Div. Engr.

Gordon Kirby — Division Manager — FEB 12 1958 Date

To El Dorado 2-12-58

RECOMMEND APPROVAL:

Staff Geologist — Land Manager — Engineering — Staff Production

Leo Paul C. McDonald — Vice President-Operations — 2-25-58 Date

HM:eh
12-18-57

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

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

RECEIVED
JUL 29 1955
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA BILLINGS

SUNDRY NOTICES AND REPORT OF WELLS

802

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	X
Notice of Intention to Abandon Well		Report of Fracturing	

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

July 27, 1955

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

LEASE BLN-A-029305

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 61 12 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 1980 ft. from {N / S} line and 2080 ft. from {E / W} line of Sec. 12

(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 2151' Gr.

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; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Spudded July 23, 1955. Ran 142 jts. 1047.77', 10 3/4", 32.75 and 40.50#, H-40, and J-55, R-1 and R-2 standard American casing. Landed 9.75' below RKB. Howco float shoe at 1057.52'. 2 Howco centralizers at 830' and 1042'. Cemented with 700 sacks regular with 1 percent $CaCl_2$. Plug down 11:45 A.M., 7-25-55. Lost circulation while cementing. Ran temperature survey, found top cement at 220'. Ran 189' 1" down by the side of the 10 3/4", cement top 10 3/4 with 100 sacks regular. Cement returned to surface.

APPROVED USGS 8-1-55

Approved subject to conditions on reverse of form

Date 8-2-55

By Mark P. Hurley Geol-Eng
Title
District Office Agent

Company Murphy Corporation

By Harold Milam
Harold Milam

Title Division Production Superintendent

Address Midland Nat'l. Bank Bldg.

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

OVER

Form 9-331a
(Feb. 1951)

Approval expires 12-31-55.

(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Land Office Billings
Lease No. BLM-A 029305A
Unit East Poplar

RECEIVED JAN 10 1956 U. S. GEOLOGICAL SURVEY BILLINGS, MONTANA

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	X
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

January 5, 19 56

Well No. 61 is located 1980 ft. from {N/~~S~~} line and 2080 ft. from {E/~~W~~} line of sec. 12

SW NE Section 12 (¼ Sec. and Sec. No.) 28N (Twp.) 51E (Range) M.P.M. (Meridian)

East Poplar (Field) Roosevelt (County or Subdivision) Montana (State or Territory)

RECEIVED JAN 12 1956 U.S. GEOLOGICAL SURVEY

The elevation of the derrick floor above sea level is 2162 ft. K.B.

DETAILS OF WORK

COPY RETAINED DISTRICT OFFICE

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

This well was spudded July 23, 1955 and 10-3/4" casing at 1057.52' with 700 sacks cement. The production string was 5-1/2" casing set at 5942' with 300 sacks of cement. Completion attempts were made in the "A" Zone (5603'-5617'). The subsequent swab test and pumping test resulted in a non-commercial well capable of producing 7 BOPD and 60 BWPD. Operations have been suspended and the well shut in pending a further study to explore the possibility of using this well for salt water disposal purposes.

Approved JAN 11 1956
District Engineer

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company MURPHY CORPORATION

Address 602 Midland Bank Bldg.

Billings, Montana

By Harold Milam

Title Division Production Superintendent

U. S. GOVERNMENT PRINTING OFFICE 16—84337-8

U. S. GEOLOGICAL SURVEY
RECEIVED
MAY 21 1958
BILLINGS, MONTANA

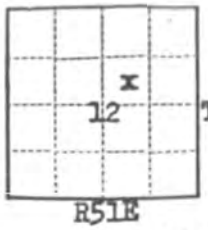
Form 9-331 a
(Feb. 1961)

Budget Bureau No. 42-R358.4.
Approval expires 12-31-60.

(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Land Office Billings
Lease No. BLM -A-029305
Unit East Poplar



Ref. 34

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL	X		

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

May 19, 1958

Well No. 61 is located 1980 ft. from [N] line and 2080 ft. from [E] line of sec. 12

C - SW NE Section 12 (¼ Sec. and Sec. No.) 28N (Twp.) 51E (Range) M.P.M. (Meridian)

East Poplar (Field) Roosevelt (County or Subdivision) Montana (State or Territory)

The elevation of the derrick floor above sea level is 2162 ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

COPY RETAINED DISTRICT OFFICE

SEE ATTACHED SHEET

U. S. GEOLOGICAL SURVEY
RECEIVED
MAY 22 1958
CASPER, WYOMING

Approved MAY 21 1958
C. V. Clifford
Actg District Engineer

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Murphy Corporation

Address P. O. Box 447

Poplar, Montana

By

Title Field Production Supt.

GPO 9 18507

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION

RECEIVED
DEC 4 1961
OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA

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	XXX
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)

October 17, 1961

Following is a {~~XXXXXXXXXXXXXXXXXXXXXXXX~~ report of work done} on land {~~XXXXX~~ leased} described as follows:

LEASE BLM-A-029305A

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 61 SW NE Section 12 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 1980 ft. from {N ~~XX~~} line and 2080 ft. from {E ~~XX~~} line of Sec. 12

(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 2162 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; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

See Attached Sheet

RECEIVED
OCT 18 1961
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

Approved subject to conditions on reverse of form (Usgs approved 11-30-61)

Date 12-1-61

By [signature] Title District Office Agent

Company MURPHY CORPORATION

By [signature]

Title Field Production Superintendent

Address Box 547 Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

10M

OVER

MURPHY 6846 61

LOCATE WELL CORRECTLY

Form No.
(Gen. Rule 206.3 & 231

(SUBMIT IN TRIPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

LOG OF WELL

Company MURPHY CORPORATION Lease BLM-A 029305 Well No. 61

Address 602 Midland Bank Bldg, Billings, Montana Field (or Area) East Poplar

The well is located 1980 ft. from ~~(S)~~ (N) line and 2080 ft. from ~~(W)~~ (E) line of Sec. 12

Sec. 12; T. 28N; R. 51E; County Roosevelt; Elevation 2162' K.B. (D.F., R.B. or G.L.)

Commenced drilling July 23, 19 55; ~~Completed~~ Temporarily Abandoned ? December 19, 19 55

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 dry hole (oil well, gas well, dry hole)

Signed Harold Milam
Harold Milam
Title Division Production Superintendent

Date January 5, 1956

IMPORTANT ZONES OF POROSITY

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

From ____ to ____ From ____ to ____
From ____ to ____ From ____ to ____
From ____ to ____ From ____ to ____
From ____ to ____ From ____ to ____

RECEIVED
JAN 7 1956
OIL AND GAS CONSERVATION COMM.
OF THE STATE OF MONTANA - BILLINGS

CASING RECORD

Size Casing	Weight Per Ft.	Grade	Thread	Casing Set	From	To	Sacks of Cement	Cut and Pulled from
10-3/4"	32.75 & 40.50	H-40 J-55	8	1057.52'			700	
5-1/2"	15.50#	J-55	8	5942.00'			300	

TUBING RECORD

Size Tubing	Weight Per Ft.	Grade	Thread	Amount	Perforations
2-3/8"	4.70#	EUE	8	5631.72'	open ended

COMPLETION RECORD

Rotary tools were used from 0 to 5943'
Cable tools were used from ____ to ____
Total depth 5943' ft.; Plugged back to 5900' T.D.; Open hole from ____ to ____

PERFORATIONS			ACIDIZED, SHOT, SAND FRACED, CEMENTED			
Interval From	Interval To	Number and Size and Type	Interval From	Interval To	Amount of Material Used	Pressure
5606'	5612'	1/2" Jet	5606'	5612'	700 gallons acid	2400#
5603'	5609'	1/2" Jet	5603'	5612'	500 gallons acid	2500#
5612'	5617'	1/2" Jet	5603'	5617'	300 gallons acid	2600#

(If P&A show plugs above)

INITIAL PRODUCTION

Well is producing from ____ (pool) formation.

I. P. Temporarily Aban barrels of oil per ____ hours (pumping or flowing)

____ Mcf of gas per ____ hours.
____ barrels of water per ____ hours, or ____ % W.C.

(OVER)

15M—5-55

INITIAL PRODUCTION—(Continued)

Initial 10-day average production _____ (bbl./day) (if taken)
Pressures (if measured): Tubing _____ psi flowing; _____ psi shut
Casing _____ psi flowing; _____ psi shut
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
			See attached					

LOGS RUN

Type	Intervals	
	From	To
See attached		

FORMATION RECORD

From	To	SAMPLE AND CORE NO. AND DESCRIPTION	Top of Formation
		See attached	

Form 9-330

Budget Bureau No. 42-R-355.5.
Approval expires 12-31-55.

U. S. LAND OFFICE Billings
SERIAL NUMBER BLM-A 029305
LEASE OR PERMIT TO PROSPECT

RECEIVED
JAN 6 1956
U. S. GEOLOGICAL SURVEY
BILLINGS, MONTANA

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LOCATE WELL CORRECTLY

LOG OF OIL OR GAS WELL

Company MURPHY CORPORATION Address 602 Midland Bank Bldg., Billings, Mont.

