

U.S. DEPARTMENT OF THE INTERIOR

U.S. GEOLOGICAL SURVEY

Assessed oil and gas plays in Wyoming--  
Generalized location maps and mean estimates  
of undiscovered recoverable conventional oil, gas, and natural gas liquids  
of plays appraised in the 1989 National assessment for oil and gas

by

R. B. Powers<sup>1</sup> and K.L. Varnes <sup>1</sup>

Open-File Report 93-192

This report is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards.

<sup>1</sup> U.S. Geological Survey  
Denver, Colorado

1993

Assessed oil and gas plays in Wyoming--  
Generalized location maps and mean estimates  
of undiscovered recoverable conventional oil, gas, and natural gas liquids  
of plays appraised in the 1989 National assessment for oil and gas

by

R. B. Powers<sup>1</sup> and K.L. Varnes <sup>1</sup>

Table 1 presents the mean estimates of undiscovered recoverable conventional oil, gas and natural gas liquids (NGL) for plays in Wyoming provinces appraised in the 1989 National assessment. The estimates refer to the whole province or play even where the province or play is only partly in Wyoming.

Figure 1 is an index map showing the outlines of the provinces covered in this report and their relation to each other and to Wyoming and surrounding States.

Thirty-six maps showing the location of each of these plays follow as figures 090-020 through 104-330; on these figures the play areas are identified by hachures or, in the case of the Wind River and Bighorn Basins Provinces, by a dotted screen pattern. The figure numbers are keyed to the play identification numbers in the table; the first three digits refer to the province and the last three to the play. Maps are not available for plays listed in the table as "Other occurrences >1MMBO, Other occurrences >6BCFG, Oil <1MMB, and Gas<6 BCF".

Additional information on the 1989 National assessment of oil and gas resources may be found in the following references:

Mast, R.F., Dolton, G.L., Crovelli, R.A., Root, D.H., Attanasi, E.D., U.S. Geological Survey; Martin, P.E., Cooke, L.W., Carpenter, G.B., Pecora, W.C., and Rose, M.B., Minerals Management Service; 1989, Estimates of undiscovered conventional oil and gas resources in the United States -- A part of the Nation's energy endowment: U.S. Department of the Interior, 44 p.

USGS-MMS, 1988, Working papers -- National assessment of undiscovered conventional oil and gas resources: U.S. Geological Survey Open-File Report 88-373, 511 p. Revised and reissued in microfiche only, July 1989.

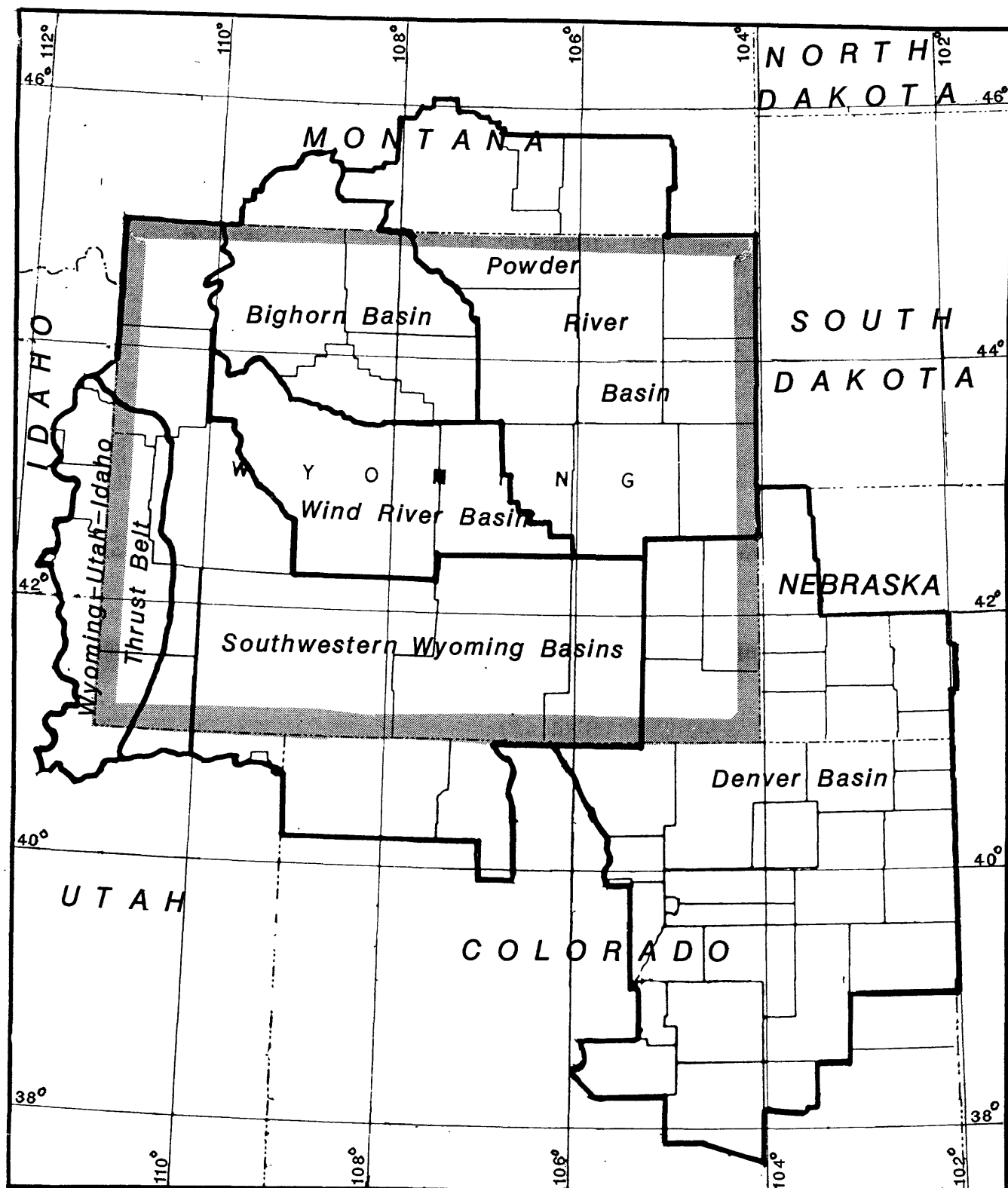


Fig 1. Generalized index map of Wyoming and surrounding States showing the 1989 provinces assessed in this area in 1989 and covered in this report. Heavy lines are province boundaries. Wyoming boundaries are shaded. Approximate scale is 1:5,000,000.

TABLE 1.-Estimates of undiscovered recoverable conventional oil, gas, and natural gas liquids (NGL) in Wyoming provinces by play. Provinces and plays may include parts of other States; estimates are for the whole province or play. Province Mean value totals may not be equal to the sums of the component means because numbers have been independently rounded. [Gas includes both nonassociated and associated-dissolved gas. Negl., negligible quantity; -, no estimate.]

		Crude Oil	Total Gas	Total NGL
		(Millions of Barrels)	(Billions of Cubic Feet)	(Millions of Barrels)
		Mean	Mean	Mean
<b>0 9 0</b>	<b>Wyoming-Utah-Idaho Thrust</b>			
0 2 0	Moxa Arch Extension	0.0	2 147.5	0.0
0 3 0	Crawford-Meade Thrusts	0.0	504.4	2.5
0 4 0	Northern Thrusts	167.1	6 741.7	135.1
0 5 0	Absaroka Thrust-Gas	0.0	3 891.8	451.4
0 6 0	Absaroka Thrust-Oil	260.1	1 690.4	0.0
0 7 0	Hogback Thrust	75.9	553.9	15.5
0 8 0	Cretaceous Stratigraphic	55.6	55.6	0.0
3 2 0	Oil <1 MMB	16.1	96.6	0.0
3 3 0	Gas <6 BCF	0.0	126.9	6.3
	Province Total	574.8	15,808.8	610.9
<b>1 0 0</b>	<b>Wind River Basin</b>			
0 2 0	Deep Basin Structure	0.0	947.3	9.5
0 3 0	Basin Margin Anticlinal	8.3	11.4	0.1
0 6 0	Muddy Sandstone	101.5	253.7	0.0
0 8 0	Basin Margin Subthrust	7.1	82.6	0.8
3 0 0	Other Occurrences >1 MMBO	60.3	120.5	1.2
3 1 0	Other Occurrences >6 BCFG	0.0	333.1	0.0
3 2 0	Oil <1 MMB	21.4	47.0	0.0
3 3 0	Gas <6 BCF	0.0	84.6	0.8
	Province Total	198.5	1,880.3	12.5

TABLE 1. Estimates of undiscovered recoverable conventional oil, gas, and natural gas liquids (NGL)--continued

		Crude Oil (Millions of Barrels) Mean	Total Gas (Billions of Cubic Feet) Mean	Total NGL (Millions of Barrels) Mean
<b>1 0 1</b>	<b>Powder River Basin</b>			
020	Basin Margin Anticline	24.3	20.9	0.0
030	Sussex-Shannon	121.2	103.1	7.2
040	Leo Sandstone	109.8	30.2	0.0
050	Dakota Sandstone	158.4	158.4	0.0
060	Mesaverde-Lewis	57.0	91.3	9.1
070	Deep Frontier Sandstone	28.4	99.5	8.5
080	Deep Muddy Sandstone	347.4	1,215.8	34.0
090	Shallow Muddy Explored	58.7	82.2	0.8
100	Minnelusa Explored	47.7	9.5	0.0
110	Minnelusa Unexplored	774.6	193.6	0.0
300	Other Occurrences >1 MMBO	103.8	124.5	2.5
310	Other Occurrences >6 BCFG	0.0	118.0	1.2
320	Oil <1 MMB	416.0	499.2	0.0
330	Gas <6 BCF	0.0	10.8	Negl.
	Province Total	2,247.3	2,757.0	63.3
<b>1 0 2</b>	<b>SW Wyoming Basins</b>			
020	Cherokee Ridge	0.2	34.6	0.2
030	Jackson Hole	5.7	40.6	0.5
040	Moxa-La Barge	49.4	966.8	12.6
050	Platform	32.2	78.4	1.1
060	Axial Arch	16.0	47.0	1.0
070	Basin Margin Anticline	9.9	190.7	1.3
080	Subthrust	15.4	179.8	1.4
090	Rock Springs	3.2	163.3	6.5
300	Other Occurrences >1 MMBO	44.5	89.0	3.6
310	Other Occurrences >6 BCFG	0.0	1035.0	10.4
320	Oil <1 MMB	31.1	43.5	1.7
330	Gas <6 BCF	0.0	511.0	5.1
	Province Total	207.6	3,379.6	45.3

TABLE 1.--Estimates of undiscovered recoverable conventional oil, gas, and natural gas liquids (NGL)--continued

		Crude Oil		Total Gas		Total NGL	
		(Millions of Barrels)		(Billions of Cubic Feet)		(Millions of Barrels)	
		Mean		Mean		Mean	
<b>1 0 3</b>	<b>Bighorn Basin</b>						
020	Phosphoria	8.5		8.5		0.0	
040	Deep Basin Anticlinal	0.0		107.0		2.7	
050	Basin Margin Subthrust	39.8		78.8		0.4	
060	Sub-Absaroka	77.7		3.9		0.0	
070	Basin Margin Anticlinal	29.6		14.8		0.0	
300	Other Occurrences >1 MMBO	54.1		81.2		1.2	
310	Other Occurrences >6 BCFG	0.0		311.9		3.1	
320	Oil <1 MMB	33.2		23.2		0.0	
330	Gas <6 BCF	0.0		33.2		0.5	
	Province Total	246.0		664.6		7.9	
<b>1 0 4</b>	<b>Denver Basin</b>						
030	Shallow Niobrara Gas	0.0		632.5		0.0	
040	Paleozoic	37.1		33.4		0.0	
050	D-J Sandstone	77.9		109.0		10.9	
060	Pierre Shale Sandstone	1.1		4.5		Negl.	
300	Other Occurrences >1 MMBO	58.7		58.7		0.0	
320	Oil <1 MMB	411.0		493.2		49.3	
330	Gas <6 BCF	0.0		382.3		0.0	
	Province Total	585.7		1,713.5		60.2	

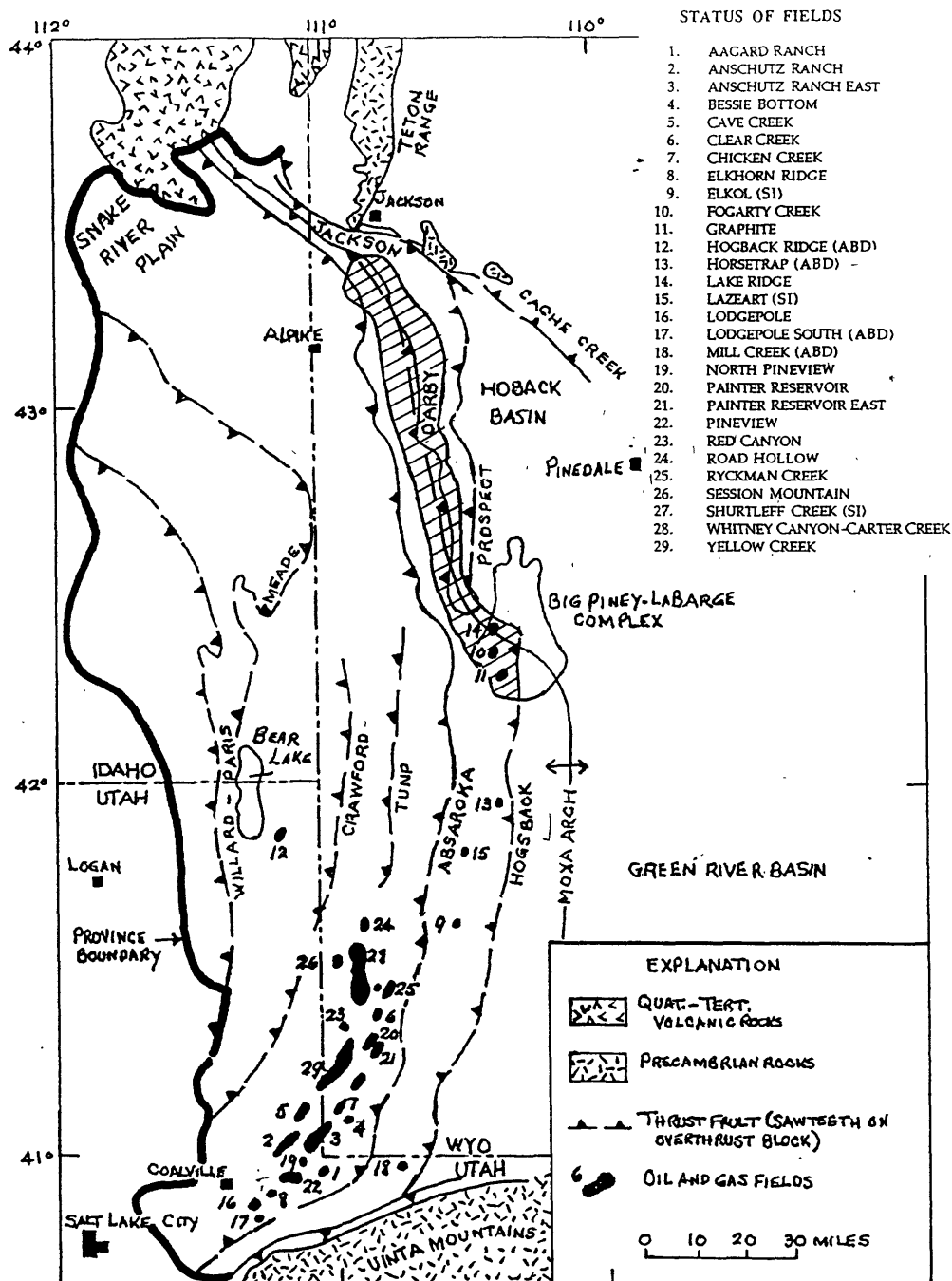


Fig. 090-020. Map of Moxa Arch Extension play, Wyoming-Utah-Idaho Thrust Belt Province

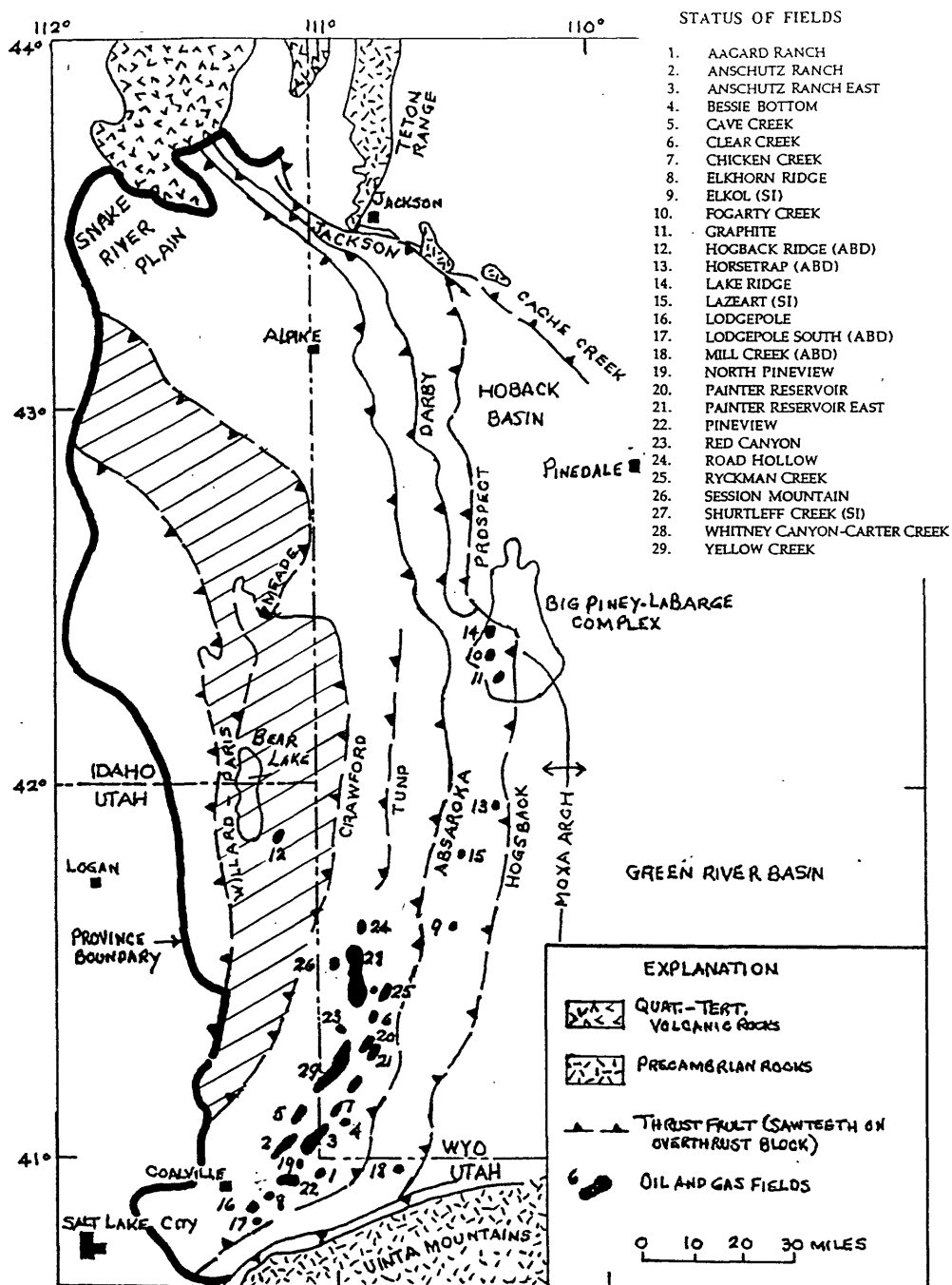


Fig. 090-030. Map of Crawford-Meade Thrusts play, Wyoming-Utah-Idaho Thrust Belt Province

