

The Oil and Gas Conservation Commission of The State of Montana

ADMINISTRATORS

JAMES F. NEELY
EXEC. SECRETARY

JOHN H. RISKEN
ATTORNEY

ROBERT M. WATKINS
PETROLEUM ENGINEER

KENT BROUILLETTE
GEOLOGIST



COMMISSIONERS

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215 E. MORRILL
SIDNEY, MONTANA

TED HAWLEY, VICE-CHAIRMAN
CONRAD, MONTANA

E. L. ANDERSON
210 2ND AVE. S. E.
CUT BANK, MONTANA

IKE W. TAYLOR
BOX 349
LEWISTOWN, MONTANA

ALLEN ZIMMERMAN
450 D STREET
POPLAR, MONTANA

Administrative Office325 Fuller Avenue, Helena
Northern District Field Office124 Main Street, Shelby
Southern District Field and Tech. Office.....15 Poly Drive, Billings
Sub-District Office.....216 East Main St., Sidney

Annual Review for the Year 1961 Volume 6

INTRODUCTION

Annual production for the year 1961 approached 31 million barrels for an average daily producing rate of approximately 84,500 barrels of oil per day. A total of 417 wells were drilled during the year, which makes the best year since 1957. Exploratory drilling reached 182 wells which is just one less than the record year of 1956. Nine new fields were discovered during the year 1961. Lookout Butte, south of the town of Baker in Fallon County, will probably prove to be the most important discovery of the year. Important stepouts and extensions of existing fields resulted in the drilling of 235 development wells, of which 175 were completed as oil or gas wells.

This year for the first time a section of the report is devoted to secondary recovery projects. An estimate of secondary reserves is made for each project which is now in operation. Existing projects are expected to recover approximately 80 million barrels of oil that would otherwise be non-recoverable. This represents approximately one-fourth of the total State reserves.



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FIVE YEAR SUMMARY

	1957	1958	1959	1960	1961
Production, Northern Montana—Bbbs.	5,632,616	4,348,256	4,307,739	4,332,218	4,211,017
South Central—Bbbs.	2,867,658	3,590,554	4,514,034	3,087,871	2,895,587
Central—Bbbs.	2,301,145	3,201,003	4,515,489	5,780,420	6,367,524
Williston Basin—Bbbs.	16,320,543	16,816,816	16,497,964	17,039,406	17,431,916
TOTAL	27,121,962	27,956,629	29,857,226	30,239,915	30,906,044
No. of Producing Wells, Northern Montana	3,130	3,120	3,067	2,811	2,447
South Central	103	102	100	96	81
Central	214	248	266	303	324
Williston Basin	376	446	455	497	535
TOTAL	3,823	3,916	3,888	3,707	3,387
Average Daily Production/Well—BOPD,					
Northern Montana	4.9	3.8	3.8	4.2	4.7
South Central	76.3	96.4	123.7	88.1	97.9
Central	29.5	35.4	46.5	52.3	53.8
Williston Basin	118.9	103.3	99.3	93.9	89.3
STATE AVERAGE	19.4	19.6	21.1	22.3	25.0
Development Wells Drilled, Oil Wells	182	159	156	114	169
Gas Wells	17	7	12	4	6
Dry Holes	57	46	71	58	60
TOTAL	256	212	239	176	235
Exploratory Wells Drilled, Oil Wells	12	12	7	14	7
Gas Wells	2	2	6	3	2
Dry Holes	162	109	101	150	173
TOTAL	176	123	114	167	182
TOTAL WELLS DRILLED	432	335	353	343	417
TOTAL FOOTAGE DRILLED	2,108,462	1,700,404	1,627,574	1,655,172	2,209,803
AVERAGE DEPTH ALL WELLS	4,880	5,106	4,611	4,811	5,299

OIL AND GAS DISCOVERIES IN 1961

County	Field	Operator — Well Name and Location	Total Depth Ft.	Producing Formation	Initial Production Oil Gas (B/D) (MCF)
Dawson	Seven Mile	Texaco, NP "G" (NCT-12) 1, NE SW 17-16N-54E	9,835	Interlake-Red River	279
Fallon	Lookout Butte	Continental, NP A-29 2, SE SW 29-7N-60E	8,851	Red River-Ordovician	495
Fallon	Monarch	Shell, NP M-12-15, SW NW 15-9N-58E	8,256	Madison	369
Glacier	Graben Coulee	Cardinal, McAlpine 1, NE SW 3-37N-5W	2,816	Sunburst	56
Glacier	Two Medicine Creek	Great Northern, Tribal 1, SE NW 19-31N-11W	9,453	Madison	13.6 771
Pondera	Unnamed	Yeager Land & Livestock, Fee 1, NE SW SW 33-29N-3W	1,382	Blackleaf	50
Roosevelt	Benrud	Calvert Explor., Listug-Olsen 1, NE SW 34-31N-47E	7,620	Nisku	498
Teton	Pondera Coulee	Perl Smith, Louttit-Mills 1, SE NE 4-27N-5W	2,450	Madison	30
Yellowstone	Laurel	King Oil, Van Winkle 1, NE SE 23-2S-24E	1,000	Dakota	19

MONTANA
GAS PRODUCTION DATA

Field	County	Producing Formation	1961 Production MCF
Bears Den	Liberty	Kootenai	77,551
Big Coulee	Golden Valley	Lakota-Morrison	890,509
Bowdoin	Phillips & Valley	Colorado	4,013,919
Bowes	Blaine	Eagle	1,094,898
Box Elder	Blaine & Hill	Eagle	22,422
Cabin Creek	Fallon	Siluro-Ordovician	1,096,688
Cedar Creek	Fallon & Wibaux	Judith River & Eagle	5,492,270
Clarks Fork	Carbon	Lakota & Dakota	20,431
Cut Bank & Reagan	Glacier & Toole	Kootenai	12,377,473
Devon	Toole	Colorado	55,494
Dry Creek	Carbon	Cretaceous	2,137,085
Elk Basin	Carbon	Tensleep	238,668
Flat Coulee	Liberty	Kootenai	112,398
Golden Dome	Carbon	Eagle	12,876
Grandview	Liberty	Greenhorn	146,776
Hardin	Big Horn	Frontier	53,776
Keith Block	Liberty	Sawtooth-Madison	2,126,038
Kevin-Sunburst	Toole	Kootenai	1,074,342
Pine	Dawson, Prairie, Fallon, Wibaux	Siluro-Ordovician	823,113
Plevna	Fallon	Judith River	168,546
Utopia	Liberty	Sawtooth-Ellis	528,314
Whitlash	Liberty	Colorado	1,137,891
Miscellaneous			497,934
TOTAL all Fields			34,199,412

REFINING

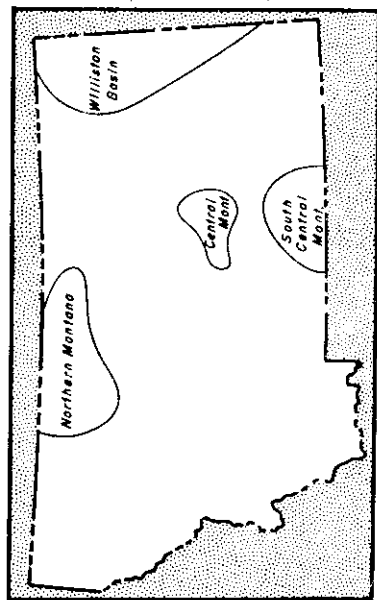
	Year 1961 Total Bbls.
Big West Oil Company.....	830,617
Continental Oil Company.....	4,684,591
Diamond Asphalt Company.....	255,178
Farmers Union Central Exchange, Inc.....	5,951,477
Humble Oil & Refining Company.....	9,574,190
Jet Fuel Refinery.....	110,044
Petrofuels Refining Co.	30,775
Phillips Petroleum Company.....	1,318,195
Union Oil Company.....	1,113,747
TOTAL Bbls. Oil Refined in Montana (1961).....	23,868,814

B.O.P.D. (THOUSANDS)

CRUDE OIL PRODUCTION

1942-1961

TOTAL
30,906,044
BARRELS

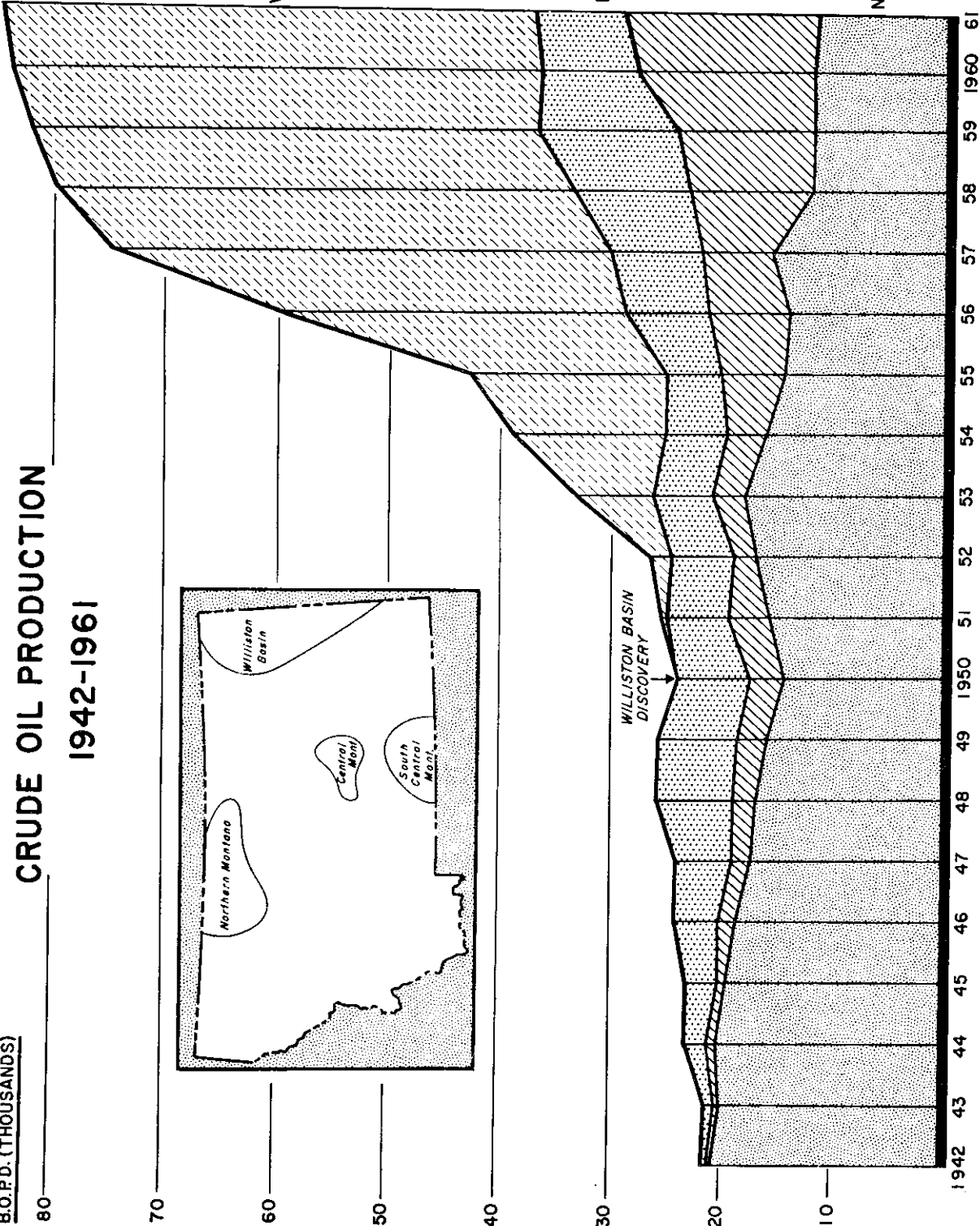


1961
PERCENT
WILLISTON - 56.4 %

SOUTH
CENTRAL
MONTANA
9.4 %

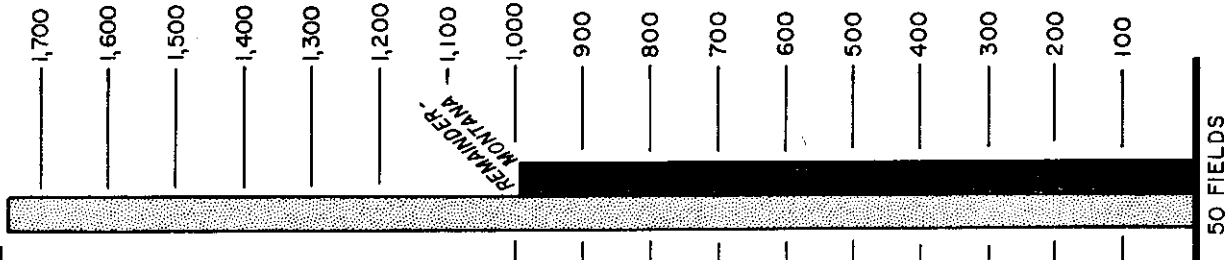
CENTRAL
MONTANA
20.6 %

NORTHERN
MONTANA
13.6 %



CRUDE OIL PRODUCTION - MONTH OF DECEMBER, 1961

NUMBER OF
PRODUCING WELLS



	BBLs
TWELVE LARGEST FIELDS	2,047,892 - 76.8%
REMAINDER - MONTANA	615,658 - 23.2%
TOTAL	2,663,550 - 100 %



TWELVE FIELDS OF LARGEST PRODUCTION - (OVER 50,000 BBLs/MONTH)