Lessor or Tract BLM-A 029305 (Carter Oil Co.) Field East Poplar State Montana

Well No. 31 Sec. 12 T. 28N R. 51E Meridian M.P.M. County Roosevelt

Location 1980 ft. {N. / S.} of N Line and 2080 ft. {E. / W.} of E Line of Sec. 12 Elevation 2162' K.B.
(Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed Harold Milam
Harold Milam
Title Division Production Supt.

Date January 5, 1956

The summary on this page is for the condition of the well at above date.

Commenced drilling July 23, 19 55. Temporarily Abandoned December 19, 19 55

OIL OR GAS SANDS OR ZONES

(Denote gas by G)

No. 1, from ..... to ..... No. 4, from COPY RETAINED DISTRICT OFFICE to .....

No. 2, from ..... to ..... No. 5, from ..... to .....

No. 3, from ..... to ..... No. 6, from ..... to .....

IMPORTANT WATER SANDS

No. 1, from ..... to ..... No. 3, from ..... to .....

No. 2, from ..... to ..... No. 4, from ..... to .....

U. S. GEOLOGICAL SURVEY
RECEIVED
JAN -9 1956
CASPER, WYOMING

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated From—	Perforated To—	Purpose
10-3/4"	32.75# 40.50#	8	H-40 J-55	1047.77'	Howco				Surface
5-1/2"	15.60#	8	J-55	5939.50'	Howco		5606' 5603' 5612'	5610' 5609' 5617'	Oil String

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Mud gravity	Amount of mud used
10-3/4"	1057.52'	700	Pump & Plug		
5-1/2"	5942.00'	300	Pump & Plug		

PLUGS AND ADAPTERS

Heaving plug—Material ..... Length ..... Depth set .....

Adapters—Material ..... Size .....

SHOOTING RECORD

FOLD | MARK

COMPLETION DATA

CASING: Ran 42 jts. 1047.77' of 10-3/4", 32.75# and 40.50#, H-40 and J-55, R-1 and R-2 Standard American casing. Landed 9.75' below RKB. Howco float shoe at 1057.52'. Two Howco centralizers at 830' and 1042'. Cemented with 700 sacks regular with 1 percent $CaCl_2$. Plug down at 11:45 A.M., 7-25-55. Lost circulation while cementing. Ran temperature survey, found top of cement at 220'. Ran 189' 1" down by the side of 10-3/4", cement top 10-3/4" with 100 sacks regular. Cement returned to surface. 10-3/4" surface pipe set as follows:

RKB to ground----------	9.75
40.50# J-55----------	94.16
32.75# H-40----------	601.51
40.50# J-55----------	352.10
Total	1057.52

Ran 187 jts. 5933.50' of 5-1/2", 15.50#, J-55, 8 rd. thd., R-2, American casing. Landed 8.50' below RKB and set at 5942'. Ran Howco automatic fillup shoe at 5942', Howco baffle collar at 5906'. Ran scratchers solid from 5940' to 5909', from 5909' to 5799', skipped 2' between scratchers, from 5798' to 5718' solid, from 5713' to 5648', skipped 2' between scratchers, and from 5650' to 5570' solid. Ran Howco centralizers at 5926', 5806', 5709', 5644' and 5558'. Cemented with 300 sacks Slo-set cement with 2 percent gel. Pipe froze while cementing. Plug down at 3:50 A.M., 8-13-55. Bumped plug with 1000#, released pressure, held ok. Tested casing with 1000#, 30 minutes, held ok.

COMPLETION: Ran 181 jts. 5595.50' 2-3/8", 4.70#, J-55, EUE, 8rd. thd., R-2, American tubing. Landed 7.00' below RKB at 5602.50'.

Perforated "A" Zone 5606'-5612', 5 jets per foot with Schlumberger 1-3/4" tubing gun. Opened to pit. Flowed natural stream the size of a pencil. Flowed to pit for 3 hours, circulated tubing out, no free water. Acidized "A" Zone 5606'-5612' with 700 gallons, 15 percent regular Dowell acid. Broke formation with 2400# with 100 gallons in formation. Stopped pumps and opened to pit, flowed 9 barrels displacement oil in 37 minutes, spend acid 79 more minutes. Flowed 22 barrels, 1 hour open flow, 98 percent salt water. TFP--25#, CP--800#. Flowed 8 hours to pit, 100 percent salt water. DOC squeezed with 50 sacks Slo-set cement. Broke formation with 2400#, maximum squeeze pressure--3000#. Held 30 sacks in formation, reversed out 20 sacks. Job complete at 8:00 A.M., 8-17-55. Swabbed to test squeeze job. Swabbed 67 barrels displacement oil, lowered fluid level to 3700', circulated with oil and found 1/2 barrel water in the tubing. Ran Lane Wells 1-3/4" Gamma Ray through tubing. Re-perforated 5603'-5609', 5 jets per foot with Lane Wells 1-3/4" tubing gun. Would not flow natural, swabbed 97 barrels displacement oil, no water, fluid level 4000'.

8-19-55: Re-acidized with 500 gallons Dowell 15 percent regular acid; injected 4 barrels in formation at 2500#, no break in formation. Final injection pressure 2500#, bleed down pressure 1400#. Flowed unspent acid for 23 minutes, new fluid for 14 more minutes. Flowed to pit for 30 minutes on open flow with 75 to 85 percent water. 1 hour test on 1/4" choke, flow rate 16 BFPH, 85% water, TFP--70#, CP--900#. 1 hour test on 12/64" choke, flow rate 9 BFPH, 89% water, TFP--100#, CP--950#. 1 hour test on 10/64" choke, flow rate 10 BFPH, 90% water, TFP--165#, CP--1000#. Rig released at 4:00 P.M., 8-19-55.
Moved in pulling unit.

8-22-55: Continued testing--10/64" choke, flow rate 8 BFPH, 98% water, TFP--125#, CP--950#.
8-24-55: 1/4" choke, flow rate 16 BFPH, 89% water, TFP--80#, CP--850#. Displaced water in tubing with oil. Broke formation with oil at 1800#. DOC squeezed with 50 sacks Slo-set cement, 516 gallons Diesel oil, 30 sacks in formation, maximum pressure was 3200#, held ok. Reversed out 20 sacks. Pulled up 1 joint, shut in under 1500# pressure. Job complete at 3:00 P.M., 8-25-55. Waited on cement for 16 hours. Began swabbing to test shut off. Swabbed 8 hours, 101 barrels oil, fluid level 4500', no water, let set overnight.

8-28-55: Checked fluid level with swab, found level at 5000', Swabbed 4 barrels fluid, no water.
8-29-55: Swabbing. Let set over the weekend (48 hours), 1000' fillup, recovered 10 barrels fluid in 1 hour, one trip with swab 90% water, 2 trips with swab 10% water. Clean oil after two trips. Swabbed down.
8-30-55: Swabbed 7:00 A.M.-8:00 A.M., recovered 7 barrels clean oil, 8:00-9:00, recovered 3 barrels oil. Swabbed down. Reperforated "A" Zone with Schlumberger 5612'-5617' with 1-3/4" tubing gun, 5 jets per foot, let set overnight. Swabbed 6:00 A.M.-7:00 A.M., recovered 8 barrels fluid, 2% water, fluid level at 5500'. Acidized with 300 gallons Dowell 15 percent regular acid, maximum pressure 2600#. Injected 3 barrels acid in formation, no pressure break. Flowed and swabbed out acid. Swabbed 6 BFPH, 3% water. Flowed 3-1/2 hours on open flow, flow rate 3.58 BFPH, no water, TP--0#, CP--100#. Flowed 9 hours on 1/4" choke, flow rate 2.34 BFPH, no water, TFP--0#, CP--450#.

9-3-55: Tested 1/4" choke, 14 BFPD, 33% water, TFP--0#, CP--750#.
9-5-55: Displaced tubing with oil, 16 hour flow rate on 1/4" choke, 25 barrels displacement oil, TFP--255#, CP--600#.
9-13-55: Rigged up swabbing machine. Swabbed 81 barrels fluid in 6 hours, 31% water.
9-14-55: Swabbed 8 hours, swab rate 248 BFPD, 33% water.
9-20-55: Pulled tubing, spaced seating nipple at 3675'. Ran rods and 2" x 1½" x 16' D&B pump. Set portable pumping unit.