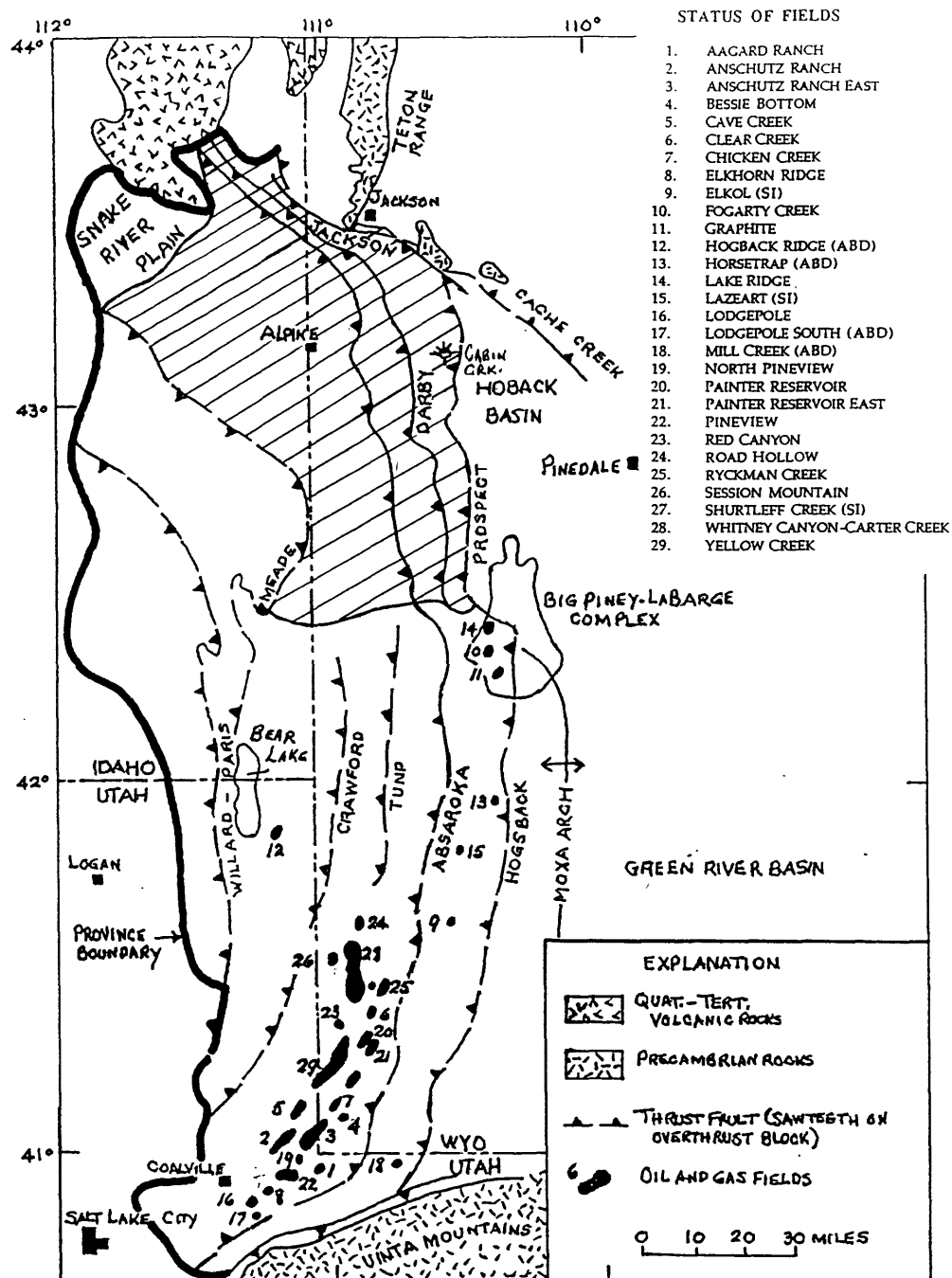


Fig. 090-040. Map of Northern Thrusts play, Wyoming-Utah-Idaho Thrust Belt Province

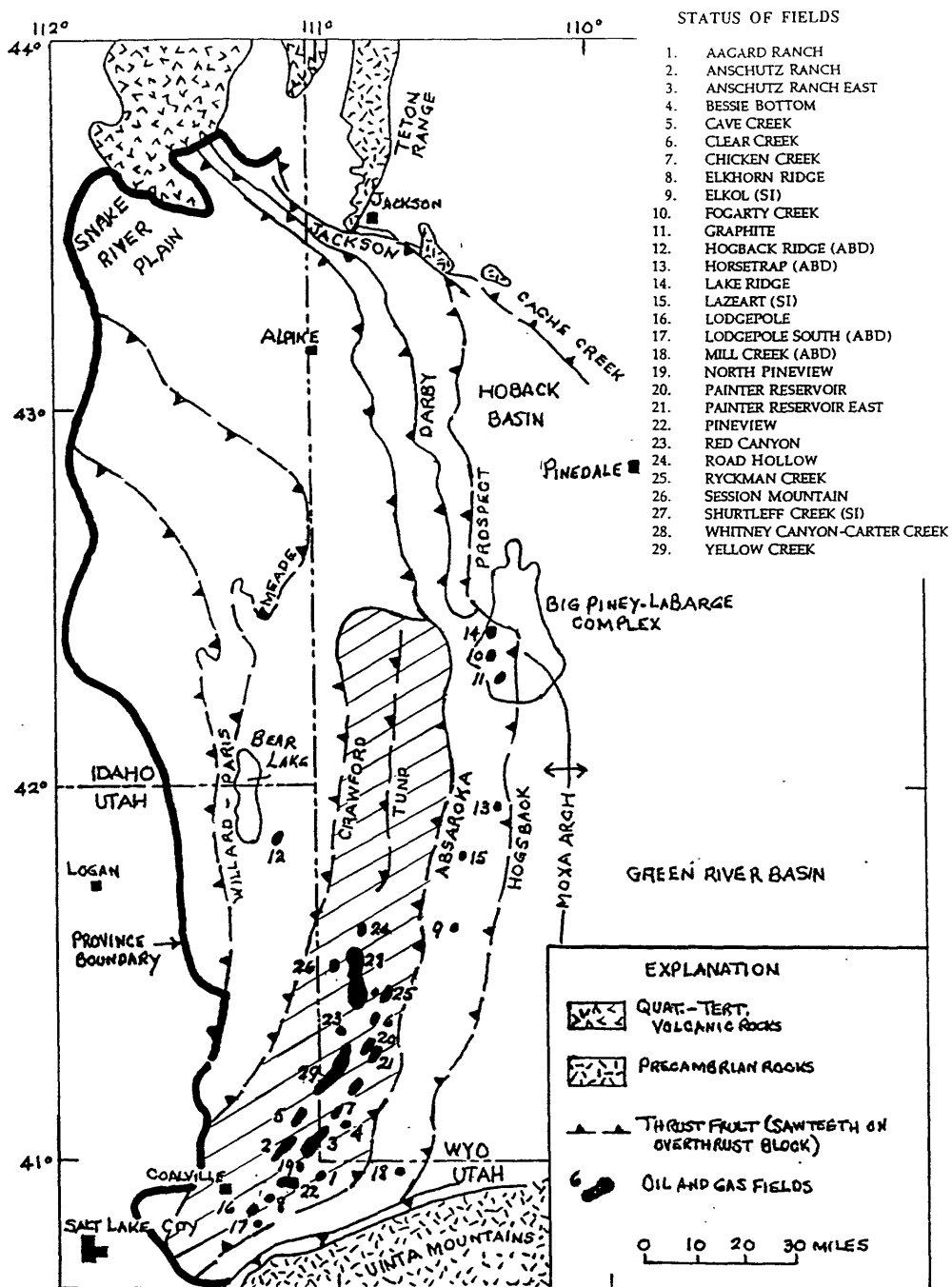


Fig. 090-050 and 060. Map of Absaroka Thrust Gas play, Absaroka Thrust Oil play, Wyoming-Utah-Idaho Thrust Belt Province

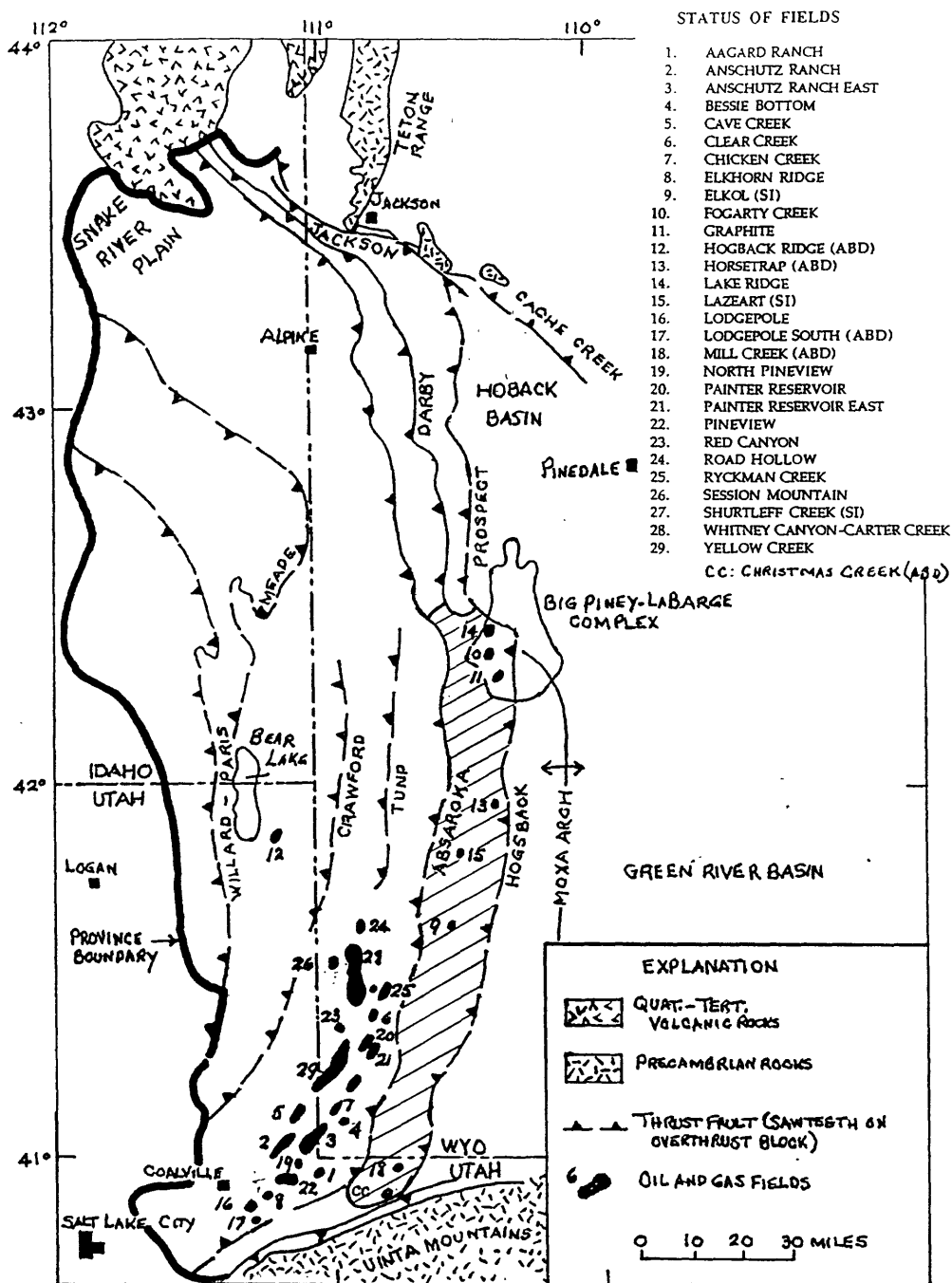


Fig. 090-070. Map of Hogsback Thrust play, Wyoming-Utah-Idaho Thrust Belt Province

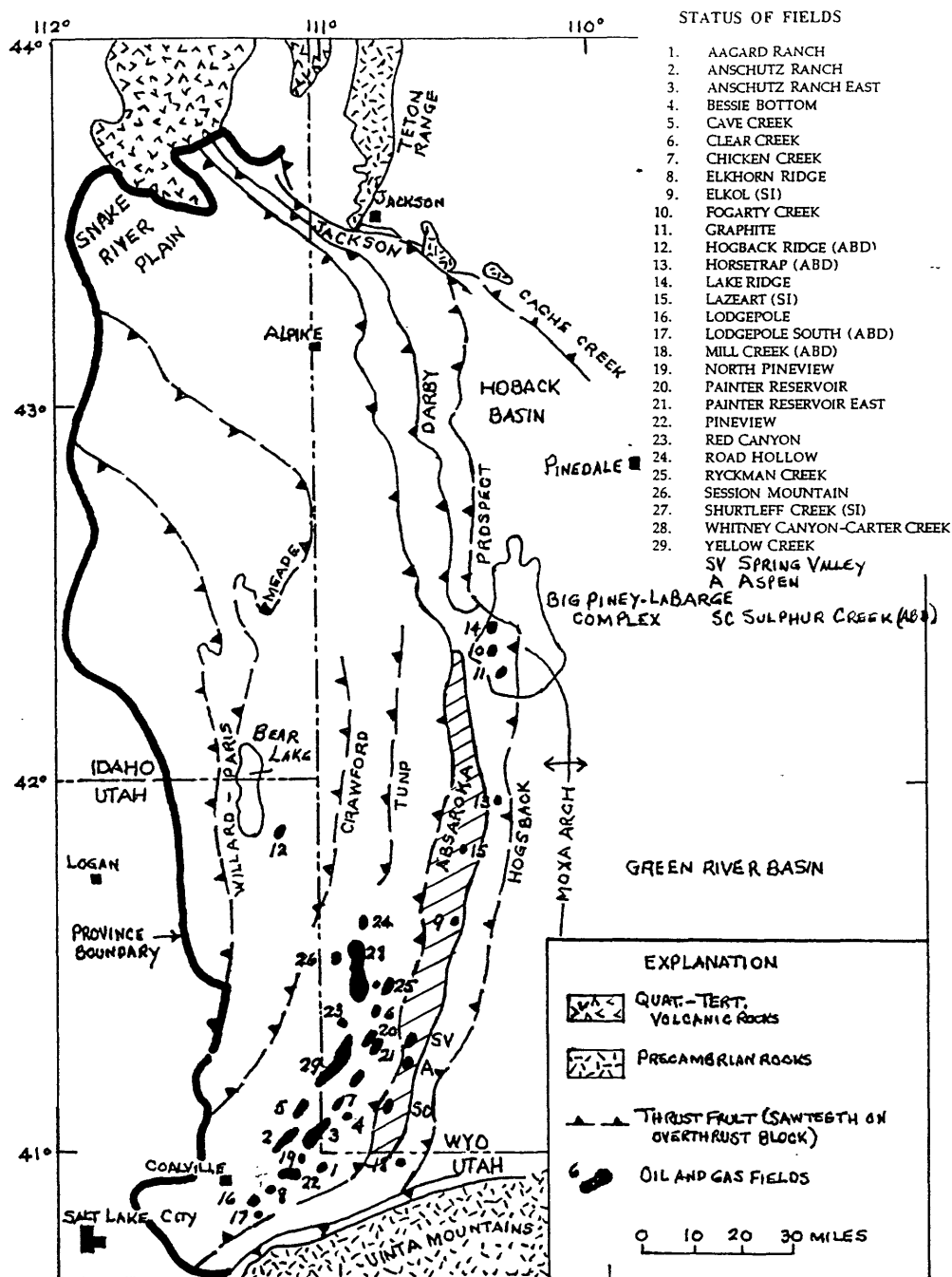


Fig. 090-080. Map of Cretaceous Stratigraphic play, Wyoming-Utah-Idaho Thrust Belt Province

