

OIL AND GAS CONSERVATION COMMISSION

OF THE STATE OF MONTANA

● HELENA ●

ANNUAL REVIEW FOR THE YEAR 1958

Volume 4

Relating To

OIL AND GAS



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THE OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA

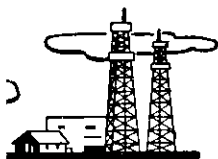
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ANNUAL REVIEW FOR THE YEAR 1958

Volume 4

INTRODUCTION

This is the Fourth Annual Review of drilling and producing operations in Montana oil fields. For the first time the Review is issued in pamphlet form and has been expanded to include a brief general description of the individual oil and gas fields in the State, together with a designation of the discovery well and the deepest test well. The term, "discovery well" used in this Review refers to the well in which the discovery of hydrocarbons lead to further exploration and eventual development of the structure. This may or may not have been a commercial well. The deepest test well is that one which apparently had the deepest stratigraphic penetration and may or may not have had the greatest total depth in the area. Only those wells within the immediate structure or area of development have been considered.

The Commission has presented this discussion of fields to be a preliminary report and it is the intent to expand the material in subsequent reviews to include all of the basic information that has been accumulated.

It has been the policy of the Oil and Gas Commission to offer this service to the oil industry and the public in general. In addition, the Commission maintains complete records of all wells drilled in Montana, records of well tests and reservoir pressures, and production reports. The law specifies that samples of cuttings and cores from all wells drilled in Montana be submitted to the Commission, and these are preserved at the Billings' repository and are available to interested parties. Other services rendered by the Commission include a monthly Statistical Bulletin, showing the oil and gas production by fields, refining and transportation data; and an annual production and valuation summary. These items are available upon request.

SUMMARY OF OPERATIONS

(1) Production (oil)

Fields	67
Wells, producing	3,963
Yearly Production	27,956,649 Bbls.
Average Daily Production	76,593 Bbl./D
Max. Avg. Daily (Aug.).....	78,696 Bbl./D

(2) Drilling

(a) Development

Oil	159
Gas	7
Dry	46
(Oil wells abnd.).....	39

Total Dev. Wells 212

(b) Exploratory

Oil	12
Gas	2
Dry	109

Total Explor. Wells 123

Total all wells.....	335
Total Footage	1,700,404
Avg. depth all wells	5,106
Deepest well drilled for year	12,185

(c) Success ratio (wildcat)..... 1 in 11.4 wells

(3) Reserves (Primary, proven)

(a) Reserve corrected to Jan. 1, 1958.....		321,566,000 Bbls.
* By 1958 Discovery Fields.....	2,976,000	
By 1958 Extension & Development.....	28,899,000	

+ 31,875,000

Sub Total 353,441,000

Less 1958 Production..... — 27,957,000

Est. Reserve January 1, 1959..... 325,484,000 Bbls.

(b) Bbls. reserve developed per foot drilled 18.7

(c) Bbls. reserve developed per bbl.
oil produced

1.14

* Only limited acreage is assigned to each new discovery.

OIL AND GAS DISCOVERIES IN 1958

County	Field	Operator — Well Name and Location	Total Depth Ft.	Initial Production	
				Producing Formation	Oil (B/D) Gas (Mcf/D)
Carbon	Belfry	Carter Oil, Wheatley Govt. 1, 7-9S-22E	12,185	Fuson	196
Fallon	Monarch	Shell Oil, NPRR 12-23, 23-9N-58E	9,175	Silurian	218
Glacier	Red Creek	Carter Oil, McAlpine 1, 12-37N-5W	2,935	Cut Bank	5
Musselshell	Hawk Creek	Miles Jackson, NPRR 1, C Lot 24, 8N-29E	7,179	Amsden	70
Richland	Unnamed	Wendell C. Flynn, Beagle 1, 17-23N-59E	13,134	Mission Canyon	50
Rosebud	Stensvad	Honolulu Oil, Stensvad 11-9, 11-11N-31E	5,516	Tyler	448
Sheridan	Red Stone	H. L. Hunt, Hagen 1, 7-34N-52E	10,700	Siluro-Devonian	100
Stillwater	No. Lake Basin	Holland American, Castles 1, 22-2N-21E	4,180	Eagle-Frontier	450
Teton	Blackleaf Canyon	Northern Natural, Blackleaf 1, 13-26N-9W	6,323	Madison	6,239

IMPORTANT FIELD EXTENSIONS IN 1958

County	Field	Operator — Well Name and Location	Total Depth Ft.	Initial Production	
				Producing Formation	Oil (B/D) Gas (Mcf/D)
Glacier	Red Creek	Salt Dome, Kruger 1, 12-37N-5W	2,740	Madison	126
Pondera	Pondera	Skelly Oil, State 1, 36-28N-5W	2,120	Madison	60
Rosebud	Sumatra	Barker, O'Neill-Ottman 1, 26-11N-32E	5,240	Heath Ls.	73
Sheridan	Outlook	Amerada Petr. Corp., Thorson 1, 7-34N-52E	9,727	Silurian	76

DISTRIBUTION OF 1958 PRODUCTION

By Geologic Age		By Regional Area	
Cretaceous	10%	Northern Montana	16%
Jurassic	4%	Central Montana	12%
Pennsylvanian-Permian	8%	South Central Montana	13%
Mississippian	35%	Williston Basin	59%
Ordovician-Silurian-Devonian	43%		

WATER INJECTION AND DISPOSAL

(A) PRESSURE MAINTENANCE AND SECONDARY RECOVERY

Field	Operator	Reservoir	Water Input
East Poplar	Murphy Corporation	Charles "B"	3,591,659
Elk Basin	Sinclair	Frontier	55,879
Kevin-Sunburst	Imperial-Craig	Madison	274,675
Cabin Creek	Shell	Red River	384,695
Pine	Shell	Red River	401,095

(B) SALT WATER DISPOSAL INTO VARIOUS BARREN FORMATIONS

Field	Operator	Barrels	Working Pressure
Big Wall	Texas Company	1,808,159	850 p.s.i.
Deer Creek	Texas Company	123,468	332 p.s.i.
Richey	Shell	399,000	500 p.s.i.
Glendive	Texas Company	125,597	566 p.s.i.

REFINING

Big West Refining.....	751,440
Carter Oil Company.....	9,108,956
Continental Oil Company.....	3,681,579
Diamond Asphalt Company.....	202,398
Farmers Union Central Exchange.....	5,840,848
Jet Refining Company.....	126,787
Phillips Petroleum Company.....	994,566
The Texas Company.....	1,293,558
Texas Calgary	44,558
Union Oil Company.....	1,214,855
Unity Petroleum Company.....	5,373
TOTAL Bbls. Oil Refined in Montana (1958).....	23,264,918

MONTANA
GAS PRODUCTION DATA

Field	County	No. of Wells	Producing Formation	1958 Production MCF
Bears Den	Liberty	2	Kootenai	31,933
Big Coulee	Golden Valley	6	Lakota-Morrison	659,287
Bowdoin	Phillips & Valley	367	Colorado	2,143,347
Bowes	Blaine	19	Eagle	886,086
Box Elder	Blaine & Hill	2	Eagle	19,551
Cabin Creek	Fallon	—*	Siluro-Ordovician	789,456
Cedar Creek	Fallon & Wibaux	232	Judith River & Eagle	5,387,597
Clarks Fork, North	Carbon	4	Lakota & Dakota	360,744
Cut Bank, incl. Reagan	Glacier & Toole	219	Kootenai	11,800,595
Devon	Toole	21	Colorado	191,518
Dry Creek	Carbon	6	Cretaceous	1,627,297
Elk Basin	Carbon	2	Tensleep	590,846
Flat Coulee	Liberty	4	Kootenai	309,301
Golden Dome	Carbon	1	Greybull ss	37,596
Hardin	Big Horn	48	Frontier ss	50,502
Keith Block	Liberty	5	Sawtooth-Madison	1,451,141
Kevin-Sunburst	Toole	72	Kootenai	1,003,600
Pine	Wibaux & Prairie	—*	Siluro-Ordovician	993,045
Plevna	Fallon	29	Judith River	216,589
Utopia	Liberty	6	Sawtooth-Ellis	619,537
Whitlash	Liberty	42	Colorado	1,058,633
Miscellaneous				737,052
TOTAL all Fields		<u>1,087</u>		<u>30,965,253</u>

* Gas produced from oil wells

BIG HORN COUNTY

ASH CREEK

Discovery Well: McDermott-Shell, Elsie Berry 1 (24-58N-85W, Wyoming). Completed 4-52.

Oil in the Ash Creek Field comes from the Shannon "Ash Creek sandstone member of the lower part of the Pierre group of Upper Cretaceous age. The field is situated on a southward plunging anticlinal nose in which the accumulation is confined to the southern or upthrown side of a series of north-east-southwest trending faults. The Montana portion of the field is confined to only four producing wells in the extreme northern part of the structure. The one lease in Montana has settled production with a decline less than ten percent per year. Water production is reported as nil.

4 Wells; 1 Lease; 1 Operator; Truck Transportation.

Spacing: State-wide rules.

TETON COUNTY

BANNATYNE

Discovery Well: Genou Oil and Gas, Speer 1 (8-25N-1E). Completed 7-27.

Deepest Test Well: Thomas Carney, Speer 2 (5-25N-1E). Completed 12-47. Devonian (?).
TD 3115

Production from the Bannatyne Field in 1958 was from the Swift "Emrick" sandstone of Jurassic age. The Bannatyne Field is located on a relatively symmetrical domal structure with only a slight northeast-southwest elongation.

The field was originally abandoned in 1935, and revived in 1955, with the recompletion of two wells. An additional well was drilled in 1956; however, the annual production in 1957 averaged only 16½ barrels per day. Activity was increased in 1958 by an independent operator who acquired various interests and completed four wells during the year.

The reservoir energy is water drive; however, the extremely low viscosity of the reservoir oil accounts for the low well productivity and low recovery of the oil in place. In an effort to improve this condition, the operator currently has plans to attempt insitu combustion in the reservoir.

6 Wells; 6 Leases; 2 Operators; Truck Transportation.

Spacing: 10 Acre; Orders No. 1-1-53, 17-58, 20-58.

LIBERTY COUNTY

BEARS DEN

Discovery Well: Kenneth Frazier et al, Ritter-Government 1X (12-36N-5E). Completed 7-24.
Gas well.

Deepest Test Well: Above well. Jefferson (Devonian). TD 3290.

Oil and gas production in the Bears Den Field is from the lenticular Sunburst "Ribbon" or "Baskoo" sandstone member of the Kootenai formation of Lower Cretaceous age. In addition, one well in the field is producing gas from the upper part of the Madison (Mississippian) formation. The field lies within a small closure on the east flank of the Sweetgrass Hills.

Production is in the stripper stage; however, the annual decline is less than four percent per year.

3 Wells; 2 Leases; 1 Operator; Truck Transportation.

Spacing: State-wide rules.

CARBON COUNTY

BELFRY

Discovery Well: Carter, Wheatley-Govt. 1 (7-9S-22E). Completed 4-58.

Deepest Test Well: Above well. Madison (Mississippian). TD 12,185.

Condensate having an API gravity of 61 degrees is produced from the one well in this field, from a stray sand in the Fuson formation of Lower Cretaceous age. Depth of production is 9,844 feet.

1 Well; 1 Lease; 1 Operator.

Spacing: State-wide rules.

TOOLE COUNTY

BERTHELOTE

Discovery Well: Black Gold Petroleum, Pederson 1. Gas well (30-36N-2E). Completed 11-29.

Deepest Test Well: Waterford, Berthelote 1 (30-36N-2E) Madison (Mississippian). TD 2,692.

This field is on an anticlinal nose situated on the west flank of the Sweetgrass Hills. Production is from the Kootenai "Cut Bank sand" of Lower Cretaceous age.

2 Wells; 1 Lease; 1 Operator; Truck transportation.

Spacing: State-wide rules.

STILLWATER & GOLDEN VALLEY COUNTIES

BIG COULEE

Discovery Well: Texas, NP D-1 (31-5N-20E). Completed 11-48.

Deepest Test Well: Above well. Cambrian. TD 4,543.

Production of natural gas in the Big Coulee Field comes from sands in the Lakota (Lower Cretaceous) formation and the underlying Morrison (Jurassic) formation. Although the Big Coulee Field is located on an anticlinal structure over which the producing sands are continuous, there is much variability in the thickness and porosity of these sands.

The field was unitized and put on production in 1956. It supplies gas to the communities of Harlowton and Lewistown.

3 Wells; 3 Leases; 1 Operator.

Spacing: State-wide rules.

MUSSELSHELL COUNTY

BIG WALL

Discovery Well: Texas, NP 1 (19-10N-27E). Completed 7-48.

Deepest Test Well: Texas, Zoerb 1 (18-10N-27E). Kibbey (Mississippian). TD 3,617.