Pumped 12 hours, then tested 8 hours, first 6 hours rate 147 BFPD, 20% water, last 2 hours rate 81 BFPD, 25% water.
9-22-55: Pumped 103 BFPD, 30% water.
9-23-55: Pumped 98 BFPD, 26% water.
9-24-55: Pumped 24 BFPD, 80% water.
9-25-55: Pumped 88 BFPD, 80% water.
9-27-55: Pumped 17.08 BOPD, 68.36 BWPD.
9-28-55: Pumped 82 BFPD, 80% water, 16 BOPD, 66 BWPD.
10-4-55: Pumped 88 BFPD, 85% water, 13 BOPD, 75 BWPD.
11-30-55: Pumped 59 BFPD, 84% water, 9 BOPD, 50 BWPD.
12-2-55: Pumped 79 BFPD, 75% water, 20 BOPD, 59 BWPD.
12-3-55: Pumped 72 BFPD, 14 BOPD, 58 BWPD.
12-4-55: Pumped 73 BFPD, 12 BOPD, 61 BWPD.
12-5-55: Pumped 72 BFPD, 12 BOPD, 60 BWPD.
12-6-55: Pumped 71 BFPD, 18 BOPD, 53 BWPD.
12-7-55: Pumped 72 BFPD, 15 BOPD, 58 BWPD.
12-8-55: Pumped 71 BFPD, 10 BOPD, 61 BWPD.
12-9-55: Pumped 69 BFPD, 14 BOPD, 55 BWPD.
12-10-55: Pumped 73 BFPD, 11 BOPD, 62 BWPD.
12-11-55: Pumped 69 BFPD, 14 BOPD, 56 BWPD.
12-12-55: Pumped 69 BFPD, 8 BOPD, 61 BWPD.
12-13-55: Pumped 67 BFPD, 7 BOPD, 60 BWPD.

Moved in pulling unit to reacidize. Acidized "A" Zone 5603'-5617' with 500 gallons Dowell etching acid. Maximum pressure 2500#, broke formation back to 2200#, injection rate 1/2 BPM. Bled back to 1800#, opened to pit, spent acid to surface in 31 minutes and then died. Swabbed 6 hours at rate of 35 BPH, 100% salt water.

Temporarily abandoned December 19, 1955.

RECEIVED
JAN 12 1956
OIL AND GAS CONSERVATION COMM.

ELECTRO LOG DATA

TYPE OF LOG	INTERVAL LOGGED
Schlumberger Electrical Survey 2"	1056'-5942'
Schlumberger Electrical Survey 5"	2000'-5942'
Schlumberger Microlog 5"	2000'-5939'
Schlumberger Microlog 25"	5400'-5939'
Schlumberger Temperature Log	0'-1039'
Lane Wells Radioactivity Log	4450'-5665'

LOG TOPS

Eagle	1419	(+ 743)	(?)
Niobrara	2069	(+ 93)	
Greenhorn	2416	(- 256)	
Graneros	2623	(- 461)	
Muddy	2980	(- 818)	
Dakota	3187	(-1025)	
Morrison	3491	(-1329)	(?)
Swift	3640	(-1478)	(?)
Rierdon	4150	(-1988)	
Piper Shale	4319	(-2157)	
Piper Limestone	4399	(-2237)	
Gypsum Springs	4453	(-2291)	
Spearfish	4667	(-2505)	
Amsden	4757	(-2595)	(?)
Heath	4912	(-2750)	
Otter	5104	(-2942)	
Kibbey Sandstone	5241	(-3079)	
Kibbey Limestone	5400	(-3238)	
Madison	5552	(-3390)	
"A" Zone	5607	(-3445)	
Salt	5688	(-3526)	12' thick
"B-1" Zone	5744	(-3582)	
"B-2" Zone	5762	(-3600)	
"C" Intercrystalline	5912	(-3750)	

DRILL STEM TESTS

D.S.T. #1: 5604'-5615' ("A" Zone) with Halliburton single packer, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with strong blow, continued throughout test. Recovered 1000' gas, 2990' clean oil, 55' oil-and-gas-cut mud, 50' salty sulphur water. IBHFP--95#, FBHFP--1028#, BHSIP--2810#, Hydro--3128#.

D.S.T. #2: 5738'-5754' ("B-1" Zone) with Halliburton straddle packers, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with weak blow, died in 75 minutes. Recovered 30' oil-cut mud, 335' salt water. IBHFP--10#, FBHFP--185#, BHSIP--2140#, Hydro--2950#. Bottom recorder broke, fluid recovered, indicated bottom packer held.

D.S.T. #3: 5751'-5765' ("B-2" Zone) with Halliburton single packer, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with good blow, continued throughout test. Recovered 85' oil-cut mud, 3100' salt water. IBHFP--10#, FBHFP--1495#, BHSIP--2730#, Hydro--3240#.

D.S.T. #4: 5909'-5925' ("C" Zone) with Halliburton packer, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with medium blow, continued throughout test. Recovered 800' gas, 10' clean oil, 285' salt water with bad odor. IBHFP--10#, FBHFP--65#, BHSIP--2600#, Hydro--3300#.

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

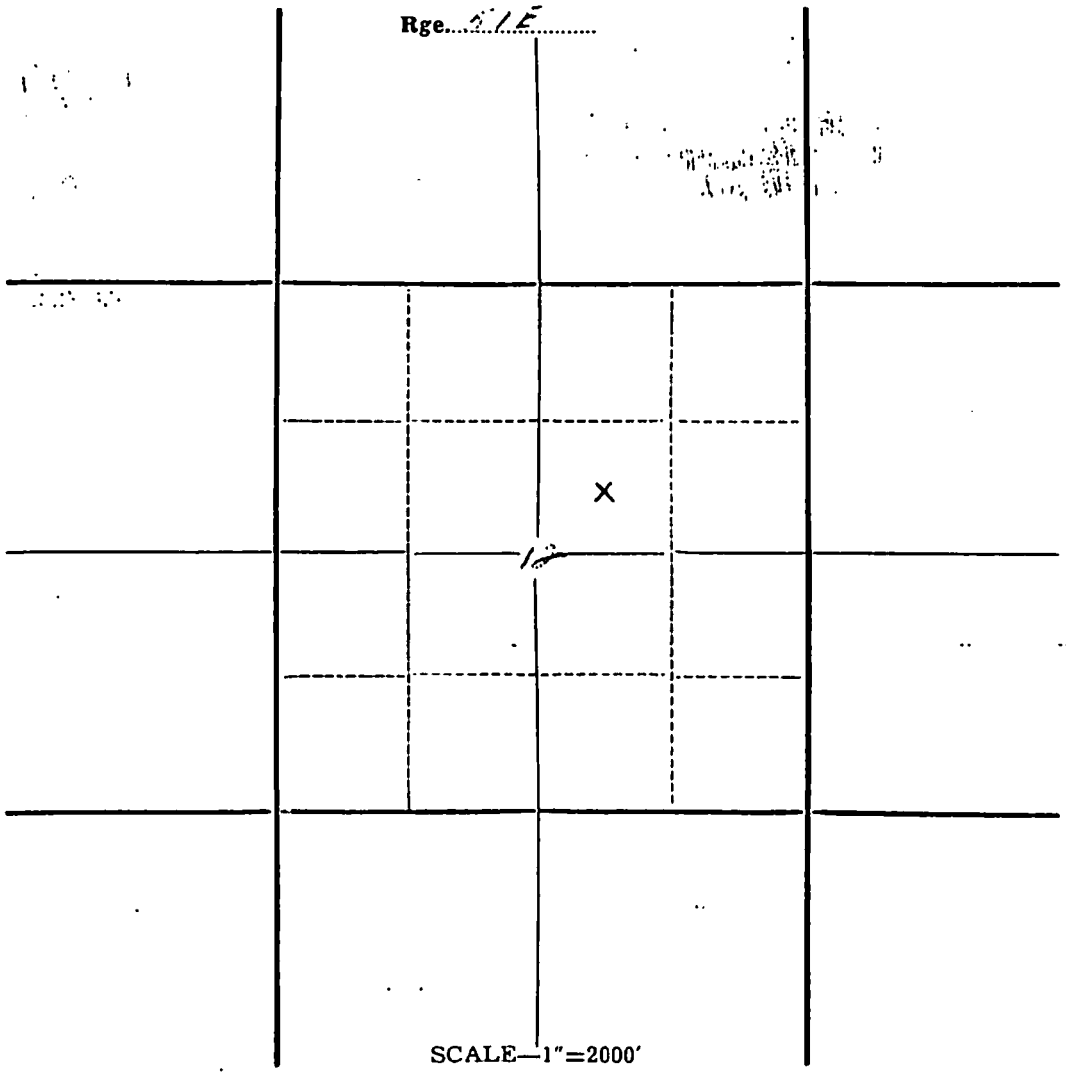
Rge. 21E

Form No. 2
File at
Billings
or Shelby

Locate
Well
Correctly

Locate
Lease
Boundary

Twp. 21N



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, 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 (3500) feet or less, twenty-five dollars ($25.00); from thirty-five hundred and one (3501) feet to seven thousand (7000) feet, seventy-five dollars ($75.00); seven thousand (7000) 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.