BARRELS OF OIL PER DAY

NUMBER OF
WELLS DRILLED

500

300

200

100

0

1955

1956

1957

1958

1959

1960

1961

TOTAL

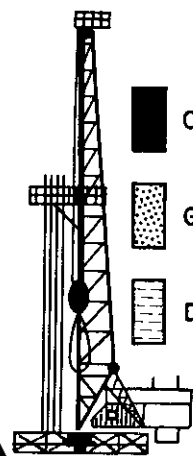
DEVELOPMENT

EXPLORATORY

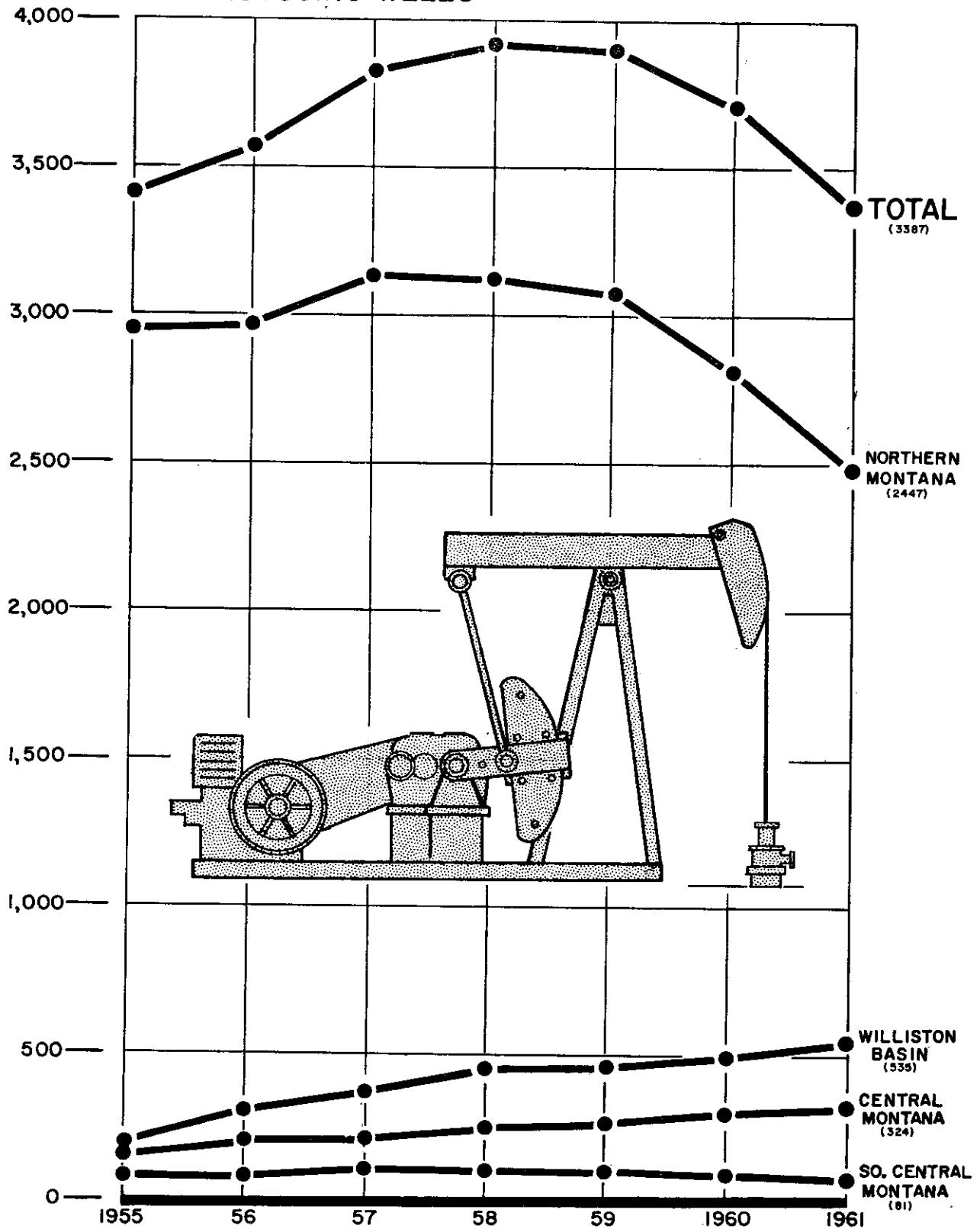
OIL

GAS

DRY HOLES

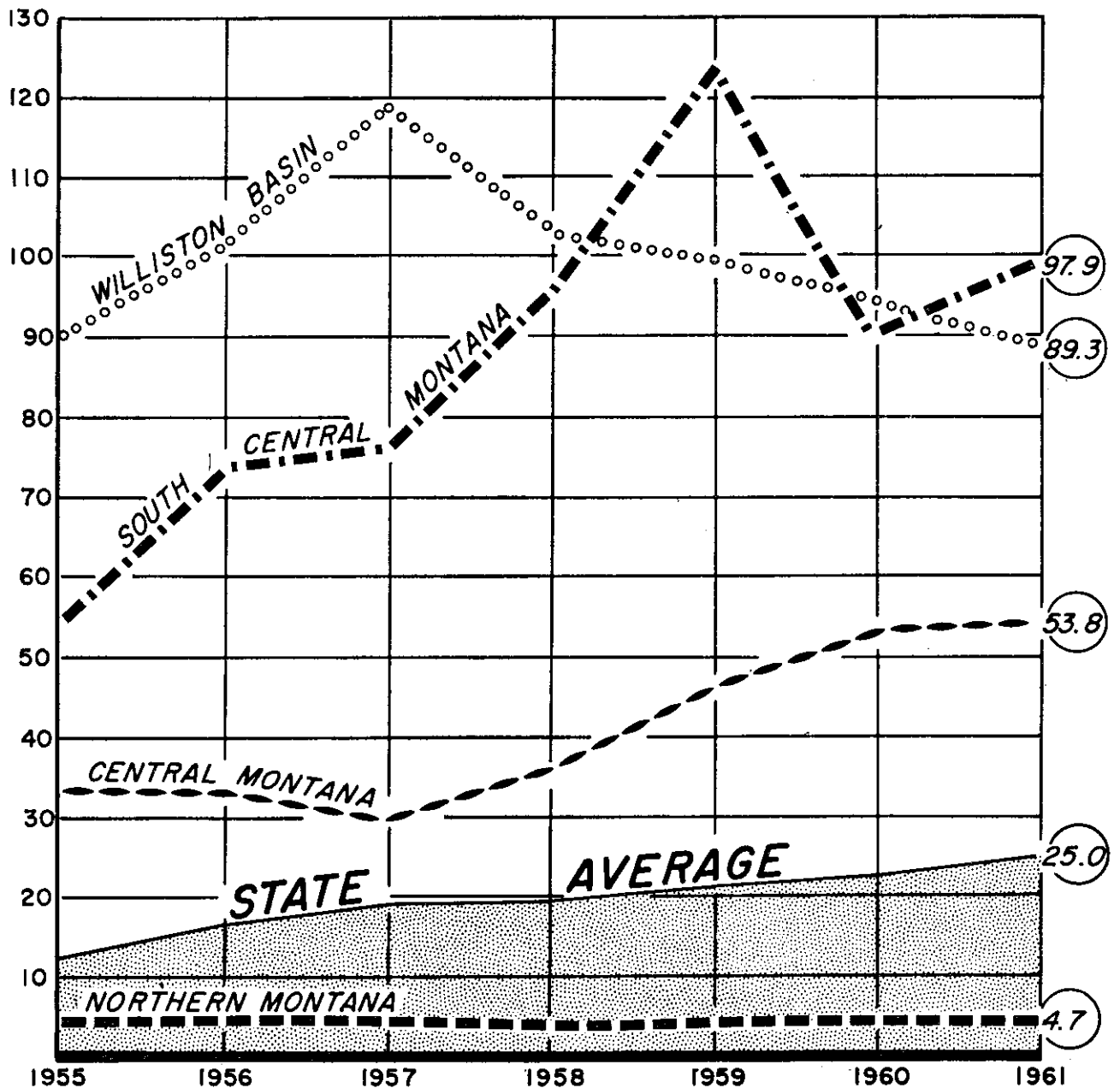


NUMBER OF PRODUCING WELLS

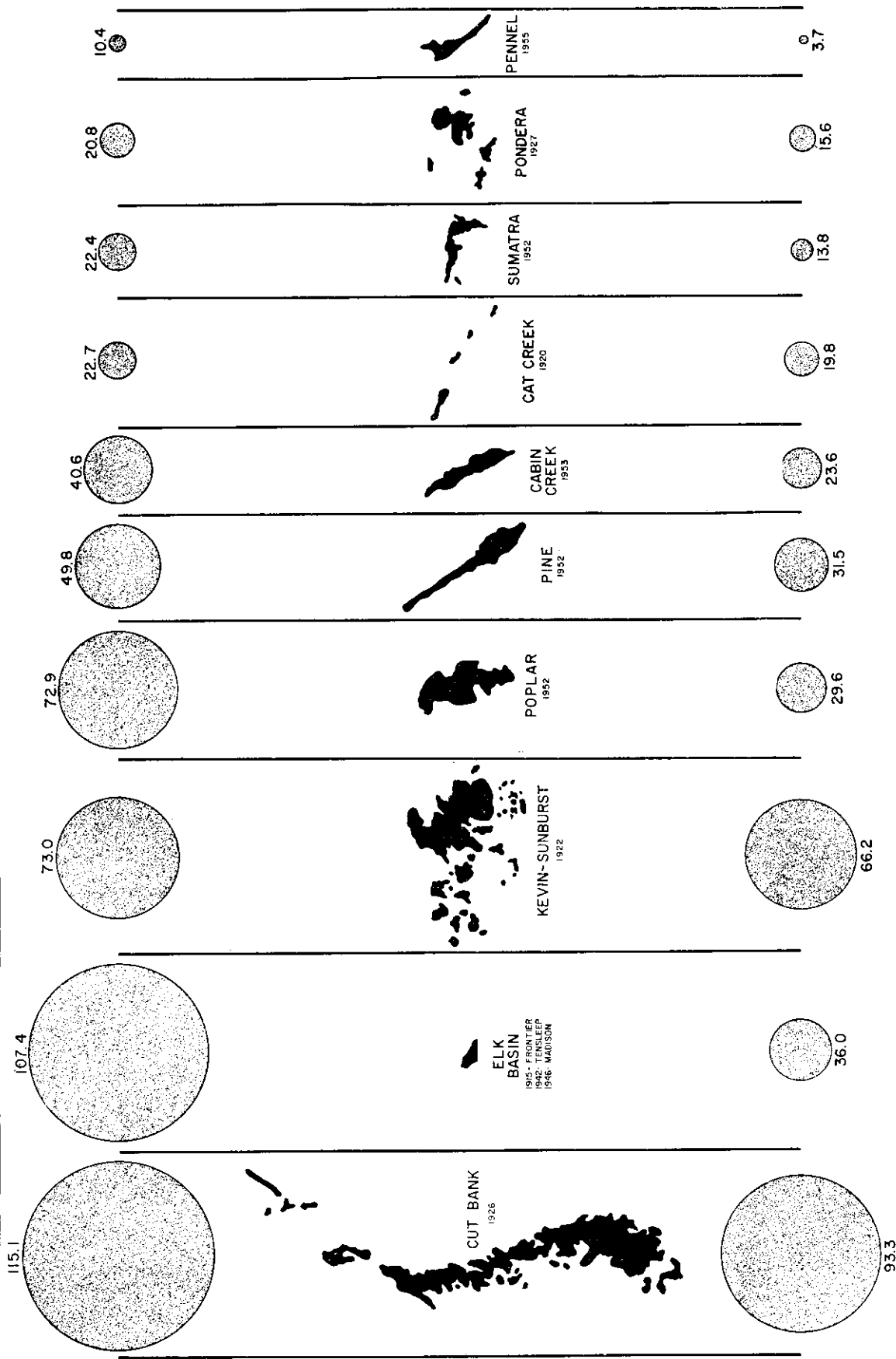


- AVERAGE - DAILY PRODUCING RATE

B.O.P.D. / WELL



ORIGINAL PRIMARY RESERVES—



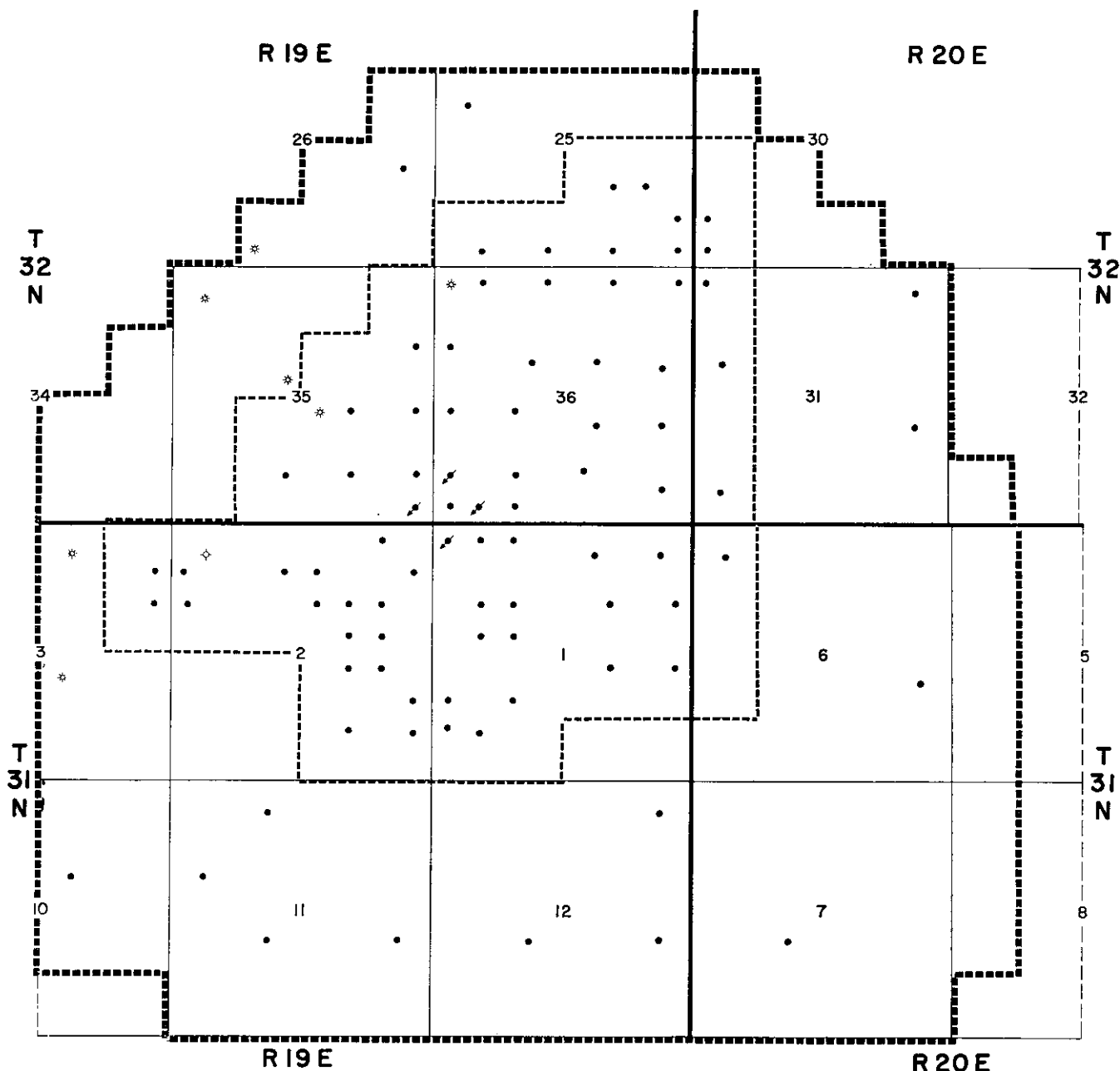
CUMULATIVE PRODUCTION—

TEN TOP FIELDS — MILLIONS OF BARRELS

SUMMARY OF ACTIVE SECONDARY RECOVERY PROJECTS
STATE OF MONTANA
(Data effective to January 1, 1962)

Field, Formation	Operator	Type of Project	Injector. Pattern	Date Injections Commenced	Cumulative Injections 1000's Bbls. or MCF	Dec. 1961 Avg. Daily Injection Rate	Average Injection Pressure psi	Est. Life of Projects Years	Est. Sec. Recovery Reserves 1000's bbls.	Source of Injection Media
Bowes, Sawtooth	Texaco	Waterflood	Pilot 5-Spot	5-23-61	154	767	Vacuum	15	5,000	Madison
Cabin Creek, Siluro-Ordovician	Shell	"	Pilot	6-12-59	395	910	500	20	19,000	Prod. Water & Fox Hills
Cat Creek, 1st and 2nd Cat Creek	Continental	"	Periphal	12-59	3280	5320	--	10	3,000	Third Cat Creek
Cut Bank, NW Unit, Cut Bank	Humble	"	5-Spot	Installing facilities				15	2,800	Madison
SE Unit, Cut Bank	Texaco	"	5-Spot	Installing facilities				15	5,700	Madison
SW Unit, Cut Bank	Phillips	"	5-Spot	Installing facilities				15	18,000	Madison
Elk Basin, Frontier	Pan American	Gas Inj.	Crestal	1926	All injection wells in Wyoming			10	No. Prim. Est.	Purchased Gas
Embar-Tensleep	Pan American	"	Crestal	1949	All injection wells in Wyoming			50	No. Prim. Est.	Manufactured Inert Gas
Madison	Pan American	Waterflood	Periphal	Installing facilities				50	10,106	Madison & Clarks Fork River
Elk Basin, N.W., Frontier	Sinclair	"	Periphal	10-17-57	854	615	--	10	340	Madison
Kevin-Sunburst, Madison	Northwest Prod.	"	Pilot 5-Spot	1-23-61	209	448	750	Inconcl.		Madison
Pine, Siluro-Ordovician	Shell	"	Modified Periphal	3-10-59	2739	7258	900 to 1975	25	14,800	Prod. Water & Fox Hills
Pondera, Madison	Phillips	"	One well pilot	8-22-61	53	366	Vacuum	Inconcl.		Madison
Poplar, Madison	Murphy	"	Periphal	9-56	8057	4630*	--	Inconcl.		Madison
Reagan, Madison	Union	Gas Inj.	Crestal	8-61	49	242 MCF/D	1020	20	600	Prod. Gas
TOTAL									79,346	

* Last Injection was May 16, 1961.



BOWES FIELD
BLAINE COUNTY, MONTANA

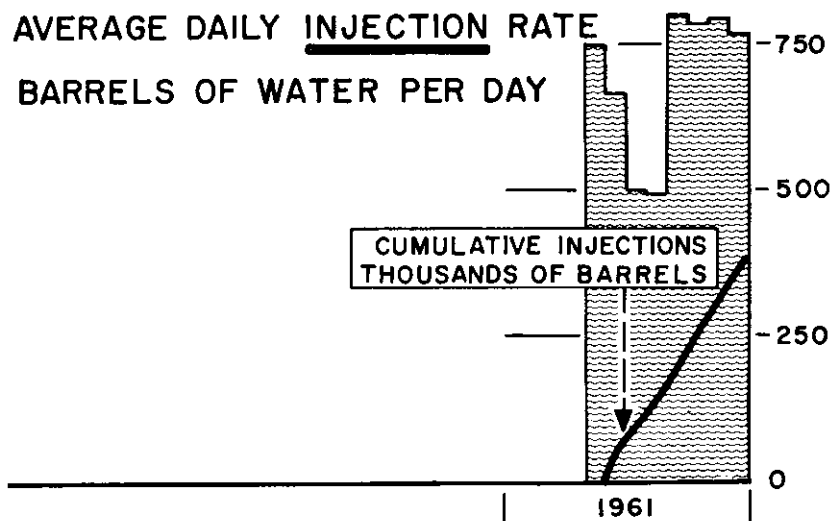
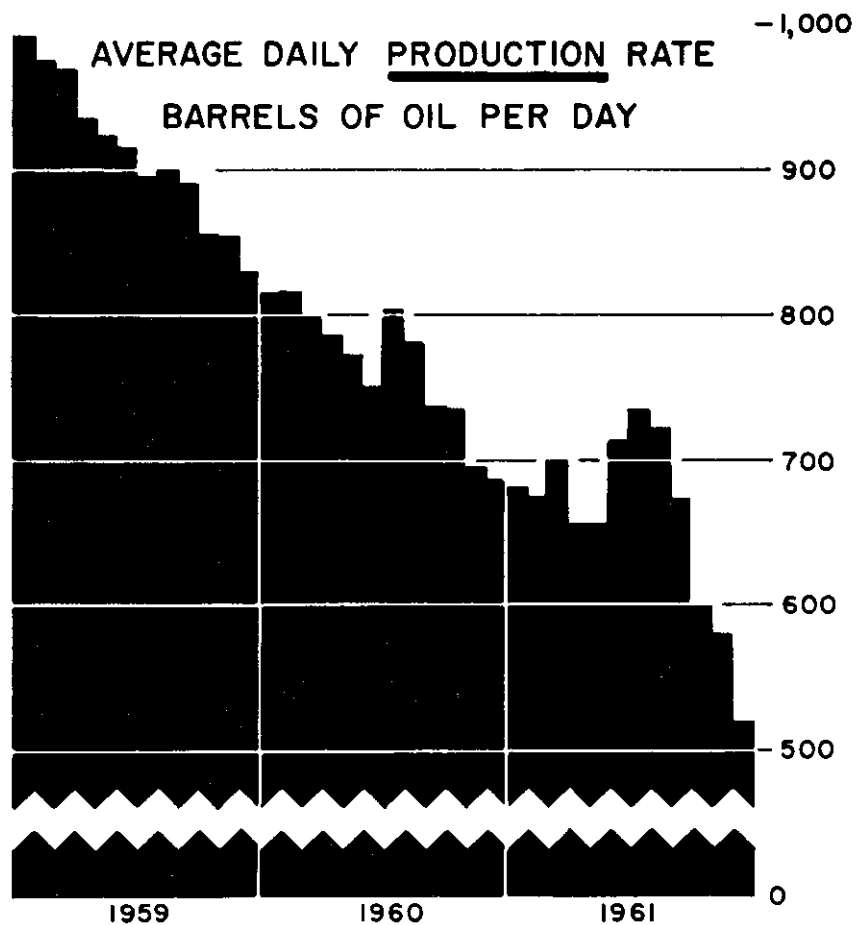
----- UNIT OUTLINE ----- CENTRAL PARTICIPATING OUTLINE

OIL PRODUCTION: SAWTOOTH FM.