Structurally the Big Wall Field is a domal structure bisected by a deep saddle separating the field into two elongated east-west anticlines. Oil is produced from the Amsden (Pennsylvanian) dolomite and the Tyler (Mississippian) "A" and "B" sands. Production from the lowermost Tyler "B" unit is largely controlled by the erratic distribution of this sand.

The reservoirs are entirely different in character and fluid; however, both operate under water drive. The low decline in the Tyler (10 percent per year) indicates uniform stabilized water influx with an indicated ultimate recovery of 42 percent. Present water cut for the field is 50 percent. Disposal is mainly in a barren Tyler "A" sand section.

26 Wells; 10 Leases; 3 Operators; Truck Transportation.

Spacing: State-wide rules. Order No. 12-54.

GLACIER COUNTY

BLACKFOOT FIELD

Discovery Well: Union, Muntzing 1 (11-37N-6W). Completed 10-56.

Deepest Test Well: Mobil, F-34-3-1. Madison (Mississippian). TD 3,687.

The Blackfoot Field is located on a north-northwest plunging anticlinal nose the east side of which is upthrown along a fault paralleling the structural trend. Oil is produced from both the Kootenai "Cut Bank" sand of Lower Cretaceous age and the uppermost "Sun River" dolomite of Mississippian age. Both producing horizons though continuous over the structure are irregular in both thickness and permeability.

Development during 1958 increased the annual production and substantial reserves in the Madison reservoir. Production is due to both water and solution gas drive.

15 Wells; 10 Leases; 4 Operators; Truck Transportation.

Spacing: 40 Acre. Order No. 3-57.

TETON COUNTY

BLACKLEAF CANYON

Discovery Well: Northern Natural Gas, Blackleaf-Federal "A" (13-26N-9W). Completed 6-58.

Deepest Test Well: Above well. Madison (Mississippian). TD 6,323.

The Blackleaf Canyon Field is situated along a series of southwest dipping thrusts. Gas has been found in the Mississippian-Sun River dolomite in a drag fold along the upthrust side of one of these faults.

The field is a 1958 gas discovery, currently shut-in pending further development and pipeline outlet.

Spacing: State-wide rules.

TOOLE COUNTY

BORDER

Discovery Well: Vanalta Oil Company, Ltd. 1 (4-1N-16W). Completed 9-29.

Deepest Test Well: Empire State, Iowa Holding Co. 2. Jefferson (Devonian). TD 4,920.

Oil from the Border Field is produced from the "Vanalta" and "Cosmos" sands of the lower part of the Kootenai formation of Lower Cretaceous age. Although the field is located on a northwest plunging anticlinal nose, production is largely controlled by variable porosity and a pinch-out of one of the producing sands.

The field is in settled stripper production, averaging 26 barrels per day in 1958, compared with 23 barrels per day in 1957. Production is apparently stabilized by well servicing, and slow water influx.

8 Wells; 4 Leases; 2 Operators; Truck Transportation.

Spacing: 9 Wells/40 Acres; Order No. 7-54.

PHILLIPS & VALLEY COUNTIES

BOWDOIN

Discovery Well: Martin Water Well (18-31N-35E). Completed 1913.

Deepest Test Well: Texas, Dupont 1 (8-32N-32E). Cambrian. TD 5,855.

The Bowdoin Gas Field lies on a large oval dome having a general east-west elongation. Gas production is from the "Bowdoin" and "Phillips" sands in the Colorado shale of Upper Cretaceous age. Gas production is controlled in part by varying porosities in these sands.

This is a unitized gas field covering an extremely large producing area. Gas is produced into the Montana-Dakota Utilities Company System. Several deep tests of the structure have failed to develop oil.

367 Wells; 8 Leases; 1 Operator.

Spacing: 160 acre; Order No. 29-55.

BLAINE COUNTY

BOWES

Discovery Well: California, Johnson 1 (9-31N-19E). Gas well. Completed 10-26.

Deepest Test Well: Northern Ordinance, Guertzgen 5 (1-31N-19E). Devonian. TD 5,082.

The Bowes dome is a relatively symmetrical structure in which shallow faults are found only near the surface. Gas production is from the Eagle sandstone of Upper Cretaceous age. Oil is produced from the Sawtooth or Piper formation of Jurassic age.

There was no drilling in 1958; however, the 13 wells drilled in 1957 considerably extended the field limits and oil reserves. Production of the developed oil leases declined twelve percent in 1958, and the drive mechanism is considered to be solution gas; however, water production is 28.8 percent.

87 Wells; 20 Leases; 2 Operators; Transportation, Pipeline to Chinook.

Spacing: 10 Acre (oil). Order No. 13-54; 40 Acre (gas). Order No. 23-54.

BLAINE COUNTY

BOX ELDER

Discovery Well: Perkins, Stranahan 1 (14-32N-17E). Completed 6-31.

Deepest Test Well: Northern Ordinance, Morphey 1 (14-32N-17E). Madison (Mississippian). TD 4,212.

Gas in the Box Elder Field is produced from the Eagle sandstone of Upper Cretaceous age. The Box Elder structure is a faulted asymmetrical anticline having steep southwest flanks.

The field is essentially a depleted gas field. Currently it is being converted into a gas storage reservoir by the Montana Power Company, the sole owner and operator.

Spacing: 160 Acre. Storage: Order 4-59.

ROOSEVELT COUNTY

BREDETTE

Discovery Well: California Company, Elizabeth Grimm 1 (13-32N-49E). Completed 5-55.

Deepest Test Well: Above well. Winnipeg (Ordovician). TD 9,761.

Oil in the Bredette Field comes from a fractured zone in the Charles "McGowan" formation of Mississippian age. Although situated on an oval northwest-southeast trending anticline, production is limited to the zone of fracturing.

The reservoir, developed in 1955, proved to be very small areally and having only slight closure on the oil section. Rapid influx of water resulted in early abandonment of uneconomic wells and leases.

1 Well; 1 Lease; 1 Operator; Pipeline Transportation.

Spacing: 40 Acre. Orders No. 2-56, 23-56, 24-56.

DANIELS & ROOSEVELT COUNTIES

BREDETTE, NORTH

Discovery Well: California Company, Paulson 1 (34-33N-49E). Completed 5-56.

Deepest Test Well: Above well. Madison (Mississippian). TD 7,475.

Situated a little over a mile north of the Bredette Field, is a similar northwest-southeast trending anticline, which also produces from the fractured portion of the Charles "McGowan" formation.

Production is due to water-drive, and the indicated recovery is considerably better than Bredette. This may be due to more uniformity in the section.

5 Wells; 5 Leases; 5 Operators; Pipeline Transportation.

Spacing: 80 Acre. Orders No. 20-56, 25-56.

RICHLAND COUNTY

BRORSON

Discovery Well: Sun-Phillips, Carl Dynneson 1 (32-24N-58E). Completed 8-53.

Deepest Test Well: Sun-Phillips, Dennis Dynneson 1 (30-24N-58E). Red River (Ordovician). TD 13,050.

The Reservoir for oil produced from the Brorson Field is located in fracture zones in the upper part of the Madison limestone of Mississippian age. As only four wells have been drilled in this field, the exact nature of the trap is not known.

The original completion was in the Red River Ordovician formation which produced about 100,000 barrels from a 20 foot section in one well at 12,585 feet. Casing in this well collapsed and the reservoir was abandoned as uneconomic without further development.

2 Wells; 2 Leases; 1 Operator; Pipeline Transportation.

Spacing: 160 Acre (Red River). Orders No. 25-54, 20-55. State-wide rules (Madison).

TETON COUNTY

BYNUM

Discovery Well: Continental, Briggs 1 (9-26N-6W). Completed 10-55.

Deepest Test Well: Above well. Madison (Mississippian). TD 3,076.

This field, located south of the Pendroy area has two wells, both producing in the upper part of the Sun River formation of Mississippian age.

2 Wells; 2 Leases; 1 Operator; Truck Transportation.

Spacing: State-wide rules.

FALLON COUNTY

CABIN CREEK

Discovery Well: Shell, 22-33 (33-10N-58E). Completed 6-53.

Deepest Test Well: Shell, 21-17 (17-10N-58E). Pre-Cambrian. TD 10,573.

Cabin Creek is a segment in the northwest-southeast trending Cedar Creek anticline. Dips are steep on the west flank and more gentle on the east. The field itself is within a large horst block on this structure. Oil and gas is produced from the Ordovician, Red River and Stony Mountain formations and the Silurian-Interlake formation. In addition to this, there is some production from the Mission Canyon formation of Mississippian age.

This is one of the major fields on the Cedar Creek anticline in the Williston Basin. It is a unitized operation under intense current development in 1958, having 27 successful completions for the year. Pressure maintenance by injection of water into the reservoir is being conducted. The reservoir is under water drive, in part, assisted by gas expansion.

70 Wells; 1 Unit Lease; 1 Operator; Pipeline Transportation.

Spacing: State-wide rules. Orders No. 35-54, 7-58.

GARFIELD & PETROLEUM COUNTIES

CAT CREEK

Discovery Well: Frantz Corporation 1 (21-15N-30E). Completed 2-20.

Deepest Test Well: Arre-California, Charles 4. (21-15N-30E). Cambrian. TD 5,705.

The Cat Creek Field is located on an anticlinal structure elongated in a northwest-southeast direction having steep northeast dips. A series of highs or domes occur along the crest of this structure. Oil is produced from the Kootenai formation "first and third Cat Creek sands" of Lower Cretaceous age, from the Morrison "Brindly sand", and the Swift formations of Jurassic age. The Swift formation is continuous throughout the field but all other producing horizons are variable in either lithology or permeability.

The field is now in the stripper stage of production, averaging 5.3 barrels per well per day. Good recovery has been achieved by water drive. Pilot water flood experiments have been conducted and are currently under study. The oil is extremely high gravity, approximately 52 API, and characterized by practically no associated dissolved gas.

88 Wells; 29 Leases; 6 Operators; Pipeline and Truck Transportation.

Spacing: 9 Wells/40 Acres; Orders No. 14-54, 17-55, 17-56, 19-58.

WIBAUX & FALLON COUNTIES

CEDAR CREEK

Discovery Well: Eastern Montana Oil and Gas (20-14N-55E). Completed 11-12.

The Cedar Creek anticline is a long narrow asymmetrical northeast plunging structure with steep dips on the west side. Gas is produced from two horizons of sandy shales and siltstones equivalent to the Judith River and Eagle formations of Upper Cretaceous age.

Most of the leases in the Cedar Creek Gas Field have been unitized, and are producing into the Montana-Dakota Utilities Company gas system. The Company operates underground gas storage in the southern part of the field.

233 Wells.

Spacing: 160 Acre. Order No. 33-54.

CARBON COUNTY

CLARKS FORK

Discovery Well: General Petroleum and Julius Peten, Govt.-McClellan 1 (25-9S-22E). Completed 12-44.

Deepest Test Well: British-American, Govt.-McClellan 1. Madison (Mississippian). TD 9,446.

Oil and Gas was produced from a solitary well in this field in 1958. Production was from the Lower Frontier Sand of Upper Cretaceous age. Clarks Fork Field consists of a faulted anticline in which production is largely controlled by variable porosity. A gas cap is the reservoir driving medium.

1 Well; 1 Lease; 1 Operator; Truck Transportation.

Spacing: State-wide rules. Order No. 17-54.

CARBON COUNTY

CLARKS FORK, NORTH

Discovery Well: British-American, State 1 (16-9N-22E). Completed 1-56.

Deepest Test Well: Above well. Madison (Mississippian). TD 10,877.

Clarks Fork, North, is a separate closure separated from the main Clarks Fork field by a fault. Oil and gas are produced from the Dakota and Lakota formations of Upper Cretaceous age.

The Lakota is the reservoir of most significance, operating under a combination gas cap and water drive with an anticipated recovery of thirty-five percent. One well in the Dakota formation is under gas cap drive. The produced gas from the field is sold commercially.

5 Wells; 3 Leases; 2 Operators; Truck Transportation.

Spacing: State-wide rules. Order No. 17-54.

FALLON COUNTY

CUPTON

Discovery Well: Rothschild, Northwest Improvement 44-15 (15-9N-59E). Completed 8-55.

Deepest Test Well: Above well. Red River (Ordovician). TD 9,785.

The Cupton Field is located on the east flank of the Cedar Creek anticline. Production in 1958 was from two wells in the Red River formation of Ordovician age. The average production from both of the wells in 1958 was 55 barrels per day. Decline is slight, but depth and indicated low recovery have not been conducive to further development at this time.

2 Wells; 2 Leases; 1 Operator; Pipeline Transportation.

Spacing: 80 Acre. Orders No. 31-55, 10-56, 18-56, 6-57.

TOOLE & GLACIER COUNTIES

CUT BANK

Discovery Well: Sand Point, Berger 1. Gas Well (1-35N-5W). 1926.

Deepest Test Well: Union, Stufft 418-7. Cambrian. TD 5,500.