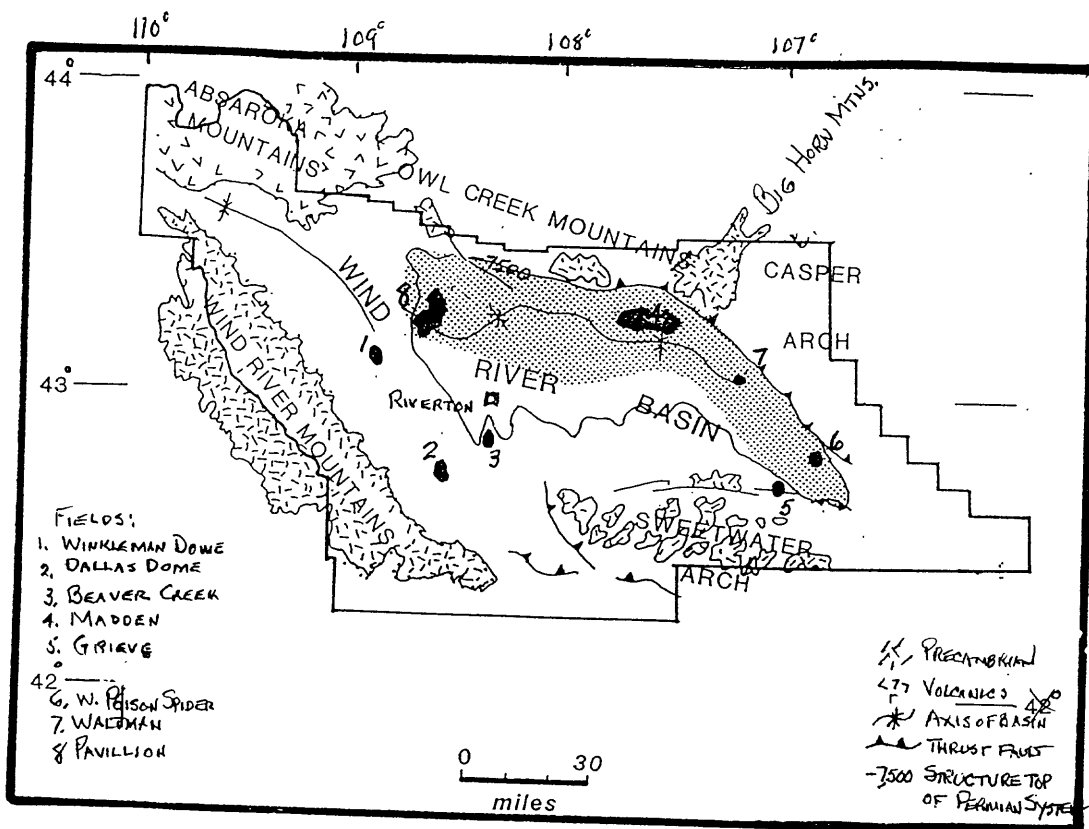


Fig. 100-020. Map of Deep Basin Structure play, Wind River Basin Province

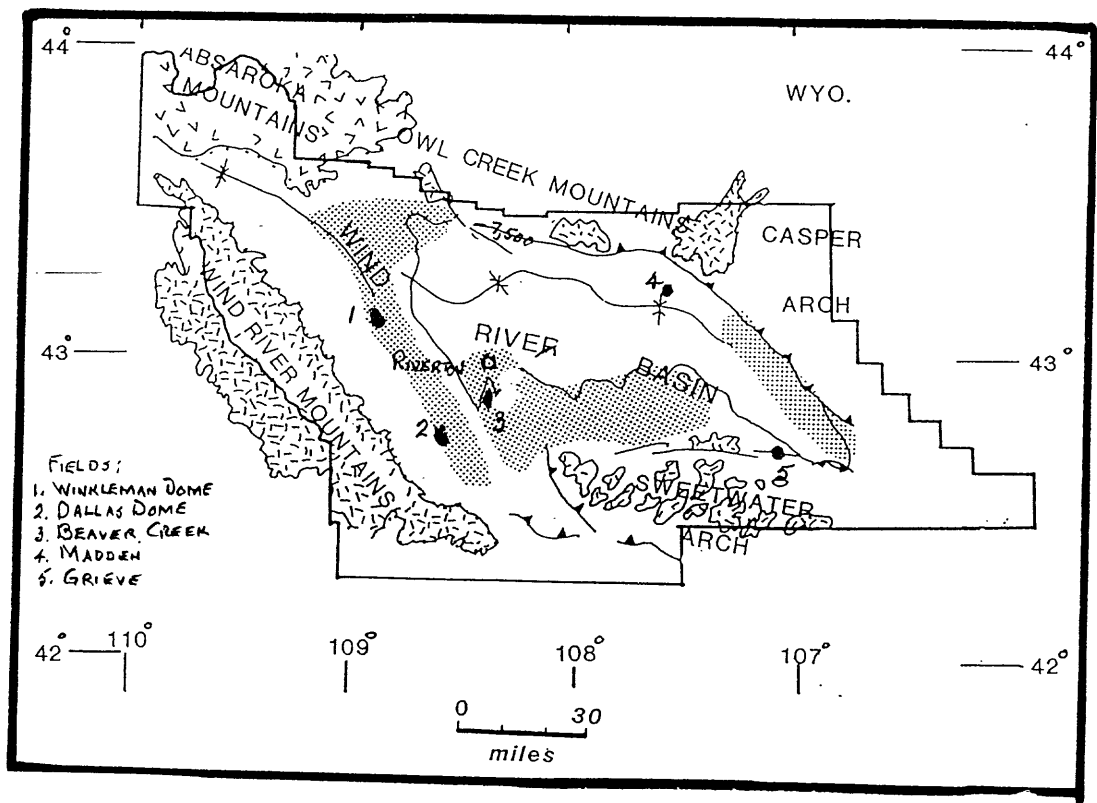


Fig. 100-030. Map of Basin Margin Anticlinal play, Wind River Basin Province

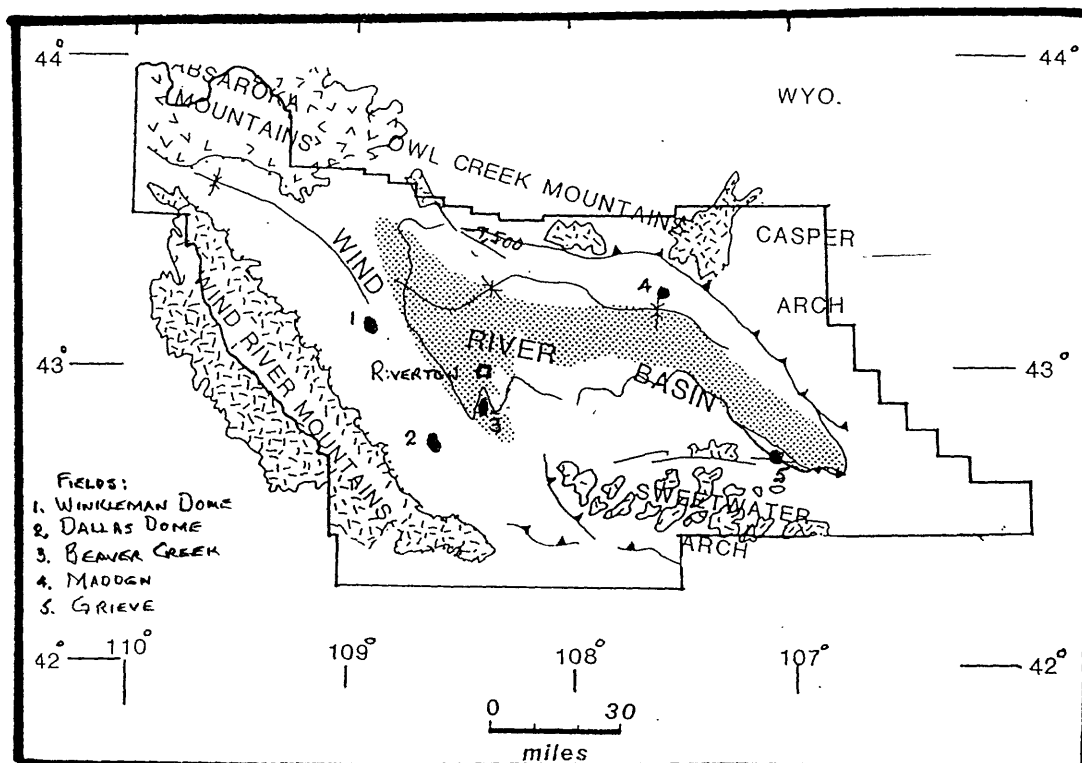


Fig. 100-060. Map of Muddy Sandstone play, Wind River Basin Province

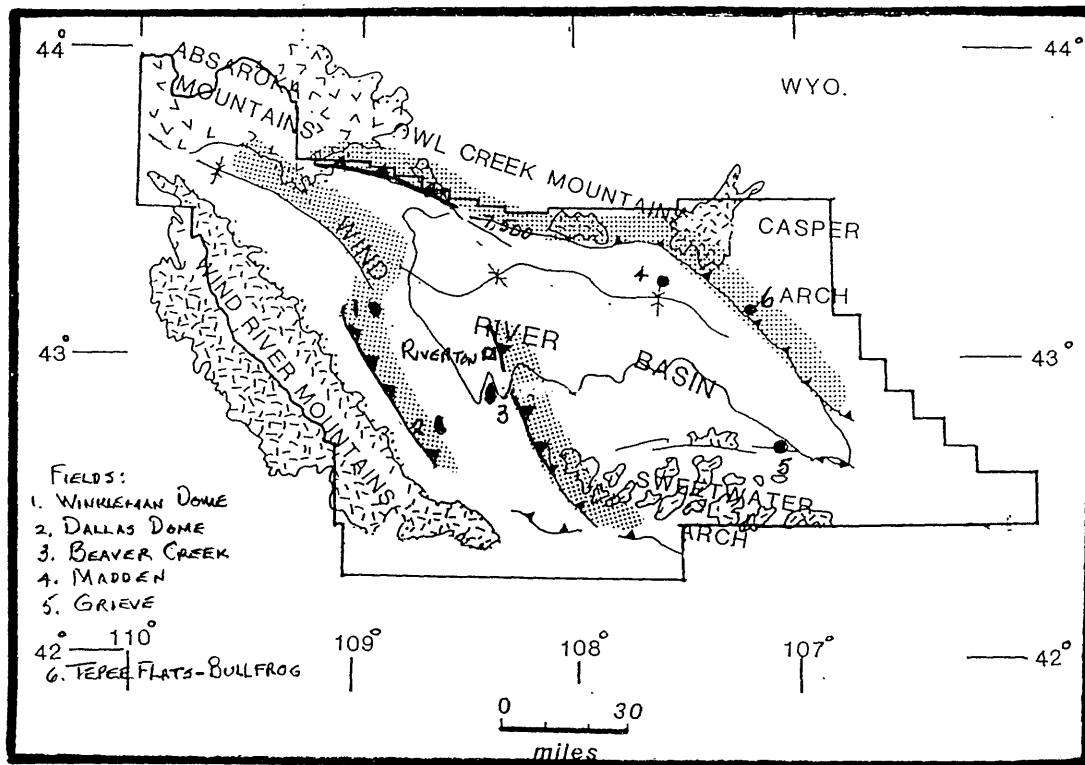


Fig. 100-080. Map of Basin Margin Subthrust Play, Wind River Basin Province

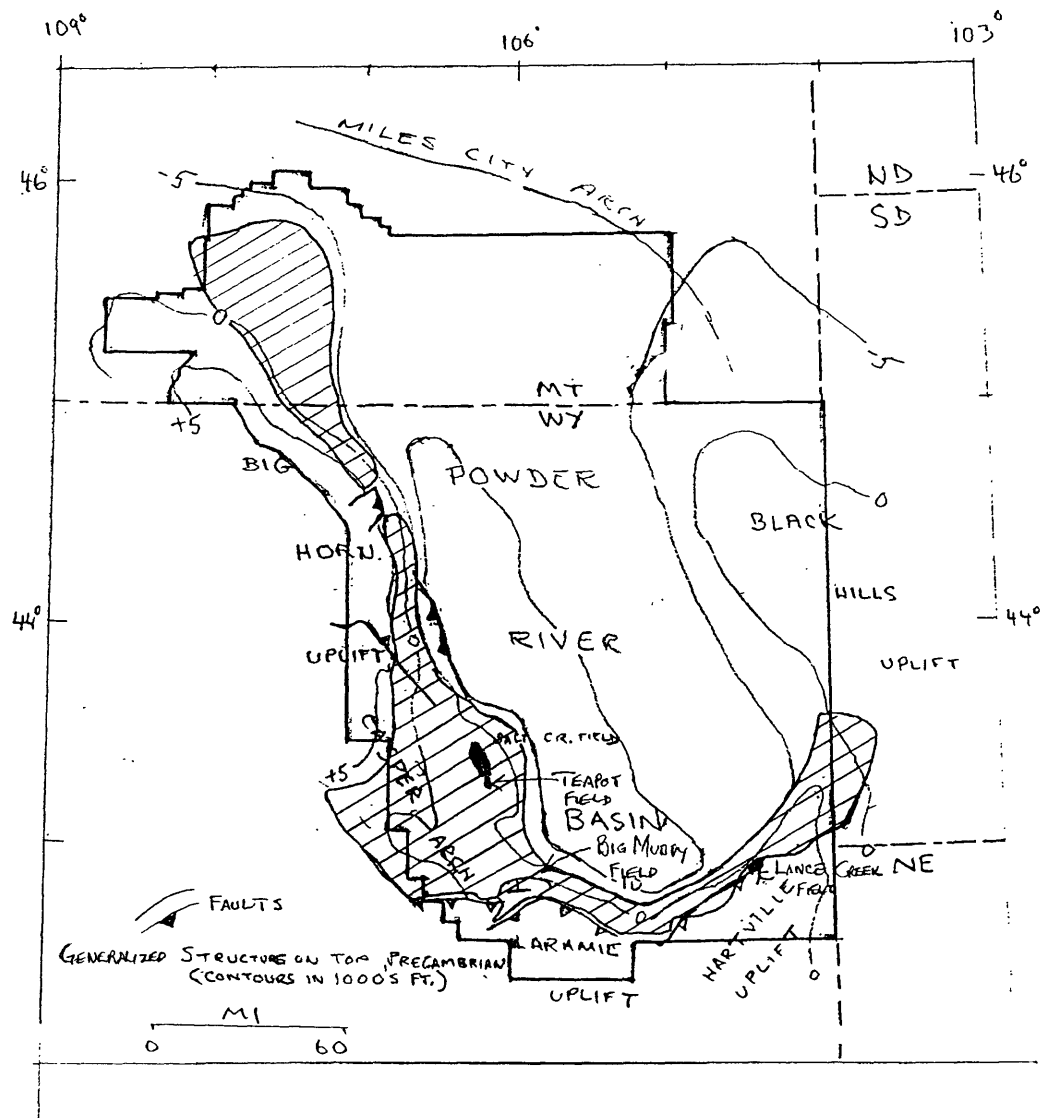


Fig. 101-020. Map of Basin Margin Anticline play, Powder River Basin Province