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	Depth	Datum	Thickness
Eagle	1419	+ 743	
Niobrara	2069	+ 93	
Greenhorn	2418	- 256	
Graneros	2623	- 461	
Muddy	2980	- 818	
Dakota	3187	-1025	
Morrison	3491	-1329	
Swift	3640	-1478	
Rierdon	4150	-1988	
Piper Shale	4319	-2157	
Piper Limestone	4400	-2238	
Gypsum Springs	4453	-2291	
Spearfish	4667	-2505	
Amsden	4797	-2635	
Heath	4960	-2798	
Otter	5100	-2938	
Kibbey Sandstone	5234	-3072	
Kibbey Limestone	5394	-3232	
Madison	5495	-3333	
A-1	5578	-3416	3
A-2	5591	-3429	2
A-3	5596	-3434	11
A-4	5607	-3445	27
B-1	5744	-3582	8
B-2	5762	-3600	16
B-3	5784	-3622	4
B-4	5814	-3652	4
B-5	5852	-3690	?
C-1	5888	-3726	?
C-2	5912	-3750	16

DRILL STEM TESTS

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CORE ANALYSIS REPORTS

Company Murphy Corporation Date 8-9-55 Lab. No. 417

Well No. Unit #61 Location SW NE 12-28N-51E Formation "A" Zone

Field East Poplar County Roosevelt State Montana Depths 5580-5610

Sample No.	Depth Feet	Effective Porosity %Porespace	Permeability Millidarcies Horizontal	Vertical	Saturations % Pore Space Resid. Oil	Total Water
	Core #1	5580-5614	Recovered 30'			
NS	5580-5604					
1	5604-05	1.9	0.85		0.0	84.2
2	05-06	0.1	U.T.		0.0	75.4
3	06-07	3.3	83.0		Tr.	88.5
4	07-08	0.5	0.01		0.0	98.0
5	08-09	0.2	0.06		0.0	91.2
6	09-10	0.2	0.01		0.0	87.4

CORE ANALYSIS REPORTS CONTINUED

Formation Charles Depths 5730-5765 Date 8-12-55

Sample No.	Representative of Feet	Midpoint of Sample	Permeability Radial	Permeability Vertical	Effective Porosity Percent	Density Bulk	Density Matrix	Saturation % of Pore Space Resid. oil	Saturation % of Pore Space Water
	Core No. 2	5730-5765	Rec. 35'						
NS	5730-40								
7	40-41		1.78	0.34	11.4	2.38	2.68	0.8	51.3
8	41-42		4.01	1.61	15.9	2.27	2.70	2.8	22.1
9	42-43		3.91	2.11	10.7	2.41	2.70	9.2	54.3
10	43-44		27.	3.43	3.3	2.62	2.70	0.0	23.0
11	44-45		21.	1.75	5.0	2.56	2.70	Tr.	99.2
12	45-46		2.45	1.31	9.4	2.44	2.69	10.6	18.1
13	46-47		3.00	1.59	12.9	2.34	2.69	5.5	42.5
14	47-48		0.81	0.14	5.2	2.60	2.74	Tr.	89.7
NS	48-59								
15	59-60		17.	1.50	7.7	2.54	2.75	3.2	3.9
16	60-61		14.	4.87	13.6	2.29	2.65	16.9	73.5
17	61-62		12.	12.	16.0	2.21	2.66	0.2	40.3
18	62-63		7.44	2.77	12.3	2.34	2.67	6.5	40.7
19	63-64		33.	12.	3.0	2.47	2.63	3.3	27.0
20	64-65		18.	11.	5.3	2.54	2.68	3.8	66.4
	Core No. 3	5895-5925	Rec. 29'						
NS	5895-5910								
21	10-11		0.05	0.03	6.4	2.53	2.70	1.6	61.9
22	11-12		0.38	0.11	11.5	2.39	2.70	19.7	36.6
23	12-13		0.95	0.30	16.2	2.30	2.74	21.3	24.6
24	13-14		0.60	0.18	13.1	2.37	2.73	19.3	38.5
25	14-15		0.54	0.21	10.3	2.46	2.74	19.5	39.7
26	15-16		0.57	0.15	11.2	2.42	2.73	16.3	23.8
27	16-17		0.61	0.12	12.0	2.38	2.73	23.4	24.8
28	17-18		0.71	0.16	14.1	2.32	2.70	36.7	28.4
29	18-19		0.76	0.29	12.8	2.34	2.69	38.4	28.4
30	19-20		0.76	0.23	12.4	2.47	2.82	20.5	21.5
31	20-21		0.31	0.04	8.1	2.53	2.75	1.5	28.5
32	21-22		0.12	U.T.	4.0	2.58	2.68	2.0	92.0
33	22-23		0.17	0.01	6.0	2.48	2.69	Tr.	87.9
34	23-24		0.26	0.14	12.3	2.42	2.75	61.9	61.9

CORE DESCRIPTIONS

Core No. 1 5580 - 5615, cut 35', recovered 30'.

8'0"	Limestone; dark gray, microcrystalline, dense with small anhydritic inclusions, unit appears wet. No show.
3'0"	Limestone; dark gray, microcrystalline, dolomitic, dense with numerous, small tight fractures and anhydrite inclusions. No show.
4'0"	Limestone; medium gray, micro to cryptocrystalline, very dolomitic with many large soft angular anhydritic inclusions, unit appears wet. No show.
6'0"	Dolomite, medium gray, micro to cryptocrystalline, hard, dense, with anhydrite inclusions increasing in number with depth. No show.
3'0"	Anhydrite; massive gray crystalline. No show.
6'0"	Limestone; brown-gray, micro to amorphous, hard, dense, with many short, tight irregular fractures with faint oil odor, some associated staining and pale milky yellow fluorescence, most of unit so highly fractured when removed from core barrel that missing recovery is thought all from this unit.
5'0"	No recovery.

Core No. 2 5730 - 5765, cut 35', recovered 35'.

3'0"	Anhydrite; soft, massive, salty with a 6" salt plug at very top. No show.
7'0"	Anhydrite, massive, crystalline, no show.
8'0"	Limestone; dark gray-brown, microcrystalline, dense streak 43-44, otherwise fair to slight visible porosity, no fracturing, fair oil odor on fresh break, good staining throughout, uneven dull brassy yellow fluorescence.
11'0"	Anhydrite, massive. No show.
6'0"	Limestone; dark brown-gray, fine to medium crystalline, many small brown, calcite crystals, tight fracture in top foot and bottom foot, fair oil odor on fresh break, some uneven dull brassy fluorescence. Unit has overall unusual slick appearance and slightly unfamilar odor.

Core No. 3 5895 - 5925, cut 30', recovered 29'.

3'0"	Limestone; dark gray, cryptocrystalline, dense, argillaceous. No show.
4'0"	Dolomite; medium gray, microcrystalline, dense, anhydritic, slightly calcareous. No show.
8'0"	Limestone; medium gray, microcrystalline, dense with a very tight fracture, bottom foot having a very slight stain, spotty fluorescence and questionable odor. Dolomitic streak 05-06.
10'0"	Limestone; gray-brown, fine to microcrystalline, dense, fair intercrystalline porosity, spotty to even staining, sulfurous petroleum odor, very mottled dull brassy fluorescence.

2'0"	Limestone; medium gray, fine crystalline, dense, stylolitic, with no stain, no odor and very spotty dull fluorescence.
2'0"	Limestone; gray-brown, fine crystalline, dense, some intercrystalline porosity, stain, very questionable odor and very spotty dull fluorescence.
1'0"	No recovery.

MUD PROGRAM SUMMARY

MUD SERVICE CO.: Northern Mud Co.

MUD ADDITIVES AND COST:

	Spud - Surface		Surface to T.D.		Total	
Material	Amt.	Cost	Amt.	Cost	Amt.	Cost
Magcogel	50	117.50	56	131.70	106	249.20
Cement	4	7.20			4	7.20
Quebracho			73	967.25	73	967.25
Driscose			9	405.00	9	405.00
Caustic Soda			48	648.00	48	648.00
Lime	2	3.40			2	3.40
TSPP	5	137.50			5	137.50
Total Mud		265.60		2151.95		2317.55
Drayage		47.00		143.11		190.11
TOTAL COST:		312.60		2295.06		2607.66

UNIT MUD COSTS:	Total Cost	Feet Drld	Cost Per Foot	Days Mud Used	Cost Per Day
Spud - TD	2607.66	5937	.44	21	124.17
Spud - Surface	312.60	1068	.29	2	156.30
Surface - TD	2295.06	4369	.47	19	120.79

MUD PROPERTIES:

Depth	Weight	Viscosity	Water Loss	pH	Remarks
0-200	High viscosity mud				Spudding
200-4550	Native clay and water				
4550	10.4	45	11.	12.0	
4900	10.3	45	14.	12.5	
5100	10.5	55	16.	12.0	
5300	10.5	55	16.	12.5	
5665	10.6	49	13.	12.6	
5765	10.5	46	16.4	12.8	Coring
5895	10.5	54	15.	12.5	Coring
5937 TD	10.5	60	16.	12.5	Logging

SUMMARY:

A high viscosity spud mud was mixed to drill the surface gravels. After the gravel had been penetrated, the mud was thinned with water and phosphate to drill the 15" hole to 1068'. The Judith River Sand does not exhibit an abnormal pressure in this area so no barite was needed. The 10 3/4" casing was landed at 1058' and cemented with 700 sacks, but no cement returns were obtained. A temperature survey was run and the well was re-cemented from 190' to surface with 100 sacks by circulating through 1" pipe which had been run between the casing and the 15" hole.