The Cut Bank Field lies on the west flank of the Sweetgrass Arch. The basal Kootenai formation of Lower Cretaceous age forms a wedge-edge up-dip on the structure. Various names have been given to the producing horizons in this part of the section. In ascending order they are the Cut Bank, Sunburst, Lander, and Moulton sands. In addition, oil is produced from the Madison (Mississippian) formation.

This is Montana's largest oil field from the standpoint of cumulative production and area, however, it is now in the settled stripper stage, producing 6,000 barrels per day; for a per well average 5.2 barrels per day.

It has a gas cap drive reservoir operating, more specifically, as a solution gas reservoir due to the withdrawal of up-dip gas.

Secondary recovery by both gas and water has been attempted on pilot scale, and possibilities for the latter are considered good.

The Cut Bank area has experienced reasonable exploration throughout the years which has resulted in successful discoveries such as Reagan, Blackfoot, Darling, Red Creek and smaller isolated pools within the field itself.

1,153 Wells; 357 Leases; 60 Operators; Pipeline Transportation.

Spacing: 10 Acre (with a 5-spot allowed). Order No. 10-54.

DAWSON COUNTY

DEER CREEK

Discovery Well: Texas NP "G" (NCT-4) 1 (23-17N-53E). Completed 8-52.

Deepest Test Well: Texas, Ekland 1 (26-17N-53E). Red River (Ordovician). TD 10,228.

The Deer Creek Field is located on a domal structure having a northwest-southeast trend, the western margin of which is probably delimited by a fault. Oil, and some gas, is found in the Ordovician in the Red River dolomite and the Silurian-Interlake formation.

It is one of the smaller fields on the Cedar Creek anticline, averaging about 350 barrels per day. Production is by water drive assisted by gas expansion. The produced water is disposed of in a barren formation.

6 Wells; 3 Leases; 2 Operators; Pipeline Transportation.

Spacing: 80 Acre; Orders No. 28-54, 23-55, 6-56, 3-58.

MUSSELSHELL COUNTY

DELPHIA

Discovery Well: Texota, Goffena 1 (26-9N-23E). Completed 12-56.

Deepest Test Well: Texota-Bradley, L. W. Goffena et ux, A-1. Charles (Mississippian). TD 6,811.

The Delphia Field is located within a small anticlinal closure trending northwest-southeast, situated on the north flank of the Bull Mountain Basin. Oil is found in the top of the Amsden dolomite of Pennsylvanian age. Production is limited by variable porosity and a water table tilted to the northeast.

The reservoir section is comparable to that at Wolf Springs. It is characterized by fairly low porosity (6.5%) for a section of some 10 to 12 feet. Four wells were completed in 1958, and the current production is 150 barrels per day.

6 Wells; 4 Leases; 1 Operator; Truck Transportation.

Spacing: State-wide rules.

MUSSELSHELL COUNTY

DEVIL'S BASIN

Discovery Well: Van Duzen Oil 1 (24-11N-24E). Completed 12-19.

Deepest Test Well: Clark Drilling Co., NP 1. Cambrian. TD 4,081.

The Devil's Basin structure is an elongated northwest-southeast trending anticline having steep dips on the south side. Production is from isolated fracture zones in a Heath Limestone, the "Van Duzen" of Mississippian age.

This was the first commercial oil discovery lying wholly within Montana. It is an extremely large closed structure easily identified on the surface. Production has been inconsequential to date; however, the development of stratigraphic traps and lenses associated with other central Montana structure has encouraged recent and current flank exploration.

5 Wells; 4 Leases; 2 Operators; Truck Transportation.

Spacing: State-wide rules.

TOOLE COUNTY

DEVON

Discovery Well: Minot, Shelby Holding Company 1 (13-33N-2E). Completed 1926.

Deepest Test Well: Above well. Madison (Mississippian). TD 2,000.

The Devon Field is situated on the southeast flank of the Kevin-Sunburst dome. Gas occurs in the Blackleaf member of the Colorado formation of Lower Cretaceous age. Accumulation is controlled by an up-dip lithologic pinch-out along the west margin of the field.

There has been no indication of oil. Gas is produced into the Montana Power Company system.

21 Wells.

Spacing: State-wide rules.

CARBON COUNTY

DRY CREEK

Discovery Well: Ohio Oil, NP 1. Gas well (11-7S-21E). Completed 3-29.

Deepest Test Well: Ohio Oil, NP 18 (3-7S-21E). Cambrian. TD 8,882.

The Dry Creek structure is a northwest-southeast trending anticline on which there is a complex of relatively shallow faults. Gas is produced from the Eagle and Frontier sandstones of Upper Cretaceous age, and the Lower Cretaceous Greybull sandstone. Oil comes from the Lower Cretaceous, Pryor and Greybull sands.

This field has been a substantial producer of both gas and oil for a number of years. The oil sections are under water drive.

6 Wells; 5 Leases; 1 Operator; Pipeline Transportation.

Spacing: State-wide rules. Orders No. 17-54, 3-59.

CARBON COUNTY

ELK BASIN

Discovery Well: Hurst 1 (30-58N-99W Wyoming). Completed 1915.

The Elk Basin structure is a northwest-southeast trending asymmetrical anticline having steep dips on the east flank. Most of the Elk Basin Field is in Wyoming and only a part of the northern flank is in Montana. The surface of the Elk Basin structure is intersected by a series of faults which dissipate in depth. Oil and gas are found in a number of horizons in the Elk Basin Field in Montana. These are the Mississippian-Madison formation, the Embar-Tensleep horizon of Permian-Pennsylvanian age, and the Frontier sandstone of Upper Cretaceous age.

Elk Basin is one of the major oil fields in the Rocky Mountains, having pay sections of 97 feet in the Frontier, 166 feet in the Embar-Tensleep and 224 feet in the Madison.

Montana data: 57 Wells; 20 Leases; 2 Operators; Pipeline Transportation.

Spacing: State-wide rules; Orders No. 17-54, 9-57.

CARBON COUNTY

ELK BASIN, NORTHWEST

Discovery Well: Sinclair Wyoming Oil Co., Elk Basin, NW, Unit 1 (28-9S-23E). Completed 6-47.

Deepest Test Well: Stanolind, B. L. Zaerr B-1. Madison. TD 6,957.

Northwest of the main Elk Basin structure and separated from it by a fault is the small northwest-southeast trending Northwest Elk Basin Field. Production is from the Upper Cretaceous Frontier sandstone and the Mississippian-Madison formation.

This discovery, made in 1947 as an extension to the Elk Basin Field, has considerably less development of section, being 28 feet in the Frontier and 16 feet in the Madison; however, the porosity in the Madison is considerably better developed.

Lease and well data included in Elk Basin.

Spacing: State-wide rules.

FALLON COUNTY

FERTILE PRAIRIE

Discovery Well: Mon-O-Co, Ferguson-Goldin 1 (18-7N-61E). Completed 11-54.

Deepest Test Well: McAlester Fuel, NP A-1. Winnipeg (Ordovician). TD 9,684.

The Fertile Prairie Field is located on an eastward plunging anticlinal nose situated on the east flank of the Cedar Creek Anticline. Oil is produced from the Ordovician-Red River formation. Production is at a depth of 9,200 feet; the reservoir section averaging 49 feet is characterized by fairly low values of porosity and permeability. Production is due to water drive with some solution gas expansion. Depth, low well capacity and mechanical problems caused by salt water have retarded development to this time.

3 Wells; 2 Leases; 2 Operators; Pipeline Transportation.

Spacing: 80 Acre. Orders No. 5-55; 6-55; 3-56; 5-58.

LIBERTY COUNTY

FLAT COULEE

Discovery Well: Sunburst Oil and Refining, Disobell 1 (10-37N-5E). Completed 1927.

Deepest Test Well: A. B. Cobb, Millen 1 (15-37N-5E). Cambrian. TD 5,149.

The Flat Coulee Dome, situated in the northern portion of the Sweetgrass Hills, is penetrated on the southwest side by an igneous dike. One well in the field produces oil and gas from the Jurassic-Swift sandstone. This well continues to produce about 5 barrels per day with little noticeable decline.

1 Well; 1 Lease; 1 Operator; Truck Transportation.

Spacing: 10 Acre. Orders No. 36-54; 16-55.

CARBON COUNTY

FRANNIE

Discovery Well: Stanolind, Rosenberg C-1 (25-58N-93W, Wyoming). Completed 2-28.

The Frannie anticline is an asymmetrical structure having steep dips on the northeast side. The main part of the field is in Wyoming and only the northwesterly edge is in Montana. In this portion of the field, oil comes from the Permian-Phosphoria and the Pennsylvanian-Tensleep formations. The Frannie Tensleep reservoir has a water table tilted towards the west with a difference in elevation of 1,000 feet in the main part of the field.

3 Wells; 2 Leases; 1 Operator; Pipeline Transportation.

Spacing: State-wide rules.

MUSSELSHELL COUNTY

GAGE

Discovery Well: Northern Ordnance, L. T. Morris 1 (15-9N-26E). Completed 8-43.

Deepest Test Well: Above well. Madison (Mississippian). TD 7,495.

Oil in the Gage Dome is produced from porous zones in the upper Amsden dolomite of Pennsylvanian age. The Gage structure is an asymmetrical dome elongated in a northeast direction and having steeper dips on the north side.

The field was characterized by rapid development by eight producing wells in 1944-45, followed by a sharp decline in production to the point where only one well remained in 1954. The acre recovery appears reasonably good for the 18 foot section, and the field was given further consideration in 1958 by the drilling of an additional well.

2 Wells; 2 Leases; 2 Operators; Truck Transportation.

Spacing: State-wide rules.

DAWSON COUNTY

GAS CITY

Discovery Well: Shell, 33X-21 (21-14N-55E). Completed 6-55.

Deepest Test Well: Above well. Winnipeg (Ordovician). TD 9,596.

Situated on the northern part of the Cedar Creek Anticline, the Gas City Field is an oval anticlinal structure faulted on the west side. Oil production is from the Ordovician-Red River dolomite.

The reservoir is considered to be operating under both gas expansion and water drive. The gas/oil ratio is 400.

12 Wells; 4 Leases; 2 Operators; Pipeline Transportation.

Spacing: State-wide rules.

DAWSON COUNTY

GLENDIVE

Discovery Well: Texas, NP "G" (NCT-1) 1 (35-15N-54E). Completed 12-51.

Deepest Test Well: Texas, NP "G" (NCT-1) 2 (35-15N-54E). Winnipeg (Ordovician). TD 10,537.

The Glendive Field is located in the northern end of the Cedar Creek Anticline. It is an elongated domal structure cut off on the west by a northeast-southeast trending fault. Oil and gas are produced from the Stony Mountain and Red River formations of Ordovician age.

The field is characterized by a thick pay section averaging 147 feet. The porosity and permeability values are low; however, the productivity of the section averages some 130 barrels per day per well. High acre recoveries are predicted. Salt water is disposed of in barren sub-surface stratum.

12 Wells; 6 Leases; 4 Operators; Pipeline Transportation.

Spacing: 80 Acre. Orders No. 32-54; 27-55; 16-56; 1-57.

CARBON COUNTY

GOLDEN DOME

Discovery Well: Kirk Oil, Stow 1 (14-7S-22E). Completed 8-53.

Deepest Test Well: Ohio Oil, Kuchinski 1 (15-7S-22E. Sundance (Jurassic). TD 6,362.

Golden Dome consists of two structural highs each of which is closed on the west side by a fault. In 1958 gas was produced from a solitary well in the Eagle formation of Upper Cretaceous age. The field produced 36,485 barrels of oil prior to abandonment of the oil reservoir.

1 Well; 1 Lease; 1 Operator.

Spacing: State-wide rules.

TETON & PONDERA COUNTIES

GYPSY BASIN

Discovery Well: Western Oil, Bills 1 (31-28N-6W). Completed 7-54.

Deepest Test Well: Above well. Mission Canyon (Mississippian). TD 3,410.

Gypsy Basin is located in an irregular northeast-southwest trending anticlinal structure. Wells in the northern part of the field have penetrated a fault paralleling the general trend. Oil is produced from the Sun River formation of Mississippian age and the Kootenai "Sunburst" formation of Lower Cretaceous age.

This is a relatively undeveloped and unexplored discovery. Data for reserves and recovery are inconclusive, the cumulative production being less than 2,000 barrels.

3 Wells; 3 Leases; 2 Operators; Truck Transportation.

Spacing: State-wide rules.

BIG HORN COUNTY

HARDIN

Discovery Well: (?) Yellowstone Oil and Gas, Blair 1 (10-1S-33E). Completed 1913.

Deepest Test Well: Daniels Petroleum Company, 1 (13-1S-33E). Madison (Mississippian). TD 4,195.

The Hardin Field is a stratigraphic gas trap located where the strata dip up from the Powder River Basin to the Big Horn uplift. Gas comes from an updip pinch-out of a stray sand horizon in the Cretaceous-Frontier formation.

Spacing: State-wide rules.

MUSSELSHELL COUNTY

HAWK CREEK

Discovery Well: Miles Jackson, NP-McConnell 1 (1-8N-29E). Completed 11-58.