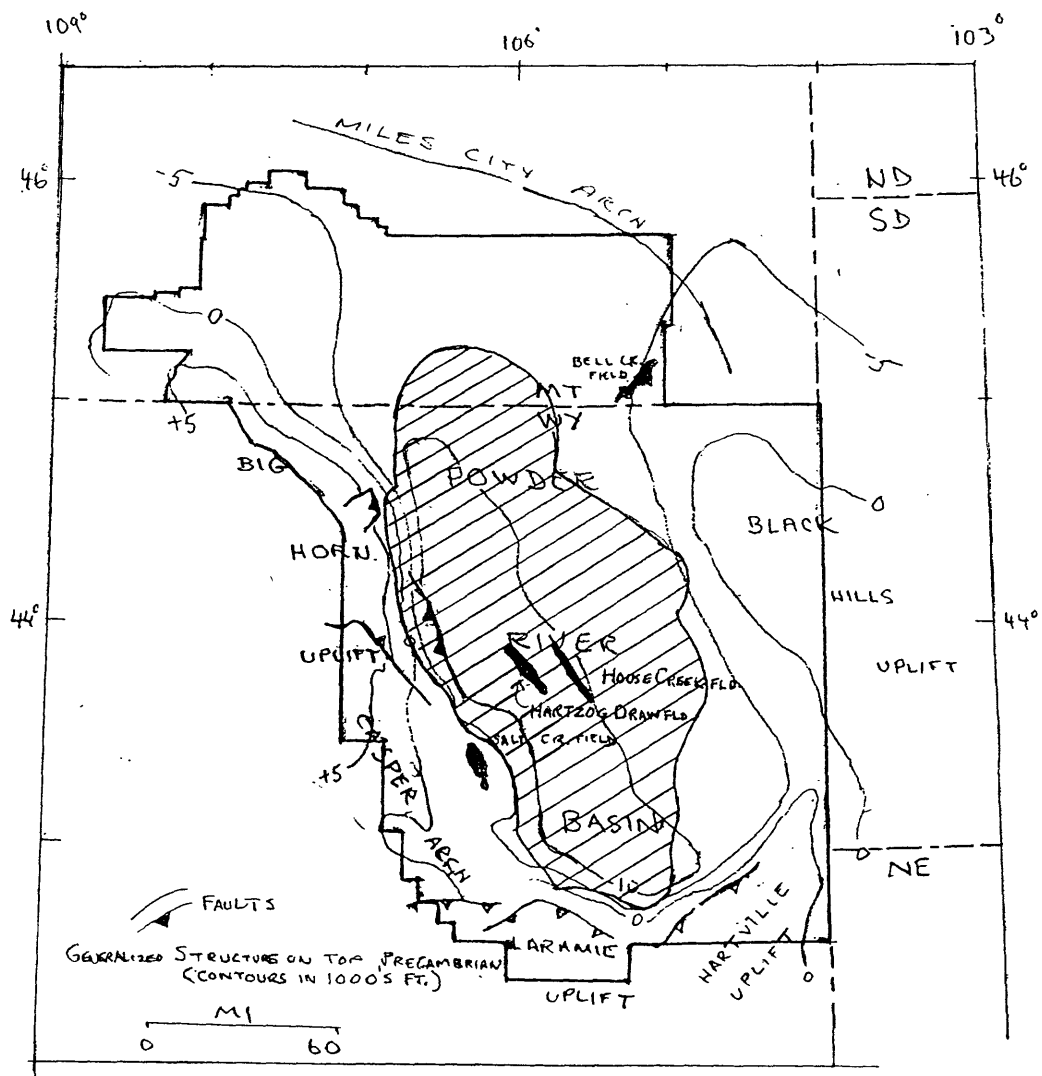


Fig. 101-030. Map of Sussex-Shannon play, Powder River Basin Province

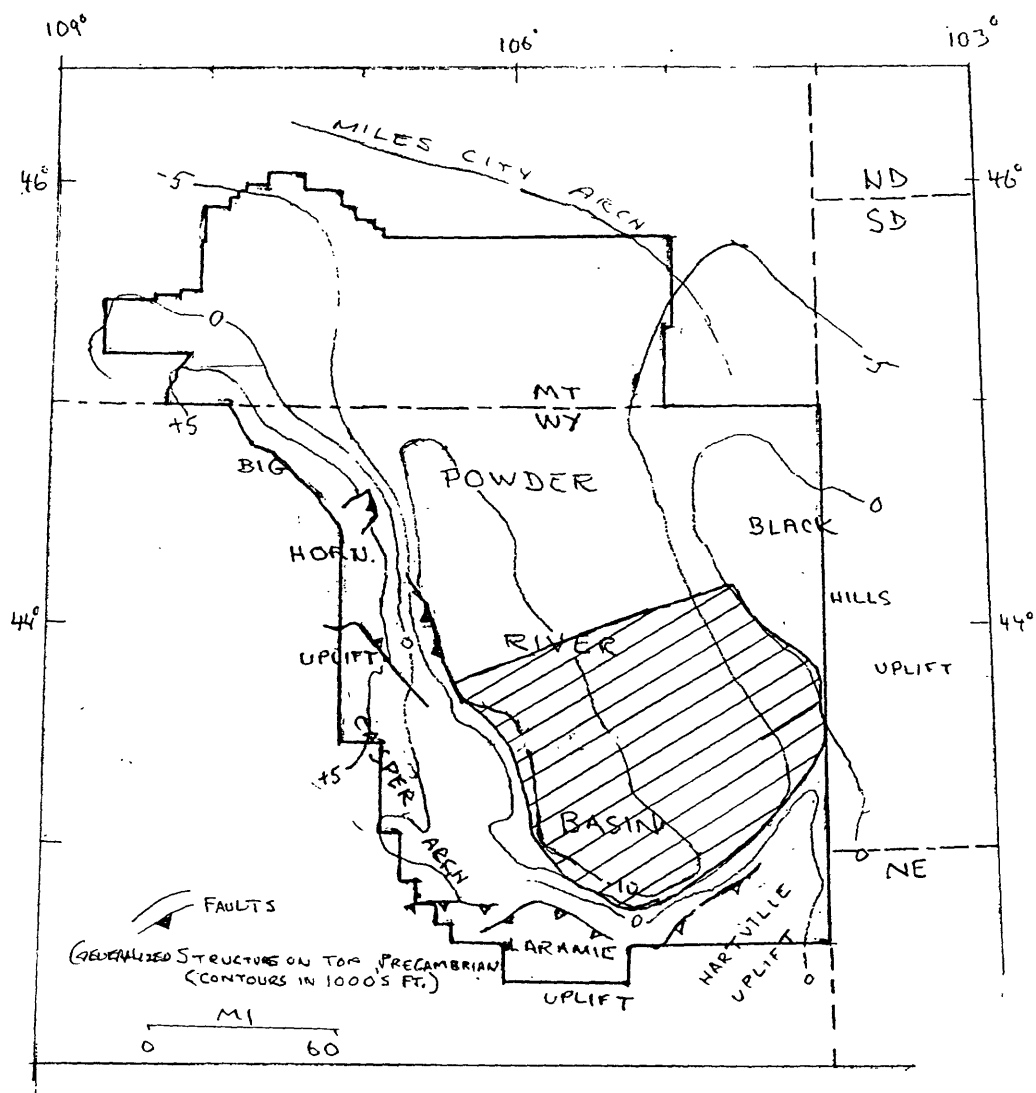


Fig. 101-040. Map of Leo Sandstone play, Powder River Basin Province

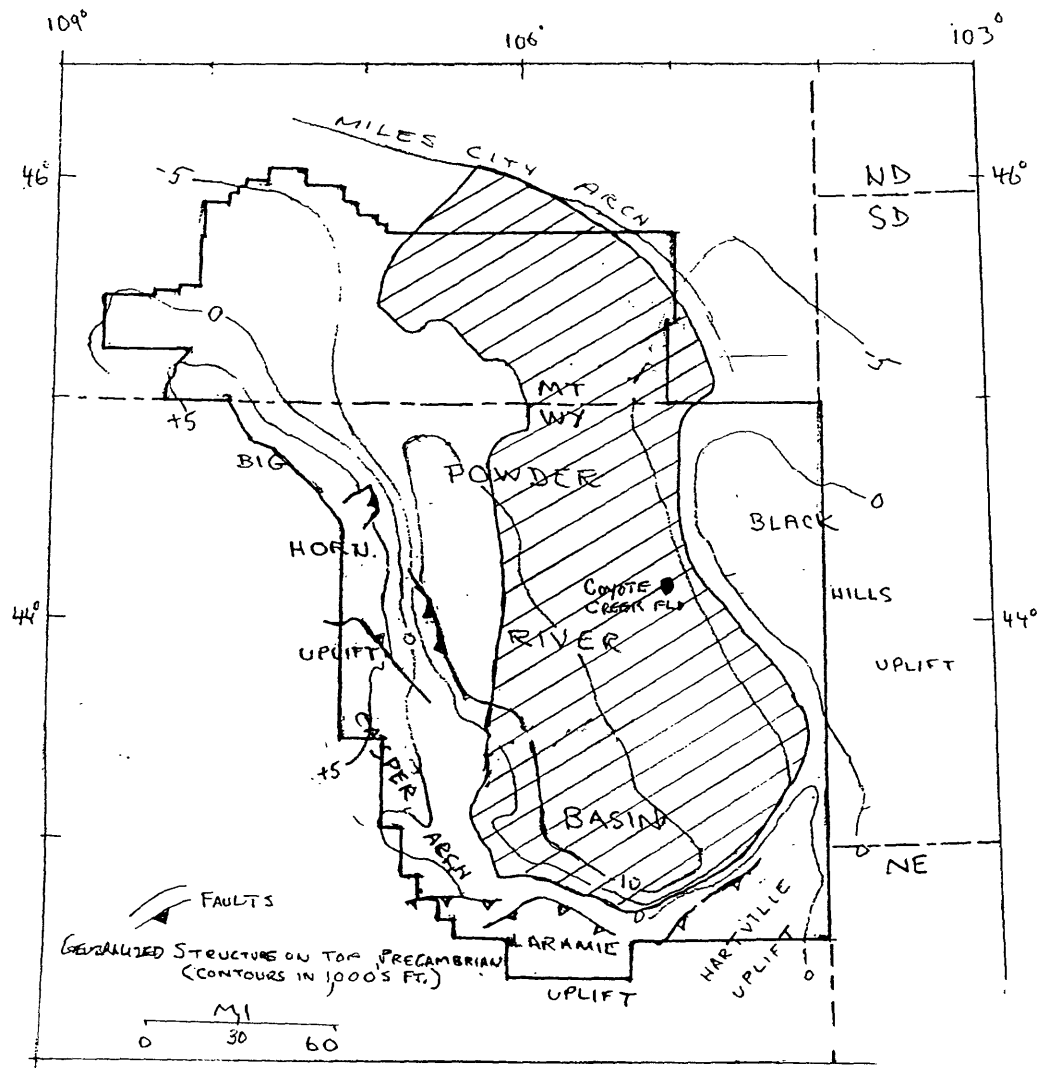


Fig. 101-050. Map of Dakota Sandstone play, Powder River Basin Province

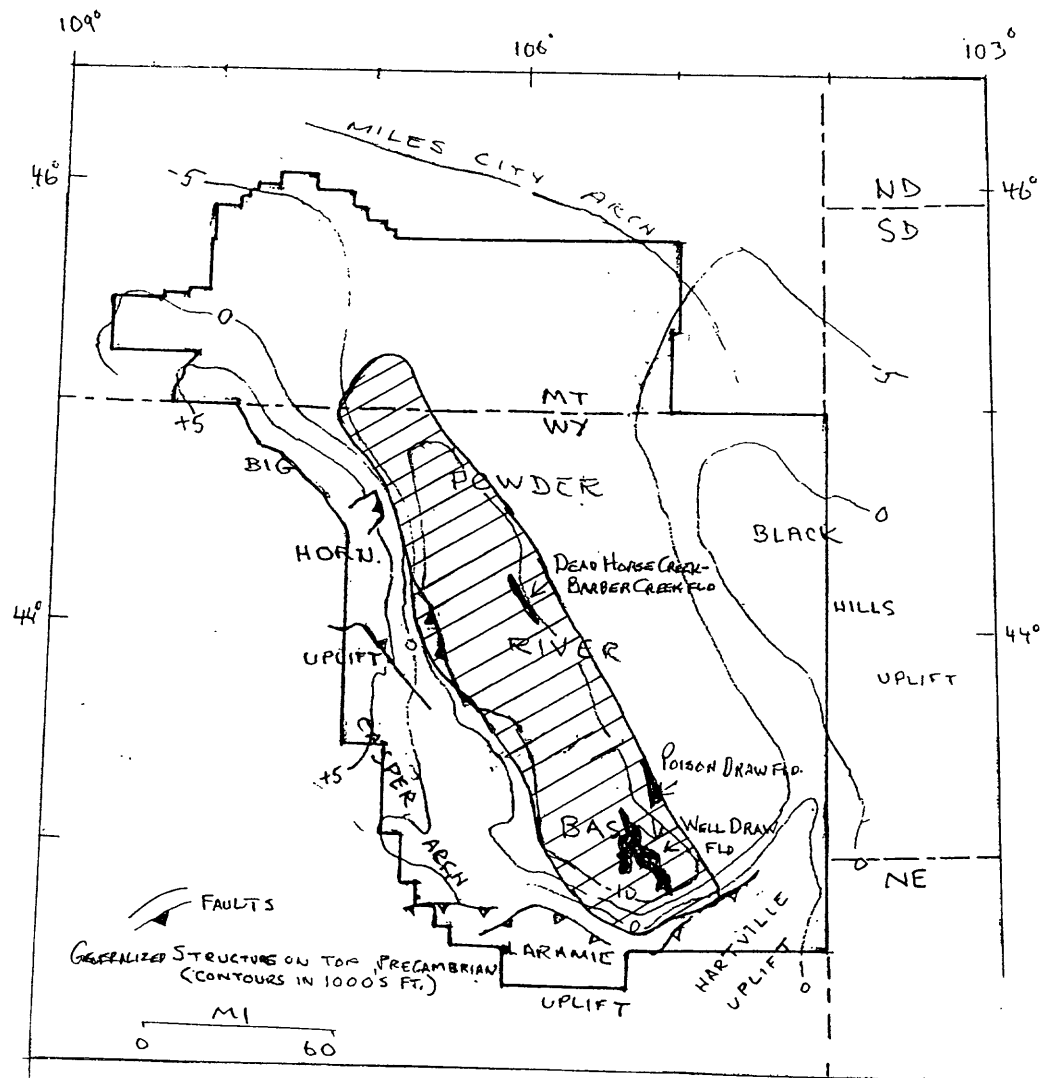


Fig. 101-060. Map of Mesaverde-Lewis play, Powder River Basin Province

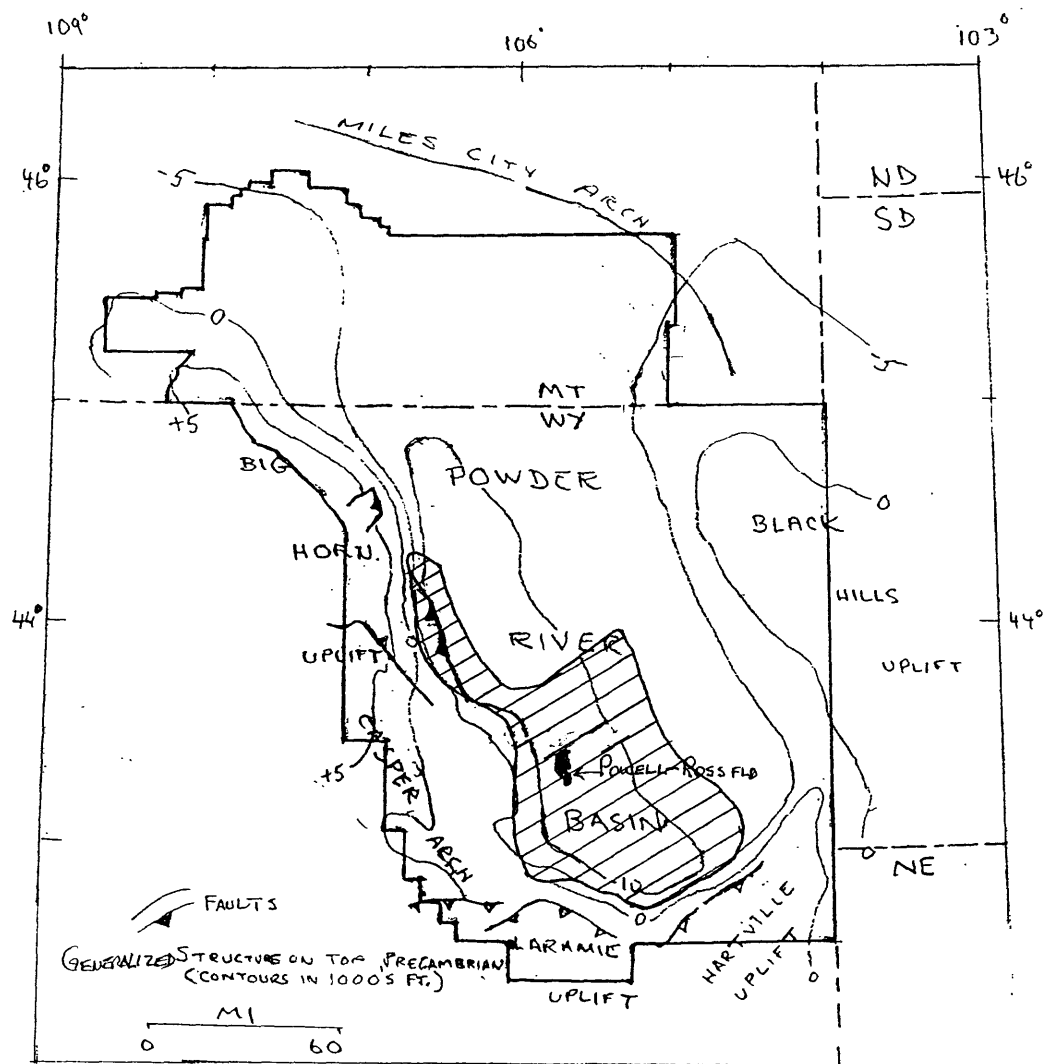


Fig. 101-070. Map of Deep Frontier Sandstone play, Powder River Basin Province