GAS PRODUCTION: EAGLE FM, NOT UNITIZED

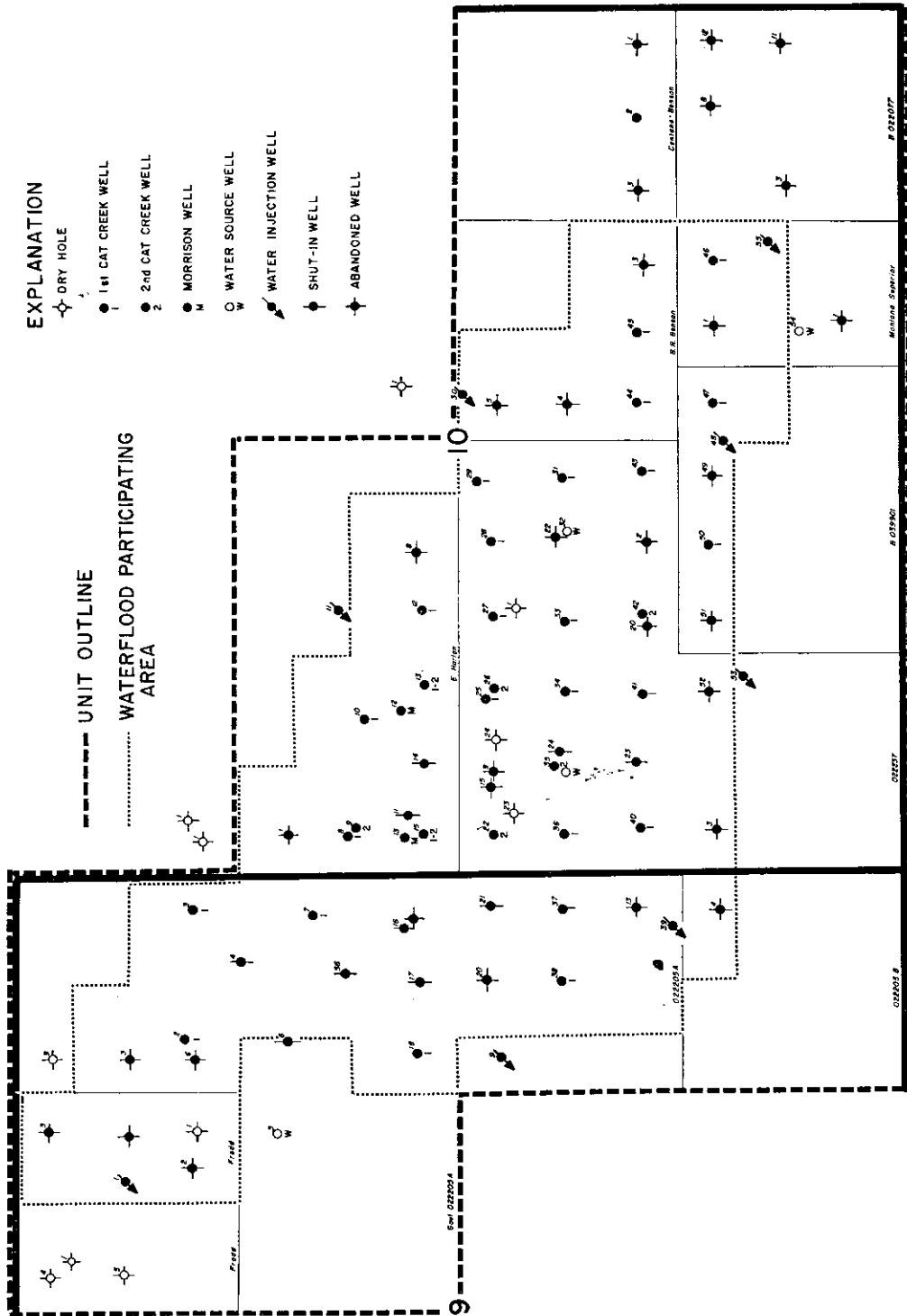
★ WATER INJECTION WELL





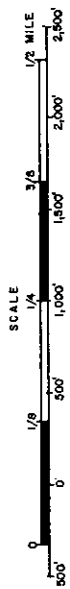
PILOT WATERFLOOD
SAWTOOTH FORMATION
BOWES FIELD
BLAINE COUNTY, MONTANA

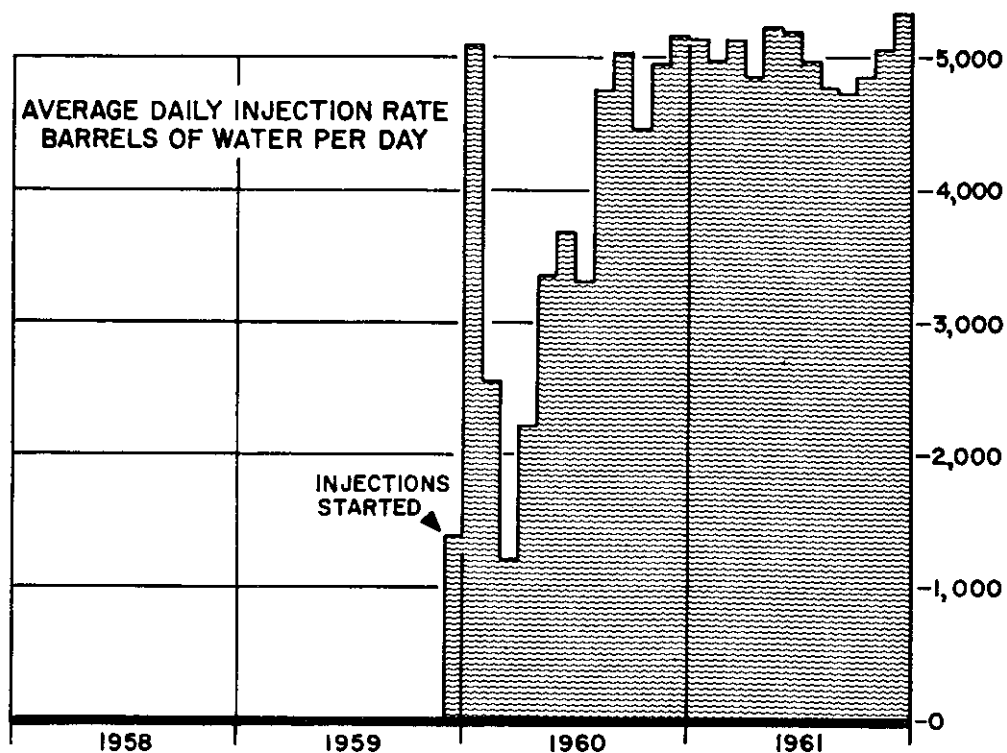
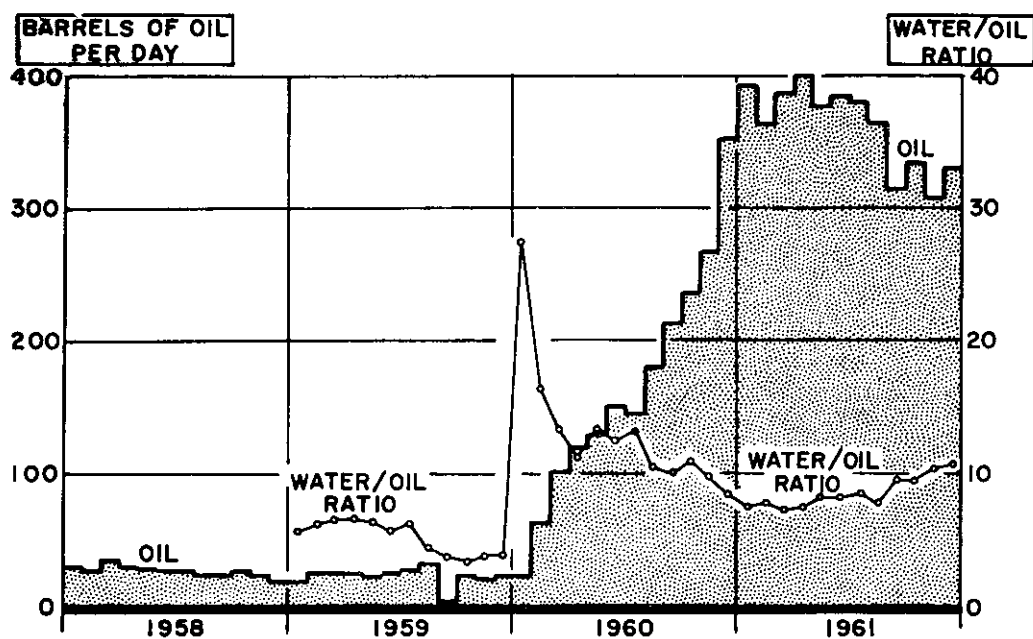
R 29E



R 29E

CAT CREEK WATERFLOOD UNIT 2, WEST DOME, CAT CREEK FIELD PETROLEUM COUNTY, MONTANA





WATERFLOOD PERFORMANCE
FIRST AND SECOND CAT CREEK SANDS
CAT CREEK FIELD - UNIT AREA 2
PETROLEUM COUNTY, MONTANA

T 37 N

GLACIER	COUNTRY
TOOLE	COUNTRY

COUNTY

R6W C A N A D A R5W

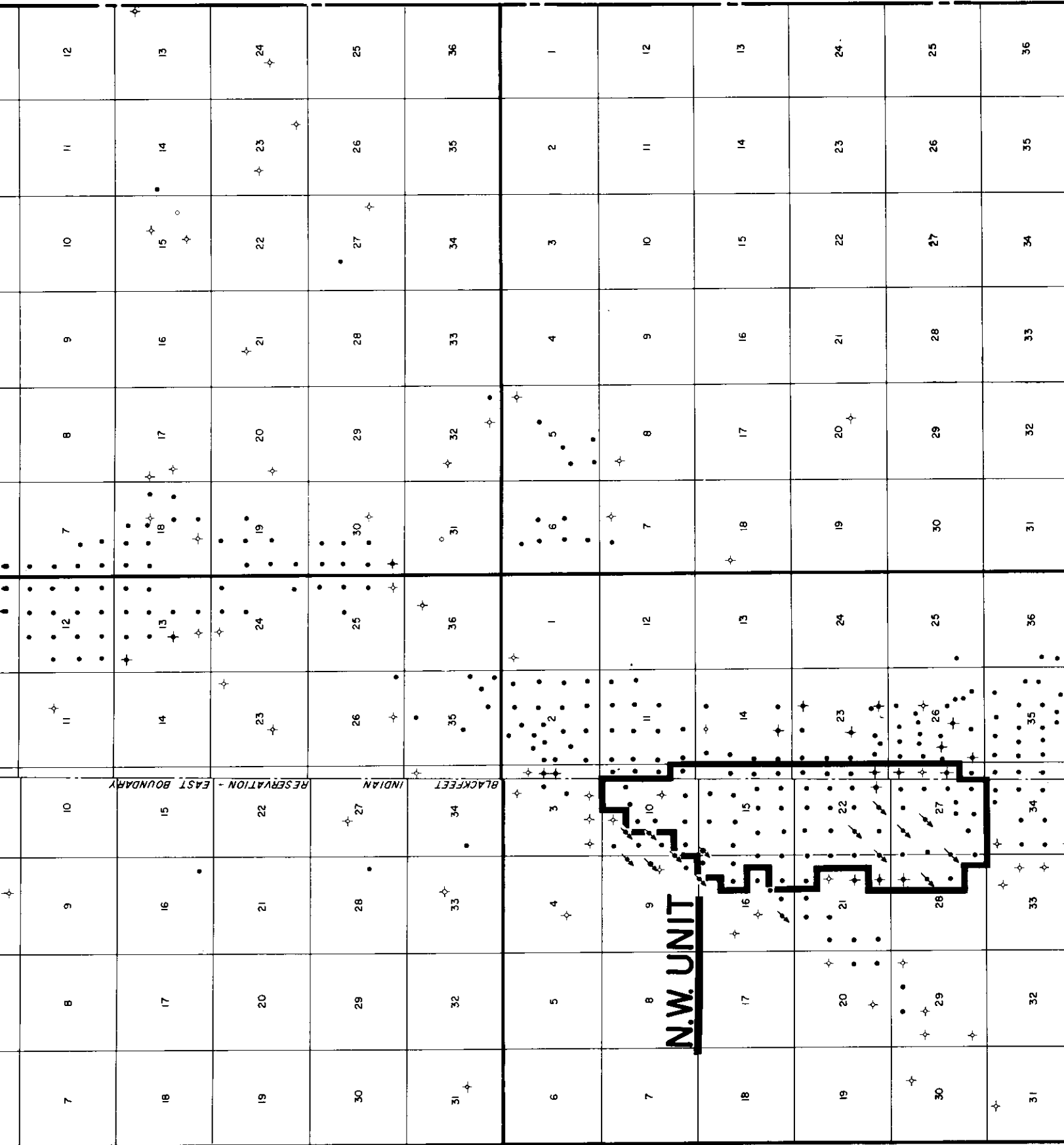
N A D A

T 37 N

NOARY

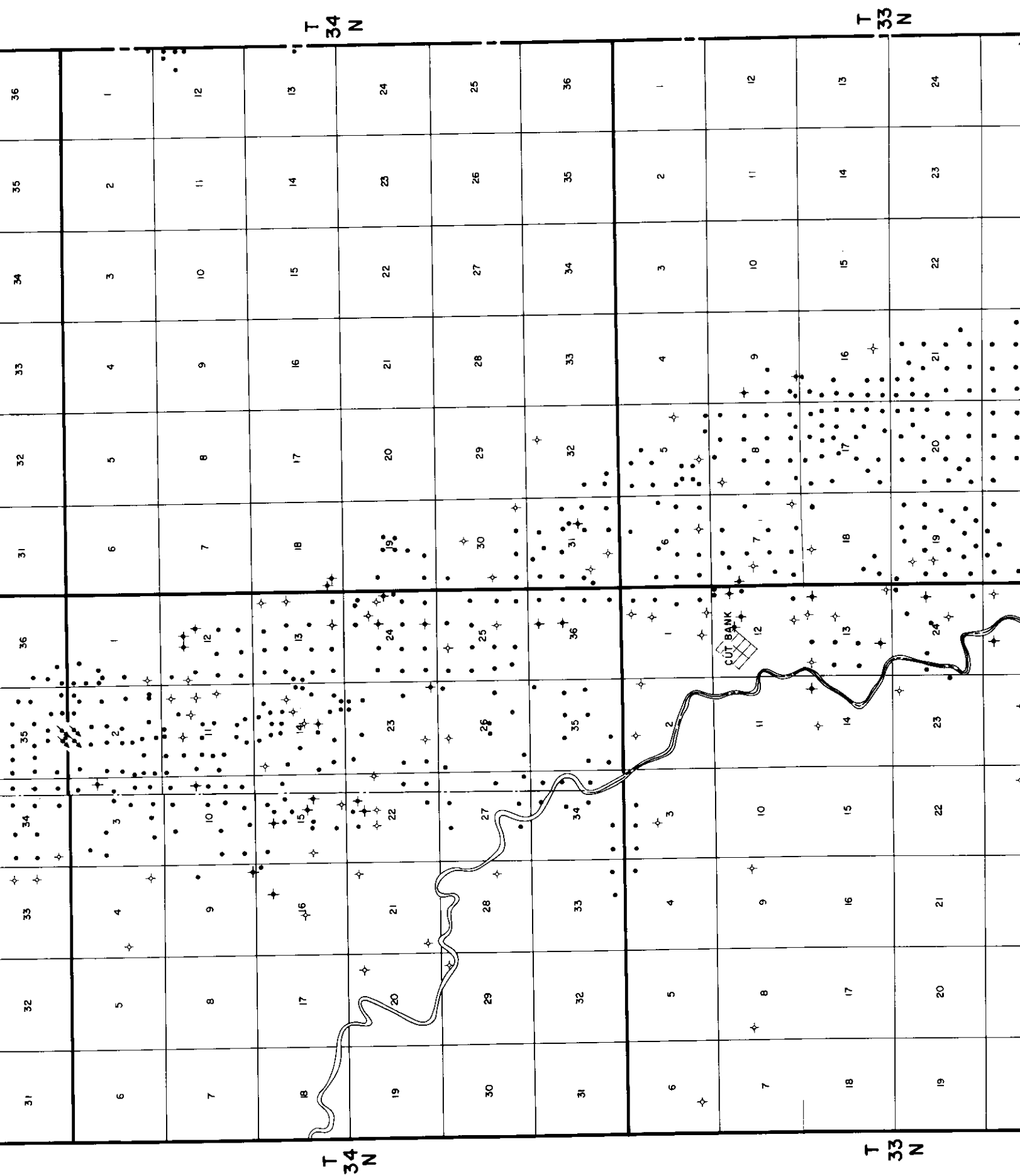
T 36 N

T 35 N



T 36 N

T 35 N

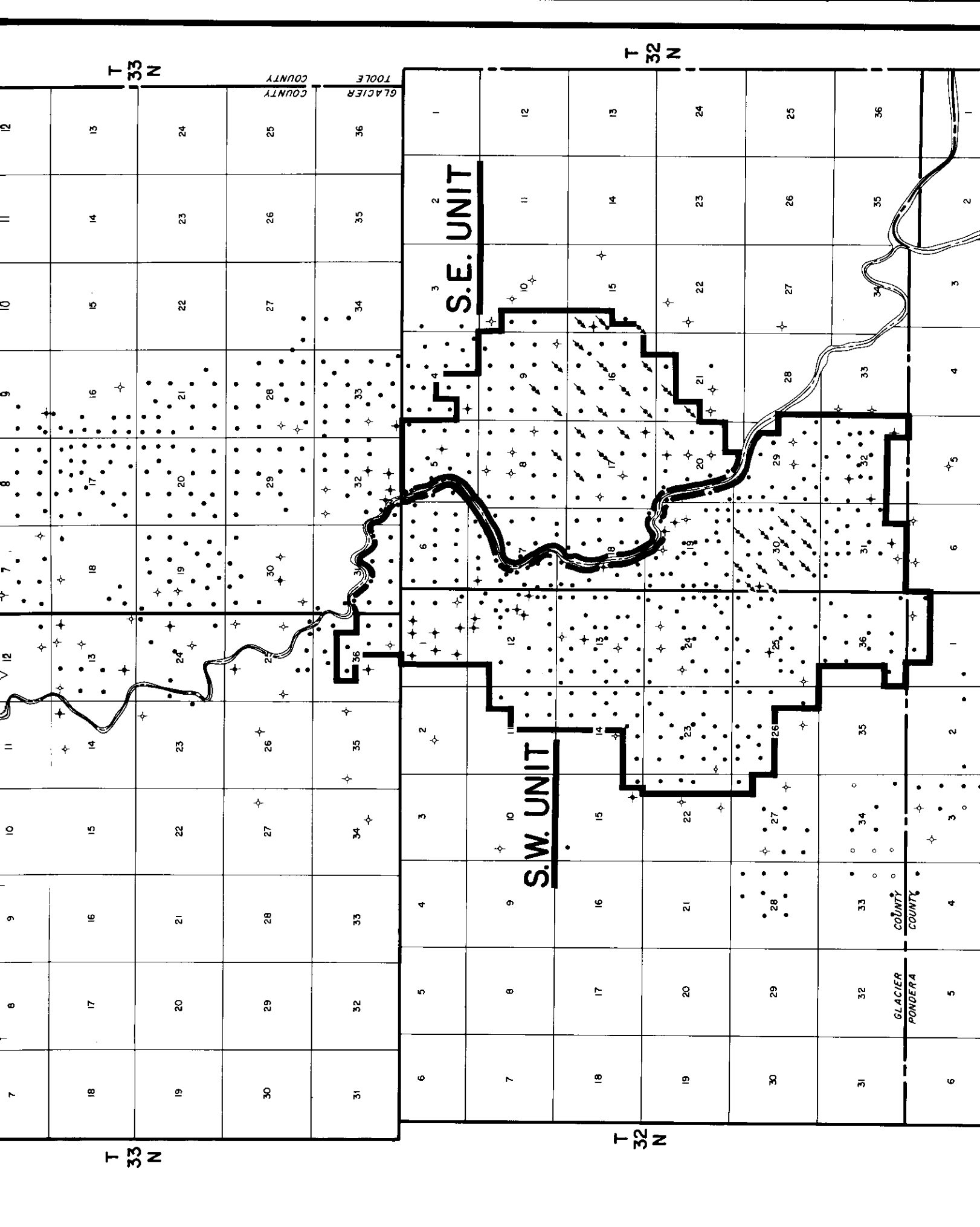


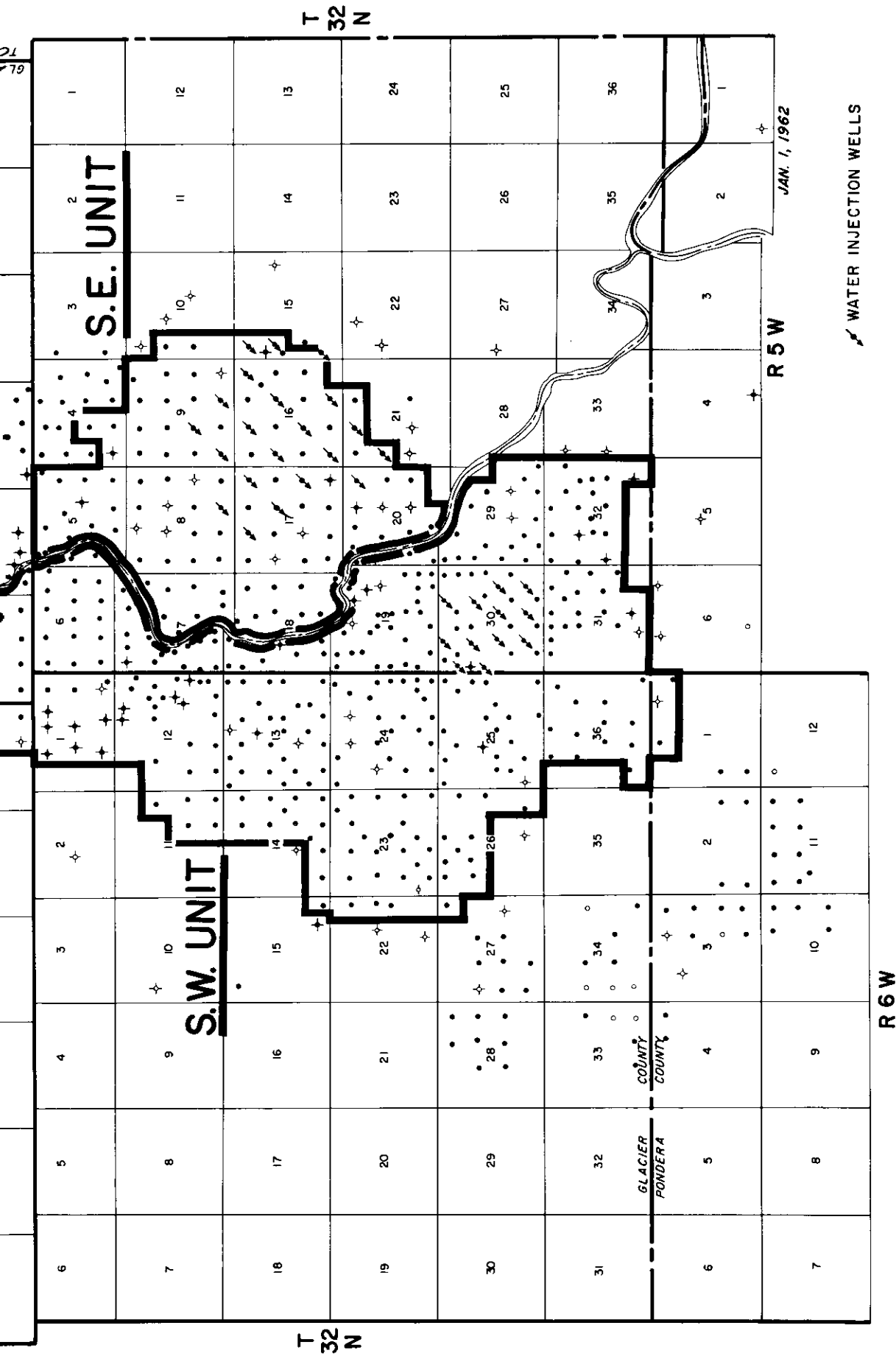
T 34 N

T 33 N

T 34 N

T 33 N





WATERFLOOD UNITS **CUT BANK FIELD** **GLACIER AND PONDERA COUNTIES, MONTANA**

SINCLAIR OIL & GAS CO.

SINCLAIR OIL & GAS CO.

2

4

1

3

2

1

2

3

4

3

1

2

3

4

5

6

7

2

2

1

Helen

PAN AMERICAN

SINCLAIR OIL & GAS CO.