Water was the only additive from surface to approximately 4300'. However, the shales drilled are natural mud builders and reasonable viscosity and water loss values were maintained while drilling with water. At 4300' additions of caustic, quebracho, and gel were started and the mud was converted to a high pH red mud. Driscose was added upon reaching the porosity sections to control the water loss below 15 cc.

Three cores were cut and four drill stem tests were run. Although the water loss was slightly higher than recommended, other mud properties were uniformly maintained and good hole conditions predominated.

D R I L L I N G B I T R E C O R D

Bit No.	Make	Size	Type	Ser. No.	From	To
1	Hughes	15	OSC-3	Re-run	0	1068
2	"	8 3/4	OSC-1G	520	1068	3426
3	Hughes	"	OSCJ	65557	3426	3585
4	"	"	"	67231	3585	4056
5	"	"	"	81627	4056	4270
6	"	"	"	21546	4270	4449
7	"	"	"	66342	4449	4595
8	"	"	OSC	72881	4595	4820
9	"	"	OWVJ	41766	4820	4947
10	"	"	OWV	96397	4947	5055
11	"	"	"	96388	5055	5243
12	"	"	"	96306	5243	5385
13	"	"	"	96179	5385	5470
14	"	"	"	96245	5470	5585
15	"	"	"	96319	5585	5730
16	"	"	"	80643	5730	5925
17	"	"	"	96304	5925	5937

T O T C O R E C O R D

Depth Out	Degrees Off
1400	1/2
4463	2 1/2
4836	1 1/2
5243	1 1/4

Christensen Diamond Coring Record
Bit No. D-713

Core No.	From	To	Footage
1	5580	5615	35
2	5730	5765	35
3	5895	5925	30

SAMPLE DESCRIPTION

2000	2230	Shale; light gray, micaceous, sandy; scattered sandstone, light gray, fine grained; trace aragonite.
2230	2400	Shale; light to dark gray, firm, pyritic; trace bentonite; trace aragonite.
2400		Sample Top Greenhorn
2400	2610	Shale; dark gray, slightly calcareous, micaceous with tan specks; trace shale as above; aragonite as above.
2610	2800	Shale; dark gray, soft, slightly micaceous; trace white bentonite; trace aragonite fragments.
2800	2995	Shale; as above; scattered, soft, gray, muddy siltstone; trace bentonite, as above; aragonite as above.
2995		Sample Top Muddy Sandstone
2995	3070	Shale and siltstone as above; trace sandstone, medium gray, fine grained, micaceous, slightly glauconitic.
3070	3260	Shale; dark gray, chunky; siltstone, light gray, calcareous; sandstone, trace as above.
3260	3450	Sandstone; light gray to white, fine grained, well cemented; shale, medium to dark gray; trace light brown-gray siltstone.
3450	3650	Shale; medium to dark gray, splintery; trace sandstone as above.
3650		Sample Top Swift
3650	3750	Sandstone; light gray, very fine grained, glauconitic; shale, medium to dark gray, splintery.
3750	3900	Shale; light gray, splintery, calcareous, trace gray-green; sandstone trace as above; trace pyrite.
3900	3970	Shale; light gray to light gray-green, blocky, waxy; sandstone, trace light gray, fine grained, glauconitic and micaceous; shale, dark gray, scattered.
3970		Sample Top Vanguard
3970	4110	Sandstone; light gray, very fine grained, calcareous; shale, medium dark gray, blocky.
4110	4275	Shale; light gray, splintery, calcareous; shale, dark gray, pyritic; sandstone trace light gray, very fine grained, slightly calcareous.

4275	4320	Shale; medium gray, blocky, silty; shale, scattered gray-green, waxy, blocky; sandstone trace, fine grained, light gray, micaceous; limestone, trace cream, amorphous, dense.
4320		Sample Top Piper Shale
4320	4402	Shale; sandstone and limestone as above plus scattered shale, red-brown, silty, blocky.
4402		Sample Top Piper Lime
4402	4460	Limestone; scattered dark brown, amorphous, dense; shale as above with few reds.
4460		Sample Top Gypsum Springs
4460	4540	Shale; medium gray, light gray and dark red-brown; trace gypsum; trace pyrite.
4540	4590	Shale; as above; scattered dolomite, light brown-gray; scattered limestone, dark brown, microcrystalline.
4590	4660	Shale; as above with trace limestone and occassional anhydrite toward bottom.
4660		Sample Top Spearfish
4660	4690	Sandstone; red to pink, very fine grained, sub-angular; shale, medium grays and some dark reds; trace anhydrite.
4690	4780	Shale; as above; trace sandstone as above.
4780		Sample Top Amsden
4780	4810	Shale; as above; dolomite, pink, microcrystalline, dense.
4810	4950	Shale; light gray, fissile, calcareous; shale, purple to gray; scattered limestone, brown-gray, microcrystalline.
4950	5075	Shale; brick reds, soft; shale, gray-green, purples; trace sandstone, fine to medium grained, white to dull red.
5075	5092	Shale; red and medium grays and some purples, silty, blocky to splintery; trace limestone, tan, amorphous, dense; aragonite trace.
5092		Sample Top Otter
5092	5200	Shale; as above with scattered bright greens and more purples; limestone as above.
5200	5242	Shale; variegated purples, reds, greens and medium grays; limestone scattered as above.

5242		Sample Top Kibbey Sandstone
5242	5268	Sandstone; brick red, very fine grained; shale as above; limestone, cream, amorphous, scattered.
5268	5388	Sandstone; brick red to pink, coarse grained to medium grained, angular, porous, no show; shale as above; limestone as above.
5388	5407	Sandstone; brick red, fine grained, tight; trace shale and limestone.
5407		Sample Top Kibbey Limestone
5407	5425	Limestone; gray-brown, microcrystalline, dense, argillaceous, dolomitic; sandstone scattered as above; some shale as above.
5425	5540	Shale; reds, grays and few purples; scattered sandstone, brick red, fine grained with trace limestone as above.
5540		Sample Top Madison
5540	5580	Shale; as above; scattered to prevalent anhydrite, white, soft; limestone, gray-brown to dark gray, microcrystalline, dense.
5580	5615	Core No. 1, recovered 30'.
5615	5730	Limestone; dark brown-gray, fine crystalline, hard, dense; anhydritic, white, soft, amorphous; trace light gray, fine crystalline dolomite.
5730	5765	Core No. 2, recovered 35'.
5765	5800	Limestone; dark brown-gray, medium crystalline with slight porosity, trace pale yellow fluorescence, scattered anhydrite, as above.
5800	5830	Dolomite, light gray, medium crystalline, fair porosity; some limestone as above, no show; anhydrite, as above.
5830	5895	Limestone; brown-gray, fine crystalline, dense; some dolomite, medium gray, fine crystalline, dense.
5895	5925	Core No. 3, recovered 29'.

Total Depth 5937 Driller equals 5943 Schlumberger

EXPLORATION PROSPECTUS FOR EAST POPLAR UNIT (Lease Name) 61 (Well No.)

LOCATION SW¼NE¼ Section 12-T28N-R51E FIELD EAST POPLAR

COUNTY ROOSEVELT STATE MONTANA

ELEVATION 2166' K.B.(est) OBJECTIVE FORMATION AND DEPTH MADISON 5941'

EXPECTED STRATIGRAPHIC SECTION AND ESTIMATED DEPTHS.

Judith River	856	(+1310)	Amsden	4798	(-2630)
Eagle	1242	(+ 924)	Heath	4969	(-2803)
Niobrara	2086	(+ 80)	Otter	5119	(-2953)
Greenhorn	2437	(- 271)	Kibbey Sandstone	5260	(-3094)
Muddy Sandstone	3011	(- 845)	Kibbey Limestone	5421	(-3255)
Dakota Silt	3232	(-1066)	Madison	5516	(-3350)
Piper Shale	4333	(-2167)	"A" Zone	5626	(-3460)
Piper Limestone	4412	(-2246)	"B-1" Zone	5753	(-3637)
Gypsum Springs	4469	(-2303)	"B-2" Zone	5772	(-3606)
Spearfish	4661	(-2495)	"C" Zone	5911	(-3745)

RECOMMENDED CORING PROGRAM

Circulate Heath sands and core on show.
"A" Zone (25')
"B-1" and "B-2" Zones (35')
"C" Zone (20') (Core 3' to 10' into "C" Zone porosity)
Core 20' below "C" Zone if production is not established in "C" Zone or shallower horizons.

RECOMMENDED TESTING PROGRAM

"A" Zone.
"B-1" Zone, if warranted by show.
"B-2" Zone, if warranted by show.
"C" Zone, if warranted by show.

RECOMMENDED LOGGING SERVICE

A. ELECTRIC LOG: (1) Surface ___ (2) Correlation ___ (3) Total Depth X

B. MICRO LOG: (1) Surface ___ (2) Correlation ___ (3) Total Depth X

C. GAMMA RAY: If necessary D. LATERO LOG: ___ E. LIMESTONE: ___

F. OTHER: ___ VELOCITY SURVEY ___ MUD TRUCK ___

GENERAL INFORMATION (SURFACE AND NEAR SURFACE SEDIMENTS, DRILLING WATER, CULTURE, ACCESSIBILITY, NEARBY WELL CONTROL, ETC.)