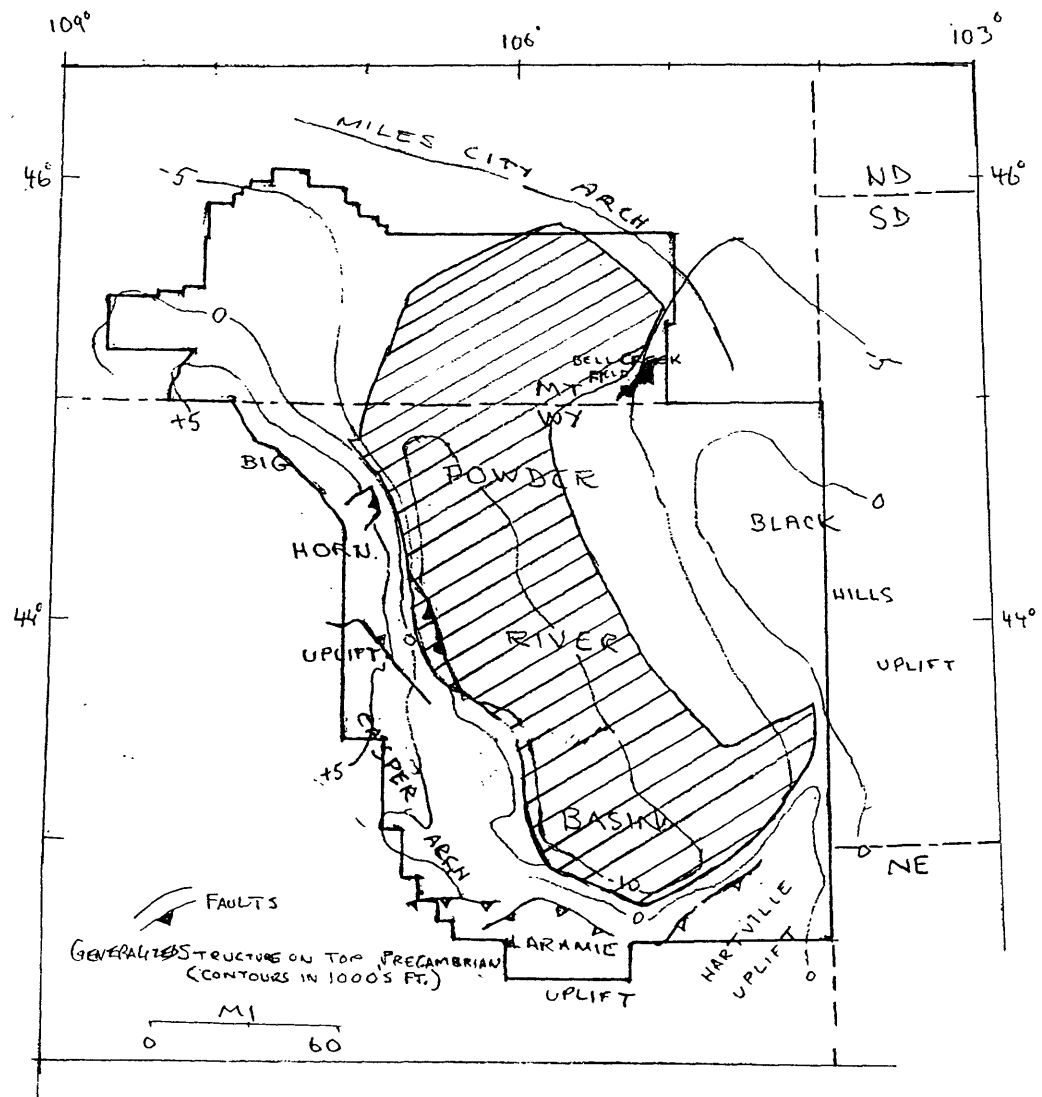


Fig. 101-080. Map of Deep Muddy Sandstone play, Powder River Basin Province

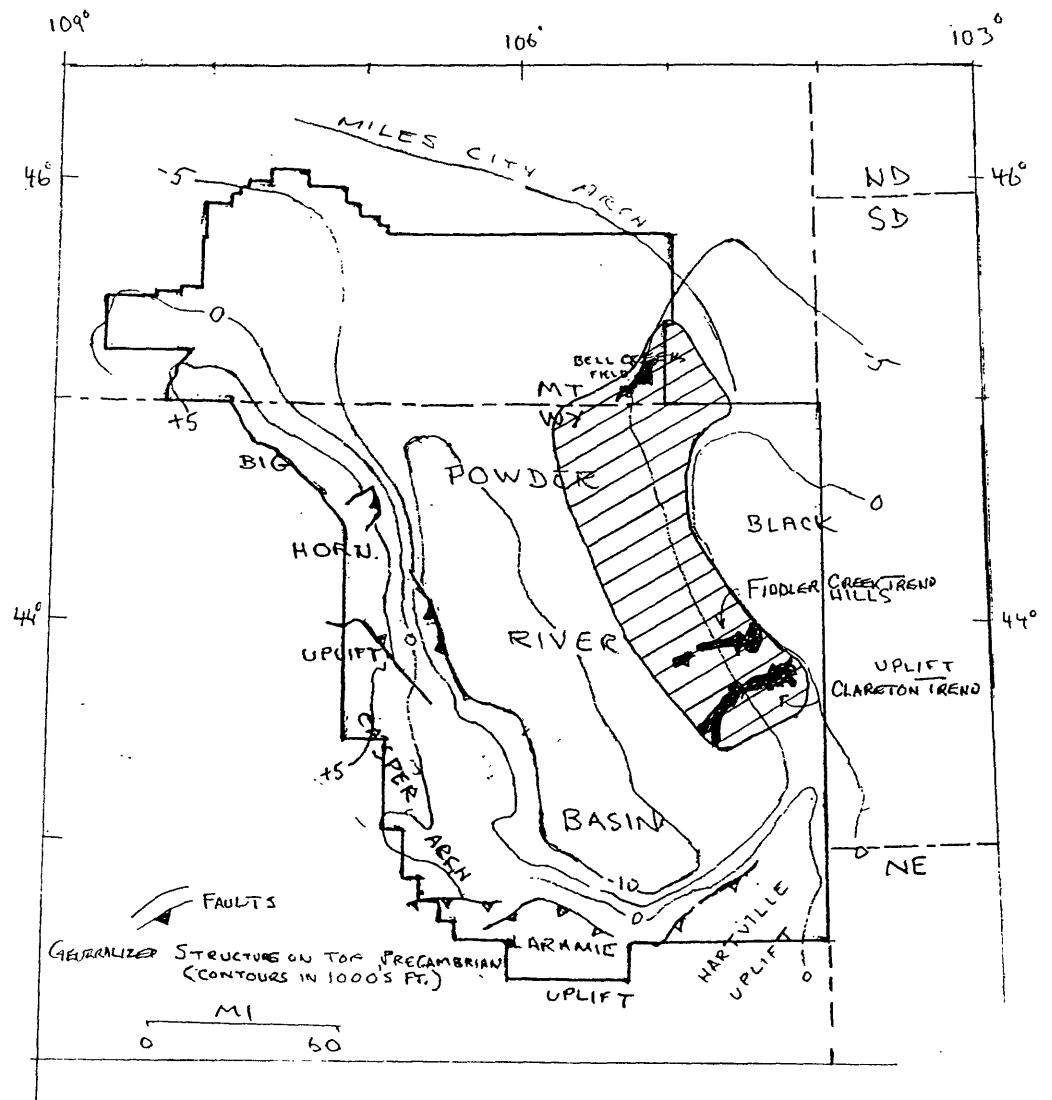


Fig. 101-090. Map of Shallow Muddy Explored play, Powder River Basin Province

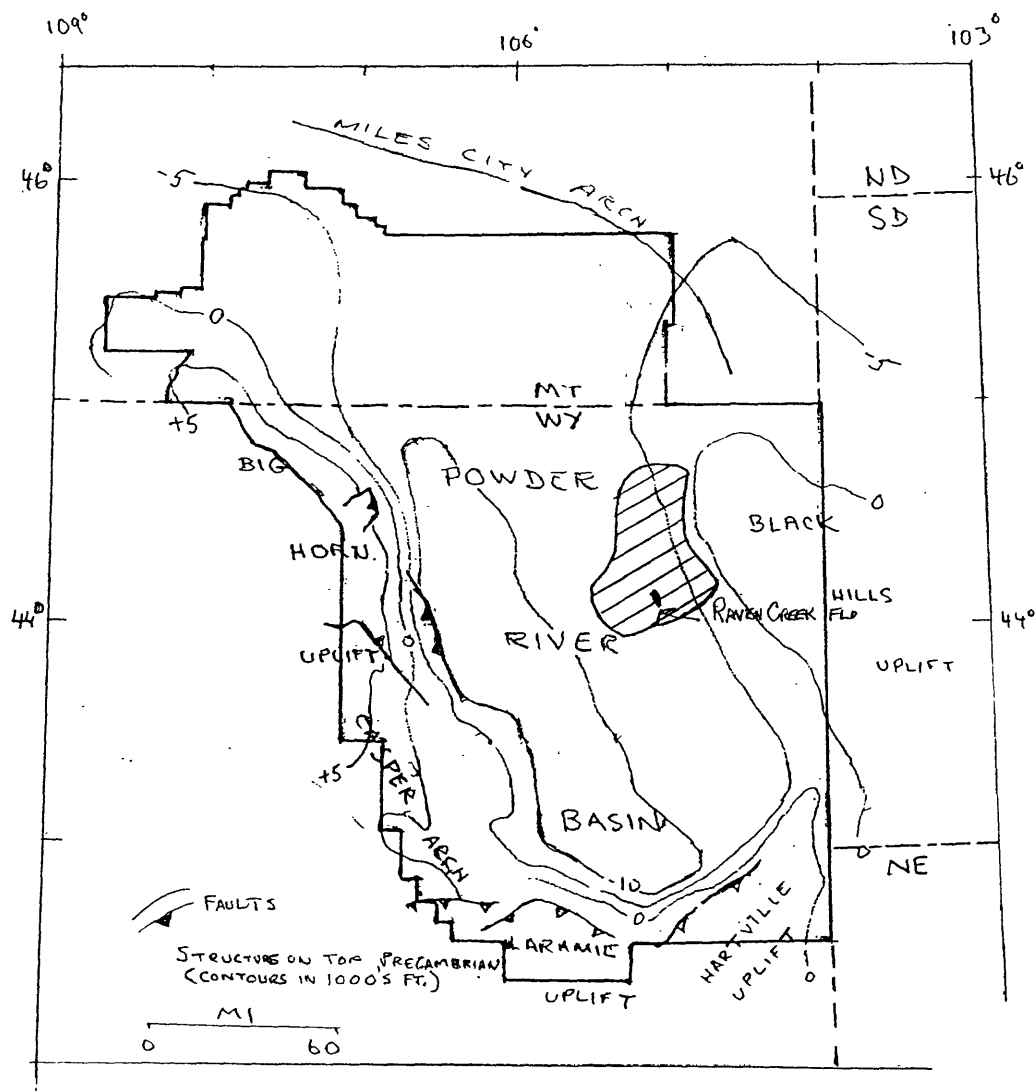


Fig. 101-100. Map of Minnelusa Explored play, Powder River Basin Province

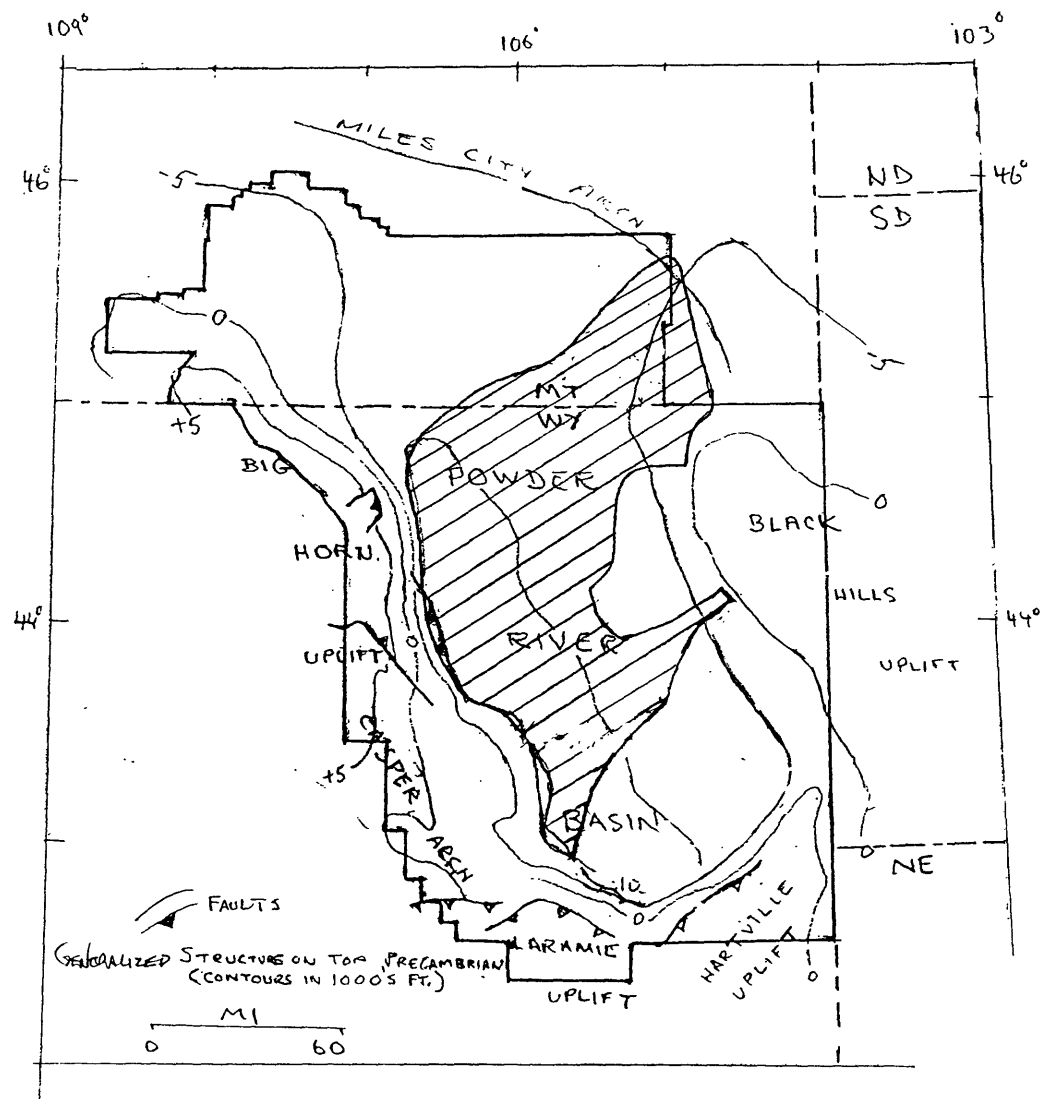


Fig. 101-110. Map of Minnelusa Unexplored play, Powder River Basin Province

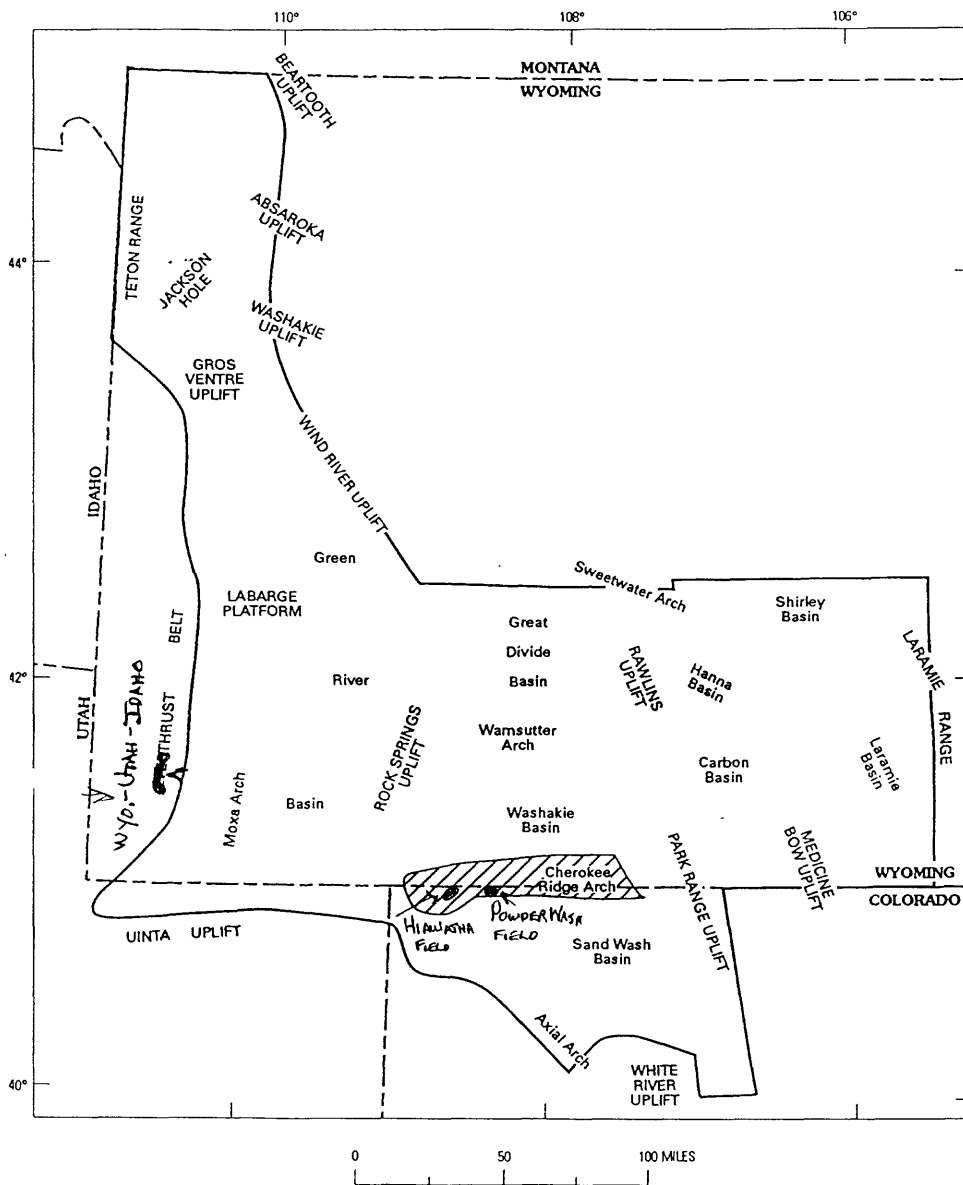


Fig. 102-020. Map of Cherokee Ridge play, Southwestern Wyoming Basins Province