Deepest Test Well: Above well. Amsden (Pennsylvanian). TD 7,179.

The Hawk Creek structure, located on a seismic high, was discovered in 1958. The anticline is elongated in a northwest-southeast direction. Oil is produced from the Upper Amsden dolomite of Pennsylvanian age.

1 Well; 1 Lease; 1 Operator; Truck Transportation.

Spacing: State-wide rules.

MUSSELSHELL COUNTY

IVANHOE

Discovery Well: Chicago-Republic, NP 1 (17-11N-31E). Completed 9-53.

Deepest Test Well: Above well. Charles (Mississippian). TD 5,210.

The Ivanhoe Dome is a small closure on the eastern part of the Ragged Point anticline. The dome is elongated in an east-west direction and is somewhat asymmetrical, having steep dips on the north flank. Production is from the Morrison formation of Jurassic age and from three sand horizons in the Mississippian-Tyler formation. The Tyler wells are controlled by distribution of these sands on the south flank of the structure.

The Tyler discovery was one of the significant stratigraphic developments in Central Montana in recent years. It is producing under both gas expansion and water drive with anticipated high recoveries due to uniformity of the sands.

3 Wells; 5 Leases; 4 Operators; Truck Transportation.

Spacing: State-wide rules. Orders No. 13-56; 10-57; 6-59.

LIBERTY COUNTY

KEITH BLOCK

Discovery Well: Texas, Cicon 1 (29-36N-6E). Completed 12-44.

Deepest Test Well: Montana Power, Sorrel-Govt. 1. Cambrian. TD 5,015.

The Keith Block consisting of the east and west domal structures are part of a broad anticline plunging eastward from the Sweetgrass Hills. Gas is produced from the Lower Cretaceous "Bow Island" sandstone, from the Jurassic "Sawtooth" detrital zone, and the Upper Madison limestone of Mississippian Age.

Gas is produced into the Montana Power gathering system.

Spacing: State-wide rules.

TOOLE COUNTY

KEVIN-SUNBURST

Discovery Well: James Miller Ranch, 1. Water well. (25-34N-4W). 1912.

Deepest Test Well: Lee Edwards, Inland Empire 1. Pre-Cambrian. TD 4,916.

The Kevin-Sunburst Field is located in a large elliptical domal structure having a slight north-west-southeast trend. The main oil producing horizon occurs in the uppermost Madison (Mississippian) formation. The productive zone of this horizon is found mostly on the north flank of the field where the upper surface has been leached by Pre-Jurassic erosion. The overlying Sawtooth and Swift sandstone of Jurassic age also contains oil in isolated traps or pockets. The Sunburst sandstone of Lower Cretaceous age is the main gas producing horizon in the field although it also produces oil locally.

This is one of the older fields in Montana, in the stripper stage of production. The reservoir is somewhat variable in porosity with numerous dry holes within the producing area. Fracturing also influences production. Current study and pilot water flooding are being conducted by at least one operator.

1,433 Wells; 195 Leases; 66 Operators; Pipeline Transportation.

Spacing: 9 Wells/40 Acres; Orders No. 8-54; 10-55; 30-55; 7-56; 12-56; 8-57.

STILLWATER COUNTY

LAKE BASIN

Discovery Well: Midwest Refining, Hepp 1 (26-1N-21E). Completed 10-24.

Deepest Test Well: Midwest Refining, Luce 1. Kootenai (Lower Cretaceous). TD 4,100.

The Lake Basin structure is a narrow north-south trending anticline. During the early part of 1958 one well produced oil from the Upper Cretaceous "Dakota" formation. Before the end of the year this well was closed down and later abandoned, ending a production history for the Lake Basin Field that extended over a period of thirty-four years.

Abandoned.

STILLWATER COUNTY

LAKE BASIN, NORTH

Discovery Well: Holland American, Castle 1 (22-2N-21E). Completed 1-58.

Deepest Test Well: Superior, Copulos 71-22. Pre-Cambrian. TD 7,929.

The North Lake Basin Field is a separate closure in the northern extremity of the Lake Basin structure. It is located on a north-south trending anticline. Although a half dozen wells had been drilled on the structure without success, the Holland American, Castle 1, drilled early in 1958, found commercial amount of gas in the Upper Cretaceous, Eagle and Frontier formations.

Shut in gas field. 1 Operator.

Spacing: 640 Acre; Order No. 6-58.

DANIELS COUNTY

LINE COULEE

Discovery Well: Pan American, Edith Godden 1 (5-33N-49E). Completed 10-57.

Deepest Test Well: Above well. Winnipeg (Ordovician). TD 9,548.

The Line Coulee Field is located north of the Bredette structure. Oil is produced from the Charles "McGowan" formation of Mississippian age. Depth of the producing section is 6,400 feet. Low porosity and thin section have not encouraged development.

2 Wells; 2 Leases; 2 Operators; Pipeline Transportation.

Spacing: State-wide rules.

FALLON COUNTY

LITTLE BEAVER

Discovery Well: Shell 23-13 Unit (13-4N-61E). Completed 7-52.

Deepest Test Well: Carter, NP 1 (19-4N-62E). Pre-Cambrian. TD 9,676.

Lying on the west flank of the Cedar Creek Anticline is the Little Beaver anticlinal closure. Production of oil is from the Red River formation of Ordovician age.

This is a depletion type reservoir on the southern end of the anticline. The section is tighter here, the wells averaging about 60 barrels per day by pumping.

7 Wells; 1 Lease; 1 Operator; Pipeline Transportation.

Spacing: State-wide rules.

FALLON COUNTY

LITTLE BEAVER, EAST

Discovery Well: Montana-Dakota Utilities, NP 1 (17-4N-62E). Completed 8-36.

Deepest Test Well: Shell, 14-34 (34-5N-61E). Red River (Ordovician). TD 8,471.

East Little Beaver Field is located on a separate anticlinal closure one and one-half miles to the east of the Little Beaver Field. Production here is from the same Red River formation of Ordovician age. The reservoir is comparable to Little Beaver in character.

5 Wells; 3 Leases; 1 Operator; Pipeline Transportation.

Spacing: State-wide rules.

MUSSELSHELL COUNTY

MELSTONE

Discovery Well: Amerada, Hougen 1 (23-10N-29E). Completed 10-48.

Deepest Test Well: Amerada, Hougen 2 (23-10N-29E). Cambrian. TD 7,626.

The Melstone Field lies within an anticlinal closure on a southeast plunging anticlinal nose. Dips on this structure are steeper on the northeast side. Oil comes from two sands in the Mississippian-Tyler formation. The erratic pinch-out distribution of these sands controls production in the field. Reservoir is water drive.

9 Wells; 5 Leases; 2 Operators; Truck Transportation.

Spacing: State-wide rules.

FALLON COUNTY

MONARCH

Discovery Well: Shell, NP 12-23 (23-9N-58E). Completed 11-58.

Deepest Test Well: Above well. Red River (Ordovician). TD 9,175.

The Monarch Field is located on a northwest plunging nose on the Cedar Creek Anticline. This new field produced oil in 1958 from the Silurian Interlake and the Ordovician-Red River formation.

1 Well; 1 Lease; 1 Operator; Pipeline Transportation.

Spacing: State-wide rules.

YELLOWSTONE COUNTY

MOSSER

Discovery Well: Tarrant-Mosser 2 (26-3S-24E). Completed 1-37.

Deepest Test Well: Tarrant-Mosser 1 (26N-3S-24E). Mission Canyon (Mississippian). TD 2,568.

The northeast-southwest trending Mosser Dome is bounded on the southeast by the Fromberg grab-ben fault zone. Oil production is from the "Mosser" sandstone of the Lower Cretaceous Kootenai formation.

This is a water drive field, however, the extremely high viscosity of the oil has resulted in very low well productivity and recovery.

Current studies are being made on the application of bottom hole heaters to reduce viscosity.

6 Wells; 2 Leases; 1 Operator; Truck Transportation.

Spacing: State-wide rules. Orders No. 17-54, 21-56.

SHERIDAN COUNTY

OUTLOOK

Discovery Well: Amerada, Tange 1 (20-36N-53E). Completed 12-56.

Deepest Test Well: Amerada, A. Johnson 1 (33-36N-53E). Pre-Cambrian. TD 11,074.

The Outlook Field, situated high in the northwest flanks of the Williston Basin, consists of two southeast plunging anticlinal noses. Production is from the Red River formation of Ordovician age and the "Outlook Pay", which consists of a vertical fractured zone found in various parts of the field with a vertical distribution ranging in extremes from the Devonian-Winnipegosis to the Silurian-Interlake formation.

This discovery has been expanded to explore a large area. Development drilling to date has not proven continuity of the reservoir section.

14 Wells; 11 Leases; 1 Operator; Pipeline Transportation.

Spacing: State-wide rules.

FALLON COUNTY

PENNEL

Discovery Well: Shell, 22X-36 State (36-8N-59E). Completed 9-55.

Deepest Test Well: Above well. Winnipeg (Ordovician). TD 9,242.

The Pennel structure is an elongated anticlinal closure on the axis of the Cedar Creek Anticline. There are four producing horizons in this field. They are the Mississippian-Mission Canyon formation, the Silurian-Interlake formation, and the Stony Mountain and Red River formation of Ordovician age.

This is a depletion type gas drive reservoir having a well developed Siluro-Ordovician section. The Mission Canyon is of less consequence, however, it is significant.

22 Wells; 10 Leases; 2 Operators; Pipeline Transportation.

Spacing: 80 Acres; Orders No. 1-56; 8-56; 22-56.

FALLON, PRAIRIE & WIBAUX COUNTIES

PINE

Discovery Well: Shell, Pine Unit 32-30 (30-12N-57E). Completed 1-52.

Deepest Test Well: Shell 43-22A (22-11N-57E). Pre-Cambrian. TD 10,414.

The Pine Unit anticlinal closure is located on the Cedar Creek Anticline. Dips to the southwest are steep, probably dipping into a fault zone. Production is from the Silurian-Interlake formation and the Stony Mountain and Red River formations of Ordovician age.

This is Montana's largest producer, having been in a stage of continuous development since 1952. The reserves, together with these at Cabin Creek, were the principal justification for the Butte Pipeline into the Williston Basin.

The field has a combined water and gas drive mechanism and water is being injected into the reservoir to maintain pressure. Good recoveries are anticipated from the 40-foot pay section.

135 Wells; 6 Leases; 2 Operators; Pipeline Transportation.

Spacing: State-wide rules. Order No. 35-54.

FALLON COUNTY

PLEVNA

Discovery Well: F. H. Baker 1 (28-5N-60E). Completed 1-46.

Deepest Test Well: Fallon, NP 7 (3-5N-59E). Judith River (Upper Cretaceous). TD 2,240.

The Plevna anticlinal structure lies to the west of the Cedar Creek Anticline. Gas is produced from the Judith River formation of Upper Cretaceous age. The field produces a small amount of gas into the Montana-Dakota Utilities Company gas system.

Spacing: 160 Acre. Order No. 34-54.

PONDERA & TETON COUNTIES

PONDERA

Discovery Well: Midwest, Harber 1 (17-27N-4W). Completed 6-27.

Deepest Test Well: Wasatch Oil, Hirshberg 1 (23-27N-4W). Pre-Cambrian. TD 5,233.

Oil in the Pondera Field is produced from the "Sun River" or Ma zone of the Madison formation of Mississippian age. Although the field is not a generally high structural area, the production is believed to be controlled by a folded porous zone that has been truncated by Pre-Jurassic erosion.

The field is interesting in that good recovery and production has been accomplished by relatively close infill drilling in areas previously considered depleted. This is due to the variable nature of the section and distribution of water through the reservoir. Both gas and water are active driving mediums.

The areas adjacent to Pondera are currently under exploration and indications of further success are good.

336 Wells; 74 Leases; 19 Operators; Pipeline Transportation.

Spacing: 9 Wells/40 Acres. Orders No. 9-54; 11-56; 15-56.

ROOSEVELT COUNTY

POPLAR

Discovery Well: East Poplar Unit 1, (2-28N-51E). Completed 3-52.

Deepest Test Well: Above well. Winnipeg (Ordovician). TD 9,163.

The Poplar Anticline, situated along the west flank of the Williston Basin, has a slight north-south trend. Oil is produced from three zones in the Charles and Mission Canyon formations of Mississippian age. The oil water contact in the field is tilted towards the north.

This has been and continues to be a very significant field in the Williston Basin. The reservoir is highly fractured and under active water drive. Previously estimated recoveries have been revised downward as water cuts have increased. The water is believed to be traveling through the fractures in preference to the matrix pore system. However, acre recoveries will be on the order of 4,750 barrels per acre.

Salt water is disposed by reinjection into the "B" zone as pressure maintenance.

108 Wells; 74 Leases; 5 Operators; Pipeline Transportation.

Spacing: State-wide rules. Orders No. 2-54; 37-54; 1-55; 7-55; 34-55; 5-57; 7-57; 1-58.