Nearest well control: E. P. U. No. 24, SW¼SW¼ Section 12-T28N-R51E.

TUBULAR PROGRAM

1000' of 10-3/4" O.D.
5941' of 5-1/2" O.D.
5941' of 2-3/8" O.D. Tubing

REMARKS

BILLINGS DIVISION

DATE 7-8-55

BY J. H. Powell, Jr.

App'd. By MB
Date: 7-8-55

DRILLING PROSPECTUS FOR East Poplar Unit (Lease Name) 61 (Well No.)

LOCATION SW NE Section 12-T28N-R51E FIELD East Poplar

COUNTY Roosevelt STATE Montana

SURFACE HOLE:

SIZE:	13 3/4"
MUD:	Natural
CASING:	10 3/4"
CEMENT:	400 Regular 2% $CaCl_2$
SETTING TIME:	24 Hours

BELOW SURFACE

HOLE SIZE:	8 3/4"
CORE HOLE SIZE:	6 1/8"
TEST TOOLS:	Howco
TESTING TIME:	4 Hours
SHUT IN TIME:	20 to 30 minutes
CASING:	5 1/2" O.D.
CEMENT:	300 sacks Slo-set 2% gel

MUD PROGRAM

TYPE:	Natural and chemical to 4400' Caustic and Quebracho from 4400' to T.D.
MUD WEIGHT:	10.4 to 10.6
WATER LOSS:	15 cc or less
PH:	12 to 12.5
VISCOSITY:	40 to 45

BILLINGS DIVISION

Date _____

By _____

CHEMICAL & GEOLOGICAL LABORATORIES
OF MONTANA

CHEMISTS GEOLOGISTS ENGINEERS

113 WEST BELL
GLENDIVE, MONTANA

MURPHY CORPORATION

#61 UNIT

SW NE 12-28N-51E

EAST POPLAR, MONTANA

CORE ANALYSIS REPORT

CHEMICAL & GEOLOGICAL LABORATORIES
OF MONTANA

113 West Bell
Glendive, Montana

CORE ANALYSIS REPORT

Company Murphy Corporation — Date August 9, 1955 — Lab. No. 117
Well No. #61 Unit — Location SW NE 12-28N-51E
Field East Poplar — Formation
County Roosevelt — Depths 5580-
State Montana — Drilling Fluid Water Base Mud

C—Crack
F—Fracture
H—Horizontal
O—Open

ls - Limestone
Do - Dolomite
A - Anhydrite

LEGEND
NF—No Fracture
IS—Insufficient Sample

D - Dense
UT - Unsuitable for test

S—Slight
St—Stain
V—Vertical
Vu—Vugs

SAMPLE NO.	LEGEND	DEPTH, FEET	EFFECTIVE POROSITY % PORESPACE	PERMEABILITY MILLIDARCIES HORIZONTAL	PERMEABILITY MILLIDARCIES VERTICAL	SATURATIONS % PORE SPACE RESIDUAL OIL	SATURATIONS % PORE SPACE TOTAL WATER	CONNATE WATER	SOLUBILITY MUD ACID	SOLUBILITY 15 % ACID
		CORE #1	5580-5614		Rec. 30	A Zone				
NS	ls,DO,A,D	5580-5604								
1	ls,H&VC	5604-05	1.9	0.85		0.0	34.2			
2	ls,VC	05-06	0.1	UT		0.0	75.4			
3	ls,H&VC,Vu	06-07	3.3	83.0		Tr	38.5			
4	ls,VF	07-08	0.5	0.01		0.0	98.0			
5	ls,VF	08-09	0.2	0.06		0.0	91.2			
6	ls,HC	09-10	0.2	0.01		0.0	87.4			

CHEMICAL & GEOLOGICAL LABORATORIES
OF MONTANA

CHEMISTS GEOLOGISTS ENGINEERS

113 WEST BELL
GLENDIVE, MONTANA

November 25, 1955

Murphy Corporation
El Dorado, Arkansas

Gentlemen:

The A-Zone was found to be non-porous and to have low matrix permeability. It is probable that the fractures extend into porous, oil bearing rock. The reservoir calculations and estimated recoverable oil found immediatly preceding the data sheets are believed to be of little value as they have been determined from core analysis of the material analysed and not from information concerning the rock from which the oil is thought to be coming.

The B-1 and B-2 Zones are permeable and porous but the saturations indicate high water content.

The C-Zone is typical with high intercrystalline porosity and poor permeability.

Yours very truly,

CHEMICAL & GEOLOGICAL LABORATORIES OF MONTANA

J. Roger Artley

J. Roger Artley
Chemical Engineer

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CHEMICAL & GEOLOGICAL LABORATORIES of MONTANA

113 WEST BELL P. O. BOX 537

GLENDIVE, MONTANA

CORE ANALYSIS REPORT

Field East Poplar County Roosevelt State Montana

Well No. #61 Unit Location SW NE 12-28N-51E

Formation A-Zone Depths 5580-5614

Operator Murphy Corporation Elevation 2151 Gr. Lab. No. 417

CORE INFORMATION

Cored with water base mud from 5580 to 5614

Footage of formation cored 34

Feet of core received at laboratory for analysis 30

Feet of core not accounted for 4

Number of representative samples selected for analysis 6

Feet of core represented by selected samples 6

ROCK CHARACTERISTICS	FEET OF CORE ANALYZED	FEET OF CORE NOT ANALYZED
Shale and/or dense laceu material		24
Fratured material	2	
Non-fractured material	4	
TOTAL	6	24

RECORD OF DRILL STEM TESTS

REMARKS

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CHEMICAL & GEOLOGICAL LABORATORIES of MONTANA
113 WEST BELL P. O. BOX 537
GLENDIVE, MONTANA

CORE ANALYSIS REPORT

A-Zone

Field East Poplar Well No. #61 Unit

Operator Murphy Corporation Laboratory No. 417

SUMMARY OF REPORT

DISTRIBUTION BY MAXIMUM PERMEABILITY RANGES

PERMEABILITY RANGE	FOOTAGE	PERMEABILITY	POROSITY	WATER SATURATION	RESIDUAL OIL SATURATION
Less that 0.01					
0.01 - 0.09	3	0.03	0.3	92.2	0.0
0.10 - 0.99	1	0.85	1.9	34.2	0.0
1.00 - 9.9					
10 - 99	2	83	1.7	56.9	Tr
100 - 999					
1,000 +					
Total summarized	6				
Total analyzed	6				
0.01 +	6	17	1.0	70.8	Tr
0.10 +	3	42	1.8	48.4	Tr
1.00 +	2	83	1.7	56.9	Tr
10 +	2	83	1.7	56.9	Tr
100 +					
1,000 +					

Total porosity-feet 6.2

Total millidarcy feet of 0.1 md. and above 84

Mean matrix density 2.69

Remarks:

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CHEMICAL & GEOLOGICAL LABORATORIES of MONTANA
113 WEST BELL P. O. BOX 537
GLENDIVE, MONTANA

CORE ANALYSIS REPORT

Field East Poplar County Roosevelt State Montana

Well No. #61 Unit Location SW NE 12-28N-51E

Formation B-1 & B-2 Zones Depths 5730-5765

Operator Murphy Corporation Elevation 2151 Gr. Lab. No. 417

CORE INFORMATION

Cored with water base mud from 5730 to 5765

Footage of formation cored 35

Feet of core received at laboratory for analysis 35

Feet of core not accounted for ..... -

Number of representative samples selected for analysis 14

Feet of core represented by selected samples 14

ROCK CHARACTERISTICS	FEET OF CORE	
	ANALYZED	NOT ANALYZED
Shale and/or dense barren material		21
Fractured material		
Non-fractured material	14	
TOTAL	14	21

RECORD OF DRILL STEM TESTS

REMARKS

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CHEMICAL & GEOLOGICAL LABORATORIES of MONTANA
113 WEST BELL P. O. BOX 537
GLENDIVE, MONTANA

CORE ANALYSIS REPORT

B-1 Zone

Field East Poplar Well No. #61 Unit

Operator Murphy Corporation Laboratory No. 417

SUMMARY OF REPORT

DISTRIBUTION BY MAXIMUM PERMEABILITY RANGES

PERMEABILITY RANGE	FOOTAGE	PERMEABILITY	POROSITY	WATER SATURATION	RESIDUAL OIL SATURATION
Less that 0.01					
0.01 - 0.09					
0.10 - 0.99	1	0.81	5.2	89.7	Tr
1.00 - 9.9	5	3.20	12.1	37.7	5.8
10 - 99	2	24	4.2	61.1	Tr
100 - 999					
1,000 +					
Total summarized	8				
Total analyzed	8				
0.01 +	8	8.10	9.2	48.8	3.6
0.10 +	8	8.10	9.2	48.8	3.6
1.00 +	7	9.14	9.8	44.4	4.1
10 +	2	24	4.2	61.1	Tr
100 +					
1,000 +					

Total porosity-feet 74

Total millidarcy-feet of 0.1 md. and above 65

Mean matrix density 2.70

Remarks:

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CHEMICAL & GEOLOGICAL LABORATORIES of MONTANA

113 WEST BELL P. O. BOX 537
GLENDIVE, MONTANA

CORE ANALYSIS REPORT B-2 Zone

Field East Poplar Well No. #61 Unit

Operator Murphy Corporation Laboratory No. 417

SUMMARY OF REPORT

DISTRIBUTION BY MAXIMUM PERMEABILITY RANGES

PERMEABILITY RANGE	FOOTAGE	PERMEABILITY	POROSITY	WATER SATURATION	RESIDUAL OIL SATURATION
Less that 0.01					
0.01 - 0.09					
0.10 - 0.99					
1.00 - 9.9	1	7.44	12.3	40.7	6.9
10 - 99	5	19	10.3	48.3	7.1
100 - 999					
1,000 +					
Total summarized	6				
Total analyzed	6				
0.01 +	6	17	10.6	47.0	7.1
0.10 +	6	17	10.6	47.0	7.1
1.00 +	6	17	10.6	47.0	7.1
10 +	5	19	10.3	48.3	7.1
100 +					
1,000 +					

Total porosity-feet 64

Total millidarcy-feet of 0.1 md. and above 101

Mean matrix density 2.68

Remarks:

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CHEMICAL & GEOLOGICAL LABORATORIES of MONTANA
113 WEST BELL P. O. BOX 537
GLENDIVE, MONTANA

CORE ANALYSIS REPORT

Field: East Poplar County: Roosevelt State: Montana

Well No. #61 Unit Location: SW NE 12-28N-51E

Formation: C-Zone Depths: 5895-5925

Operator: Murphy Corporation Elevation: 2151 Gr. Lab. No. 417

CORE INFORMATION

Cored with: water base mud from: 5895 to: 5925

Footage of formation cored	30
Feet of core received at laboratory for analysis	29
Feet of core not accounted for	1
Number of representative samples selected for analysis	14
Feet of core represented by selected samples	14

ROCK CHARACTERISTICS	FEET OF CORE ANALYZED	FEET OF CORE NOT ANALYZED
Shale and/or dense barren material		15
Fractured material	14	
Non-fractured material		
TOTAL	14	15

RECORD OF DRILL STEM TESTS

REMARKS

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CHEMICAL & GEOLOGICAL LABORATORIES of MONTANA
113 WEST BELL P. O. BOX 537
GLENDIVE, MONTANA

CORE ANALYSIS REPORT

C-Zone

Field East Popler Well No. #61 Unit

Operator Murphy Corporation Laboratory No. 417

SUMMARY OF REPORT

DISTRIBUTION BY MAXIMUM PERMEABILITY RANGES

PERMEABILITY RANGE	FOOTAGE	PERMEABILITY	POROSITY	WATER SATURATION	RESIDUAL OIL SATURATION
Less that 0.01					
0.01 - 0.09	1	0.05	6.4	61.9	1.6
0.10 - 0.99	13	0.52	11.3	41.3	22.2
1.00 - 9.9					
10 - 99					
100 - 999					
1,000 +					
Total summarized	14				
Total analyzed	14				
0.01 +	1	0.49	11.0	42.8	20.7
0.10 +	13	0.52	11.3	41.3	22.2
1.00 +					
10 +					
100 +					
1,000 +					

Total porosity-feet 153

Total millidarcy-feet of 0.1 md. and above 6.67

Mean matrix density 2.72

Remarks:

CHEMICAL & GEOLOGICAL LABORATORIES
OF MONTANA
113 West Bell
Glendive, Montana

CORE SUMMARY AND ESTIMATED RECOVERABLE OIL

CORE SUMMARY

Formation Name		A-Zone	B-1 Zone	B-2 Zone	C-Zone
Depth—Feet		5604-10	5740-48	5759-65	5910-24
Feet of Permeable Productive Formation		6	8	6	14
Porosity	Minimum	0.1	3.3	5.3	4.0
	Maximum	3.3	15.9	16.9	16.0
	Weighted Average	1.0	9.2	10.6	11.0
Permeability	Minimum	0.01	0.81	7.44	0.05
	Maximum	83	27	33	0.95
	Weighted Average	17	8.10	17	0.49
Capacity—Average Porosity x Feet Productive Formation		6.2	73.8	63.8	153
Weighted Average Residual Oil Saturation, % Pore Space		Tr	3.6	7.1	20.7
Weighted Average Total Water Saturation, % Pore Space		70.8	48.8	47.0	42.8
Weighted Average Connate Water Saturation, % Pore Space		40.0*			
Formation Volume Factor		1.26*			
Probable Type of Production		Oil	Water	Water	Non-Productive

Remarks: *Estimated

ESTIMATED RECOVERABLE OIL

Stock Tank Oil in Place:	
Barrels Space per Acre-Foot	78
Barrels Connate Water per Acre-Foot	31
Barrels Reservoir Oil per Acre-Foot	47
Barrels Stock Tank Oil per Acre-Foot	37
Solution Gas Drive:	
Barrels per Acre-Foot	
Barrels per Acre	
Water Drive:	
Barrels per Acre-Foot	15
Barrels per Acre	90

The interpretation and estimates herein are based upon information obtained from analyses of cores and/or material supplied by customer, and Chemical & Geological Laboratories assumes no responsibility nor makes no guarantee, as to the capacity of this well to produce oil and/or gas. The opinions and estimates contained herein represent the best judgment of Chemical & Geological Laboratories.

CHEMICAL & GEOLOGICAL LABORATORIES
OF MONTANA

113 West Bell
Glendive, Montana

CORE ANALYSIS REPORT

Company Murphy Corporation
Date August 9, 1955
Lab. No. 417
Well No. #61 Unit
Location SW NE 12-28N-51E
Field East Poplar
Formation A Zone
County Roosevelt
Depths 5580-5610
State Montana
Drilling Fluid Water Base Mud

C—Crack F—Fracture H—Horizontal O—Open	ls - Limestone Do - Dolomite A - Anhydrite	LEGEND NF—No Fracture IS- Insufficient Sample	D - Dense UT - Unsuitable for test	S—Slight St—Stain V—Vertical Vu—Vugs

SAMPLE NO.	LEGEND	DEPTH, FEET	EFFECTIVE POROSITY % PORESPACE	PERMEABILITY MILLIDARCIES HORIZONTAL	PERMEABILITY MILLIDARCIES VERTICAL	SATURATIONS % PORE SPACE RESIDUAL OIL	SATURATIONS % PORE SPACE TOTAL WATER	CONNATE WATER	SOLUBILITY MUD ACID	SOLUBILITY 15 % ACID
		CORE #1	5580-5614		Rec. 30	A Zone				
NS	ls,DO,A,D	5580-5604								
1	ls,HaVC	5604-05	1.9	0.55		0.0	34.2			
2	ls,VC	05-06	0.1	UT		0.0	75.4			
3	ls,HaVC,Vu	06-07	3.3	83.0		Tr	38.5			
4	ls,VF	07-08	0.5	0.01		0.0	98.0			
5	ls,VF	08-09	0.2	0.06		0.0	91.2			
6	ls,HC	09-10	0.2	0.01		0.0	87.4			

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CHEMICAL & GEOLOGICAL LABORATORIES of MONTANA

113 WEST BELL P. O. BOX 537
GLENDIVE, MONTANA

FULL DIAMETER CORESTUDY

Operator Murphy Corporation Field East Poplar, Roosevelt, Mont. Formation Charles