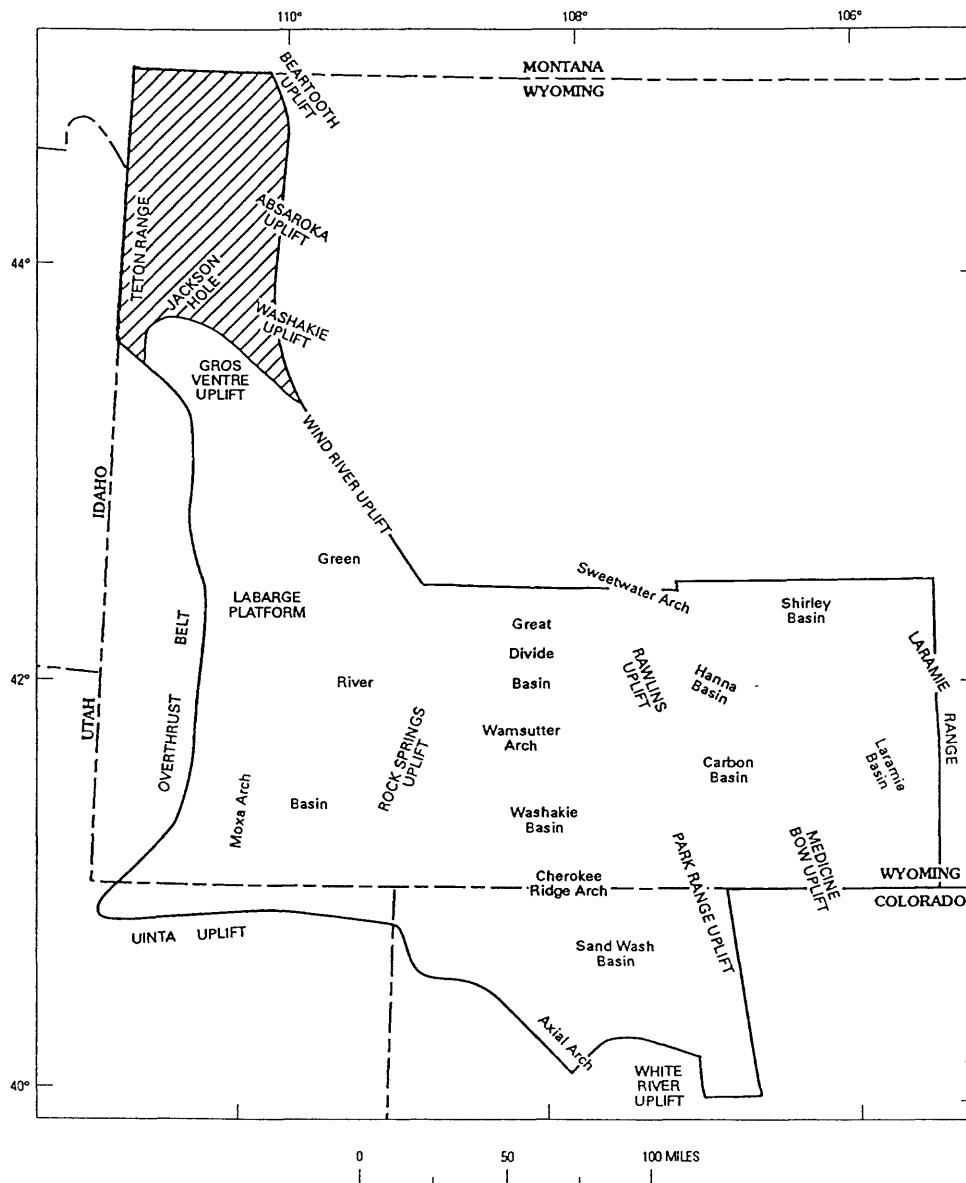


Fig. 102-030. Map of Jackson Hole play, Southwestern Wyoming Basins Province

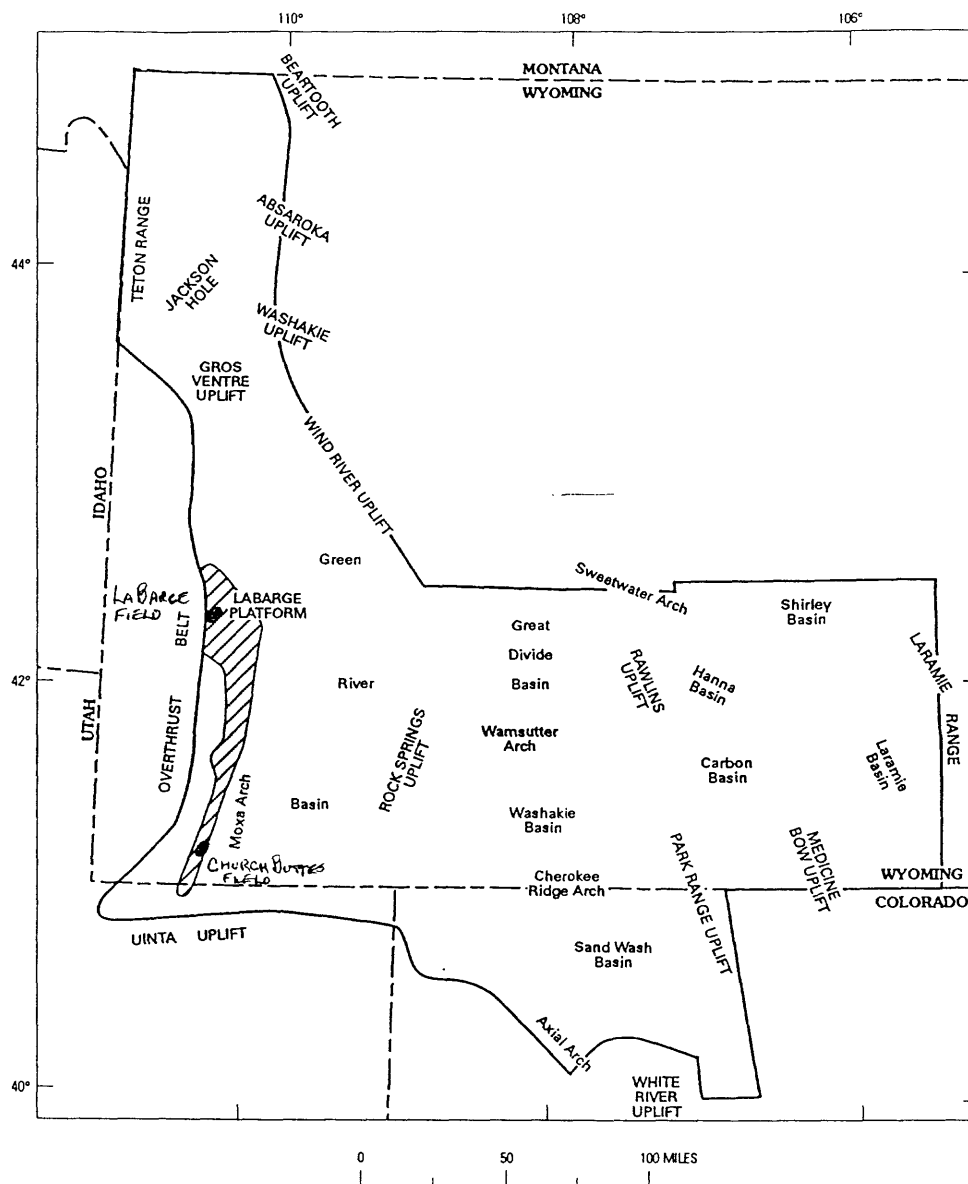


Fig. 102-040. Map of Moxa-LaBarge play, Southwestern Wyoming Basins Province

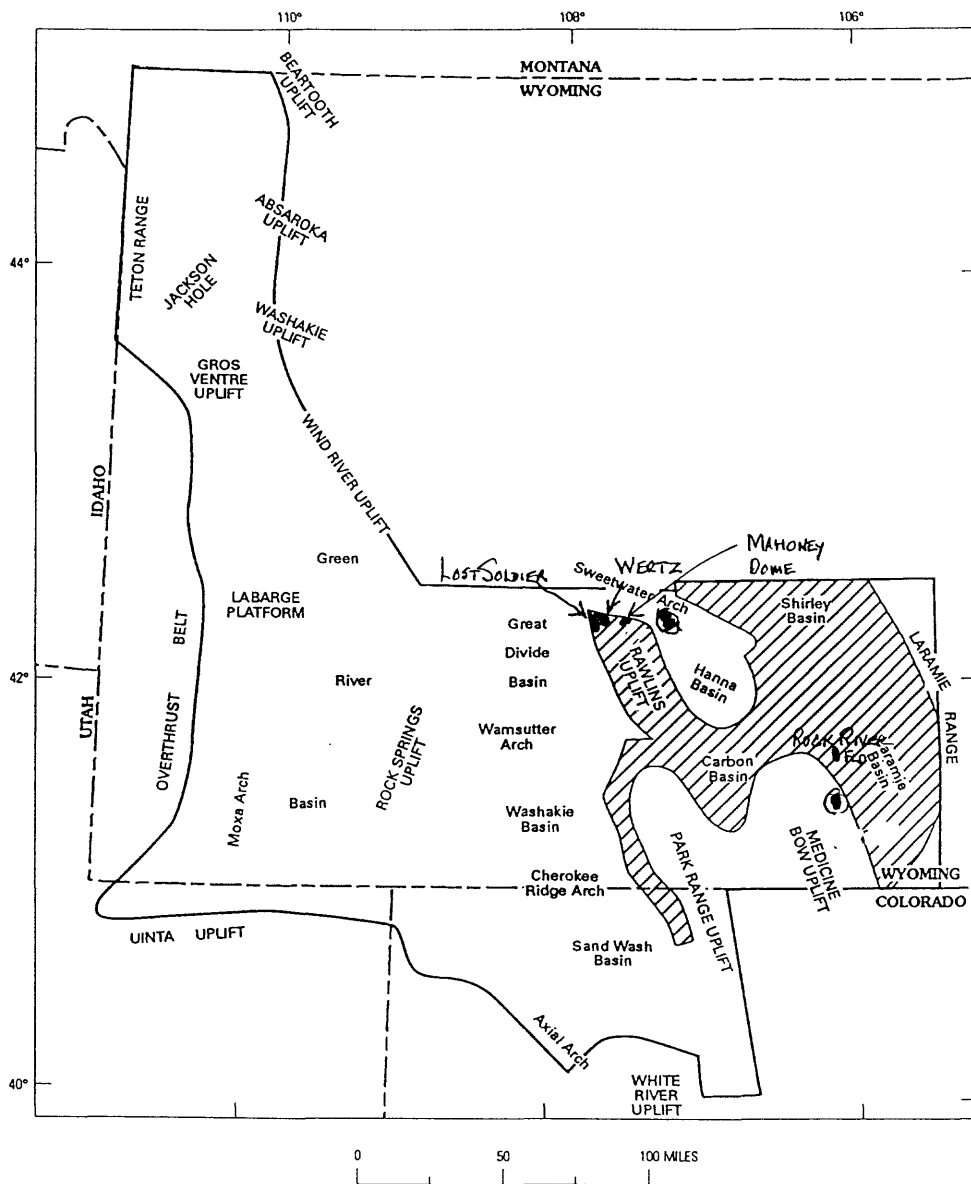


Fig. 102-050. Map of Platform play, Southwestern Wyoming Basins Province

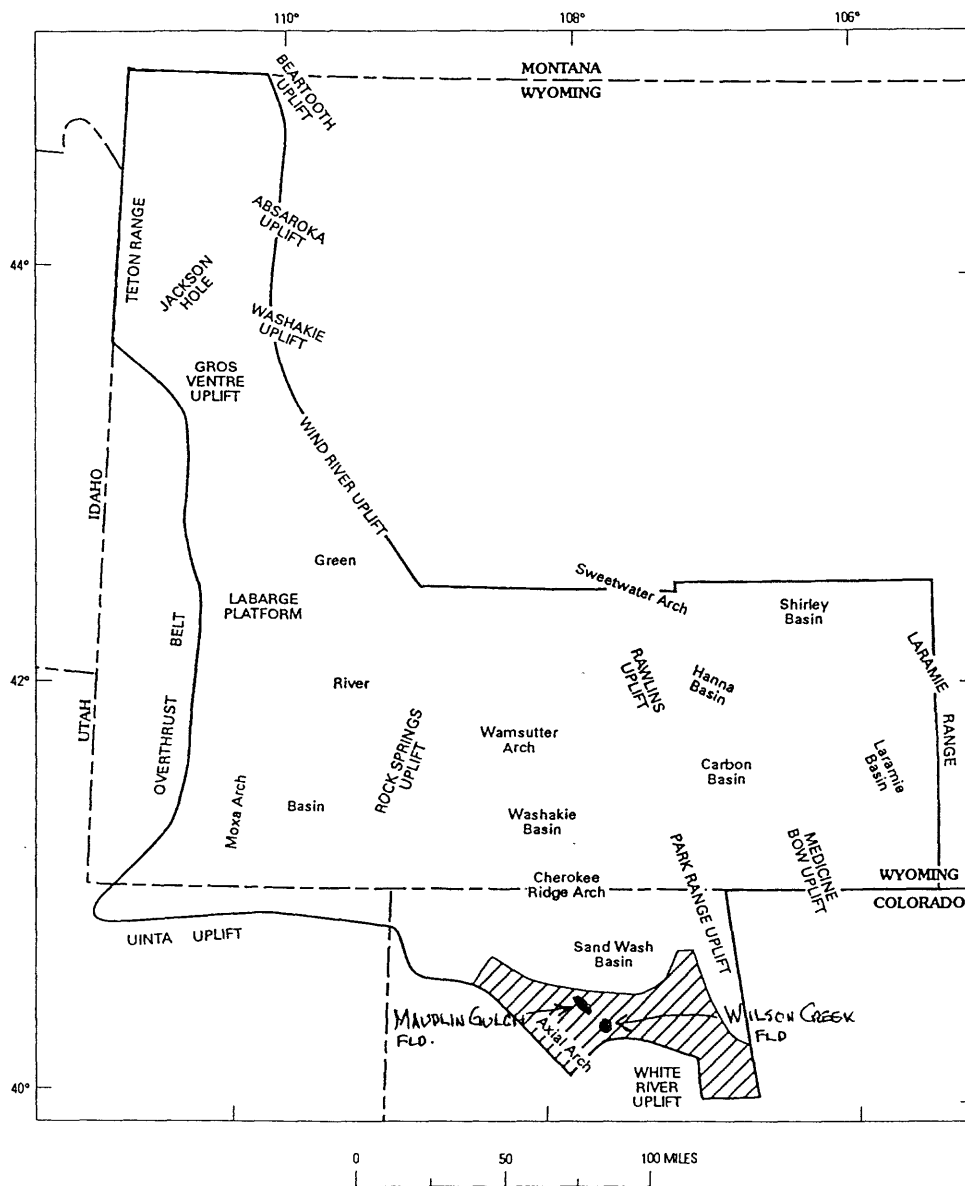


Fig. 102-060. Map of Axial Arch play, Southwestern Wyoming Basins Province

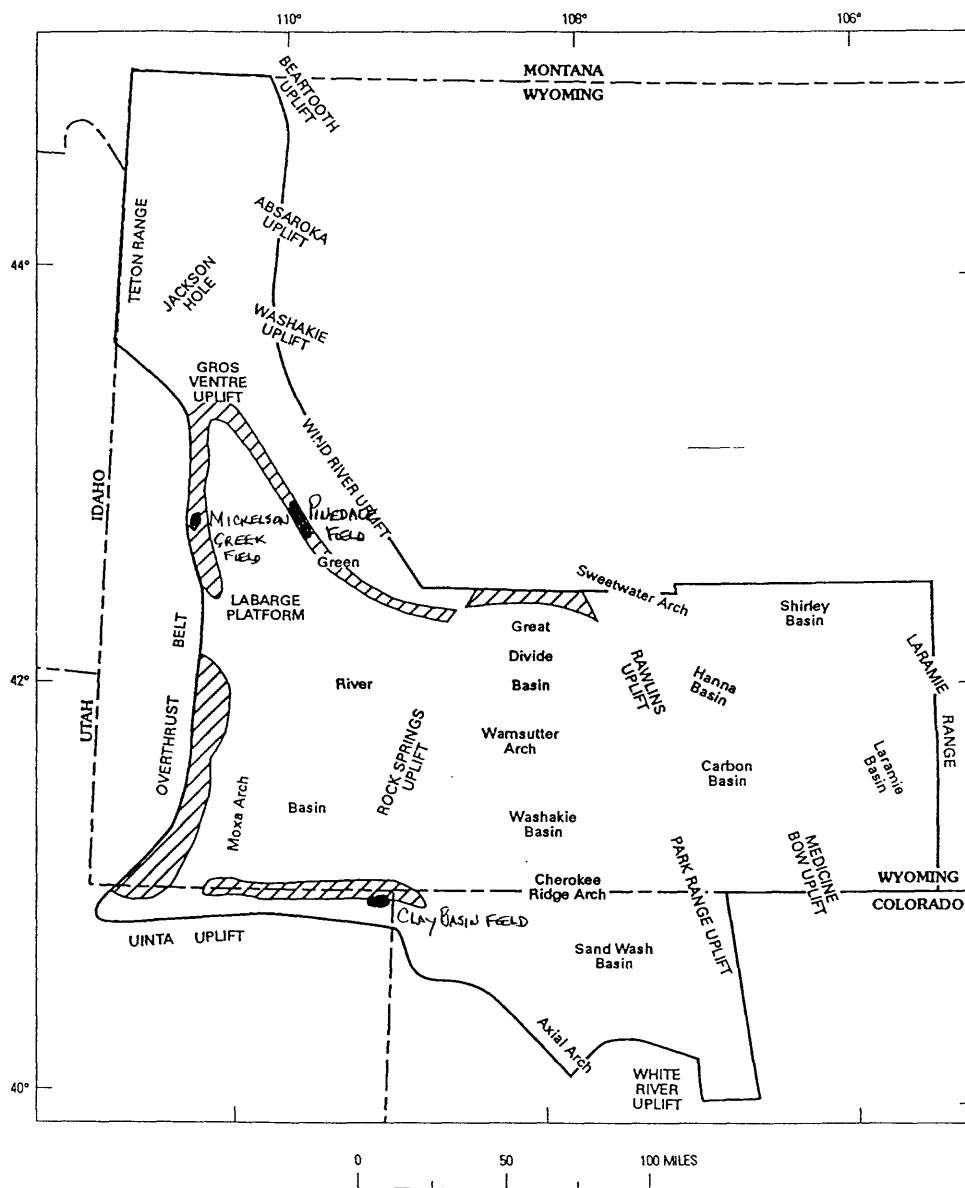


Fig. 102-070. Map of Basin Margin Anticline play, Southwestern Wyoming Basins Province