ROOSEVELT COUNTY

POPLAR, NORTHWEST

Discovery Well: Ajax Oil, McGowan 1 (10-29N-50E). Completed 5-52.

Deepest Test Well: Carter, Harry Mason 1. Interlake (Silurian). TD 8,392.

Poplar, Northwest, is an extension of the Poplar field having a separate closure. As in the Poplar field the producing horizons are the Charles and Mission Canyon formations of Mississippian age.

4 Wells; 3 Leases; 3 Operators; Pipeline Transportation.

Spacing: 80 Acre; Orders No. 3-54; 18-55.

MUSSELSHELL COUNTY

RAGGED POINT

Discovery Well: Texas, Manion 1 (5-11N-30E). Completed 1-48.

Deepest Test Well: Above well. Cambrian. TD 6,312.

The Ragged Point Anticline is an east-west trending structure having steep dips on the north flank. Production is from two horizons in the Mississippian. The Upper Tyler sand is erratic in its distribution so that the production from this horizon is confined to the southeastern flank. The lower Kibbey sandstone reservoir is continuous over the structure but production is limited to the crest of the structure.

Ragged Point was the first significant discovery in the present area of exploration in Central Montana. It is the only Kibbey reservoir found in the state, and in 1956 a flank extension developed a Tyler pool. The field has water drive in the Kibbey and gas expansion in the Tyler.

7 Wells; 3 Leases; 3 Operators; Truck Transportation.

Spacing: State-wide rules (Kibbey) 40 Acre (Tyler); Orders No. 15-54; 8-59.

GLACIER COUNTY

REAGAN

Discovery Well: Reagan Associates, Tribal 194-1 (22-37N-7W). Completed 4-41.

Deepest Test Well: Union Oil, Blackfeet Tribal, 194-12. Cambrian. TD 6,258.

The Reagan Field consists of an elongated north-south trending anticlinal structure bounded on the east by a fault. Gas production is from the Lower Cretaceous "Blackleaf Sand" and oil production is from the Mississippian-Sun River dolomite.

Reagan was one of the significant discoveries resulting from exploration of the Cut Bank area. It has produced both oil and gas in substantial quantities. The oil section is under water drive.

45 Wells; 4 Leases; 2 Operators; Pipeline Transportation.

Spacing: State-wide rules. Order No. 17-54.

GLACIER COUNTY

RED CREEK

Discovery Well: G. S. Frary, Isabel Moberly 1. Gas well. (1-37N-5W). Completed 1-58.

Deepest Test Well: Pardee-Inland Empire, McAlpine 1. Madison (Mississippian). TD 2,990.

The Red Creek Field lies to the north of the main Cut Bank structure. The field is situated in a narrow north-south anticline having several shallow closures along the crest. Oil and gas are found in the Kootenai formation of Lower Cretaceous age; gas in the Sunburst sand, and oil and gas in the Cut Bank sand. In addition oil is produced from the Sun River dolomite of Mississippian age.

This is a 1958 discovery developing at least two significant reservoirs as indicated above. The area at present is small, further exploration being necessary to develop the extent.

8 Wells; 3 Leases; 2 Operators; Truck Transportation.

Spacing: 40 Acre. Orders No. 12-58; 16-58.

SHERIDAN COUNTY

RED STONE

Discovery Well: H. L. Hunt, Hagen 1 (7-34N-52E). Recompleted 11-58.

Deepest Test Well: Above well. Cambrian. TD 11,700.

The solitary well in this field was originally abandoned in 1952 as a dry hole. In November of 1958 it was re-opened to produce oil with some gas from the Devonian-Winnipegosis formation. The producing depth is 9,400 feet, with a 30-foot pay section. Further development is necessary to evaluate this discovery.

1 Well; 1 Lease; 1 Operator; Pipeline Transportation.

Spacing: State-wide rules.

CARTER COUNTY

REPEAT

Discovery Well: Ohio Oil, Govt. 1 (lot 4, 6-1S-62E). Completed 3-56.

Deepest Test Well: Above well. Winnipeg (Ordovician). TD 9,362.

The Repeat Field is situated on a northwest-southeast trending anticline, lying to the west of the main Cedar Creek Anticline. Oil is produced from the Red River formation of Ordovician age. The production is at a depth of 8,600 feet. There is no current exploration of the structure.

1 Well; 1 Lease; 1 Operator; Pipeline Transportation.

Spacing: State-wide rules.

DAWSON & McCONE COUNTIES

RICHEY

Discovery Well: Shell, NP 11-9 (19-23N-50E). Completed 11-51.

Deepest Test Well: Above well. Ordovician. TD 10,518.

The Richey domal structure is drawn out in a northeasterly direction. Oil and some gas are produced from limestone reservoirs in the Charles formation of Mississippian age.

An extension well drilled in 1958 may prove the field to cover an area somewhat larger than previously estimated. The reservoir is water drive.

9 Wells; 5 Leases; 2 Operators; Pipeline Transportation.

Spacing: 80 Acres. Orders No. 26-54; 21-55; 10-58.

McCONE COUNTY

RICHEY, SOUTHWEST

Discovery Well: Shell, NP 22-25B (25-22N-48E). Completed 7-52.

Deepest Test Well: Above well. Winnipeg (Ordovician). TD 10,188.

Richey, Southwest, is an east-west trending anticline. Production during 1958 was from the Silurian-Interlake formation and the Devonian-Dawson Bay formation. Both horizons are in limestone-dolomite reservoirs which vary in porosity and permeability throughout the field.

This is a depletion type gas drive reservoir containing high gravity crude however, both the production and the area are small.

2 Wells; 1 Lease; 1 Operator; Pipeline Transportation.

Spacing: 80 Acre. Orders No. 27-54; 22-55; 12-57.

BIG HORN COUNTY

SNYDER

Discovery Well: George Greer, Kendrick 2 (6-1S-35E). Completed 10-52.

Deepest Test Well: George Greer, Kendrick 3 (6-1S-35E). Winnipeg (Ordovician). TD 6,808.

The Snyder Field is located on the eastern margin of the Lake Basin fault zone. The field is in a domal structure cut by one or more northeast-southwest trending normal faults. Oil production comes from the upper part of the Pennsylvanian-Tensleep sandstone.

This is a water drive reservoir, producing black sour crude. Recoveries are indicated to be good for the 12-foot pay section.

4 Wells; 2 Leases; 2 Operators; Truck Transportation.

Spacing: State-wide rules.

BIG HORN COUNTY

SOAP CREEK

Discovery Well: Western States Oil and Land, Tribal 1 (34-6S-32E). Completed 3-21.

Deepest Test Well: Inland Empire, Tribal 52-34 (34-6S-32E). Pre-Cambrian. TD 4,470.

The Soap Creek anticline is a domal structure elongated in a north-northwesterly direction. Oil is produced from the Pennsylvanian-Amsden dolomite and the Mississippian-Madison formation.

The field has been periodically produced and shut in since its original development in 1921 due to the problems in marketing low gravity black sour crude.

29 Wells; 4 Leases; 2 Operators; Truck Transportation.

Spacing: 10 Acre; Order No. 32-55.

ROSEBUD COUNTY

STENSVAD

Discovery Well: Honolulu, Stensvad 11-9 (11-11N-31E). Completed 12-58.

Deepest Test Well: Above well. Heath (Mississippian). TD 5,516.

The Stensvad Field is in an eastward plunging synclinal structure, the southern margin of which is delineated from the Sumatra anticline by a fault. Oil is found in the Mississippian-Tyler sandstone. Production in this field is controlled by the erratic distribution of these sands.

This is a particularly interesting and significant discovery for 1958, being the first on the north flank of the Sumatra anticline, and stimulating further exploration in the Sumatra area.

2 Wells; 2 Leases; 2 Operators; Truck Transportation.

Spacing: 40 Acre. Order No. 2-59.

ROSEBUD COUNTY

SUMATRA

Discovery Well: Farmers Union, Sawyer 1 (26-11N-32E). Completed 10-50.

Deepest Test Well: Texas, Horgen 1 (13-11N-32E). Kibbey (Mississippian). TD 5,657.

The northern part of the Sumatra Field is an elongated east-west trending anticline on the crest of which are several highs or closures. The north flank of this structure has steep dips and in the north-western section a fault has been penetrated. The more gentle south flanks terminate in a shallow synclinal structure in the southeastern part of the field. Oil and some gas are produced from three zones or sand horizons in the Mississippian-Tyler formation. Some oil is produced from the Amsden dolomite of Pennsylvanian age, and from a Mississippian-Heath limestone.

Sumatra is the most important field in Central Montana. The reservoirs are complex in nature, depending upon both sand and porosity development. Production is both gas and water drive. Exploration is current.

72 Wells; 22 Leases; 6 Operators; Pipeline Transportation.

Spacing: 40 Acre. Orders No. 17-54; 14-58; 18-58.

LIBERTY COUNTY

UTOPIA

Discovery Well: Texas, State M-1094 (16-33N-4E). Completed 10-43.

Deepest Test Well: Texas, Lass 2 (14-33N-4E). Cambrian. TD 4,593.

The Utopia Field is located on a simple domal structure having a slight east-west elongation. Gas is produced from three horizons, the Jurassic-Sawtooth formation, the Mississippian-Madison formation, and the Devonian-Jefferson formation. Gas is produced into the Montana Power Company system.

Spacing: State-wide rules.

LIBERTY & TOOLE COUNTIES

WHITLASH

Discovery Well: Montana-Canadian Oil, E. Brown 1 (19-37N-4E). Completed 11-18.

Deepest Test Well: Union Oil, Mahoney 1 (22-37N-4E). Cambrian. TD 4,068.

The Whitlash structure is located in the northern part of the Sweetgrass Hills. This irregular shaped dome is underlain at a depth by laccolithic intrusions. Oil is produced largely from the Blackleaf and Sunburst sands of Lower Cretaceous age, although some comes from the Jurassic-Swift formations. Gas is produced from the Blackleaf and Sunburst horizons of Lower Cretaceous age, the Sawtooth and Swift formations of Jurassic age, and the Madison (Mississippian) formation.

The section and porosity are well developed. A strong gas drive is present, indicating a recovery of 4,600 barrels per acre. The producing depth is 1,400 feet.

35 Wells; 9 Leases; 2 Operators; Truck Transportation.

Spacing: 10 Acres; Orders No. 16-54; 12-55; 11-57.

FALLON & WIBAUX COUNTIES

WILLS CREEK

Wills Creek is actually a non-unitized extension of the Cabin Creek Unit, lying on the gently dipping east flank of the Cedar Creek anticline. It is in the region lying outside of and to the east of the Cabin Creek Unit. Oil in this area comes from the Silurian-Interlake formation and the Stony Mountain and Red River formations of Ordovician age.

9 Wells; 5 Leases; 2 Operators; Pipeline Transportation.

Spacing: State-wide rules.

YELLOWSTONE COUNTY

WOLF SPRINGS

Discovery Well: Atlantic C. S. Horton 18-1 (18-7N-32E). Completed 7-55.

Deepest Test Well: Above well. Cambrian. TD 8,442.

The Wolf Springs structure, located along the east flank of the Bull Mountain Basin, consists of at least three separate highs strung along a northwest-southeast trending anticline. Oil is produced from the upper part of the Amsden formation of Pennsylvanian age. The field has an active water drive that produces an oil-water contact tilted towards the northeast.

The field is characterized by a thin low porosity section. Production is through a fracture system. Development is static at present.

20 Wells; 9 Leases; 3 Operators; Pipeline Transportation.

Spacing: 80 Acres; Orders No. 4-56; 8-58; 9-59.

DAWSON COUNTY

WOODROW

Discovery Well: Texas, NP "G" (NCT-8) 1 (7-16N-54E). Completed 11-56.

Deepest Test Well: Texas, Elpel 1. Winnipeg (Ordovician). TD 10,370.

The Woodrow Field is located in a relatively flat closure in the extreme northern part of the Cedar Creek Anticline. Oil is being produced from the Mississippian-Charles formation.

2 Wells; 2 Leases; 1 Operator; Pipeline Transportation.

Spacing: 160 Acres; Orders No. 29-54; 30-54; 24-55; 25-55.

DAWSON COUNTY

YELLOWSTONE

Discovery Well: Williston Oil and Gas, Entzell 1 (18-14N-55E). Completed 6-55.

Deepest Test Well: Robt. O'Meara, Larsen 1, Red River (Ordovician). TD 8,890.

Oil in the Yellowstone Field is produced from the Ordovician-Red River formation. The field is located on a northwest-southeast trending closure on the west flank of the Cedar Creek Anticline. Dips to the west are steep where a possible fault exists. The field may be considered as an extension of the Gas City structure, which lies to the southeast.

1 Well; 1 Lease; 1 Operator; Pipeline Transportation.

Spacing: State-wide rules.