Well No. #61 Unit Location SW NE 12-28N-51E Depths 5730-5765

Elevation 2151 Gr. Date August 12, 19555 Lab. No. 417

SAMPLE NO.	REPRESENTATIVE OF FEET	MIDPOINT OF SAMPLE	FOOTAGE	PERMEABILITY RADIAL	PERMEABILITY VERTICAL	EFFECTIVE POROSITY %	DENSITY BULK	DENSITY MATRIX	SATURATION % OF PORE SPACE RESIDUAL OIL	SATURATION % OF PORE SPACE WATER	DESCRIPTION
	CORE #2	5730-5765	Rec. 35								
NS	5730-40										A
7	40-41	B_1 Zone		1.78	0.34	12.4	2.38	2.68	0.8	51.3	Ls,I
8	41-42			4.01	1.62	15.9	2.27	2.70	2.8	22.1	ls,I
9	42-43			3.91	2.11	10.7	2.41	2.70	3.2	53.3	ls,I,Sty
10	43-44			27.	3.43	3.3	2.62	2.70	0.0	23.0	ls,M&VC
11	44-45			21.	1.75	5.0	2.56	2.70	Tr	99.2	ls,M&VC
12	45-46			2.45	1.31	9.4	2.44	2.69	10.6	13.1	ls,I
13	46-47			3.86	1.39	12.9	2.34	2.69	1.5	42.3	ls,I
14	47-48			0.81	0.14	5.2	2.60	2.74	Tr	89.7	ls,I
NS	48-59										A
15	59-60	B_2 Zone		27.	1.50	7.7	2.54	2.75	3.2	3.9	ls,VC
16	60-61			14.	4.37	13.6	2.29	2.65	16.9	73.5	ls,VC,I
17	61-62			12.	12.	16.9	2.21	2.66	8.3	46.3	ls,I
18	62-63			7.44	2.77	12.3	2.34	2.67	6.9	40.7	ls,SVu,I
19	63-64			33.	12.	8.0	2.47	2.68	3.3	57.9	ls,M&VC
20	64-65			16.	11.	5.3	2.54	2.69	2.8	48.4	ls,M&VC
	CORE #3	5895-5925	Rec. 29'	C Zone							
NS	5895-5910										ls,Do,Dense
21	5910-11			0.05	0.03	6.4	2.53	2.70	1.6	61.9	ls,VC,I
22	11-12			0.38	0.11	11.5	2.39	2.70	19.7	38.6	ls,I
23	12-13			0.95	0.30	16.2	2.30	2.74	21.3	24.6	ls,I
24	13-14			0.60	0.18	13.1	2.37	2.73	19.3	39.5	ls,I
25	14-15			0.54	0.21	10.3	2.46	2.74	19.5	39.7	ls,VC,I
26	15-16			0.57	0.15	11.2	2.42	2.73	16.3	23.8	ls,I
27	16-17			0.61	0.12	12.9	2.38	2.73	23.4	24.8	ls,I
28	17-18			0.71	0.18	14.1	2.32	2.70	38.7	28.4	ls,I
29	18-19			0.76	0.29	12.8	2.34	2.69	38.4	28.4	ls,I
30	19-20			0.76	0.28	12.4	2.47	2.82	26.5	21.8	ls,I
31	20-21			0.31	0.04	8.1	2.53	2.75	1.5	26.5	ls,I
32	21-22			0.12	U.T.	4.0	2.58	2.68	2.0	92.0	ls,Sty,VC,I
33	22-23			0.17	0.01	8.0	2.48	2.69	Tr.	87.9	ls,I
				0.28	0.14	12.3	2.42	2.75	61.9	61.9	ls,VC,I

ocation: SE NW Sec. 12-T28N-R51E
Spacing - 160 acres
levation: 2162' K.B. - 2151 Gr.
pudded: 7-23-55
ompleted: T.A. 12-19-55
.D. 5937' Drlr - 5943' Schl.
rod. Zones: None

Schlumberger Tops

	Depth	Datum	Thickness
udith River	----	-----	
reenhorn	2418	- 256	
uddy Sd	2980	- 818	
akota Silt	3187	-1025	
iper Ls	4400	-2238	
mden	4797	-2635	
eath	4960	-2798	
tter	5100	-2938	
ibbey Sd	5234	-3072	
ibbey Ls	5394	-3232	
adison	5495	-3333	
-1	**5578	-3416	3'
-2	**5591	-3429	2'
-3	**5596	-3434	11'
-4	*5607	-3445	29'
-1	**5744	-3582	8'
-2	*5762	-3600	16'
-3	*5784	-3622	4'
-4	**5814	-3652	4'
-5	5852	-3690	?
-1	**5888	-3726	?
-2	*5912	-3750	16'

**Probable prod. Zones (From DST structural position, etc.
*Shows

Drill Pipe Corrections (Made)
None

Coring Intervals:
#1 5580-5615 Rec. 30' A-2-3-4
#2 5730-5765 Rec. 35' B-1 & 2
#3 5895-5925 Rec. 29' C-1 & 2

Drill Stem Tests:
DST #1 5605-15' A-4 w/sngle pkr, ½" bot. cke., No w.c. Tool opn 4 hrs, SI 30 min, opnw/strng blo, cont. thruout test. Rec. 1000' gas, 2990' cln oil, 55' o & g cut mud, 50' salty sulf. wtr. IBHFP 95#, FBHFP 1028#, BHSIP 2810#. Hydro 3128#.
DST #2 5738-54' B-1 w/Hall. strad. pkrs. ½" bot. cke. No W.C., tool opn 4 hrs, SI 30 min. Opnd w/w.blow, died 75 min. Rec. 30' oil cut mud, 335' s.w. IBHFP 10 FBHFP 185 BHSIP 2140, Hydro 2950.
DST #3 5751-65' B-2 sngle pkr, 1/2" bot. cke, no W. C. Op 4 hrs., SI 30 min. Opnd w/good blow, cont. thruout test. Rec. 85' oil cut mud, 3100' S.W. IBHFP 10 FBHFP 1495 BHSIP 2030 Hydro 3240.
DST #4 5909-25' C-2 ½" bot. cke., No W. C. Opn 4 hrs., SI 30 min. Tool opn w/med. blo, cont. thruout test. Rec. 800' gas, 10' cln oil, 285' s.w. w/bad odor, IBHFP 10#, FBHFP 65#, BHSIP 2600#, Hydro 3300#.

History Subsequent to Completion:
12-20-55: Temporarily Abandoned

PRODUCTION &
INJECTION DATA

SURFACE EQUIPMENT

RECORD OF PLUGGING AND ABANDONMENT

Date April 25, 1960

Lease and Well No. East Poplar Unit Well No. 61

Field East Poplar County Roosevelt State Montana

Well Location SW NE Section 12, T28N, R51E

Status Prior to Abandonment:

Date Completed: December 19, 1955 Date of Last Workover None

T.D. 5943' Perforations A Zone 5603-5617 Prod. Zone None

Cumulative Production None

Justification for Abandonment:

This well was completed as a dry hole and temporarily abandoned on December 19, 1955. Will attempt to cut and recover as much of the available 5½" casing as possible.

Summary of Abandonment:

Set cement plug in 5½" casing with 25 sacks of regular cement with HR-4 retarder added. Plug from 5632 to 5380. Cut and pulled 4168' of Cond. 2 5½", 15.50# casing and 130' of Cond. 4 (junk) 5½", 15.50# casing. Plugged bottom of 10-3/4" surface casing with 25 sack plug. Set 10 sack cement plug at top of surface casing and cemented 3" pipe marker in ground, rising 6' above ground level in accordance with the regulations of the Montana Oil & Gas Conservation Commission.

U. S. GEOLOGICAL SURVEY
RECEIVED
OCT 19 1961
CASPER, WYOMING

RECEIVED

DEC 4 1961

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA

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RECEIVED
MAY 23 1958
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA

EAST POPLAR UNIT WELL NO. 61

TO PLUG AND ABANDON

E.P.U. No. 61 was completed as a dry hole and temporarily abandoned on December 19, 1955. The following intervals have been tested and found to be incapable of oil or gas production in commercial quantities:

Perforations		Drill Stem Tests	
"A"	5606'-5612'	"A"	5604'-5615'
"A"	5603'-5609'	"B"	5738'-5754'
"A"	5612'-5617'	"B"	5751'-5765'
		"C"	5909'-5925'

Height of cement in hole between 5-1/2" casing and 8-3/4" hole -- 1,303'. Top of cement at 4631'. Will kill salt water flow with 10.4# per gallon mud. Bottom of 2-3/8" E.U.E. tubing at 5632'. Will set 50 sacks cement plug in 5-1/2" casing from bottom of tubing at 5632' to 5220' (412' plug). Lay down tubing. Top of plug in 5-1/2" casing 5220'. Will attempt to cut off and pull as much of the available 4631' of 5-1/2" casing as possible, setting a 25 sack plug at the bottom of the 10-3/4" surface casing 1058' to 1009' (49' plug) and a 10 sack plug at the top of 10-3/4" casing (19' plug) with a 3" steel post marker cemented in and capped in accordance with the Montana State Oil & Gas Commission and United States Geological Survey Regulations.

RECORD OF PLUGGING AND ABANDONMENT

Date April 25, 1960

Lease and Well No. East Poplar Unit #61

Field East Poplar County Roosevelt State Montana

Well Location SW NE Section 12, T28N, R51E

Status Prior to Abandonment:

Date Completed: December 19 1955 Date of Last Workover: None

T.D.: 5943' Perforations: "A" 5603'-5617' Producing Zone: None

Cumulative Production: None

Justification for Abandonment:

This well was completed as a dry hole and temporarily abandoned on December 19, 1955. We will attempt to cut and recover as much of the available 5½" casing as possible.

Summary of Abandonment:

Set cement plug in 5½" casing with 25 sacks of regular cement with HR-4 retarder added. Plug from 5632' to 5380'. Cut and pulled 4168' of Cond. 2 - 5½" 15.50# casing and 130' of Cond. 4 - 5½" 15.50# casing. Plugged bottom of 10 3/4" surface casing with 25 sack plug. Set 10 sack cement plug at top of surface casing and cemented 3" pipe marker in ground, rising 6' above ground level in accordance with the regulations of the Montana Oil and Gas Conservation Commission.

Disposition of Salvable Material:

4298' of 5½" 15.50# casing recovered from well - transferred to stock.

10 3/4" x 10" Cameron type W.F. 4000# T casing head and 10" x 6" Cameron type F tubing head complete with hangers for above, 6" x 2" studded adapter flange, 2" Cameron Fig. 500132 LP Valve, 2" McEvoy gate valve, 2" OCT Type JEIP flow control with positive choke - transferred to stock.