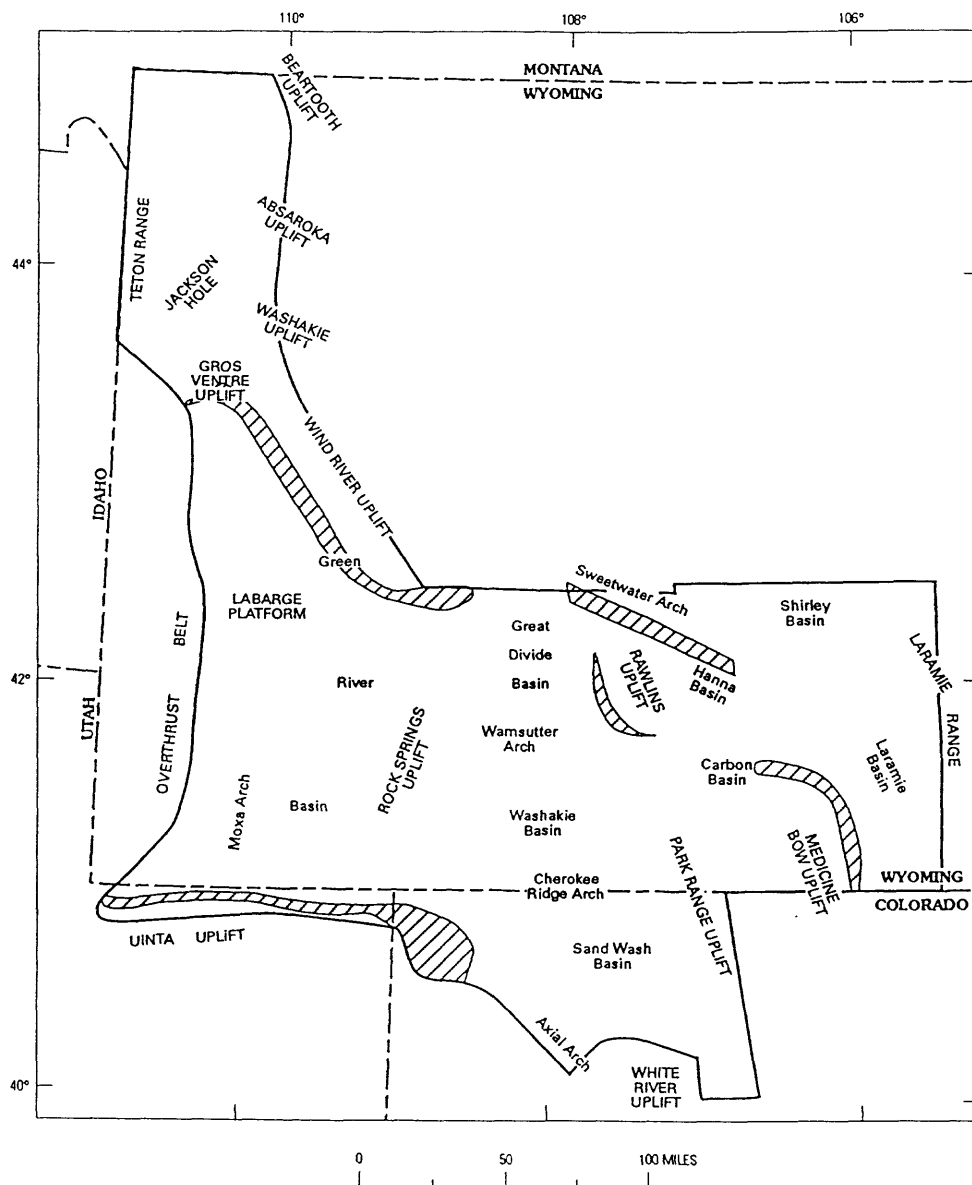


Fig. 102-080. Map of Subthrust play, Southwestern Wyoming Basins Province

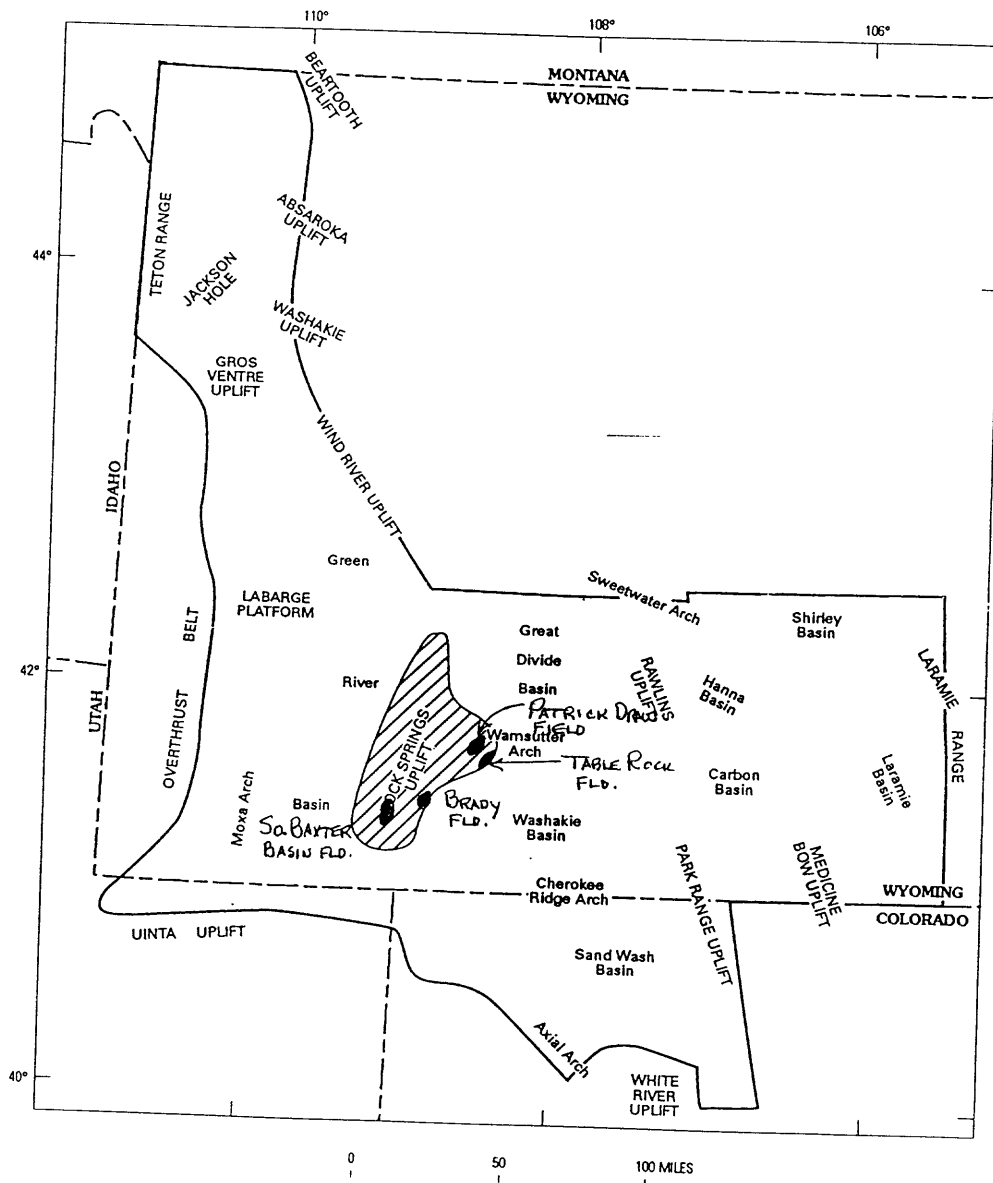


Fig. 102-090. Map of Rock Springs play, Southwestern Wyoming Basins Province

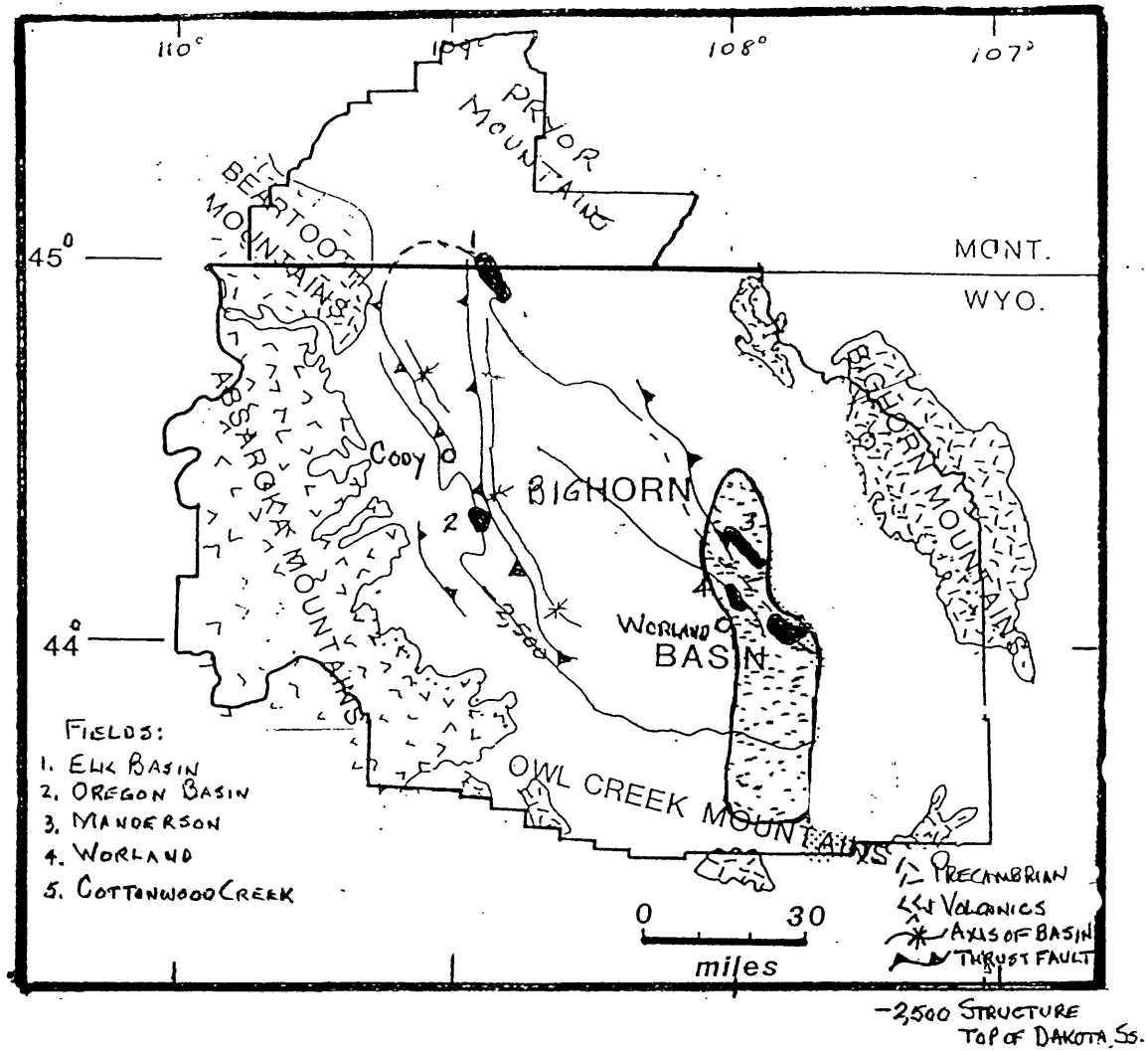


Fig. 103-020. Map of Phosphoria play, Bighorn Basin Province

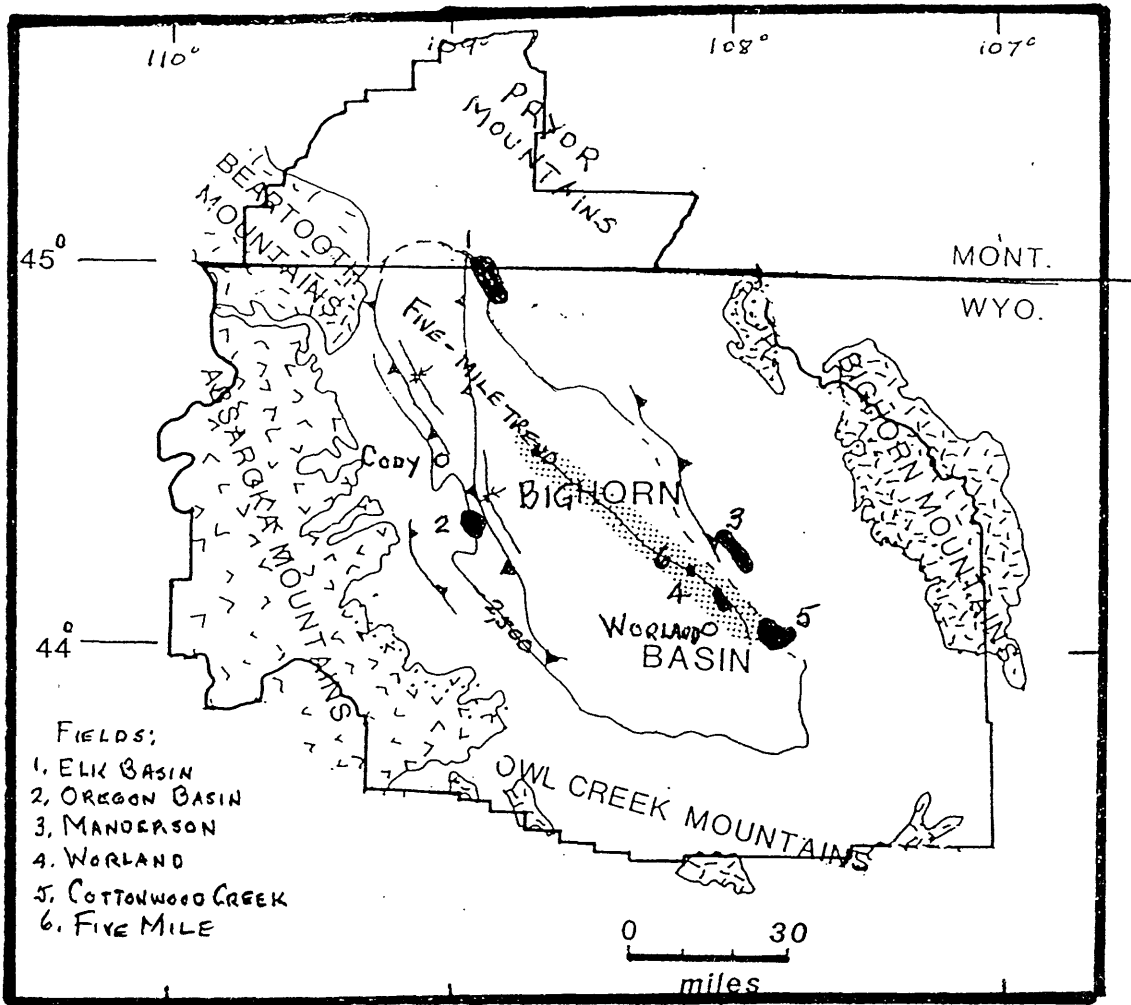


Fig. 103-040. Map of Deep Basin Anticlinal play, Bighorn Basin Province

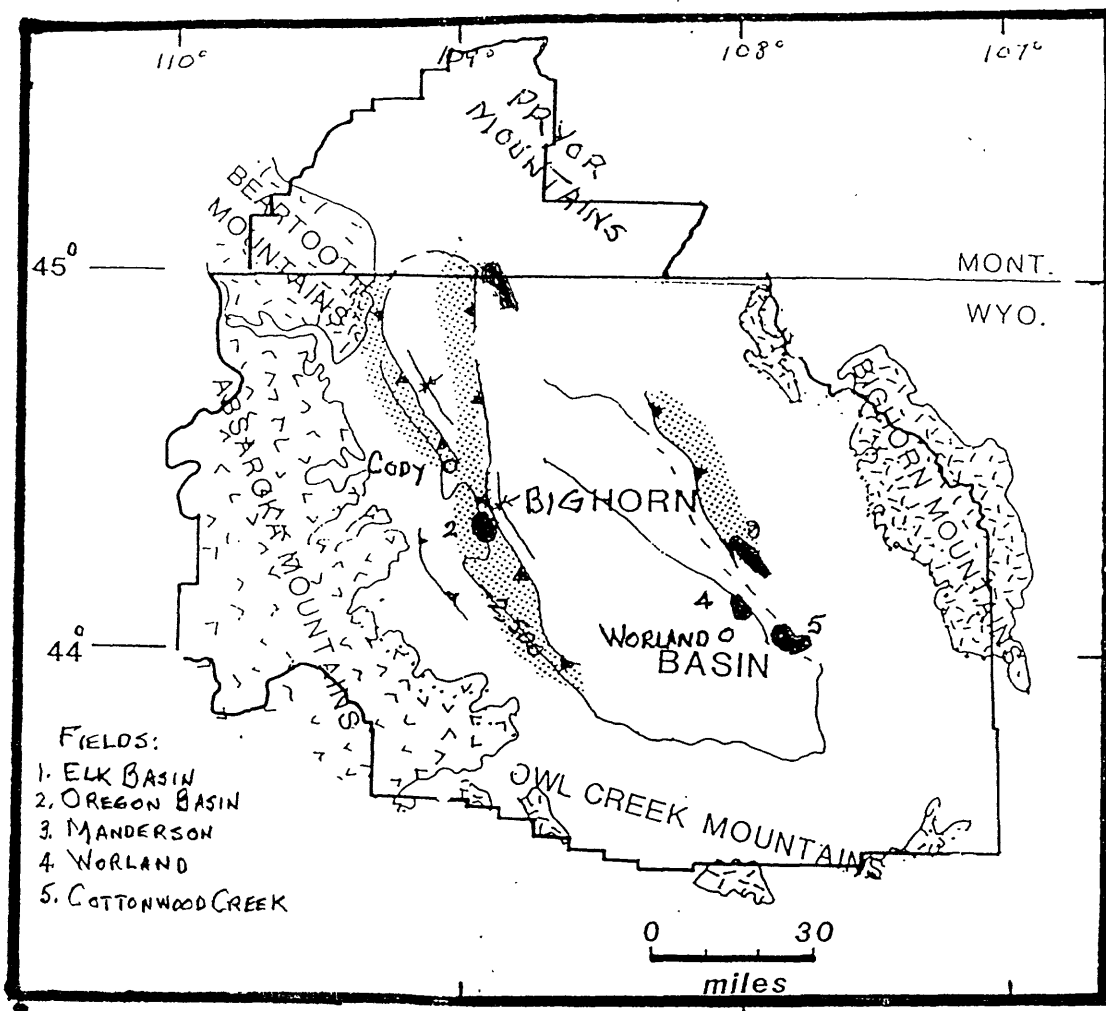


Fig. 103-050. Map of Basin Margin Subthrust play, Bighorn Basin Province

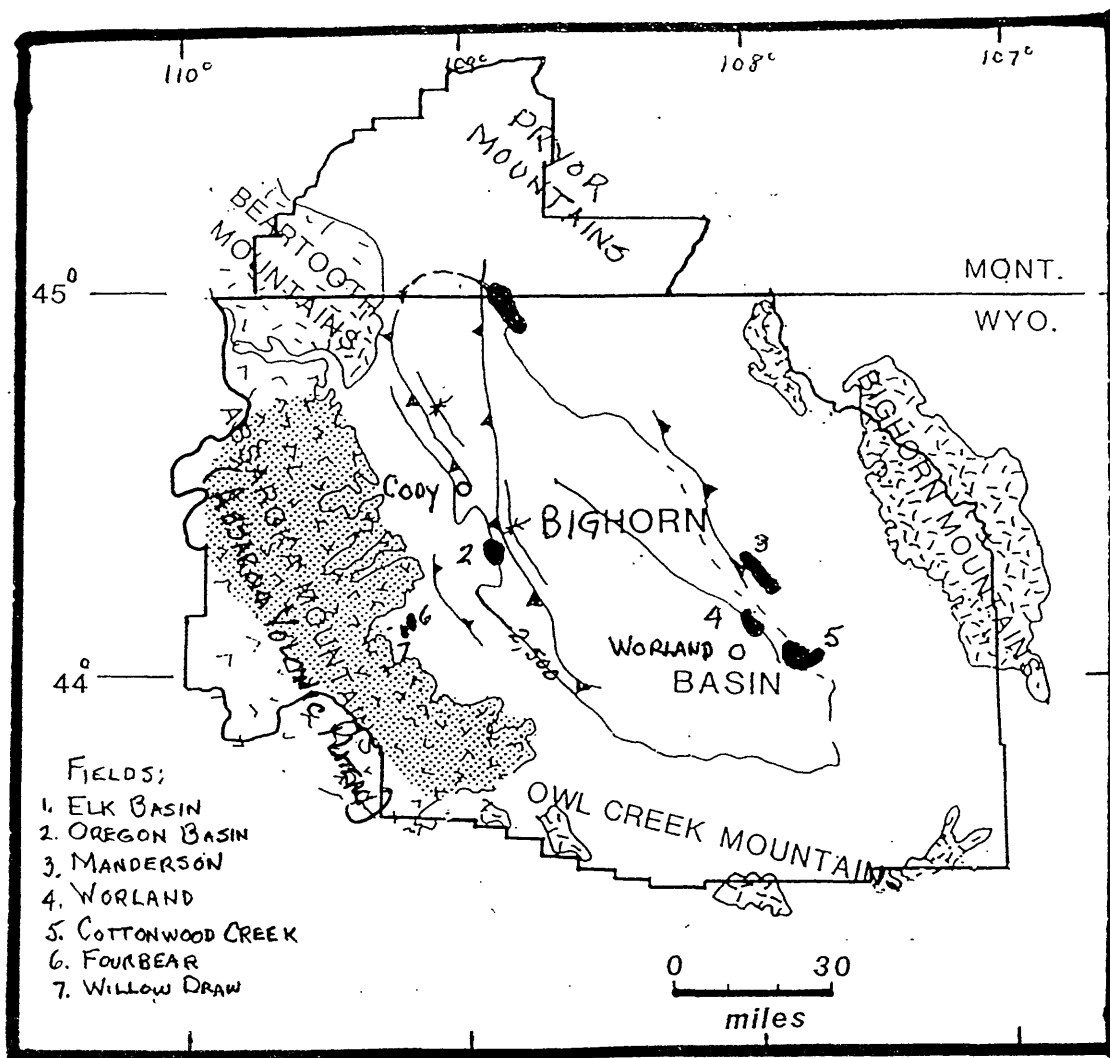