Line No.	Field (or Pool)	County	Year Discovered	Production Formation
1	Ash Creek	Big Horn	1952	Shannon (U. Cret.)
2	Bannatyne	Teton	1927	Swift (U. Jur.)
3	Bears Den	Liberty	1924	Kootenai (L. Cret.)
4	Belfry	Carbon	1958	Fuson (L. Cret.)
5	Berthelote	Toole	1929	Kootenai (L. Cret.)
6	Big Wall	Musselshell	1948	Tyler (U. Miss.)
7	Big Wall	Musselshell	1953	Amsden (L. Penn.)
8	Blackfoot	Glacier	1955	Sun River (Miss.)
9	Blackfoot	Glacier	1955	Kootenai (L. Cret.)
10	Border	Toole	1929	Kootenai (L. Cret.)
11	Bowes	Blaine	1949	Sawtooth (M. Jur.)
12	Brady-Midway	Pondera	1943	Kootenai (L. Cret.)
13	Bredette	Roosevelt	1955	Charles (Miss.)
14	Bredette, North	Roosevelt, Daniels	1956	Charles (Miss.)
15	Brorson	Richland	1954	Mission Canyon (Miss.)
16	Bynum	Teton	1955	Madison (Miss.)
17	Cabin Creek (West Flank)	Fallon	1953	Siluro-Ordovician
18	Cabin Creek (East Flank)	Fallon	1957	Siluro-Ordovician
19	Cabin Creek	Fallon	1956	Mission Canyon (Miss.)
20	Cat Creek (Antelope-Mosby)	Petroleum-Garfield	1920	Kootenai (L. Cret.)
21	Cat Creek (West Dome)	Petroleum-Garfield	1920	Kootenai (L. Cret.)
22	Cat Creek	Petroleum-Garfield	1945	Morrison (U. Jur.)
23	Cat Creek	Petroleum-Garfield	1945	Swift (U. Jur.)
24	Clark's Fork	Carbon	1954	Frontier (U. Cret.)
25	Clark's Fork, North	Carbon	1956	Lakota (L. Cret.)
26	Clark's Fork, North	Carbon	1957	Dakota (L. Cret.)
27	Cupton	Fallon	1955	Red River (U. Ord.)
28	Cut Bank	Glacier	1932	Kootenai "Cut Bank" (L. Cret.)
29	Cut Bank	Glacier	1935	Kootenai "Lander" (L. Cret.)
30	Cut Bank (Darling Area)	Glacier-Toole	1939	Kootenai "Moulton" (L. Cret.)
31	Cut Bank (North)	Glacier	1945	Madison (Miss.)
32	Cut Bank (Caughlin)	Toole	1955	Madison (Miss.)
33	Cut Bank (South Darling)	Glacier	1954	Madison (Miss.)
34	Cut Bank (Dahlquist)	Glacier-Toole	1946	Kootenai "Cut Bank" (L. Cret.)
35	Deer Creek	Dawson	1952	Red River (U. Ord.)
36	Deer Creek	Dawson	1952	Interlake (Sil.)
37	Delphia	Musselshell	1957	Amsden (L. Penn.)
38	Devil's Basin	Musselshell	1919	Heath (U. Miss.)
39	Dry Creek	Carbon	1930	Greybull (L. Cret.)
40	Dry Creek	Carbon	1932	Pryor (L. Cret.)
41	Elk Basin	Carbon	1915	Frontier (U. Cret.)
42	Elk Basin	Carbon	1942	Embar-Tensleep (Perm. Penn.)
43	Elk Basin	Carbon	1946	Madison (Miss.)
44	Elk Basin (Northwest)	Carbon	1947	Frontier (U. Cret.)
45	Elk Basin (Northwest)	Carbon	1947	Madison (Miss.)
46	Fertile Prairie	Fallon	1954	Red River (U. Ord.)
47	Flat Coulee	Liberty	1928	Swift (U. Jur.)
48	Frannie	Carbon	1928	Phosphoria-Tensleep (Perm. Pen)
49	Gage	Musselshell	1943	Amsden (L. Penn.)
50	Gas City	Dawson	1955	Red River (U. Ord.)

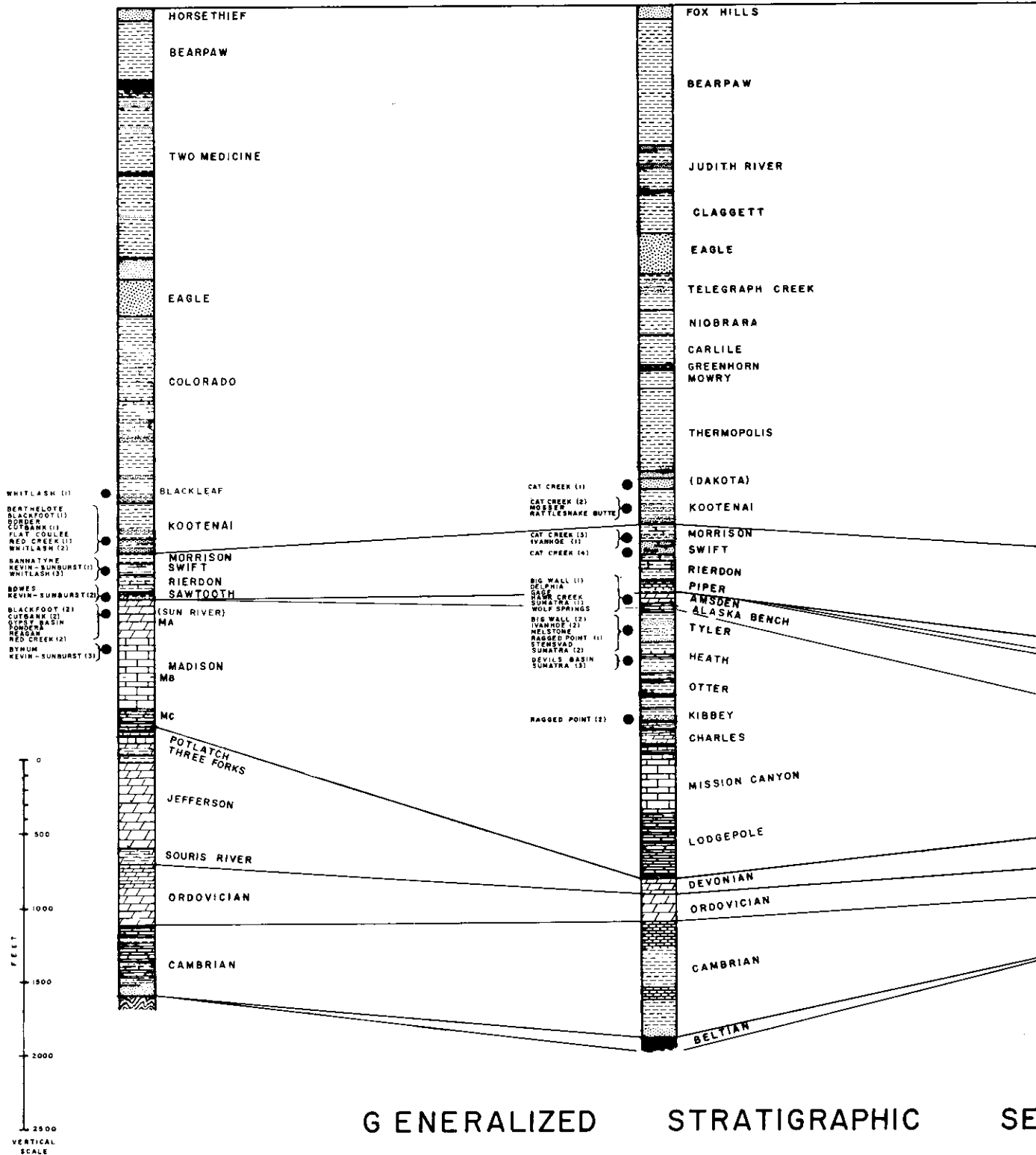
	Approx. Depth (2)	No. of Oil Wells		A.P.I. Gravity (5)	Volume Factor (6)	Net Pay Feet (7)	Porosity % (8)	Connate Water % (9)	Stock Tank Oil in Place Bbls./Acre (10)	Estimated Proven Acres as of 1/58 (11)	Acreage Increased by Development 1958 (12)
		Producing 1/59 (3)	Completed 1958 (4)								
	4,500	4	0	34	1.045	14	22	35	14,850	160	0
	1,450	6	4	27	1.05	39	15	43	24,600	170	0
	2,300	3	0	39	1.08	20	12	35	11,200	80	0
	9,844	1	1	38	1.6	20	11.25	17	8,450	0	80
	2,422	2	0	36	....	35	....	....	.....	50	0
	3,000	14	0	31	1.02	22	17	40	17,100	540	0
	2,500	14	1	19	1.02	17	16	35	13,450	280	0
	3,550	11	5	25	1.15	8	14	40	4,540	280	200
	3,500	4	1 re	30	1.11	15	15	35	10,230	120	40
	2,400	8	0	31	1.08	22	15	30	16,600	300	0
	3,250	87	0	20	1.00	22	12	45	11,300	4,990	0
	1,450	5	0	35	1.07	5	11	40	2,390	200	0
	6,550	1	0	40	1.24	19	6	56	3,140	400	0
	6,720	5	1	38	1.24	18	6	53	3,084	480	0
	9,744	3	1	32	1.50	92	4	40	11,400	160	0
	2,950	2	0	40	1.24	18	16	63	6,662	320	0
	8,300	33	4	33	1.242	94	11	30	45,100	2,080	120
	8,450	37	23	34	1.17	40	11.5	30	21,400	1,200	1,760
	7,300	18	0	33	1.13	25	11	30	24,700	1,060	0
	1,225	4	0	52	1.10	10	21	19	12,000	200	0
	1,100	31	0	52	1.10	51	21	19	61,200	920	0
	1,600	6	0	52	1.10	6	22	40	4,570	120	0
	1,750	47	0	52	1.10	25	18	40	19,050	880	0
	6,730	1	0	43	1.16	28	14	43	14,900	40	0
	8,940	4	1	50	1.92	19	19	39	8,900	320	80
	8,750	1	0	56	1.9	11	20	30	6,300	80	0
	9,800	2	0	33	1.50	90	13	35	39,300	160	0
(Cret.)	2,950	990	12	38	1.083	15	15	35	10,450	48,460	340
(Cret.)	2,900	28	0	35	1.17	12	18.8	35	9,692	1,120	0
(Cret.)	2,550	46	1	38	1.17	28	12.5	35	15,100	1,350	0
	3,000	62	0	39	1.10	10	14	30	6,909	3,240	0
	2,400	6	0	37	1.10	13	15	30	9,632	110	0
	2,800	8	1	30	1.10	12	14	30	8,291	260	0
(Cret.)	2,650	13	0	38	1.12	11	15	35	5,716	180	0
	9,850	3	0	42	1.21	112	6.7	35	31,209	480	0
	9,440	3	1 re	42	1.22	71	7	35	20,543	160	80
	6,290	5	4	35	1.15	12	6.5	30	3,690	160	280
	1,200	5	2	24	1.02	11	17	64	5,122	80	40
	5,600	2	0	52	1.6	12	12	22	5,445	1,700	0
	5,800	5	0	52	1.2	30	12	25	16,000	1,000	0
	1,200	11	0	45	1.1621	97	21	29	96,574	120	0
(Penn.)	4,900	29	0	29	1.1566	166	10.5	35	75,924	1,376	0
	5,150	9	2	28	1.123	224	11.6	35	116,687	920	0
	3,375	9	0	47	1.287	28	18.91	30	22,322	120	0
	6,215	2	0	35	1.075	16	19	20	17,547	350	0
	9,200	3	0	33	1.25	49	5.6	30	11,900	320	0
	1,500	1	0	39	1.1	7	16	30	5,530	80	0
(Perm. Penn.)	2,700	2	0	27	1.018	29	19	16	35,267	80	0
	6,000	2	1	34	1.07	18	10	48	6,780	280	40
	8,700	12	0	38	1.284	31	11	30	14,829	1,120	0