H. G. Wilkins

29

28

T 9 S

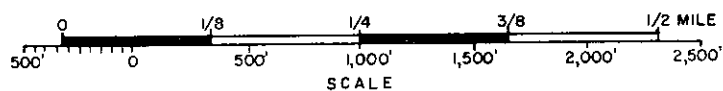
T 9 S

R 23 E

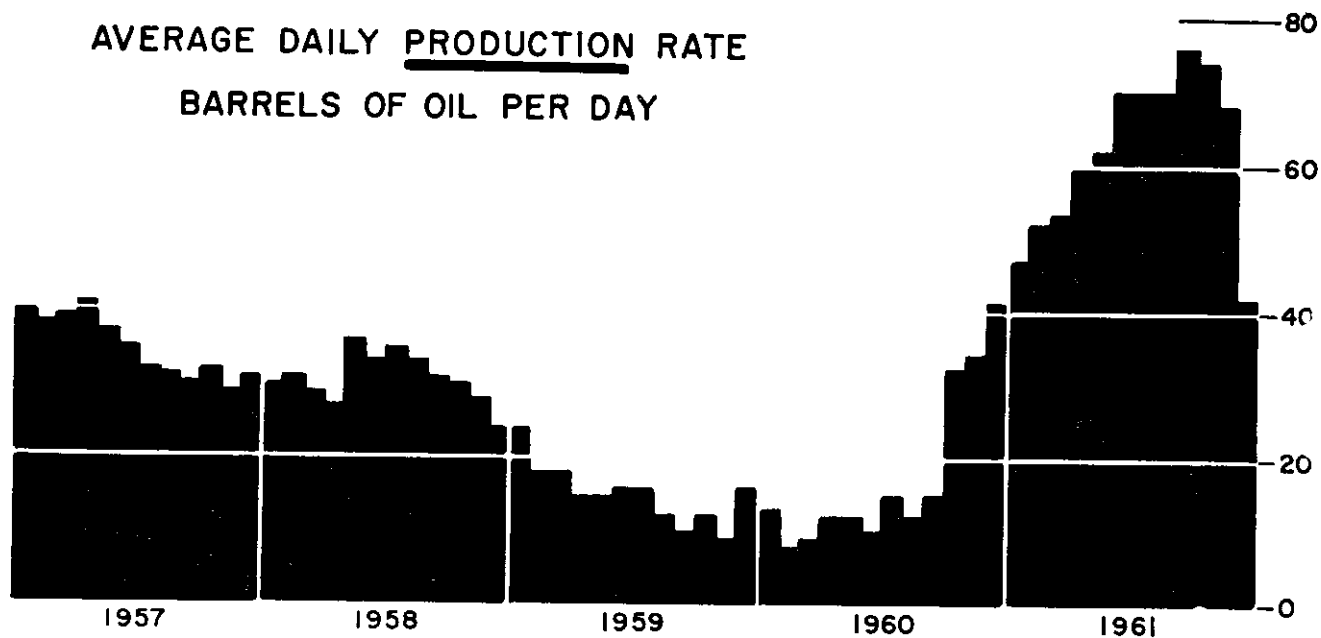
CARBON COUNTY, MONTANA

FRONTIER WATER FLOOD

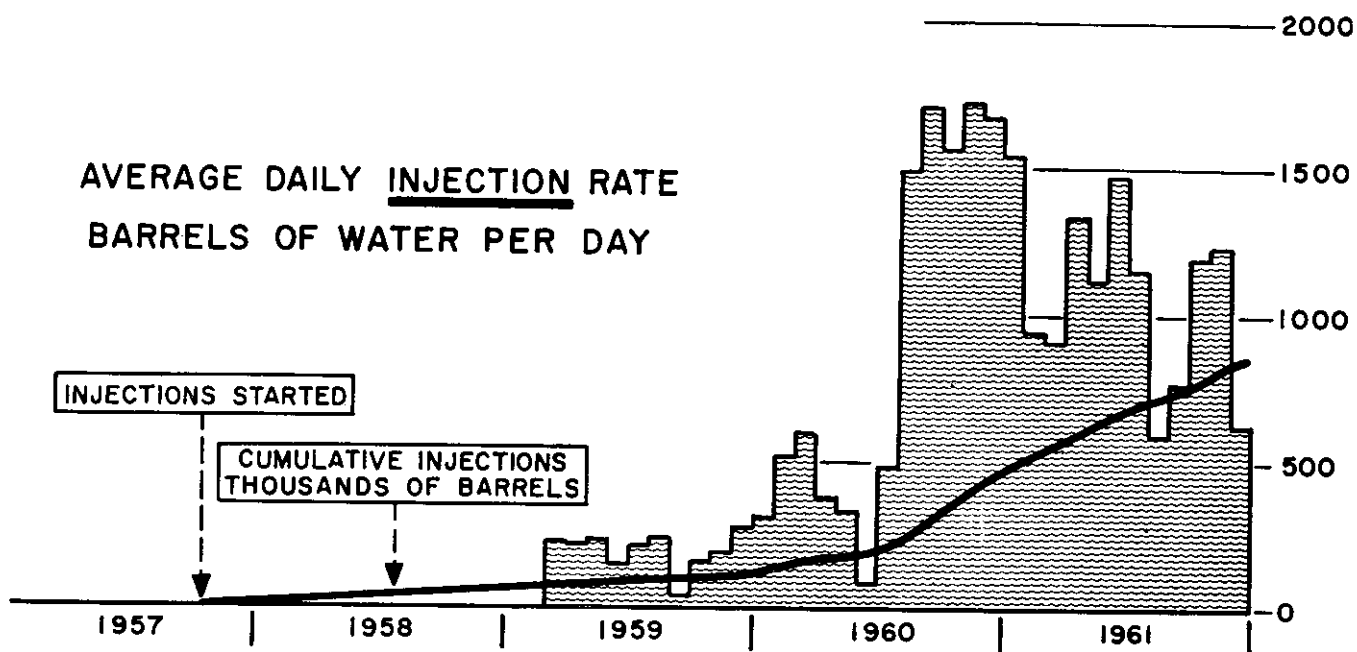
● FRONTIER WELL ● INJECTION WELL ● MADISON WELL



AVERAGE DAILY PRODUCTION RATE
BARRELS OF OIL PER DAY



AVERAGE DAILY INJECTION RATE
BARRELS OF WATER PER DAY



WATERFLOOD PERFORMANCE
FRONTIER FORMATION
N. W. ELK BASIN FIELD
CARBON COUNTY, MONTANA

ASH CREEK

County: Big Horn

Discovery Well:

Name: McDermott-Shell, Elsie Berry No. 1
Location: NW SW Sec. 24, T. 58N., R. 85W., Sheridan County, Wyo.
Date Completed: April 26, 1952
Total Depth: 4799'
Initial Potential: 180 BOPD, 20 BWPD

Spacing Regulations:

330' from boundary of quarter-quarter section, and 1320' between wells. 75' tolerance for topographical conditions. The field boundaries are not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 4

Type of Trap: Anticline

Productive Formations: Shannon sandstone of Upper Cretaceous age.

Probable Drive Mechanism: Partial water drive and depletion drive.

BANNATYNE

County: Teton

Discovery Well:

Name: Genou Oil & Gas, Speer No. 1
Location: NW NW Sec. 8, T. 25 N., R. 1E.
Date Completed: July 21, 1927
Total Depth: 1580'
Initial Potential: 30 BOPD.

Deepest Well: Thomas Carney, Speer No. 2, T.D. 3115'

Spacing Regulations:

Center of 10 acre tracts, 50' tolerance for topographic conditions, delineated by Commission Order No. 20-58.

Special Field Rules:

State-wide rules.

No. Producing Wells: 12

Type of Trap: Anticline

Productive Formations: Swift (Jurassic)

Probable Drive Mechanism: Water drive.

Secondary Recovery:

A waterflood secondary recovery project is approved for this field. The operator has not yet begun injections.

BEARS DEN

County: Liberty

Discovery Well:

Name: Kenneth Frazier, Ritter-Govt. No. 1-X
Location: SW SE Sec. 12, T. 36N., R. 5E.
Completed: July 6, 1924
Total Depth: 3290'
Initial Potential: 5,000 MCFGPD

Deepest Well: Above well

Spacing Regulations:

330' from boundary of quarter-quarter section, and 1320' between wells. Tolerance of 75' for topographic reasons. Field is not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 4

Type of Trap: Anticline

Productive Formations: Kootenai (Lower Cretaceous)

Probable Drive Mechanism: Depletion and gas cap drive.

BELFRY

County: Carbon

Discovery Well:

Name: Carter, Wheatley-Govt. No. 1
Location: NW NW Sec. 7, T. 9S., R. 22E.
Date Completed: March 22, 1958
Total Depth: 12,185'
Initial Potential: 196 BOPD, 1,121 MCFGPD

Deepest Well: Above well

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons. Field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 1

Type of Trap: Stratigraphic

Productive Formations: Fuson (Lower Cretaceous)

Probable Drive Mechanism: Depletion and solution gas drive.

BENRUD

County: Roosevelt

Discovery Well:

Name: Cooperative Refinery Association, Listug-Olson "A" 1

Location: NE SW Section 34, T. 31N., R. 47E.

Date Completed: December 7, 1961

Total Depth: 7620'

Initial Potential: 498 BOPD, 16/64" choke, no water.

Deepest Well: Above well (Devonian)

Spacing Regulations: 160 acre spacing units, permitted well to be no closer than 900' to any boundary of spacing unit. Field delineated by Order No. 23-62.

Special Field Rules:

State-wide rules.

No. Producing Wells: 1

Type of Trap: Structural

Productive Formations: Nisku (Devonian)

Probable Drive Mechanism: Water drive.

BIG COULEE

County: Stillwater and Golden Valley

Discovery Well:

Name: Northern Natural Gas, NP "B" 1

Location: NW SE Sec. 31, T. 5N., R. 20E.

Date Completed: September 19, 1954

Total Depth: 2145'

Initial Potential: 5,515 MCFGPD

Deepest Well: Above well (Cambrian)

Spacing Regulations:

1320' from lease line, 3700' between wells, 75' tolerance for topographic reasons, not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 4

Type of Trap: Anticline

Productive Formations: Lakota (Lower Cretaceous). Morrison (Jurassic).

Probable Drive Mechanism: Water Drive.

BIG WALL

County: Musselshell

Discovery Well:

Name: Texaco, NP No. 1

Location: SE NE NW Sec. 19, T. 10N., R. 27E.

Date Completed: July 1, 1948

Total Depth: 3139'

Initial Potential: 9 BOPD

Deepest Well: Texaco, Zoerb No. 1, Section 18, T. 10 N., R. 27 E. Kibbey (Mississippian). T.D. 3617'.

Spacing Regulations:

330' from lease line, 990' between wells, 75' tolerance for topographic reasons. Delineated by Order 12-54.

Special Field Rules:

State-wide rules.

No. Producing Wells: 32

Type of Trap: Structural

Productive Formations: Amsden (Pennsylvanian); Tyler (Mississippian).

Probable Drive Mechanism: Amsden, water drive; Tyler, depletion.

Water Disposal: The Tyler "A" sand has previously been used as a water disposal formation. Water injection was ceased on November 1, 1961 after approximately 3,200,000 barrels had been injected. Water is now being backflowed to relieve pressure in the Tyler "A" sand.

BLACKFOOT

County: Glacier

Discovery Well:

Name: Union Oil Co., Muntzing No. 1

Location: NE NW Section 11, T. 37N., R. 6W.

Date Completed: October, 1956

Total Depth: 3542'

Initial Potential: 15 BOPD

Deepest Well: Mobil, F-34-3-1. Madison (Mississippian). T.D. 3687'.

Spacing Regulations:

Center of 40 acres, 300' tolerance for topographic reasons, delineated by Order No. 3-57.

Special Field Rules:

Dual completions permitted upon approval by Petroleum Engineer.

No. Producing Wells: 15

Type of Trap: Structural and stratigraphic

Productive Formations: Cut Bank Sand (Cretaceous); Madison (Mississippian).

Probable Drive Mechanism: Partial water drive and depletion drive.

BLACKLEAF CANYON

County: Teton

Discovery Well:

Name: Northern Natural Gas, Blackleaf-Federal "A" No. 1

Location: NW SE NE Section 13, T. 26N., R. 9W.

Date Completed: May 22, 1958

Total Depth: 6323'

Initial Potential: 5,293 MCFGPD

Deepest Well: Above well.

Spacing Regulations:

1320' from lease line, 3700' between wells, 75' tolerance for topographic reasons; not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: Shut-in

Type of Trap: Fault block.

Productive Formation: Madison (Mississippian).

Probable Drive Mechanism: Unknown

BORDER

County: Toole

Discovery Well:

Name: Vanalta Oil Co., Ltd. No. 1

Location: L.S.D. 3, Sec. 4, T. 1N., R. 16W., Alberta, Canada.

Date Completed: September 25, 1929

Total Depth: 2477'

Initial Potential: 85 BOPD

Deepest Well: Empire State, Iowa Holding Co. No. 2. Jefferson (Devonian). T.D. 4920'.

Spacing Regulations:

220' from quarter-quarter section line and 430' between wells, 75' tolerance for topographic reasons. Field is delineated by Order No. 7-54.

Special Field Rules:

State-wide rules, except Rules No. 207, 219, 211, 223 and 224, which do not apply.

No. of Producing Wells: 5

Type of Trap: Stratigraphic and structural.

Productive Formations: Cut Bank (Lower Cretaceous).

Probable Drive Mechanism: Depletion drive.

BOWDOIN

County: Phillips and Valley

Discovery Well:

Name: Martin well

Location: Section 18, T. 31 N., R. 35E.

Date Completed: 1913

Total Depth: 740'

Initial Potential: Unknown

Deepest Well: Texaco, Dupont No. 1 Sec. 8, T. 32N., R. 32E. Cambrian. T.D. 5855'.

Spacing Regulations:

One well to each quarter-section; at least 1000' from any lease boundary and 2000' between wells; field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 364

Type of Trap: Structural

Productive Formations: Bowdoin and Phillips sands in upper part of Colorado shale (Cretaceous)

Probable Drive Mechanism: Volumetric.

BOWES

County: Blaine

Discovery Well:

Name: California, Johnson & Hobson No. 1

Location: NE NE NE Sec. 9, T. 31N., R. 19E.

Date Completed: October 17, 1926

Total Depth: 4700'

Initial Potential: Show oil

Deepest Well: Northern Ordnance, Guertzgen No. 5, Sec. 1, T. 31N., R. 19E. Devonian. T.D. 5082'.

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons; field delineated by Order No. 13-54.

Special Field Rules:

State-wide rules.

No. Producing Wells: 78

Type of Trap: Structural

Productive Formations: Gas—Eagle (Upper Cretaceous); Oil—Sawtooth (Jurassic).

Probable Drive Mechanism: Eagle, volumetric; Sawtooth, water drive.

Secondary Recovery: A pilot five spot waterflood was initiated in the Sawtooth formation on May 23, 1961. More details concerning this project appear later in the report.

BOX ELDER

County: Blaine

Discovery Well:

Name: Perkins, Stranahan No. 1

Location: NW NW NE Sec. 14, T. 32N., R. 17E.

Date Completed: June 17, 1931

Total Depth: 1276'

Initial Potential: 8000 MCFGPD

Deepest Well: Northern Ordnance, Morphey No. 1, Sec. 14, T. 32N., R. 17E. Madison (Mississippian). T.D. 4212'.

Spacing Regulations:

State-wide rules.

Special Field Rules:

Not applicable.

Type of Trap: Structural

Productive Formations: Eagle (Upper Cretaceous)

The Eagle sandstone is presently being used by The Montana Power Company for a gas storage reservoir.

BREDETTE — NORTH

County: Daniels and Roosevelt

Discovery Well:

Name: California Company, Paulson No. 1

Location: NW SW Sec. 34, T. 33N., R. 49E.

Date Completed: May 27, 1956

Total Depth: 7475'

Initial Potential: 114 BOPD, 7/64" ck.

Deepest Well: Above well. Madison (Mississippian).

Spacing Regulations:

80-acre spacing, permitted wells in the NW¼ and SE¼ of each quarter section, 75' tolerance for topographic reasons. Field delineated by Order No. 20-56.

Special Field Rules:

State-wide rules.

No. Producing Wells: 2

Type of Trap: Structural

Productive Formations: Charles (Mississippian)

Probable Drive Mechanism: Water drive.

BREDETTE

County: Roosevelt

Discovery Well:

Name: California Company, Elizabeth Grimm No. 1

Location: NE SE Sec. 13, T. 32N., R. 49E.

Date Completed: May 19, 1955

Total Depth: 9671'

Initial Potential: 140 BOPD, 31 BWPD, 1/8" ck.

Deepest Well: Above well. Winnipeg (Ordovician). T.D. 9671'.

Spacing Regulations:

80-acre spacing, permitted wells in the NE¼ and SW¼ of each quarter section, 75' tolerance for topographic reasons. Field delineated by Orders No. 2-56 and 23-56.

Special Field Rules:

State-wide rules.

No. Producing Wells: Field abandoned.

Type of Trap: Structural

Productive Formations: Charles (Mississippian)

Probable Drive Mechanism: Water drive.

BRORSON

County: Richland

Discovery Well:

Name: Sun-Phillips, Carl Dynneson No. 1

Location: SW NE Sec. 32, T. 24 N., R. 58E.

Date Completed: August 9, 1953

Total Depth: 12,671'

Initial Potential: 745 BOPD, 21 BWPD, 20/64" ck., from Red River formation.

Deepest Well: Sun-Phillips, Dennis Dynneson No. 1, Sec. 30, T. 24N., R. 58E. Red River (Ordovician). T.D. 13,050'.

Spacing Regulations:

160-acre spacing, permitted well in the SW¼ of each quarter section, 75' tolerance for topographic reasons; field delineated by Order No. 20-55.

Special Field Rules:

State-wide rules.

No. Producing Wells: 4

Type of Trap: Probable combination of structural and stratigraphic.

Productive Formations: Mission Canyon (Mississippian).

Probable Drive Mechanism: Combination water drive and depletion drive.

CABIN CREEK

County: Fallon

Discovery Well:

Name: Shell, No. 22-33

Location: NE SE NW Sec. 33, T. 10N., R. 58E.

Date Completed: June 9, 1953

Total Depth: 9412'

Initial Potential: 1248 BOPD, 32 BWPD, flow into open line

Deepest Well: Shell, 21-17, Sec. 17, T. 10 N., R. 58E. Pre-Cambrian. T.D. 10,573'.

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons; field limits considered same as unit area.

Special Field Rules:

State-wide rules.

No. Producing Wells: 104

Type of Trap: Structural

Productive Formations: Mission Canyon (Mississippian). Silurian-Ordovician.

Probable Drive Mechanism: Mission Canyon, water drive; Siluro-Ordovician, depletion drive.

Secondary Recovery: Pressure maintenance by water injection project is being expanded to include a larger portion of the field. More details concerning this project appear later in the report.

Water Disposal: Produced water has been injected into the Dakota formation since 1957. In November, 1961 an average of 5,425 BWPD was injected. A total of about 5,000,000 barrels have been injected up to December 1, 1961.

CEDAR CREEK

County: Fallon and Wibaux

Discovery Well:

Name: Eastern Montana Oil & Gas Co.

Location: NE NE Sec. 20, T. 14N., R. 55E.

Date Completed: November, 1912

Total Depth: 2710'

Initial Potential: 2,500 MCFGPD (est.)

Spacing Regulations:

1200' from quarter section line and 2400' between wells, 75' tolerance for topographic reasons. Field delineated by Order No. 33-54.

Special Field Rules:

State-wide rules.

No. Producing Wells: 232

Type of Trap: Structural

Productive Formations: Judith River (Upper Cretaceous). Eagle (Upper Cretaceous).

Probable Drive Mechanism: Volumetric

CAT CREEK

County: Garfield and Petroleum

Discovery Well:

Name: Frantz Corp., No. 1

Location: SW SE NW Sec. 21, T. 15N., R. 30E.

Date Completed: February, 1920

Total Depth: 998'

Initial Potential: 10 BOPD

Deepest Well: Arro-California, Charles No. 4, Sec. 21, T. 15N., R. 30E. Cambrian. T.D. 5705'.

Spacing Regulations:

220' from lease line, 440' between wells; field delineated by Orders No. 14-54 and 17-55.

Special Field Rules:

State-wide rules.

No. Producing Wells: 96

Type of Trap: Structural

Productive Formations: Kootenai, Morrison, Swift.

Probable Drive Mechanism: Depletion drive.

Secondary Recovery: A portion of the field has been unitized and a waterflood secondary recovery program is in progress. More details concerning this project appear later in the report.

CLARKS FORK — NORTH

County: Carbon

Discovery Well:

Name: British-American, Montana State No. 1

Location: NE SE Sec. 16, T. 9S., R. 22E.

Date Completed: January 30, 1956

Total Depth: 10,877'

Initial Potential: 338 BOPD, 1681 MCFGPD, 18/64" ck.

Deepest Well: Above well. Madison (Missippian).

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons; not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 2

Type of Trap: Structural and stratigraphic.

Productive Formations: Dakota (Lower Cretaceous), Lakota (Lower Cretaceous).

Probable Drive Mechanism: Gas cap and water drive.

CLARKS FORK

County: Carbon

Discovery Well:

Name: General Petroleum & Julius Peters, Govt.-McClellan No. 1

Location: NW NW Sec. 25, T. 9S., R. 22E.

Date Completed: December 16, 1944

Total Depth: 6531'

Initial Potential: 124 BOPD, 30% water.