Fig. 103-060. Map of Sub-Absaroka play, Bighorn Basin Province

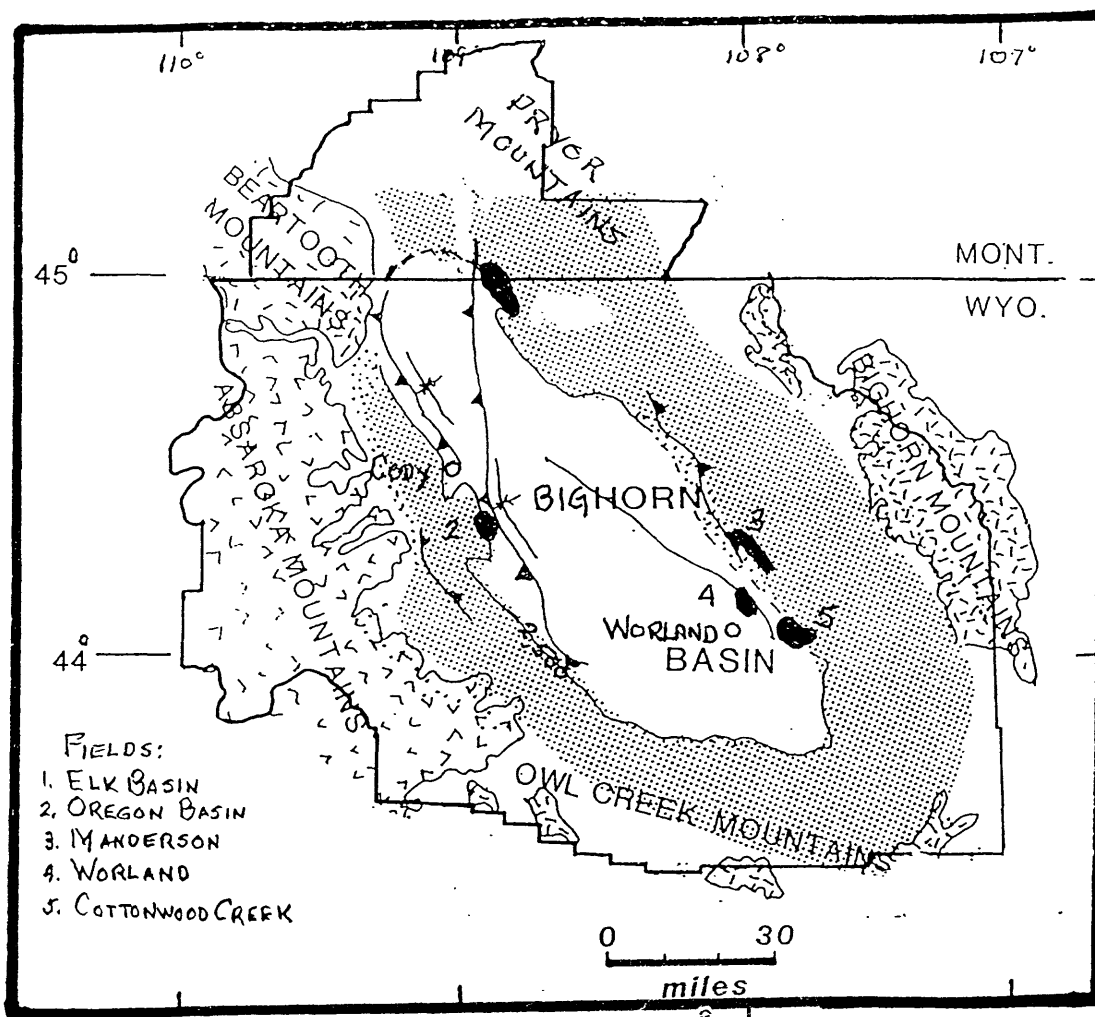


Fig. 103-070. Map of Basin Margin Anticlinal play, Bighorn Basin Province

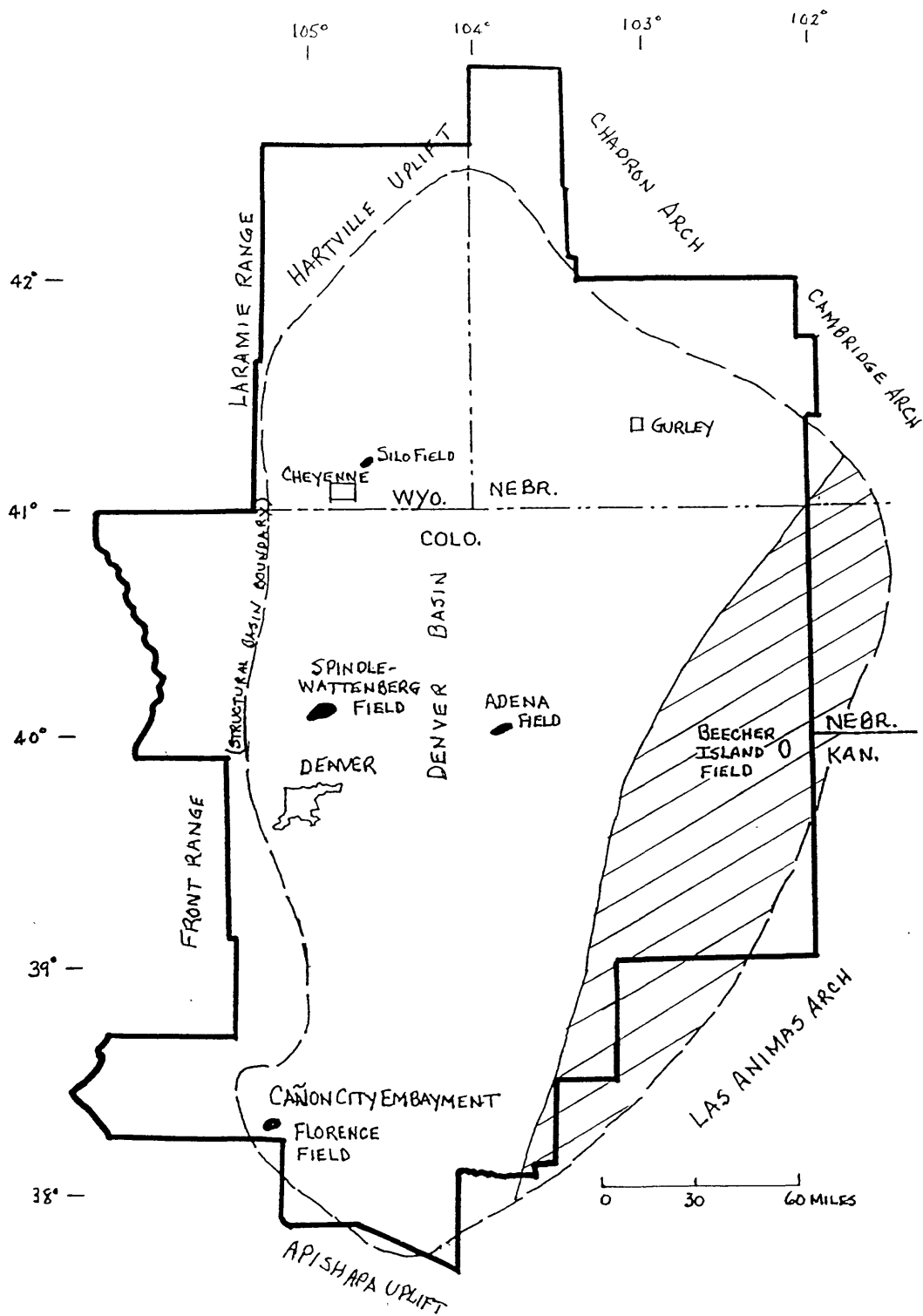


Fig. 104-030. Map of Shallow Niobrara Gas play, Denver Basin province

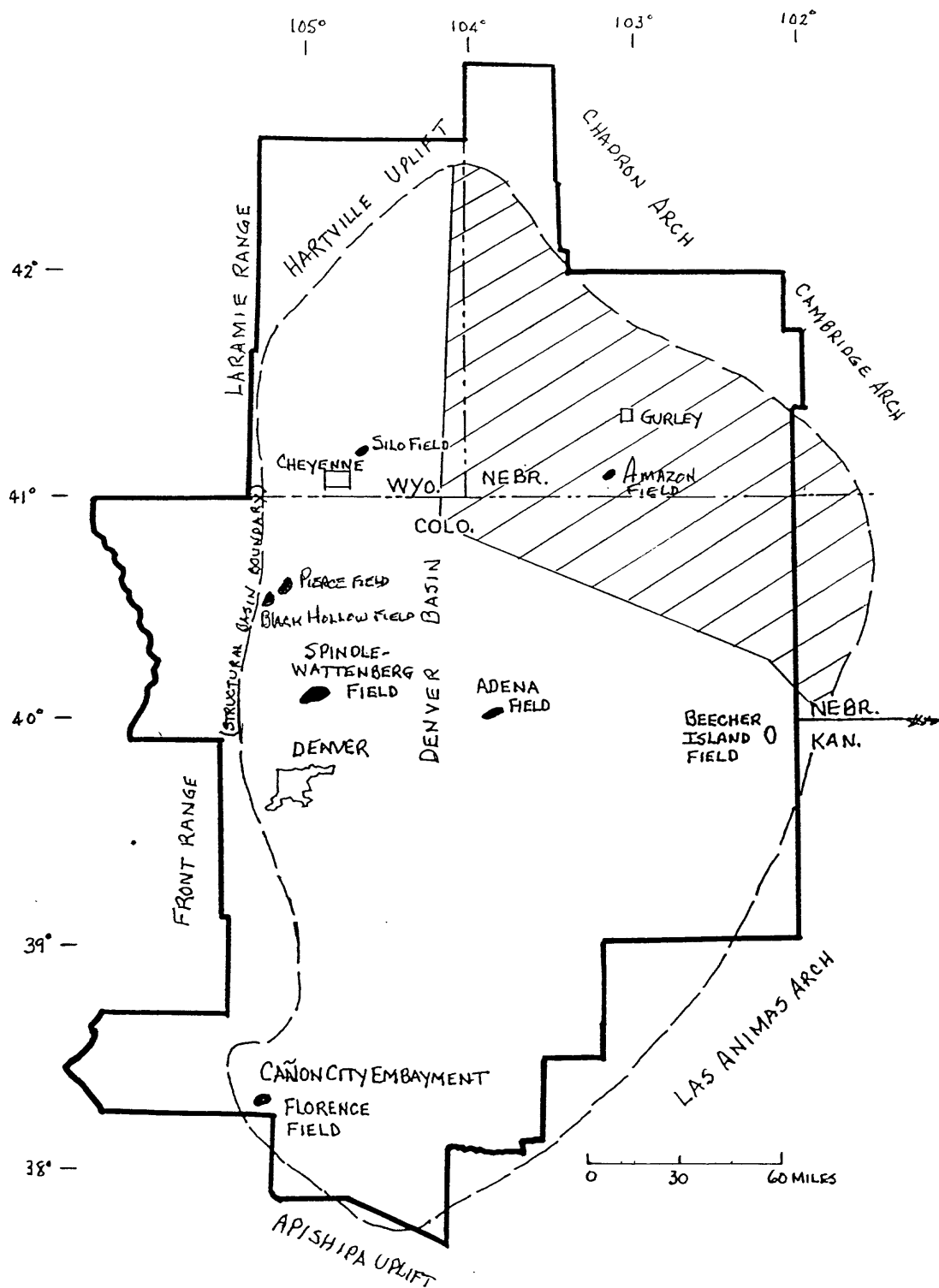


Fig. 104-040. Map of Paleozoic play, Denver Basin province

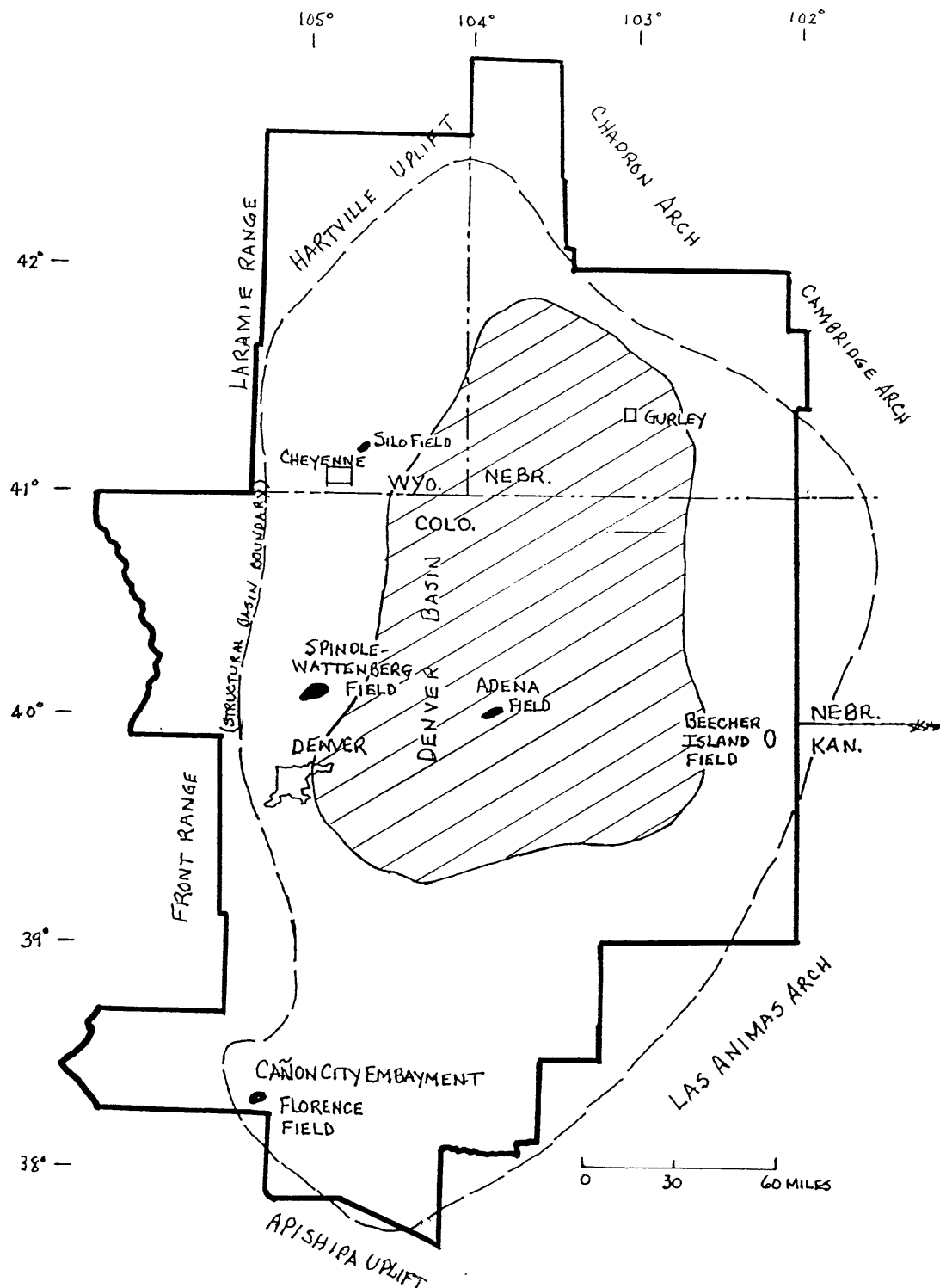


Fig. 104-050. Map of D-J Sandstone play, Denver Basin province

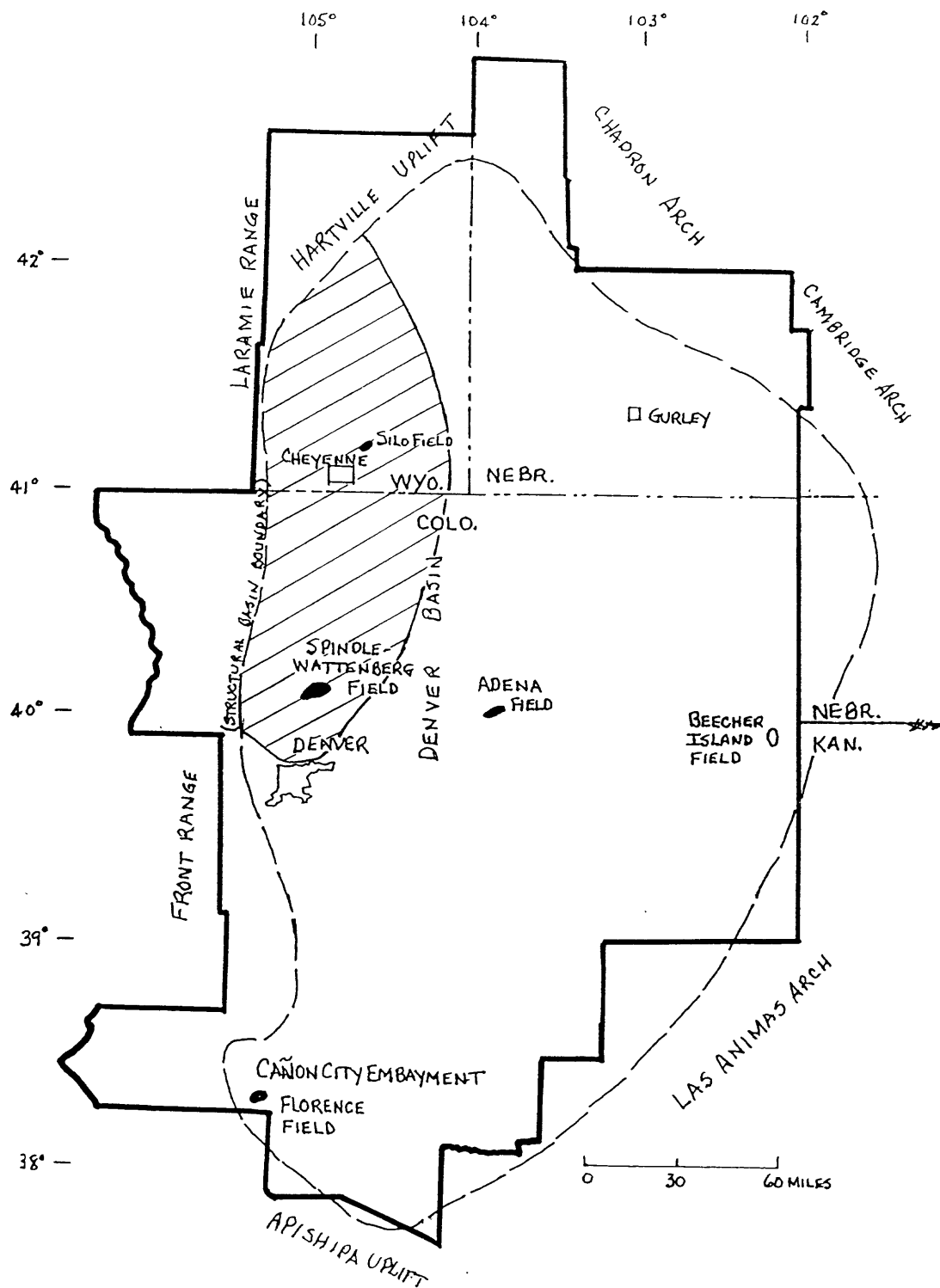


Fig. 104-060. Map of Pierre Shale Sandstone play, Denver Basin province