Acres	Acres Increased by Development 1958 (12)	Estimated Proven Acres as of 1/59 (13)	Total Stock Tank Oil in Place in 1000's Bbl. (14)	Estimated Primary Recovery % (15)	Ultimate Primary Recovery in 1000's Bbl. (16)	Cumulative Production to 1/59 in 1000's Bbl. (17)	Annual Production in 1958 in Bbls. (18)	Primary Reserves in 1000's Bbl. 1/59 (19)	Ultimate Primary Recovery Bbl. Acre (20)	Ultimate Primary Recovery Bbl. Acre-Ft. (21)	Line No.
	0	160	2,380	26	620	249	34,316	371	3,780	276	1
	0	170	4,190	5	209	70	7,450	139	1,230	32	2
	0	80	895	15	134	89	4,190	45	1,680	84	3
	80	80	676	50	338	2	2,029	336	4,225	211	4
	0	50	.....	....	91	23	1,488	68	1,820	52	5
	0	540	9,213	42	3,880	2,654	141,427	1,226	7,190	326	6
	0	280	3,766	27	1,017	546	80,496	471	3,630	214	7
	200	480	2,170	20	434	180	97,781	663	906	113	8
	40	160	1,640	25	409	180	97,781	663	2,550	170	9
	0	300	4,980	23	1,145	1,072	7,695	73	3,810	173	10
	0	4,990	56,387	25	14,097	5,023	277,263	9,074	2,820	128	11
	0	200	478	15	72	14	806	58	360	72	12
	0	400	1,256	16	201	177	10,616	24	503	26	13
	0	480	1,480	50	740	348	151,261	392	1,540	85	14
	0	160	1,820	50	910	270	28,760	640	5,690	62	15
	0	320	2,131	25	533	5	1,452	528	1,665	93	16
	120	2,200	99,220	30	29,766	8,995	3,570,453	38,747	13,550	144	17
	1,760	2,960	59,920	30	17,976	1,583	715,084	6,272	6,060	152	18
	0	1,060	26,182	30	7,855	500	3,592	28	7,400	296	19
	0	200	2,400	22	528	500	3,592	28	2,640	264	20
	0	920	56,300	22	16,300	15,263	52,256	1,037	17,700	348	21
	0	120	672	32	214	187	5,075	27	1,780	298	22
	0	880	16,764	30	4,987	3,288	110,327	1,699	5,650	226	23
	0	40	596	15	89	62	3,062	27	2,240	80	24
	80	400	3,560	35	1,240	520	274,843	720	3,100	163	25
	0	80	502	25	125	30	25,407	95	1,565	142	26
	0	160	6,275	12	755	86	20,082	669	4,720	52	27
	340	48,800	510,796	18	91,943	79,702	1,668,218	14,955	1,880	125	28
	0	1,120	10,855	25	2,714	2,190	126,775	2,900	2,420	202	29
	0	1,350	20,400	25	5,090	2,190	126,775	2,900	3,770	135	30
	0	3,240	22,385	25	5,596	4,445	315,177	1,151	1,730	173	31
	0	110	1,059	50	530	347	58,594	183	4,820	370	32
	0	260	2,156	25	539	158	36,004	381	2,070	173	33
	0	180	1,029	35	360	322	12,684	38	2,000	182	34
	0	480	15,000	24	3,600	926	97,738	2,674	7,500	67	35
	80	240	4,930	25	1,232	36	23,625	1,196	5,140	72	36
	280	440	1,624	40	650	117	56,828	533	1,480	123	37
	40	120	615	10	61	34	5,658	27	513	47	38
	0	1,700	9,256	25	2,314	3,827	73,503	2,487	1,361	113	39
	0	1,000	16,000	25	4,000	3,827	73,503	2,487	4,000	133	40
	0	120	11,589	25	2,897	28,119	3,039,762	29,937	24,150	250	41
	0	1,376	104,471	25	26,117	28,119	3,039,762	29,937	18,980	114	42
	0	920	107,352	25	26,838	28,119	3,039,762	29,937	29,200	130	43
	0	120	2,678	25	669	28,119	3,039,762	29,937	5,575	199	44
	0	350	6,141	25	1,535	28,119	3,039,762	29,937	4,380	274	45
	0	320	3,800	18	684	122	17,155	562	2,140	44	46
	0	80	442	20	88	28	1,735	60	1,100	157	47
	0	80	2,821	25	705	413	40,554	292	8,810	304	48
	40	320	2,170	25	542	466	7,757	76	1,690	94	49
	0	1,120	16,608	25	4,152	1,008	279,820	3,144	3,700	119	50

Line No.	Field (or Pool)	County	Year Discovered	Production Formation
51	Glendive	Dawson	1952	Stony Mtn.-Red River (U. Ord.)
52	Gypsy Basin	Pondera	1958	Sun River (Miss.)
53	Hawk Creek	Musselshell	1958	Amsden (L. Penn.)
54	Ivanhoe	Musselshell	1953	Morrison (U. Jur.)
55	Ivanhoe	Musselshell	1956	Tyler (U. Miss.)
56	Kevin-Sunburst	Toole	1922	Madison (Miss.)
57	Lake Basin	Stillwater	1925	Dakota (L. Cret.)
58	Line Coulee	Daniels	1957	Charles (Miss.)
59	Little Beaver	Fallon	1952	Red River (U. Ord.)
60	Little Beaver East	Fallon	1954	Red River (U. Ord.)
61	Melstone	Musselshell	1948	Tyler (U. Miss.)
62	Monarch	Fallon	1958	Interlake (Sil.)
63	Mosser	Yellowstone	1936	Kootenai (L. Cret.)
64	Outlook	Sheridan	1956	Siluro-Devonian
65	Outlook	Sheridan	1957	Red River (U. Ord.)
66	Pennel	Fallon	1955	Siluro-Ordovician
67	Pennel	Fallon	1957	Mission Canyon (Miss.)
68	Pine	Dawson, Wibaux, Fallon, Prairie	1952	Siluro-Ordovician
69	Pondera	Pondera, Teton	1927	San River (Miss.)
70	Poplar, East	Roosevelt	1952	Charles-Mission Canyon (Miss.)
71	Poplar, Northwest	Roosevelt	1952	Charles-Mission Canyon (Miss.)
72	Ragged Point	Musselshell	1947	Kibbey (U. Miss.)
73	Ragged Point	Musselshell	1956	Tyler (U. Miss.)
74	Reagan	Glacier	1947	Sun River (Miss.)
75	Red Creek	Glacier	1958	Kootenai (L. Cret.)
76	Red Creek	Glacier	1958	Sun River (Miss.)
77	Red Stone	Sheridan	1958	Winnipegosis (Dev.)
78	Repeat	Carter	1956	Red River (U. Ord.)
79	Richey	Dawson, McCone	1951	Charles (Miss.)
80	Richey, Southwest	McCone	1952	Interlake (Sil.)
81	Richey, Southwest	McCone	1952	Dawson Bay (Dev.)
82	Snyder	Big Horn	1952	Tensleep (Penn.)
83	Soap Creek	Big Horn	1920	Amsden (L. Penn.)
84	Soap Creek	Big Horn	1923	Madison (Miss.)
85	Stensvad	Rosebud	1958	Tyler (U. Miss.)
86	Sumatra	Rosebud	1949	Tyler-Heath (U. Miss.)
87	Sumatra	Rosebud	1955	Amsden (L. Penn.)
88	Whitlash	Liberty	1927	(L. Cret.)
89	Wills Creek	Fallon	1957	Siluro-Ordovician
90	Wolf Springs	Yellowstone	1955	Amsden (L. Penn.)
91	Woodrow	Dawson	1952	Charles (Miss.)
92	Yellowstone	Dawson	1953	Red River (U. Ord.)
93	Miscellaneous Abandoned Fields			
	TOTALS			

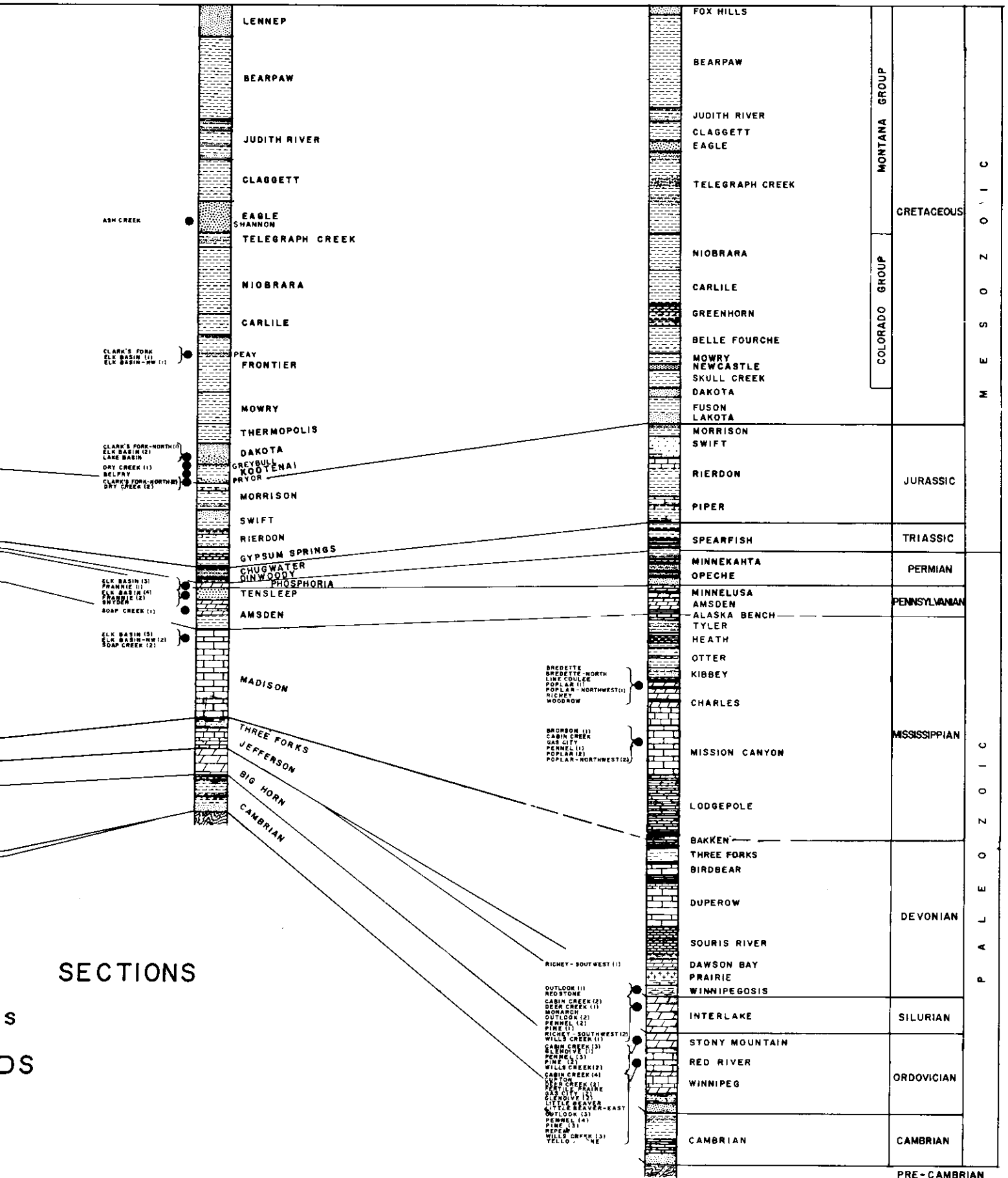
	Approx. Depth (2)	No. of Oil Wells		A.P.I. Gravity (5)	Volume Factor (6)	Net Pay Feet (7)	Porosity % (8)	Connate Water % (9)	Stock Tank Oil in Place Bbls./Acre (10)	Estimated Proven Acres as of 1/58 (11)	Acreage Increased by Development 1958 (12)
		Producing 1/59 (3)	Completed 1958 (4)								
Ord.)	8,700	12	0	38	1.25	147	6.5	35	38,500	1,040	0
	3,150	3	1	..	....	....	....	....	.....	0	120
	7,100	1	1	38	1.15	11	2.3	35	1,105	0	40
	2,800	2	0	30	1.14	10	15	41	6,040	80	0
	4,050	11	3	33	1.08	31	15.8	39	21,470	280	0
	1,500	1,433	18	32	1.083	6.5	20	35	6,019	40,205	0
	3,800	1	0	44	....	22	....	....	.....	120	0
	6,410	2	1	34	1.25	6	11	35	2,659	80	80
	8,300	9	0	29	1.16	37	12	35	19,300	710	0
	8,300	5	2	30	1.20	29	12.5	35	15,225	420	80
	4,250	9	1	34	1.09	25	12	30	14,954	360	0
	8,400	1	0	32	1.1	31	11	35	15,650	0	80
	1,000	6	0	22	1.01	15.4	23.6	30	19,546	96	0
	9,000	13	8	38	1.12	20	5	35	4,500	480	480
	9,900	1	0	33	1.21	35	5	45	6,120	80	0
	8,800	21	0	33	1.135	60	12.6	30	36,100	2,589	0
	7,000	1	0	12	1.1	38	3.4	30	6,370	80	0
	8,400	135	20	34	1.17	40	11.5	30	21,400	8,440	400
Miss.)	2,100	336	10	34	1.20	15	16	31	10,700	5,230	210
	5,550	108	3	40	1.10	25	11	30	19,000	17,909	0
Miss.)	6,200	4	0	40	1.10	16	10.3	45	6,400	400	0
	4,400	3	0	33	1.09	28	11	40	13,152	140	0
	3,580	4	0	32	1.10	14	14.5	35	16,500	220	0
	3,200	45	1	38	1.10	10	16	30	7,900	1,926	40
	2,600	8	8	33	1.17	20	19.2	25	19,100	0	200
	2,750			28	1.1	18	13	30	11,500	0	280
	9,400	1	1	39	1.1	30	7	45	8,150	0	80
	8,610	1	0	23	1.024	25	10	30	13,239	80	0
	7,000	9	3	39	1.203	25	4	30	9,560	900	40
	9,200	1	1	48	1.37	21	9	35	6,950	300	0
	9,130	1	0	48	1.37	6	9	30	2,140	300	0
	4,550	4	0	21	1.16	12	20	35	10,450	149	0
	1,825	13	0	17	1.04	12	15	35	8,700	150	0
	1,925	16	0	20	1.05	18	15	35	13,000	310	0
	5,500	2	0	33	1.20	46	14	46	22,500	0	80
	4,500	67	12	32	1.16	30	18.5	35	24,100	2,300	480
	4,000	5	0	29	1.10	8	20	35	7,330	200	0
	1,400	35	5	38	1.13	15	21	15	18,400	970	70
	8,500	9	8	32	1.2	70	12	25	40,700	40	680
	6,200	20	0	30	1.07	18	3.6	25	3,540	4,250	0
	7,800	2	0	32	1.45	19	17.3	35	11,800	160	0
	8,800	1	0	38	....	24	....	....	.....	80	0
		<u>3,971</u>	<u>173</u>							<u>169,730</u>	<u>6,500</u>