Deepest Well: British-American, Govt.-McClellan No. 1. Madison (Mississippian). T.D. 9446'.

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells; 75' tolerance for topographic reasons. Field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: Field abandoned.

Type of Trap: Structural and stratigraphic.

Productive Formations: Frontier (Upper Cretaceous).

Probable Drive Mechanism: Gas cap or depletion drive.

CUPTON

County: Fallon

Discovery Well:

Name: Rothschild, Northwest Improvement No. 44-15

Location: SE SE Sec. 15, T. 9N., R. 59E.

Date Completed: August 30, 1955

Total Depth: 9785'

Initial Potential: 306 BOPD, 165 BWPD

Deepest Well: Above well. Red River (Ordovician).

Spacing Regulations:

80-acre spacing permitted wells in the SE $\frac{1}{4}$ and NW $\frac{1}{4}$ of each quarter section, 75' tolerance for topographic reasons. Delineated by Order No. 6-62.

Special Field Rules:

State-wide rules.

No. Producing Wells: 1

Type of Trap: Structural

Productive Formations: Red River (Ordovician).

Probable Drive Mechanism: Water drive.

CUT BANK

County: Glacier and Toole

Discovery Well:

Name: Sand Point, Berger No. 1 (Gas well)

Location: SE SE NW Sec. 1, T. 35N., R. 5W.

Date Completed: 1926

Total Depth: 2978'

Initial Potential: 8,000 MCFGPD

Deepest Well: Union, Stuftt 418-7. Cambrian. T.D. 5500'.

Spacing Regulations:

320' from quarter-quarter section line, 650' between wells, fifth well in center of 40 permitted, 75' tolerance for topographic reasons. Field delineated by Orders No. 10-54 and 21-59.

Special Field Rules:

State-wide rules except Rules 207, 211, 219, 221, 223 and 224 do not apply.

No. Producing Wells: 1038

Type of Trap: Stratigraphic

Productive Formations: Kootenai (Lower Cretaceous); Madison (Mississippian).

Probable Drive Mechanism: Depletion drive.

Secondary Recovery: Three partial field units have been formed for the purpose of initiating waterflood operations. Appearing later in the report is a map showing the area of each unit. Tentative plans of the operators are to form two additional waterflood units.

DEER CREEK

County: Dawson

Discovery Well:

Name: Texaco, No. 1 NP "G" (NCT-4)

Location: SW SW Sec. 23, T. 17 N., R. 53E.

Date Completed: August 29, 1952

Total Depth: 10,128'

Initial Potential: 191 BOPD

Deepest Well: Texaco, Ekland No. 1, Sec. 26, T. 17N., R. 53E. Red River (Ordovician). T.D. 10,228'

Spacing Regulations:

80-acre spacing permitted well in the NE $\frac{1}{4}$ and SW $\frac{1}{4}$ of each quarter section 75' tolerance for topographic reasons. Delineated by Order No. 23-55.

Special Field Rules:

State-wide rules.

No. Producing Wells: 6

Type of Trap: Structural

Productive Formations: Red River (Ordovician); Interlake (Silurian).

Probable Drive Mechanism: Water drive.

Water Disposal: An average of 609 BWPD at a pressure of 398 psig. was injected during the last quarter of 1961. Approximately 640,000 barrels of water have been disposed of into the Dakota formation since March, 1957 when the project started.

DELPHIA

County: Musselshell

Discovery Well:

Name: Texota, Goffena No. 1

Location: NW NE Sec. 26, T. 9N., R. 27E.

Date Completed: December 20, 1956

Total Depth: 6311'

Initial Potential: 124 BOPD

Deepest Well: Texota-Bradley, Goffena No. A-1. Charles (Mississippian). T.D. 6811'.

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons. Field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 2

Type of Trap: Structural

Productive Formations: Amsden (Pennsylvanian)

Probable Drive Mechanism: Water drive.

DEVON

County: Toole

Discovery Well:

Name: Minot, Shelby Holding Co. No. 1

Location: SW NE Sec. 18, T. 33N., R. 2E.

Date Completed: 1926

Total Depth: 1795'

Initial Potential: 3500 MCFGPD

Deepest Well: Above well. Madison (Mississippian).

Spacing Regulations:

1320' from lease line, 3700' between wells, 75' tolerance for topographic reasons. Field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 21

Type of Trap: Stratigraphic

Productive Formations: Blackleaf (Colorado Shale), (Lower Cretaceous)

Probable Drive Mechanism: Volumetric

DEVILS BASIN

County: Musselshell

Discovery Well:

Name: Van Duzen Oil, No. 1

Location: NE SW NW Sec. 24, T. 11N., R. 24E.

Date Completed: December, 1919

Total Depth: 2110'

Initial Potential: 12 BOPD

Deepest Well: Clark Drilling Company, NP No. 1. Cambrian. T.D. 4081'

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons; field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: Shut-in.

Type of Trap: Structural

Productive Formations: Heath (Upper Mississippian)

Probable Drive Mechanism: Depletion drive.

DRY CREEK

County: Carbon

Discovery Well:

Name: Ohio Oil Company, NP No. 1

Location: 1940' N/S, 2900' W/E, Sec. 11, T. 7S., R. 21E.

Date Completed: March 31, 1929

Total Depth: 5772'

Initial Potential: 6500 MCFGPD (Frontier)

Deepest Well: Ohio Oil Company, NP No. 18, Sec. 3, T. 7S., R. 21E. Cambrian. T.D. 8882'.

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons; field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 4

Type of Trap: Structural

Productive Formations: Eagle (Upper Cretaceous) gas; Frontier (Upper Cretaceous) gas; Greybull (Lower Cretaceous) oil; Prior (Lower Cretaceous) oil.

Probable Drive Mechanism: Gas sands, volumetric; Oil sands, combination water and depletion drive.

DWYER

County: Sheridan

Discovery Well:

Name: Mobil, Muller No. F-44-20-P

Location: SE SE Sec. 20, T. 32 N., R. 59E.

Date Completed: January 8, 1960

Total Depth: 12,033'

Initial Potential: 51 BOPD, 49 BWPD

Deepest Well: Above well. Red River (Ordovician).

Spacing Regulations:

160 acre spacing, permitted well in the SE $\frac{1}{4}$ of each quarter section, 175' tolerance for topographic reasons, field delineated by Order No. 25-60, and 29-61.

Special Field Rules:

State-wide rules.

No. Producing Wells: 18

Type of Trap: Probably combination structural and stratigraphic.

Productive Formations: Mission Canyon (Mississippian).

Probable Drive Mechanism: Water drive.

ELK BASIN

County: Carbon

Discovery Well:

Name: Hurst No. 1

Location: Sec. 30, T. 58N., R. 99 W., Park County, Wyoming

Date Completed: 1915

Total Depth: 1402'

Initial Potential: 1000 BOPD (Frontier)

Spacing Regulations:

330' from quarter-quarter section, 1320' between wells, 75' tolerance for topographic conditions. Field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 52

Type of Trap: Structural

Productive Formations: Frontier (Upper Cretaceous); Dakota (Lower Cretaceous); Embar (Permian); Tensleep (Pennsylvanian); Madison (Mississippian).

Probable Drive Mechanism: Frontier, gravity drainage; Embar-Tensleep, gravity drainage; Madison, water drive.

Secondary Recovery: Frontier, crestal gas injection with sweet gas; Embar-Tensleep, full pressure maintenance by crestal injection of inert gas, and water injection into the Madison. More details concerning these projects appear later in the report.

ELK BASIN, NORTHWEST

County: Carbon

Discovery Well:

Name: Sinclair Wyoming Oil Co., NW EB Unit No. 1

Location: SW NW Sec. 28, T. 9S., R. 23E.

Date Completed: July 22, 1947

Total Depth: 6795'

Initial Potential: 494 BOPD

Deepest Well: Pan American, B. L. Zaerr B-1. Madison (Mississippian). T.D. 6957'.

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons; field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 11

Type of Trap: Structural

Productive Formations: Frontier (Upper Cretaceous). Madison (Mississippian).

Probable Drive Mechanism: Frontier, depletion drive; Madison.

Secondary Recovery: Water flood operations are being conducted in the Frontier formation. Additional details appear later in the report.

FERTILE PRAIRIE

County: Fallon

Discovery Well:

Name: Mon-O-Co, Ferguson-Goldin No. 1

Location: SE SW Sec. 18, T. 7N., R. 61E.

Date Completed: November 8, 1954

Total Depth: 9286'

Initial Potential: 132 BOPD

Deepest Well: McAlester Fuel, NP No. A-1. Winnipeg (Ordovician). T.D. 9684'.

Spacing Regulations:

80-acre spacing, permitted wells in the NW $\frac{1}{4}$ and SE $\frac{1}{4}$ of each quarter section, 75' tolerance for topographic reasons; field delineated by Order No. 3-56.

Special Field Rules:

State-wide rules.

No. Producing Wells: Field shut-in.

Type of Trap: Structural

Productive Formations: Red River (Ordovician).

Probable Drive Mechanism: Water drive.

FLAT COULEE

County: Liberty

Discovery Well:

Name: Northern Petroleum, Northern Farms 2

Location: NE SW Sec. 10, T. 37N., R. 5E.

Date Completed: 1933

Total Depth: 2879'

Initial Potential: 30 BOPD (Swift)

Spacing Regulations:

40-acre oil well spacing, 150' tolerance for surface conditions, field delineated by Order No. 16-62.

Gas wells to be no less than 330' from quarter-quarter section line and 1320' between wells, 75' tolerance for topographic reasons.

Special Field Rules:

State-wide rules.

No. Producing Wells: 2(Oil)

Type of Trap: Structural and Stratigraphic.

Productive Formations: Swift (Oil) Jurassic; Black-leaf (Gas) Cretaceous; Madison (Gas) Mississippian.

Probable Drive Mechanism: Depletion drive (Swift).

GAGE

County: Musselshell

Discovery Well:

Name: Northern Ordnance, Morris No. 1

Location: SW SW Sec. 15, T. 9N., R. 26E.

Date Completed: September 9, 1943

Total Depth: 7495'

Initial Potential: 120 BOPD

Deepest Well: Above well. Madison (Mississippian).

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons. Field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 2

Type of Trap: Combination structural and stratigraphic

Productive Formations: Amsden (Pennsylvanian)

Probable Drive Mechanism: Water drive.

FRANNIE

County: Carbon

Discovery Well:

Name: Pan American, Rosenberg C-1

Location: NW NE NW Sec. 25, T. 58 N., R. 98 W., Park County, Wyoming

Date Completed: February 28, 1928

Total Depth: 2612'

Initial Potential: 9 BOPD

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons. Field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 2

Type of Trap: Structural

Productive Formations: Tensleep (Pennsylvanian).

Probable Drive Mechanism: Combination water drive and gravity drainage.

GAS CITY

County: Dawson

Discovery Well:

Name: Shell, No. 33X-21

Location: NE NW SE Sec. 21, T. 14N., R. 55E.

Date Completed: June 4, 1955

Total Depth: 9596'

Initial Potential: 202 BOPD, 5 BWPD, 22/64" ck.

Deepest Well: Above well. Winnipeg (Ordovician)

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons. Field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 10

Type of Trap: Structural

Productive Formations: Red River (Ordovician)

Probable Drive Mechanism: Water drive.

Water Disposal: Order No. 32-61 permits the unit operator to dispose of produced salt water by injection into the Judith River formation.

GLENDIVE

County: Dawson

Discovery Well:

Name: Texaco, NP "G" (NCT-1) No. 1

Location: NE NE Sec. 35, T. 15 N., R. 54E.

Date Completed: January 10, 1952

Total Depth: 9079'

Initial Potential: 254 BOPD

Deepest Well: Texaco, NP "G" (NCT-1) No. 2. Winnipeg (Ordovician). T.D. 10,537'

Spacing Regulations:

80-acre spacing, permitted well in the NE¼ and SW¼ of each quarter section, 75' tolerance for topographic reasons. Field delineated by Order No. 27-55.

Special Field Rules:

State-wide rules.

No. Producing Wells: 11

Type of Trap: Stratigraphic and structural

Productive Formations: Interlake (Silurian). Stony Mountain-Red River (Ordovician).

Probable Drive Mechanism: Water drive.

Water Disposal: Water disposal started March 25, 1956. About 896,000 barrels have been injected into the Dakota formation since that time. Approximately 1014 BWPD were injected during the last quarter of 1961, at an average pressure of 1313 psig.

GRABEN COULEE

County: Glacier

Discovery Well:

Name: Cardinal Petr., McAlpine 1

Location: NE SW Sec. 3, T. 37N., R. 5W.

Date Completed: December 7, 1961

Total Depth: 2816'

Initial Potential: 56 BOPD

Deepest Well: Above well

Spacing Regulations:

40 acre spacing, 150' topographic tolerance, field delineated by Order No. 17-62.

Special Field Rules:

State-wide rules.

No. Producing Wells: 1

Type of Trap: Structural and stratigraphic.

Productive Formations: Sunburst (L. Cret.)

Probable Drive Mechanism: Depletion drive.

GYPSY BASIN

County: Teton and Pondera

Discovery Well:

Name: Western Oils, Bills No. 1

Location: SW SE Sec. 31, T. 28N., R. 6W.

Date Completed: July 8, 1951

Total Depth: 3410'

Initial Potential: 50 BOPD

Deepest Well: Above well. Madison (Mississippian)

Spacing Regulations:

Center of 40 acres, 150' tolerance for topographic reasons. Field delineated by Order No. 13-59.

Special Field Rules:

State-wide rules.

No. Producing Wells: 4

Type of Trap: Combination structural and stratigraphic

Productive Formations: Madison (Mississippian)

Probable Drive Mechanism: Combination water drive and depletion drive.

HARDIN

County: Big Horn

Discovery Well:

Name: Yellowstone Oil & Gas, Blair No. 1

Location: Sec. 10, T. 1S., R. 33E.

Date Completed: 1913

Total Depth: Unknown

Initial Potential: Unknown

Deepest Well: Daniels Petroleum Co., No. 1 Sec. 13, T. 1S., R. 33E. Madison (Mississippian). T.D. 4195'

Spacing Regulations:

1320' from lease line, 3700' between wells, 75' tolerance for topographic reasons, not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 41

Type of Trap: Stratigraphic

Productive Formations: Frontier (Cretaceous)

Probable Drive Mechanism: Volumetric.

HIBBARD

County: Rosebud

Discovery Well:

Name: Sinclair, Kesterson No. 1

Location: SE NW Sec. 34, T. 10N., R. 33E.

Date Completed: February 29, 1960

Total Depth: 5240'

Initial Potential: 240 BOPD

Deepest Well: Above well. Heath (Mississippian)

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons. Field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 1

Type of Trap: Unknown

Productive Formations: Amsden (Pennsylvanian)

Probable Drive Mechanism: Water drive.

KEG COULEE

County: Musselshell

Discovery Well:

Name: American-Climax Petr. Corp., DeJaegher No. 1

Location: SE NE Sec. 31, T. 11N., R. 31E.

Date Completed: April 1, 1960

Total Depth: 4635'

Initial Potential: 177 BOPD

Spacing Regulations:

80-acre spacing, pattern varies; 100' tolerance for topographic reasons. Field delineated by Order No. 11-60.

Special Field Rules:

State-wide rules.

No. Producing Wells: 12

Type of Trap: Stratigraphic

Productive Formations: Tyler (Mississippian)

Probable Drive Mechanism: Depletion drive.

IVANHOE

County: Musselshell

Discovery Well:

Name: Chicago-Republic, No. 1

Location: SW SE NE Sec. 17, T. 11N., R. 31E.

Date Completed: September 15, 1953

Total Depth: 5210'

Initial Potential: 92 BOPD (Morrison)

Deepest Well: Above well. Charles (Mississippian)

Spacing Regulations:

Center of 40-acre, 200' tolerance for topographic reasons. Delineated by Orders No. 13-56 and 7-60.

Special Field Rules:

State-wide rules.

No. Producing Wells: 23

Type of Trap: Structural and stratigraphic

Productive Formations: Morrison (Jurassic). Amsden (Pennsylvanian). Tyler (Mississippian)

Probable Drive Mechanism: Morrison and Tyler, depletion drive; Amsden, water drive.

KEITH

County: Liberty

Discovery Well:

Name: Texaco, Cicon No. 1

Location: NE NW SW Sec. 29, T. 36N., R. 6E.

Date Completed: December 17, 1944

Total Depth: 3221'

Initial Potential: 3000 MCFGPD

Deepest Well: Montana Power, Sorrel-Govt. No. 1. Cambrian. T.D. 5015'

Spacing Regulations:

1320' from lease line and 3700' between wells, 75' tolerance for topographic reasons. Field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 6

Type of Trap: Structural

Productive Formations: Bow Island (Cretaceous); Sawtooth-Madison (Jurassic-Mississippian)

Probable Drive Mechanism: Water drive.

KEVIN-SUNBURST

County: Toole

Discovery Well:

Name: Gordon Campbell-Kevin Syndicate, Goedert No. 1

Location: NE NE NE Sec. 16, T. 35N., R. 3W.

Date Completed: March 14, 1922

Total Depth: 2540'

Initial Potential: 10 BOPD

Deepest Well: Lee Edwards, Inland Empire No. 1. Pre-Cambrian. T.D. 4916'

Spacing Regulations:

9 wells per 40-acre tract, only 3 wells on any side of tract set back at least 220' from line, 75' tolerance for topographic reasons. Field delineated by Orders No. 8-54 and 28-55.

Special Field Rules:

State-wide rules, except Rules No. 207, 211, 219, 221, 223 and 224 do not apply.

No. Producing Wells: 909

Type of Trap: Stratigraphic

Productive Formations: Madison (Mississippian); Sawtooth (Jurassic); Sunburst (Cretaceous)

Probable Drive Mechanism: Depletion drive

Secondary Recovery: Two small pilot water floods are now in operation. Results of these floods are yet inconclusive. Additional data concerning one pilot appears later in the report.

LAKE BASIN — NORTH

County: Stillwater

Discovery Well:

Name: Holland-American, Castle No. 1

Location: NW SE Sec. 22, T. 2N., R. 21E.

Date Completed: January 11, 1958

Total Depth: 4179'

Initial Potential: 480 MCFGPD, Eagle; 4500 MCFGPD, Frontier

Deepest Well: Superior, Copulos 71-22. Pre-Cambrian. T.D. 7929'

Spacing Regulations:

640-acre spacing, permitted well in the NW SE of each section, 75' tolerance for topographic reasons. Delineated by Order No. 6-58.

Special Field Rules:

State-wide rules. Frontier and Eagle may be dually completed without provisions of Rule 219.

No. Producing Wells: Shut-in

Type of Trap: Structural

Productive Formations: Eagle (Cretaceous); Frontier (Cretaceous)

Probable Drive Mechanism: Unknown.

LAUREL

County: Yellowstone

Discovery Well:

Name: King Oil Company, Van Winkle 1

Location: NE SE Sec. 24, T. 2S., R. 24E.

Date Completed: July 7, 1961

Total Depth: 1000'

Initial Potential: 45 BOPD

Deepest Well: Pan American Syn., SW SW NE, Sec. 23, T. 2S., R. 24E. T.D. 2365'.

Spacing Regulations:

10 acre spacing with 75' tolerance for topographic conditions. Field is delineated by Order No. 15-62.

Special Field Rules:

State-wide rules.

No. Producing Wells: 1

Type of Trap: Structural and stratigraphic

Productive formation: Dakota (Cret.)

Probable Drive Mechanism: Depletion drive.

LITTLE BEAVER

County: Fallon

Discovery Well:

Name: Shell, Unit No. 23-13

Location: NE SW Sec. 13, T. 4N., R. 61E.

Date Completed: July 30, 1952

Total Depth: 8553'

Initial Potential: 313 BOPD, 33 BWPD

Deepest Well: Carter, NP No. 1, Sec. 19, T. 4N., R. 62E. Pre-Cambrian. T.D. 9676'

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons. Field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 21

Type of Trap: Structural

Productive Formations: Red River (Ordovician)

Probable Drive Mechanism: Water drive.

LITTLE BEAVER — EAST

County: Fallon

Discovery Well:

Name: Montana-Dakota Utilities, NP No. 1

Location: Sec. 17, T. 4N., R. 62E.

Date Completed: October, 1952

Total Depth: 8186'

Initial Potential: 25 BOPD

Deepest Well: Shell, No. 14-34, Sec. 34, T. 5N., R. 61E.
Red River (Ordovician). T.D. 8471'

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons. Field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 11

Type of Trap: Structural

Productive Formations: Red River (Ordovician)

Probable Drive Mechanism: Water

Water Disposal: Commission has granted approval for water injection; however, the project is not yet in operation.

LOOKOUT BUTTE

County: Fallon

Discovery Well:

Name: Continental Oil, NP A-29, No. 2

Location: SE SW Section 29, T. 7N., R. 60E.

Date Completed: December 26, 1961

Total Depth: 8851'

Initial Potential: 495 BOPD, 11 BWPD, 22/64" choke

Spacing Regulations:

160 acre spacing, permitted well to be in SE¼ of each spacing unit, 150' topographic tolerance, delineated by Order No. 21-62.

Special Field Rules:

State-wide rules.

No. Producing Wells: 1

Type of Trap: Structural

Productive Formations: Silurian, Ordovician

Probable Drive Mechanism: Combination depletion drive with partial water drive.

MACKAY

County: Carbon and Stillwater

Discovery Well:

Name: Northern Natural Gas, Mackay No. 1-A

Location: NW SE Sec. 14, T. 6S., R. 17E.

Date Completed: May 20, 1960

Total Depth: 4116'

Initial Potential: 103 BOPD

Deepest Well: Above well. Morrison (Jurassic)

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons. Field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: Field shut-in.

Type of Trap: Structural

Productive Formations: Greybull (Lower Cretaceous)

Probable Drive Mechanism: Unknown.

MELSTONE

County: Musselshell

Discovery Well:

Name: Amerda, Hougén No. 1

Location: SE SE Sec. 23, T. 10N., R. 29E.

Date Completed: October 18, 1948

Total Depth: 4228'

Initial Potential: 655 BOPD, ¾" ck.

Deepest Well: Amerda, Hougén No. 2. Sec. 23, T. 10N., R. 29E. Cambrian. T.D. 7626'

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons. Field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 8

Type of Trap: Structural and stratigraphic

Productive Formations: Tyler (Mississippian)

Probable Drive Mechanism: Depletion drive.

Water Disposal: Produced water was injected into the Tyler "B" zone from February, 1954 to May, 1958. A total of 1,056,000 barrels were injected before the injection well plugged.

MONARCH

County: Fallon

Discovery Well:

Name: Shell, NP 12-23

Location: Sec. 23, T. 9N., R. 58E.

Date Completed: November 18, 1958

Total Depth: 9175'

Initial Potential: 218 BOPD, 13 BWPD

Deepest Well: Above well. Red River (Ordovician)

Spacing Regulations:

160-acre spacing, SW $\frac{1}{4}$ of each quarter section, 175' tolerance for topographic reasons, Siluro-Ordovician pool. Delineated by Order No. 12-59.

80-acre spacing, with permitted wells to be in the SW $\frac{1}{4}$ or NE $\frac{1}{4}$ of each quarter-quarter section, wells to be no closer than 330' from boundary of permitted quarter-quarter section, Madison pool. Delineated by Order No. 18-61.

Special Field Rules:

State-wide rules.

No. Producing Wells: 13

Type of Trap: Structural and stratigraphic

Productive Formations: Red River (Ordovician); Interlake (Silurian); Mission Canyon (Mississippian)

Probable Drive Mechanism: Depletion drive with partial water drive.

MOSSER

County: Yellowstone

Discovery Well:

Name: Tarrant, Mosser No. 2

Location: SW SW NE Sec. 26, T. 3S., R. 24E.

Date Completed: January 25, 1937

Total Depth: 1027'

Initial Potential: 60 BOPD

Deepest Well: Tarrant, Mosser No. 1, Sec. 26, T. 3S., R. 24E. Madison (Mississippian). T.D. 2568'

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons. Order No. 21-56 establishes some exceptions.

Special Field Rules:

State-wide rules.

No. Producing Wells: 5

Type of Trap: Structural

Productive Formations: Dakota (Lower Cretaceous)

Probable Drive Mechanism: Water drive.

OUTLOOK

County: Sheridan

Discovery Well:

Name: Amerada, Tange No. 1

Location: Sec. 20, T. 36N., R. 53E.

Date Completed: December 22, 1956

Total Depth: 9950'

Initial Potential: 2742 BOPD

Deepest Well: Amerada, A. Johnson No. 1, Sec. 33, T. 36N., R. 53E. Pre-Cambrian. T.D. 11,074'

Spacing Regulations:

160 acre spacing, permitted wells can be in either SW $\frac{1}{4}$ or NE $\frac{1}{4}$ of each quarter section, 175' tolerance for topographic reasons. Delineated by Order No. 19-59A.

Special Field Rules:

State-wide rules.

No. Producing Wells: 14

Type of Trap: Stratigraphic and structural

Productive Formations: Silurian-Devonian. Red River (Ordovician)

Probable Drive Mechanism: Water drive

Water Disposal: Produced water disposal began January 12, 1960 into the Dakota formation. An average of 1020 BWPD was injected at an average pressure of 775 psig. during December, 1961. Accumulative water injections to January 1, 1962 were about 695,870 barrels.

PENNEL

County: Fallon

Discovery Well:

Name: Shell, State No. 22X-36

Location: SE NW Sec. 36, T. 8N., R. 59E.

Date Completed: September 8, 1955

Total Depth: 9242'

Initial Potential: 205 BOPD, 39 BWPD

Deepest Well: Above well. Winnipeg (Ordovician)

Spacing Regulations:

80 acre, permitted wells in the NW $\frac{1}{4}$ and SE $\frac{1}{4}$ of each quarter section, 150' tolerance for topographic reasons in western portion of field.

160 acre spacing with permitted wells in the SE $\frac{1}{4}$ of each quarter section, 150' topographic tolerance in eastern portion of pool. See Order No. 20-62.

No. Producing Wells: 31

Type of Trap: Structural

Productive Formations: Lodgepole (Mississippian); Mission Canyon (Mississippian); Siluro-Ordovician.

Probable Drive Mechanism: Combination depletion drive and water drive

Water Disposal: Produced salt water is being injected into the Siluro-Ordovician and Dakota reservoirs.

PINE

County: Fallon, Wibaux, Prairie and Dawson

Discovery Well:

Name: Shell, Pine Unit No. 32-30

Location: SW SW NE Sec. 30, T. 12N., R. 57E.

Date Completed: January 28, 1952

Total Depth: 9746'

Initial Potential: 467 BOPD, 148 BWPD

Deepest Well: Shell, 43-22A, Sec. 22, T. 11N., R. 57E.
Pre-Cambrian. T.D. 10,414'

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells; 75' tolerance for topographic reasons. Field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 150

Type of Trap: Structural

Productive Formations: Silurian-Ordovician

Probable Drive Mechanism: Water drive.

Secondary Recovery: A partial pressure maintenance program was initiated March 10, 1959 by injecting water into the producing horizon. Additional details and data appear later in the report.

Water Disposal: Produced water has been disposed of by injecting into the Dakota formation since October, 1958. A total of about 3,035,000 barrels had been injected to January 1, 1962. There have been no disposal injections since April, 1961.

PLEVNA

County: Fallon

Discovery Well:

Name: F. H. Becker No. 1

Location: NE NE SE Sec. 28, T. 5N., R. 60E.

Date Completed: January 18, 1946

Total Depth: 1053'

Initial Potential: 300 MCFGPD

Deepest Well: True Oil, NP-Plevna 1, NE SW Sec. 29, T. 5N., R. 60E., Red River. T.D. 8940'

Spacing Regulations:

1200' from quarter section line, 2400' between wells, 75' tolerance for topographic reasons. Field delineated by Orders No. 34-54 and 4-57.

Special Field Rules:

State-wide rules.

No. Producing Wells: 25

Type of Trap: Structural

Productive Formations: Judith River (Upper Cretaceous)

Probable Drive Mechanism: Water drive.

PONDERA

County: Teton

Discovery Well:

Name: Midwest Refining, Haber No. 1

Location: SE SE Sec. 17, T. 27N., R. 4W.

Date Completed: June, 1927

Total Depth: 2072'

Initial Potential: 3 BOPD, 3500 MCFGPD

Deepest Well: Wasatch Oil, Hirshberg No. 1. Sec. 23, T. 27 N., R. 4W. Pre-Cambrian. T.D. 5233'.

Spacing Regulations:

220' from quarter-quarter section line, 430' between wells, 75' tolerance for topographic reasons. Delineated by Order No. 9-54.

Special Field Rules:

State-wide rules, except Rules No. 207, 211, 219, 221, 223, and 224 do not apply.

No. Producing Wells: 285

Type of Trap: Structural and stratigraphic

Productive Formations: Madison (Mississippian)

Probable Drive Mechanism: Combination depletion drive with limited water drive.

Secondary Recovery: Commission has granted one operator approval to initiate a one injection well pilot waterflood. More details appear later in this report.

PONDERA COULEE

County: Teton

Discovery Well:

Name: Perl Smith, Louttit-Mills 1

Location: SE NE Sec. 4, T. 27N., R. 5W.

Date Completed: December 21, 1961

Total Depth: 2452'

Initial Potential: 30 BOPD.

Spacing Regulations:

10 acre spacing, 75' topographic tolerance, field delineated by Order No. 5-62.

Special Field Rules:

State-wide rules.

No. Producing Wells: 2

Type of Trap: Structural

Productive Formations: Madison (Mississippian)

Probable Drive Mechanism: Water drive.

POPLAR

County: Roosevelt

Discovery Well:

Name: East Poplar Unit No. 1 Murphy Corp.

Location: SW NE Sec. 2, T. 28N., R. 51E.

Date Completed: March 10, 1952

Total Depth: 9163'

Initial Potential: 233 BOPD

Deepest Well: Above well. Winnipeg (Ordovician)

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons. Delineated by Order No. 7-55.

Special Field Rules:

State-wide rules.

No. Producing Wells: 89

Type of Trap: Structural

Productive Formations: Charles-Mission Canyon (Mississippian)

Probable Drive Mechanism: Water drive

Secondary Recovery: Partial pressure maintenance by water injection was started in September, 1956. The project became temporarily inactive in May, 1961 to conduct an engineering evaluation. Approximately 8,057,000 barrels of water have been injected June 1, 1961.

Water Disposal: Excess produced water has been injected into the Dakota and Judith River formations since September, 1957. A total of about 11,899,166 barrels have been injected into the Dakota formation to January 1, 1962, with average daily injections during December, 1961 of 17,500 BWPD. In the Judith River formation, approximately 42,455 barrels have been injected to January 1, 1962, with average daily injections during December, 1961 of 350 BWPD.

POPLAR — NORTHWEST

County: Roosevelt

Discovery Well:

Name: Ajax Oil, McGowan No. 1

Location: SE SW Sec. 10, T. 29N., R. 50E.

Date Completed: May 12, 1952

Total Depth: 6274'

Initial Potential: 75 BOPD, 25 BWPD

Deepest Well: Humble, Harry Mason No. 1. Interlake (Silurian). T.D. 8392'

Spacing Regulations:

80-acre spacing; permitted wells in the NW¼ and SE¼ of each quarter section, 75' tolerance for topographic reasons. Field delineated by Order No. 18-55.

Special Field Rules:

State-wide rules. Order No. 18-55 lists special well completion practices to be followed.

No. Producing Wells: 4

Type of Trap: Structural

Productive Formations: Charles-Mission Canyon (Mississippian)

Probable Drive Mechanism: Water drive.

RAGGED POINT

County: Musselshell

Discovery Well:

Name: Texaco, Manion No. 1

Location: SE SW Sec. 5, T. 11N., R. 30E.

Date Completed: January 4, 1948

Total Depth: 6312'

Initial Potential: 236 BOPD, 5% water.

Deepest Well: Above well. Cambrian

Spacing Regulations:

Center of 40 acres, 75' tolerance for topographic reasons. Delineated by Orders No. 15-54 and 8-59.

Special Field Rules:

State-wide rules.

No. Producing Wells: 10

Type of Trap: Structural and stratigraphic

Productive Formations: Kibbey and Tyler (Mississippian)

Probable Drive Mechanism: Kibbey, water drive; Tyler, depletion drive.

REAGAN

County: Glacier

Discovery Well:

Name: Reagan Associates, Tribal 194-1

Location: SE NE Sec. 22, T. 37N., R. 7W.

Date Completed: March 29, 1941

Total Depth: 3869'

Initial Potential: 6000 MCFGPD

Deepest Well: Union Oil, Blackfeet Tribal 194-12. Cambrian. T.D. 6258'

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons.

Special Field Rules:

State-wide rules.

No. Producing Wells: 50

Type of Trap: Structural

Productive Formations: Madison (Mississippian)

Probable Drive Mechanism: Combination gas cap and water drive

Secondary Recovery: A pressure maintenance project utilizing crestal gas injection was initiated during August, 1961. Additional details appear later in this report.

RED CREEK

County: Glacier

Discovery Well:

Name: G. S. Frary, Isabel Moberly No. 1

Location: SW SW Sec. 1, T. 37N., R. 5W.

Date Completed: January 16, 1958

Total Depth: 2656'

Initial Potential: 1500 MCFGPD

Deepest Well: Pardee-Inland Empire, McAlpine No. 1.
Madison (Mississippian). T.D. 2990'

Spacing Regulations:

Center of 40 acres, 75' tolerance for topographic reasons. Delineated by Order No. 16-58.

Special Field Rules:

State-wide rules. Rule 219 waived.

No. Producing Wells: 21

Type of Trap: Structural and stratigraphic

Productive Formations: Cut Bank (Lower Cretaceous),
Madison (Mississippian).

RED STONE

County: Sheridan

Discovery Well:

Name: H. L. Hunt, Hagen No. 1

Location: NE NW Sec. 7, T. 34 N., R. 52E.

Date Completed: November 1, 1958

Total Depth: 10,700'

Initial Potential: 100 BOPD

Deepest Well: Above well. Cambrian.

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons. Field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 1

Type of Trap: Unknown

Productive Formations: Devonian

Probable Drive Mechanism: Water drive.

RAPELJE

County: Stillwater

Discovery Well:

Name: Shoreline Petroleum, C. F. Kirchner No. 1

Location: NE SW Sec. 4, T. 2N., R. 20E.

Date Completed: November 18, 1960

Total Depth: 4064'

Initial Potential: 840 MCFGPD

Deepest Well: Above well. Morrison (Jurassic)

Spacing Regulations:

1320' from lease line, 3700' between wells, 75' tolerance for topographic reasons. Field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: Shut-in

Type of Trap: Unknown

Productive Formations: Eagle (Cretaceous)

Probable Drive Mechanism: Unknown

REPEAT

County: Carter

Discovery Well:

Name: Ohio Oil, Govt. No. 1

Location: Lot 4, Sec. 4, T. 1S., R. 62E.

Date Completed: March 27, 1956

Total Depth: 9362'

Initial Potential: 186 BOPD, 2% water

Deepest Well: Above well. Winnipeg (Ordovician)

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons. Field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 1

Type of Trap: Unknown

Productive Formations: Red River (Ordovician)

Probable Drive Mechanism: Water drive.

RICHEY

County: Dawson and McCone

Discovery Well:

Name: Shell, NP No. 11-9

Location: SE NW NW Sec. 19, T. 23N., R. 50E.

Date Completed: November 29, 1951

Total Depth: 10,518'

Initial Potential: 1656 BOPD, 408 BWPD, 32/64" ck.

Deepest Well: Above well. Ordovician.

Spacing Regulations:

80 acre spacing, permitted wells in the NW¼ and SE¼ of each quarter section, 75' tolerance for topographic reasons. Field delineated by Order No. 21-55.

Special Field Rules:

State-wide rules

No. Producing Wells: 12

Type of Trap: Structural

Productive Formations: Charles (Mississippian)

Probable Drive Mechanism: Water drive

Water Disposal: Part of the produced water in this field is being injected into the Dakota formation. Cumulative injections to January 1, 1962 were about 2,261,281 barrels, with a daily average of 204 BWPD.

RICHEY — SOUTHWEST

County: McCone

Discovery Well:

Name: Shell, NP No. 22-25B

Location: SE NW Sec. 25, T. 22N., R. 48E.

Date Completed: 1952

Total Depth: 10,188'

Initial Potential: 51 BOPD

Deepest Well: Above well. Winnipeg (Ordovician)

Spacing Regulations:

80 acre spacing permitted wells in the NE¼ and SW¼ of each quarter section, 75' tolerance for topographic reasons. Field delineated by Order No. 22-55.

Special Field Rules:

State-wide rules.

No. Producing Wells: 2

Type of Trap: Structural

Productive Formations: Interlake (Silurian); Dawson Bay (Devonian)

Probable Drive Mechanism: Depletion drive.

RUDYARD

County: Hill

Discovery Well:

Name: Texaco, Anderson No. 1

Location: SE SW Sec. 27, T. 34N., R. 9E.

Date Completed: December 9, 1955

Total Depth: 3435'

Initial Potential: 3500 MCFGPD

Deepest Well: Texaco, R. E. Blair No. 1, NW SE Sec. 28, T. 34N., R. 9E. Pre-Cambrian. T.D. 6550'

Spacing Regulations:

640 acre spacing, permitted well in C NW¼, 150' tolerance for topographic reasons. Field delineated by Order No. 2-58.

Special Field Rules:

State-wide rules.

No. Producing Wells: Shut-in

Type of Trap: Structural

Productive Formations: Sawtooth (Jurassic)

Probable Drive Mechanism: Volumetric.

SAND CREEK

County: Dawson

Discovery Well:

Name: Texaco, Guelff No. 1

Location: SE NE Sec. 4, T. 15N., R. 54E.

Date Completed: March 8, 1959

Total Depth: 9684'

Initial Potential: 408 BOPD

Deepest Well: Above well. Red River (Ordovician)

Spacing Regulations:

80 acre spacing, permitted wells in the NW¼ and SE¼ of each quarter section, 150' tolerance for topographic reasons. Field delineated by Order No. 16-59.

Special Field Rules:

State-wide rules.

No. Producing Wells: 5

Type of Trap: Structural

Productive Formations: Interlake (Silurian); Red River (Devonian)

Probable Drive Mechanism: Water drive.

Water Disposal: The disposal of produced salt water by injection into the Swift formation was initiated June 28, 1961. A total of 227,000 barrels of water have been injected since that time. Average daily injections are approximately 1090 BWPD.

SEVEN MILE

County: Dawson

Discovery Well:

Name: Texaco, Inc., NP "G" (NCT-12) 1
Location: NE SW Sec. 17, T. 16N., R. 54E.
Date Completed: November 10, 1961
Total Depth: 9835'
Initial Potential: 276 BOPD, Interlake. 26 BOPD, Red River

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells; field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 2

Type of Trap: Structural

Productive Formations: Interlake (Silurian), Red River (Ordovician)

Probable Drive Mechanism: Water drive

SIDNEY

County: Richland

Discovery Well:

Name: Wendell C. Flynn, Beagle Land & Livestock Co. No. 1
Location: SW SW Sec. 17, T. 23N., R. 59E.
Date Completed: September 11, 1958
Total Depth: 13,135'
Initial Potential: 50 BOPD

Deepest Well: Above well. Winnipeg (Devonian)

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons. Field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 2

Type of Trap: Unknown

Productive Formations: Mission Canyon (Mississippian)

Probable Drive Mechanism: Water drive.

SNYDER

County: Big Horn

Discovery Well:

Name: George Greer, Kendrick No. 2
Location: NE NW NW Sec. 6, T. 1S., R. 35E.
Date Completed: October 4, 1952
Total Depth: 4588'
Initial Potential: 150 BOPD

Deepest Well: George Greer, Kendrick No. 3. Sec. 6, T. 1S., R. 35E. Winnipeg (Ordovician). T.D. 6808'

Spacing Regulations:

330' from quarter-quarter section line, 1320' between wells, 75' tolerance for topographic reasons. Field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 4

Type of Trap: Structural

Productive Formations: Tensleep (Pennsylvanian)

Probable Drive Mechanism: Water drive.

SOAP CREEK

County: Big Horn

Discovery Well:

Name: Western States Oil & Gas Co., Tribal No. 1
Location: Approx. center Section 34, T. 6S., R. 32E.
Date Completed: February 11, 1921
Total Depth: 1966'
Initial Potential: 200 BOPD

Deepest Well: Inland Empire, Tribal 52-34. Sec. 34, T. 6S., R. 32E. Pre-Cambrian. T.D. 4470'

Spacing Regulations:

Center of 10 acres, 100' tolerance for topographic reasons. Delineated by Order No. 26-60.

Special Field Rules:

State-wide rules.

No. Producing Wells: 17

Type of Trap: Structural

Productive Formations: Tensleep, Amsden (Pennsylvanian); Madison (Mississippian)

Probable Drive Mechanism: Water drive.

STENSVAD

County: Musselshell and Rosebud

Discovery Well:

Name: Honolulu, Stensvad No. 11-9

Location: NE SE Sec. 11, T. 11N., R. 31E.

Date Completed: December 20, 1958

Total Depth: 5516'

Initial Potential: 448 BOPD

Spacing Regulations:

Center of 40 acres, 200' tolerance for topographic reasons. Delineated by Orders No. 2-59, 22-59, 7-60.

Special Field Rules:

State-wide rules.

No. Producing Wells: 25

Type of Trap: Stratigraphic

Productive Formations: Tyler (Mississippian)

Probable Drive Mechanism: Depletion drive

Secondary Recovery: The operators in this field are in the process of forming a unit in order to initiate water flood operations.

SUMATRA

County: Rosebud

Discovery Well:

Name: Farmers Union, Sawyer No. 1

Location: NE SW Sec. 26, T. 11N., R. 32E.

Date Completed: October 8, 1950

Total Depth: 5277'

Initial Potential: 50 BOPD

Deepest Well: Texas, Horgen No. 1. Sec. 13, T. 11N., R. 32E. Kibbey (Mississippian). T.D. 5657'

Spacing Regulations:

Center of 40 acres, tolerance at Commission's discretion. Delineated by Order No. 14-58.

Special Field Rules:

State-wide rules.

No. Producing Wells: 94

Type of Trap: Stratigraphic

Productive Formations: Amsden (Pennsylvanian); Tyler (Mississippian)

Probable Drive Mechanism: Depletion drive

Water Disposal: A part of the produced water is injected into the Amsden formation. A total of about 268,000 barrels had been injected to January 1, 1962.

TULE CREEK

County: Roosevelt

Discovery Well:

Name: Murphy, Sletvold No. 1

Location: SE SE Sec. 18, T. 30 N., R. 48E.

Date Completed: October 27, 1960

Total Depth: 8478'

Initial Potential: 476 BOPD, 14/64" ck.

Deepest Well: Above well. Dawson Bay (Devonian)

Spacing Regulations:

160 acre spacing. Well to be located no closer than 900' from any boundary of spacing unit. Field delineated.

Special Field Rules:

Semi-annual B.H.P. surveys, with minimum of 12 hours shut-in.

No. Producing Wells: 7

Type of Trap: Structural

Productive Formations: Nisku (Devonian)

Probable Drive Mechanism: Water drive

UTOPIA

County: Liberty

Discovery Well:

Name: Texaco, State M-1094

Location: NW SE SE Sec. 16, T. 33N., R. 4E.

Date Completed: October 5, 1943

Total Depth: 2579'

Initial Potential: 15 BOPD (Field produces gas)

Deepest Well: Texaco, Laas No. 2. Sec. 14, T. 33N., R. 4E. Cambrian. T.D. 4593'

Spacing Regulations:

1320' from lease line, 3700' between wells, 75' tolerance for topographic reasons. Field not delineated.

Special Field Rules:

State-wide rules.

No. Producing Wells: 7

Type of Trap: Structural

Productive Formations: Sawtooth (Jurassic); Madison (Mississippian); Jefferson (Devonian)

Probable Drive Mechanism: Unknown.

WHITLASH

County: Toole and Liberty

Discovery Well:

Name: Montana-Canadian Oil, E. Brown No. 1

Location: SE NE NW Sec. 19, T. 37N., R. 4E.

Date Completed: November, 1918

Total Depth: 2730'

Initial Potential: 15,000 MCFGPD

Deepest Well: Union Oil, Mahoney No. 1. Sec. 22, T. 37N., R. 4E. Cambrian. T.D. 4068'

Spacing Regulations:

330' from quarter-quarter section line, 650' between wells, 75' tolerance for topographic reasons. Field delineated by Order No. 16-54.

Special Field Rules:

State-wide rules.

No. Producing Wells: 42 Gas; 32 Oil

Type of Trap: Combination stratigraphic and structural

Productive Formations: Blackleaf and Bow Island (Cretaceous); Kootenai-Sunburst-Swift-Sawtooth (Cretaceous); Madison (Mississippian)

Probable Drive Mechanism: Volumetric.

WOLF SPRINGS

County: Yellowstone

Discovery Well:

Name: Atlantic, C. S. Horton No. 18-1

Location: SE SW Sec. 18, T. 7N., R. 32E.

Date Completed: July 31, 1955

Total Depth: 8442'

Initial Potential: 370 BOPD

Deepest Well: Above well. Cambrian.

Spacing Regulations:

80 acre spacing, permitted wells in the NW and SE¼, 75' tolerance for topographic reasons. Delineated by Order No. 9-59.

Special Field Rules:

State-wide rules.

No. Producing Wells: 19

Type of Trap: Structural

Productive Formations: Amsden (Pennsylvanian)

Probable Drive Mechanism: Water drive.

WILLS CREEK

County: Fallon and Wibaux

Wills Creek is a non-unitized extension of the Cabin Creek Field lying on the east flank of the Cedar Creek Anticline.

WOODROW

County: Dawson

Discovery Well:

Name: Texaco, NP "G" (NCT-8) No. 1

Location: NE NE Sec. 7, T. 16 N., R. 54E.

Date Completed: August 25, 1952

Total Depth: 8124'

Initial Potential: 114 BOPD, 20% water

Deepest Well: Texaco, Elpel No. 1. Winnipeg (Ordovician). T.D. 10,370'

Spacing Regulations:

160 acre spacing, permitted well in the SW¼ in Red River, and the NE¼ in Charles, 75' tolerance for topographic reasons. Delineated by Orders No. 25-55 and 24-55.

Special Field Rules:

State-wide rules.

No. Producing Wells: 2

Type of Trap: Structural

Productive Formations: Charles (Mississippian)

Probable Drive Mechanism: Water drive.

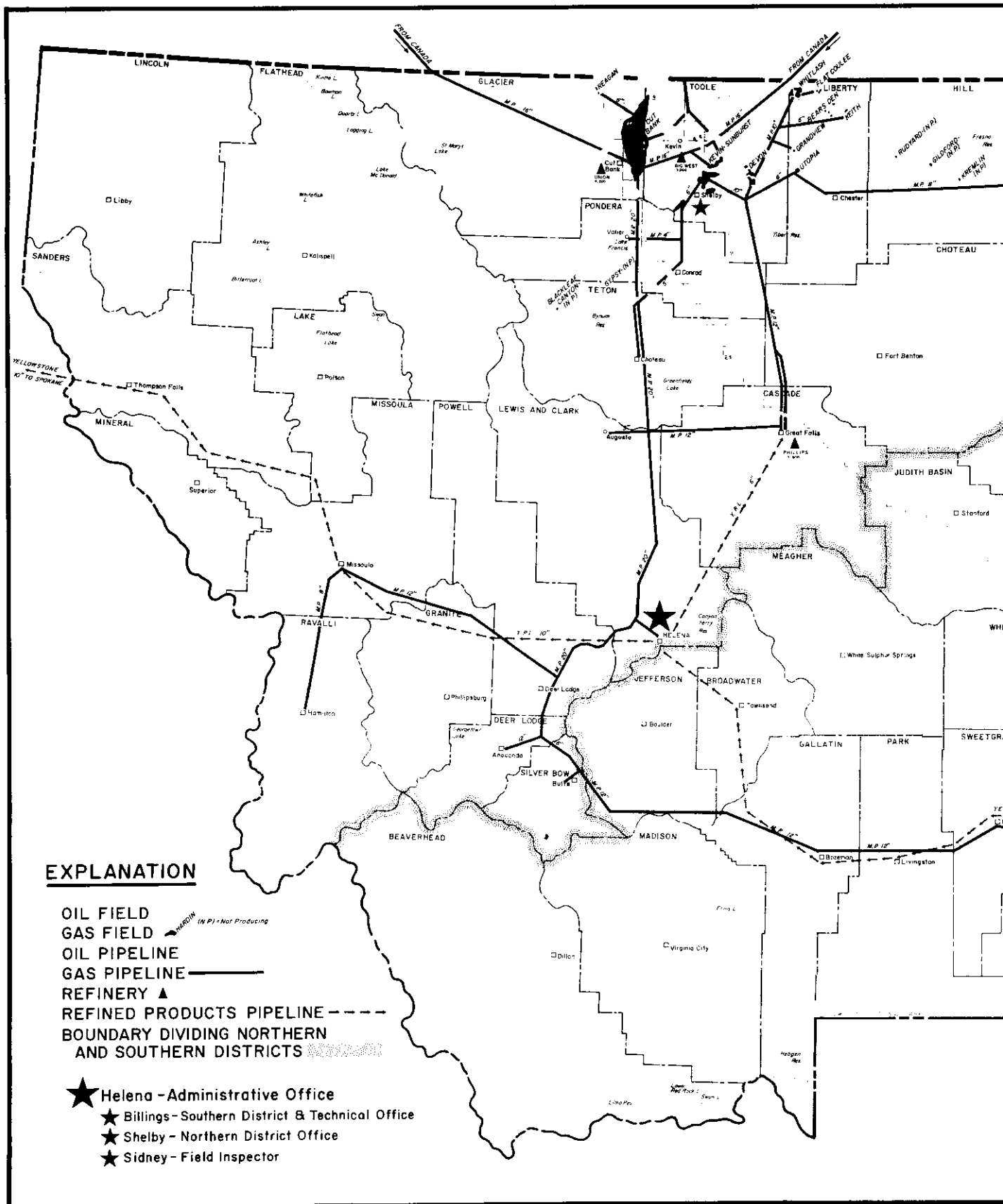
STATE OF MONTANA—SUM

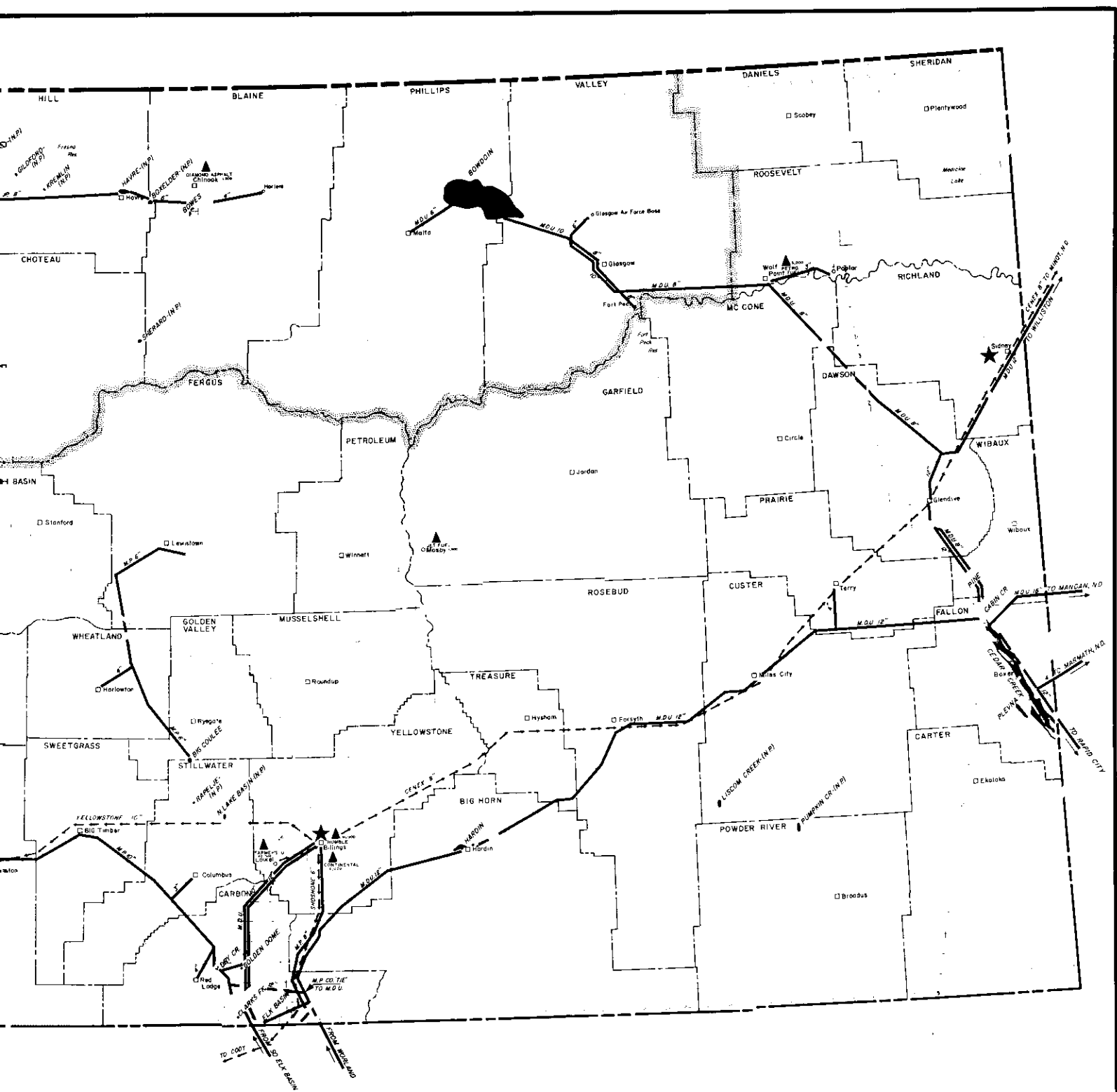
LINE NO.	FIELD (OR POOL)	COUNTY	YEAR DISCOVERED	PRODUCTION FORMATION	APPROX. DEPTH	A.P.I. GRAVITY	VOLUME FACTOR	AVG. NET PAY FT.	AVG. PORO-SITY %	AVG. CONNATE WATER %
1	Ash Creek	Big Horn	1952	Shannon (U. Cret.)	4500	34	1.05	14	22	35
2	Bannatyne	Teton	1927	Swift (U. Jr.)	1450	27	1.05	39	15	43
3	Bears Den	Liberty	1924	Sunburst (L. Cret.)	2300	39	1.08	20	12	35
4	Belfry	Carbon	1958	Fuson (L. Cret.)	9844	38	1.60	20	11.25	17
5	Benrud	Roosevelt	1961	Nisku (Dev.)	7550	43	1.41	22	16	30
6	Big Wall	Musselshell	1948	Tyler (U. Miss.)	3000	31	1.02	22	17	40
7	Big Wall	Musselshell	1953	Amsden (L. Penn.)	2500	19	1.01	17	16	35
8	Blackfoot	Glacier	1955	Madison (Miss.)	3550	25	1.15	8	14	40
9	Blackfoot	Glacier	1955	Cut Bank (L. Cret.)	3500	30	1.11	15	15	35
10	Border	Toole	1929	Cut Bank (L. Cret.)	2400	31	1.08	22	15	30
11	Bowes	Blaine	1949	Sawtooth (M. Jur.)	3250	19	1.02	37	11.7	31
12	Bredette-North	Roosevelt, Daniels	1956	Charles (Miss.)	6720	38	1.24	24	6	53
13	Brorson	Richland	1954	Mission Canyon (Miss.)	9750	32	1.50	52	4	40
14	Cabin Creek	Fallon	1953	Siluro-Ordovician	8400	33	1.20	50	13	30
15	Cabin Creek	Fallon	1956	Mission Canyon (Miss.)	7300	33	1.13	25	11	30
16	Cat Creek (Antelope-Mosby)	Petroleum, Garfield	1920	Kootenai (L. Cret.)	1225	52	1.10	10	21	19
17	Cat Creek (West Dome)	Petroleum, Garfield	1920	Kootenai (L. Cret.)	1100	52	1.10	51	21	19
18	Cat Creek	Petroleum, Garfield	1945	Morrison (U. Jur.)	1600	52	1.10	6	22	40
19	Cat Creek	Petroleum, Garfield	1945	Swift (U. Jur.)	1750	52	1.10	25	18	40
20	Clarks Fork-North	Carbon	1956	Lakota (L. Cret.)	8940	50	1.92	19	19	39
21	Cuption	Fallon	1955	Red River (U. Ord.)	9800	33	1.50	33	13	35
22	Cut Bank	Glacier, Toole	1932	Kootenai (L. Cret.)	2900	38	1.15	16	15	35
23	Cut Bank	Glacier, Toole	1945	Madison (Miss.)	3000	39	1.10	10	14	30
24	Deer Creek	Dawson	1952	Red River (U. Ord.)	9850	42	1.21	112	6.7	35
25	Deer Creek	Dawson	1952	Interlake (Sil.)	9440	42	1.22	71	7	35
26	Delphia	Musselshell	1957	Amsden (L. Penn.)	6290	35	1.15	12	6.5	30
27	Dry Creek	Carbon	1930	Greybull (L. Cret.)	5600	52	1.60	12	12	22
28	Dry Creek	Carbon	1932	Pryor (L. Cret.)	5800	52	1.20	30	12	25
29	Dwyer	Sheridan	1960	Mission Canyon (Miss.)	8000	33	1.12	30	11.8	55
30	Elk Basin	Carbon	1915	Frontier (U. Cret.)	1200	45	1.16	30	21	20
31	Elk Basin	Carbon	1942	Embar-Tensleep (Perm.-Penn.)	5000	29	1.16	124	10.5	10
32	Elk Basin	Carbon	1946	Madison (Miss.)	5300	28	1.12	224	12	9
33	Elk Basin-Northwest	Carbon	1947	Frontier (U. Cret.)	3375	47	1.29	28	19	30
34	Elk Basin-Northwest	Carbon	1947	Madison (Miss.)	6215	35	1.08	124	11.6	20
35	Flat Coulee	Liberty	1933	Swift (U. Jur.)	2900	39	1.10	22	22	40
36	Frannie	Carbon	1928	Tensleep (Penn.)	2700	27	1.02	29	19	16
37	Gage	Musselshell	1943	Amsden (L. Penn.)	6000	34	1.07	18	10	48
38	Gas City	Dawson	1955	Red River (U. Ord.)	8700	38	1.28	25	9	35
39	Glendive	Dawson	1952	Stony Mtn.-Red River (U. Ord.)	8700	38	1.25	147	6.5	35
40	Graben Coulee	Glacier	1961	Sunburst (L. Cret.)	2775	34	1.10	12	16	35
41	Gypsy Basin	Pondera	1958	Madison (Miss.)	3150	--	--	--	--	--
42	Hibbard	Rosebud	1960	Amsden (L. Penn.)	4810	31	1.05	12	15	35
43	Ivanhoe	Musselshell	1960	Amsden (L. Penn.)	3600	32	1.08	9	17	40
44	Ivanhoe	Musselshell	1953	Morrison (U. Jur.)	2800	30	1.08	10	15	35
45	Ivanhoe	Musselshell	1956	Tyler (U. Miss.)	4050	33	1.08	29	15	20
46	Keg Coulee	Musselshell	1960	Tyler (U. Miss.)	4550	32	1.15	30	15	25
47	Kevin-Sunburst	Toole	1922	Madison (Miss.)	1500	32	1.08	6.5	20	35
48	Laurel	Yellowstone	1961	Dakota (L. Cret.)	850	54	1.10	8	10	30
49	Little Beaver	Fallon	1952	Red River (U. Ord.)	8300	29	1.16	37	12	35
50	Little Beaver-East	Fallon	1954	Red River (U. Ord.)	8300	30	1.20	29	12.5	35
51	Lookout Butte	Fallon	1961	Siluro-Ordovician	8500	33	1.25	45	15	50
52	Meistone	Musselshell	1948	Tyler (U. Miss.)	4250	34	1.09	25	12	30
53	Monarch	Fallon	1958	Siluro-Ordovician	8400	32	1.10	31	7	35
54	Monarch	Fallon	1961	Mission Canyon (Miss.)	6710	34	1.08	17	19	60
55	Mosser	Yellowstone	1936	Dakota (L. Cret.)	1000	22	1.01	15.4	23.6	30
56	Outlook	Sheridan	1956	Siluro-Devonian	9000	38	1.12	20	8	30
57	Outlook	Sheridan	1957	Red River (U. Ord.)	9900	33	1.21	35	8	45
58	Pennel	Fallon	1955	Siluro-Ordovician	8800	33	1.14	40	11	35
59	Pennel	Fallon	1957	Mission Canyon (Miss.)	7000	31	1.10	38	3.4	30
60	Pennel	Fallon	1960	Lodgepole (Miss.)	7500	36	1.13	30	8	35
61	Pine	Dawson, Wibaux, Fallon, Prairie	1952	Siluro-Ordovician	8400	34	1.17	32	11.5	30
62	Pondera	Pondera, Teton	1927	Madison (Miss.)	2100	34	1.20	15	16	31
63	Pondera Coulee	Teton	1961	Madison (Miss.)	2000	34	1.10	15	15	30
64	Poplar	Roosevelt	1952	Charles-Mission Canyon (Miss.)	5550	40	1.10	25	11	30
65	Poplar-Northwest	Roosevelt	1952	Charles-Mission Canyon (Miss.)	6260	40	1.10	16	10.3	45
66	Ragged Point	Musselshell	1947	Kibbey (U. Miss.)	4400	33	1.09	28	11	40
67	Ragged Point	Musselshell	1956	Tyler (U. Miss.)	3580	32	1.10	14	14.5	35
68	Reagan	Glacier	1947	Madison (Miss.)	3700	38	1.10	11	12	30
69	Red Creek	Glacier	1958	Cut Bank (L. Cret.)	2600	33	1.17	20	19.2	25
70	Red Creek	Glacier	1958	Madison (Miss.)	2750	28	1.10	18	13	30
71	Redstone	Sheridan	1958	Winnipegosis (Dev.)	9400	39	1.10	10	7	45
72	Repeat	Carter	1956	Red River (U. Ord.)	8610	23	1.02	25	10	30
73	Richey	Dawson, McCone	1951	Charles (Miss.)	7000	39	1.20	25	8	30
74	Richey-Southwest	McCone	1952	Interlake (Sil.)	9200	48	1.37	21	9	35
75	Richey-Southwest	McCone	1952	Dawson Bay (Dev.)	9130	48	1.37	6	9	30
76	Sand Creek	Dawson	1959	Interlake (Sil.)	8950	39	1.30	20	10	40
77	Sand Creek	Dawson	1959	Red River (U. Ord.)	9400	39	1.30	15	10	40
78	Seven Mile	Dawson	1961	Siluro-Ordovician	9632	42	1.25	30	12	40
79	Sidney	Richland	1958	Mission Canyon (Miss.)	9000	32	1.50	30	4	40
80	Snyder	Big Horn	1952	Tensleep (Penn.)	4550	21	1.16	12	20	35
81	Soap Creek	Big Horn	1920	Tensleep-Amsden-Madison	1900	20	1.05	20	15	35
82	Stensvad	Musselshell, Rosebud	1958	Tyler (U. Miss.)	5500	33	1.17	26.25	14	20
83	Sumatra	Rosebud	1949	Tyler (U. Miss.)	4500	32	1.16	30	18.5	35
84	Sumatra	Rosebud	1955	Amsden (L. Penn.)	4000	29	1.10	8	20	35
85	Tule Creek	Roosevelt	1960	Nisku (Dev.)	7700	46	1.41	25	15	30
86	Whitlash	Liberty	1927	(L. Cret.)	1400	38	1.13	15	16	20
87	Wills Creek	Fallon	1957	Siluro-Ordovician	8500	32	1.20	70	12	25
88	Wolf Springs	Yellowstone	1955	Amsden (L. Penn.)	6200	30	1.07	10.5	5.75	23
89	Woodrow	Dawson	1952	Charles (Miss.)	7800	32	1.45	19	17.3	35

TOTALS

SUMMARY OF PRODUCING OIL FIELDS

AVG. CONCENTRATE WATER %	ORIGINAL OIL IN PLACE BBL./ACRE	PRODUCTIVE AREA 1-1-62 ACRES	ORIGINAL OIL IN PLACE 1000 BBL.	ESTIMATED RECOVERY FACTOR & SECONDARY		ORIGINAL PRIMARY RESERVES 1000 BBL.	ORIGINAL SECONDARY RESERVES 1000 BBL.	TOTAL ORIGINAL RESERVES 1000 BBL.	CUMULATIVE PRODUCTION 1-1-62 1000 BBL.	REMAINING RESERVES 1-1-62 1000 BBL.	1961 PRODUCTION		ORIGINAL RECOVERABLE RESERVES		LINE NO.	
				PRIMARY	SECONDARY						TOTAL BBL.	AVG. DAILY BOPD.	BBL./ ACRE	BBL./ ACRE-FT.		
35	14,855	160	2,377	26	--	618	--	618	339	279	28,163	77	3,865	276	1	
43	24,635	170	4,188	5	--	209	--	209	132	77	17,948	49	1,230	32	2	
35	11,205	200	2,241	15	--	336	--	336	150	186	46,411	127	1,680	84	3	
17	9,049	160	1,448	10	--	145	--	145	72	73	15,375	42	906	46	4	
30	13,550	160	2,168	17	--	369	--	369	4	365	4,277	300	2,304	105	5	
40	17,066	1,140	19,455	30	--	5,837	--	6,869	4,069	2,800	400,075	1,098	5,120	233	6	
35	13,647	280	3,821	27	--	1,032	--	1,032	132	77	17,948	49	1,230	32	7	
40	4,533	480	2,176	20	--	435	--	435	516	328	101,257	277	2,556	170	8	
35	10,221	160	1,635	25	--	409	--	409	200	200	9,975	27	3,816	173	9	
30	16,593	340	5,641	23	--	1,297	--	1,297	1,097	328	101,257	277	2,556	170	10	
31	22,719	5,282	120,000	5.75	9.92	6,900	5,000	11,900	5,877	6,023	240,899	660	1,306	35	11	
53	4,234	640	2,710	20	--	542	--	542	475	67	11,157	31	847	35	12	
40	11,419	320	3,654	15	--	548	--	548	376	172	25,634	70	1,712	19	13	
30	29,415	6,660	195,904	18	28	35,263	19,000	59,636	23,595	36,041	4,197,696	11,500	2,378	95	14	
30	13,215	2,259	29,852	18	--	5,373	--	5,373	1,297	328	101,257	277	2,556	170	15	
19	11,997	200	2,399	22	--	528	--	528	991	254	22,967	63	3,112	165	16	
19	61,186	920	56,291	30	35	16,887	3,000	25,656	19,809	5,847	239,050	654	18,351	360	17	
40	5,586	120	670	32	--	214	--	214	376	172	25,634	70	1,712	19	18	
40	19,043	880	16,758	30	--	5,027	--	5,027	991	254	22,967	63	3,112	165	19	
39	8,896	400	3,558	35	--	1,245	--	1,245	124	37	12,674	35	1,000	30	20	
35	14,421	160	2,307	7	--	161	--	161	221	103	12,946	34	1,089	91	21	
35	10,542	54,250	571,303	19	23	108,661	26,500	142,645	93,322	49,323	2,035,633	5,577	2,003	125	22	
30	6,912	4,010	27,717	27	--	7,484	--	7,484	395	211,979	581	1,930	27	23		
35	31,270	480	15,010	8	--	1,201	--	1,201	221	103	12,946	34	1,089	91	24	
35	20,543	400	8,217	9.4	--	772	--	772	221	103	12,946	34	1,089	91	25	
30	3,683	440	1,621	20	--	324	--	324	221	103	12,946	34	1,089	91	26	
22	5,445	1,700	9,257	20	--	1,851	--	1,851	3,937	1,405	24,049	66	3,491	116	27	
25	17,455	1,000	17,455	20	--	3,491	--	3,491	536	3,700	443,682	1,216	1,654	55	28	
55	11,033	2,560	28,244	15	--	4,236	--	4,236	536	3,700	443,682	1,216	1,654	55	29	
20	33,702	120	4,044	--	54	--	--	--	53	29	10,275	28	469	--	30	
10	78,598	1,376	108,144	57	--	2,184	--	2,184	71,383	2,645,611	7,248	--	--	--	31	
9	168,975	920	155,474	21.5	28	33,427	10,106	1,020	692	328	22,576	62	5,616	162	32	
30	22,448	120	2,694	25	38	6,80	340	6,027	880	5,147	21,865	60	15,777	70	33	
20	83,036	382	31,720	19	--	6,027	--	6,027	246	210	4,568	13	3,080	140	34	
40	20,500	80	1,640	15	--	246	--	246	485	221	22,949	63	8,830	305	35	
16	35,272	80	2,822	25	--	706	--	706	512	31	8,703	24	1,696	94	36	
48	6,786	320	2,172	25	--	543	--	543	1,854	1,494	442,645	1,212	1,590	64	37	
35	8,836	2,105	18,599	18	--	3,348	--	3,348	5,305	2,712	519,126	1,422	7,708	52	38	
35	38,544	1,040	40,086	20	--	8,017	--	8,017	53	53	--	--	1,320	110	39	
35	8,784	40	351	15	--	53	--	53	29	29	10,275	28	469	--	40	
--	--	160	300	25	--	75	--	75	83	21	35,970	99	3,005	250	41	
--	8,644	40	346	30	--	104	--	104	254	100	1,250	125	2,309	265	42	
40	6,594	110	725	35	--	254	--	254	2,051	1,365	470,333	1,288	1,250	125	43	
35	7,004	80	560	18	--	100	--	100	3,062	6,819	666,302	1,825	1,250	125	44	
20	24,997	490	12,248	25	--	3,062	--	3,062	932	3,313	698,882	1,914	4,614	154	45	
25	23,071	920	21,225	20	--	4,245	--	4,245	66,189	6,819	666,302	1,825	1,250	125	46	
35	6,053	40,205	243,361	30	--	73,008	--	73,008	6	6	--	--	592	74	47	
30	3,952	10	40	15	--	6	--	6	1,774	4,652	447,645	1,226	2,895	78	48	
35	19,299	2,220	42,843	15	--	6,426	--	6,426	868	1,617	336,410	922	2,436	84	49	
35	15,233	1,020	15,537	15	--	2,485	--	2,485	504	504	--	--	3,150	70	50	
50	20,925	160	3,348	15	--	504	--	504	1,241	1,241	45,631	125	3,586	143	51	
30	14,945	360	5,380	25	--	1,291	--	1,291	884	2,680	372,047	1,020	1,492	48	52	
35	9,946	2,240	22,279	15	--	3,342	--	3,342	163	175	5,046	14	3,521	229	53	
35	9,238	160	1,478	15	--	222	--	222	175	175	5,046	14	3,521	229	54	
60	9,238	160	1,478	15	--	222	--	222	163	175	5,046	14	3,521	229	55	
30	19,540	96	1,876	18	--	338	--	338	2,542	1,029	589,295	1,614	1,939	97	56	
40	7,758	1,760	13,652	25	--	3,413	--	3,413	2,542	1,029	589,295	1,614	1,939	97	57	
35	9,875	80	790	20	--	158	--	158	1,029	1,029	589,295	1,614	1,939	97	58	
35	19,548	4,640	90,702	10	--	9,070	--	9,070	3,688	6,755	871,688	2,388	2,141	71	59	
30	6,378	720	4,592	15	--	688	--	688	3,688	6,755	871,688	2,388	2,141	71	60	
35	10,709	320	3,426	20	--	685	--	685	31,483	33,075	5,212,260	14,280	3,415	107	61	
30	17,078	14,568	248,792	20	26	49,758	14,800	64,558	5,237	5,237	494,429	1,355	3,747	250	62	
31	10,706	5,560	59,525	35	--	20,834	--	20,834	86	86	3,043	8	2,220	148	63	
30	11,100	40	444	20	--	89	--	89	43,370	43,370	2,365,321	6,480	4,073	163	64	
30	13,576	17,909	243,133	30	--	72,940	--	72,940	262	122	21,316	58	960	60	65	
45	6,393	400	2,557	15	--	384	--	384	454	454	138,134	378	2,785	199	66	
40	13,152	140	1,841	27	--	497	--	497	2,745	3,818	152,764	419	1,950	178	67	
35	9,307	380	3,537	30	--	1,061	--	1,061	873	5,050	333,636	914	2,080	115	68	
30	6,517	3,050	19,877	30	33	5,963	600	6,563	2,745	3,818	152,764	419	1,950	178	69	
25	19,094	840	16,041	25	--	4,010	--	4,010	873	5,050	333,636	914	2,080	115	70	
30	11,553	920	10,628	18	--	1,913	--	1,913	24	24	12,565	35	662	66	71	
45	2,715	80	217	20	--	340	--	340	144	144	26,472	73	4,250	85	72	
30	13,258	160	2,122	16	--	340	--	340	372	372	126,654	347	2,080	83	73	
30	9,028	940	8,486	23	--	1,952	--	1,952	656	299	57,175	157	2,435	116	74	
35	6,955	300	2,087	35	--	730	--	730	955	656	57,175	157	2,435	116	75	
30	2,140	300	642	35	--	225	--	225	500	500	178,901	490	1,432	72	76	
40	7,160	680	4,869	20	--	974	--	974	321	16	305	15,816	225	2,006	67	77
40	5,370	240	1,289	15	--	321	--	321	61	177	22,144	61	744	25	78	
40	13,380	160	2,141	15	--	321	--	321	26	26	19,139	52	2,085	174	79	
40	3,724	320	1,191	20	--	238	--	238	236	236	67,498	185	3,185	159	80	
35	10,631	149	1,554	20	--	311	--	311	4,596	2,129	1,549,353	4,245	4,860	185	81	
35	14,488	410	5,940	22	--	1,307	--	1,307	9,001	9,001	2,462,839	6,748	1,835	229	82	
20	19,465	1,382	26,900	25	--	6,725	--	6,725	3,560	480,298	1,315	3,635	145	83	83	
35	24,123	3,720	89,737	25	--	22,434	--	22,801	968	92,099	252	1,980	132	84	84	
35	7,335	200	1,467	25	--	367	--	367	1,266	1,266	403,769	1,106	8,150	116	85	
30	14,541	1,1														





MONTANA
OIL AND GAS FIELDS, PIPELINES AND REFINERIES
1961
 THE OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA

ERA	PERIOD		SOUTHWESTERN MONTANA	CRAZY MTN. BASIN	BIG HORN BASIN		SOUTH-CENTRAL MONTANA	
CENOZOIC			BEAVERHEAD	TONGUE RIVER LEBO TULLOCK HELL CREEK LENNEP BEARPAW JUDITH RIVER CLASGETT	FORT UNION LANCE MEETEETSE MESA VERDE CODY SHALE		MELL CREEK LENNEP BEARPAW JUDITH RIVER CLASGETT	
MESOZOIC	CRETACEOUS	UPPER	MONTANA-COLORADO GROUPS	MONTANA GROUP LIVINGSTON FORMATION EAGLE VIRGELLE TELEGRAPH CREEK FRONTIER MOWRY MUDDY DAKOTA KOOTENAI MORRISON SWIFT RIERDON SAWTOOTH	COLORADO SHALE FRONTIER MOWRY THERMOPOLIS Dakota ss CLOVERLY KOOTENAI MORRISON UPPER SUNDANCE LOWER SUNDANCE GYPSUM SPRING	● ELK BASIN, N.W. ELK BASIN ● NORTH CLARKS FORK ● BELFRY ● NORTH CLARKS FORK ● NORTH CLARKS FORK	MONTANA GROUP MELL CREEK LENNEP BEARPAW JUDITH RIVER CLASGETT EAGLE VIRGELLE TELEGRAPH CREEK NIOBRARA CARLILE GREENHORN BELLE FOURCHE MOWRY Muddy ss Baso Colo. silt DAKOTA Graybull ss - FUSON PRIOR CONGLOMERATE MORRISON SWIFT RIERDON PIPER BOWES Fuson Tombeco	● DRY CREEK ● DRY CREEK, HARDIN ● MOSSER COME, LAUREL ● DRY CREEK, ● DRY CREEK
PALEOZOIC	JURASSIC	UPPER	ELLIS GROUP THAYNES WOODSIDE DINWOODY	ELLIS GROUP CHUGWATER DINWOODY	ELLIS GROUP CHUGWATER DINWOODY		ELLIS GROUP CHUGWATER DINWOODY	
PALEOZOIC	TRIASSIC	LOWER	MORRISON SWIFT RIERDON SAWTOOTH	MORRISON SWIFT RIERDON PIPER	MORRISON UPPER SUNDANCE LOWER SUNDANCE GYPSUM SPRING		MORRISON SWIFT RIERDON PIPER BOWES Fuson Tombeco	
PALEOZOIC	PERMIAN	UPPER	PHOSPHORIA QUADRANT AMSDEN SHAZER MADISON SAPPHINGTON THREE FORKS JEFFERSON WAYWOOD	PHOSPHORIA TENSLEEP AMSDEN ALASKA PENCH TYLER BIG SNOWY MADISON SAPPHINGTON THREE FORKS JEFFERSON WAYWOOD	PHOSPHORIA TENSLEEP AMSDEN DARWIN SS MADISON SAPPHINGTON THREE FORKS JEFFERSON WAYWOOD	● ELK BASIN, FRANKIE ● ELK BASIN, N.W. ELK BASIN	PHOSPHORIA TENSLEEP AMSDEN MADISON THREE FORKS JEFFERSON WAYWOOD	● SNYDER, SOAP CREEK ● SOAP CREEK ● SOAP CREEK
PALEOZOIC	PENNSYLVANIAN	MIDDLE	BIG HORN RED LION HASMARK PARK MEASHER SILVER HILL WOLSEY FLATHEAD	BIG HORN GROVE CREEK SNOWY RANGE PILGRIM PARK MEASHER WOLSEY FLATHEAD	BIG HORN LANDER SS GALLATIN UPPER SH DEATH CANYON LOWER SH FLATHEAD		BIG HORN GROVE CREEK SNOWY RANGE PILGRIM PARK MEASHER WOLSEY FLATHEAD	
PALEOZOIC	DEVONIAN	LOWER	BELT	BELT	BELT		BELT	
PALEOZOIC	SILURIAN	UPPER	BELT	BELT	BELT		BELT	
PALEOZOIC	ORDOVICIAN	MIDDLE	BELT	BELT	BELT		BELT	
PALEOZOIC	CAMBRIAN	LOWER	BELT	BELT	BELT		BELT	
PROTEROZOIC	PRE-CAMBRIAN		BELT	BELT	BELT		BELT	
ARCHEOZOIC						METAMORPHIC		AND

SHOWING PRODUCING HORIZONS — MONTANA OIL AND GAS FIELDS, 1961

WEST-CENTRAL MONTANA	CENTRAL MONTANA	SWEETGRASS ARCH	NORTH-CENTRAL MONTANA
ELL CREEK	FORT UNION	WILLOW CREEK	TULLOCK
LENNEP	TULLOCK	ST MARY RIVER	HELL CREEK
BEARPAW	HELL CREEK	HORSETHIEF	FOX HILLS
JUDITH RIVER	FOX HILLS	BEARPAW	BEARPAW
CLAGGETT	BEARPAW	TWO MEDICINE	JUDITH RIVER
WILLOW CREEK	JUDITH RIVER	VIRGELLE	CLAGGETT
LEGRAH CREEK	CLAGGETT	TELEGRAPH CREEK	EAGLE
NIOBRARA	EAGLE	ST SPECKS (GREENHORN)	VIRGELLE
CARLE	TELEGRAPH CREEK	MOWRY	TELEGRAPH CREEK
GREENHORN	NIOBRARA	Bow Island	NIOBRARA
LE FOURCHE	CARLE	BOROI	CARLE
MOWRY	GREENHORN	SLACKLEAF	GREENHORN
Muddy ss	MOWRY	KOOTENAI	BELLE FOURCHE
BOROI	THERMOPOLIS	MORRISON	MOWRY
DAKOTA	1st CAT CREEK	SWIFT	DAKOTA
FUSION	2nd CAT CREEK	RIERDON	KOOTENAI
CONGLOMERATE	3rd CAT CREEK	SAWTOOTH	MORRISON
MORRISON	4th CAT CREEK	ELLIS GROUP	SWIFT
SWIFT	5th CAT CREEK	RIERDON	RIERDON
RIERDON	6th CAT CREEK	SAWTOOTH	SAWTOOTH
BOWES	7th CAT CREEK		NESSON
FRANKLIN	8th CAT CREEK		CHARLES
TAMICO	9th CAT CREEK		MISSION CANYON
CHUGWATER	10th CAT CREEK		LODGEPOLE
SINWOODY	11th CAT CREEK		BAKKEN
PHOSPHORIA	12th CAT CREEK		THREE FORKS
ENSLIEP	13th CAT CREEK		FOTLATCH
AMSDEN	14th CAT CREEK		NISKU
MADISON	15th CAT CREEK		DUPEROW
THREE FORKS	16th CAT CREEK		SOURIS RIVER
JEFFERSON	17th CAT CREEK		DAWSON BAY
BIG HORN	18th CAT CREEK		ELK POINT GROUP
WYOMING	19th CAT CREEK		INTERLARK
PILGRIM	20th CAT CREEK		STONY MT
PARK	21st CAT CREEK		RED RIVER
MEAGHER	22nd CAT CREEK		WINNEPEG
WOLSEY	23rd CAT CREEK		WINNEPEG
FLATHEAD	24th CAT CREEK		CAMBRIAN
	25th CAT CREEK		
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