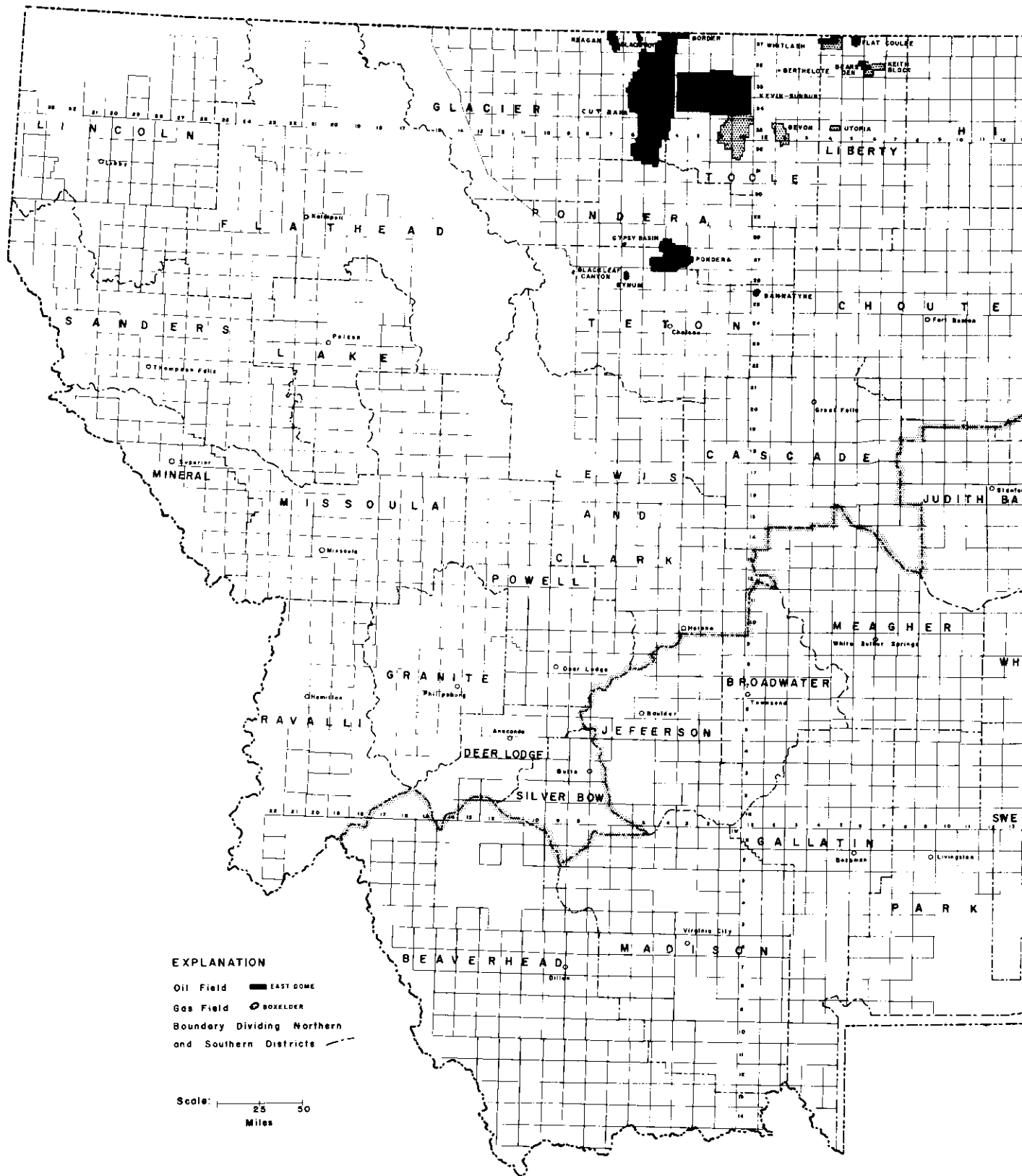
Line No.	Acres Increased by Development 1958 (12)	Estimated Proven Acres as of 1/59 (13)	Total Stock Tank Oil in Place in 1000's Bbl. (14)	Estimated Primary Recovery % (15)	Ultimate Primary Recovery in 1000's Bbl. (16)	Cumulative Production to 1/59 in 1000's Bbl. (17)	Annual Production in 1958 in Bbls. (18)	Primary Reserves in 1000's Bbl. 1/59 (19)	Ultimate Primary Recovery Bbl. Acre (20)	Ultimate Primary Recovery Bbl. Acre-Ft. (21)	Line No.
	0	1,040	40,000	24	9,610	3,825	616,226	5,785	9,250	63	51
	120	120	-----	-----	-----	2	1,922	-----	-----	-----	52
	40	40	44	50	22	1	1,245	21	525	48	53
	0	80	484	25	121	84	5,028	37	1,508	151	54
	0	280	6,020	35	2,110	925	311,933	1,185	7,550	243	55
	0	40,205	241,994	30	72,598	63,947	902,360	8,651	1,806	278	56
	0	120	-----	-----	513	474	211	39	4,260	194	57
	80	160	425	40	170	44	39,753	126	1,060	177	58
	0	710	13,703	17	2,330	888	179,552	1,442	3,170	86	59
	80	500	7,625	10	763	162	83,763	601	1,525	53	60
	0	360	5,383	30	1,615	1,093	94,776	522	4,480	179	61
	80	80	1,250	25	313	7	6,701	306	3,920	126	62
	0	96	1,876	18	337	145	7,232	192	3,510	228	63
	480	960	4,320	40	1,728	585	451,112	1,143	1,805	90	64
	0	80	490	40	196	79	47,443	117	2,450	70	65
	0	2,589	93,462	24	22,430	1,691	594,040	20,739	8,660	144	66
	0	80	510	30	153	13	4,964	140	1,915	50	67
	400	8,840	189,176	30	56,753	16,327	5,358,011	40,426	6,420	160	68
	210	5,440	58,072	35	20,325	14,077	558,655	6,248	3,736	249	69
	0	17,909	340,271	30	102,081	20,248	4,024,865	81,833	5,699	227	70
	0	400	2,560	30	770	191	23,787	579	1,920	120	71
	0	140	1,841	35	645	477	30,594	168	4,610	164	72
	0	220	2,040	30	612	185	95,957	427	2,780	198	73
	40	1,966	15,531	30	4,659	2,227	166,634	2,432	2,369	236	74
	200	200	3,820	25	955	10	9,639	1,523	4,780	239	75
	280	280	3,210	18	578						76
	80	80	652	35	228	3	3,413	225	2,850	95	77
	0	80	1,060	32	340	100	47,000	240	4,320	173	78
	40	940	8,986	25	2,244	1,065	117,866	1,179	2,389	45	79
	0	300	2,080	35	730	471	46,956	484	2,440	116	80
	0	300	644	35	225						81
	0	149	1,560	30	467	221	26,560	246	3,140	261	82
	0	150	1,300	25	326	873	63,075	460	2,170	180	83
	0	310	4,030	25	1,007						84
	80	80	1,800	30	540	3	2,864	537	6,750	147	85
	480	2,780	66,998	20	13,399	7,045	1,582,525	6,354	4,820	161	86
	0	200	1,466	25	367	134	30,036	233	1,825	229	87
	70	1,040	19,136	25	4,784	1,099	91,734	3,685	4,600	307	88
	680	720	29,300	25	7,340	239	225,590	7,101	10,200	146	89
	0	4,250	15,050	50	7,520	1,597	582,288	5,923	1,770	98	90
	0	160	1,890	10	189	97	30,006	92	1,180	62	91
	0	80	-----	-----	57	39	1,194	18	715	10	92
					81	79	341	-----	-----	-----	93
	<u>6,500</u>	<u>176,230</u>			<u>629,752</u>	<u>304,268</u>	<u>27,956,649</u>	<u>325,484</u>			



GENERALIZED STRATIGRAPHIC SE

SHOWING PRODUCING HORIZONS
MONTANA OIL FIELDS
1958

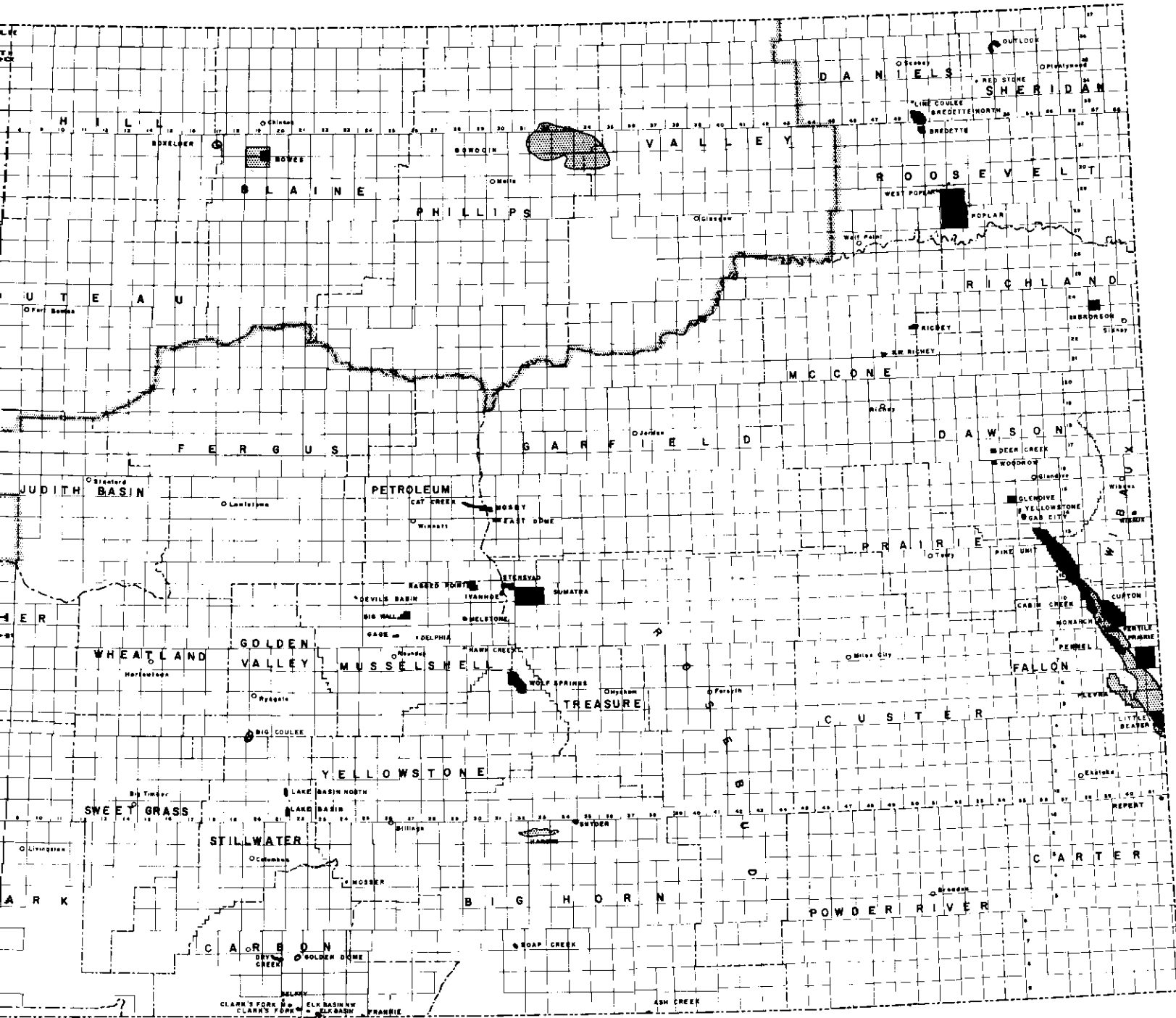




EXPLANATION

- Oil Field ■ EAST DOME
- Gas Field ⊗ BOXELDER
- Boundary Dividing Northern and Southern Districts - - - -

Scale: ——— 25 50
Miles



OIL AND GAS PRODUCING FIELDS IN MONTANA
1958

THE OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA