UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

ESTIMATES OF UNDISCOVERED RECOVERABLE RESOURCES OF TOTAL GAS BY PROVINCE-- STATISTICAL BACKGROUND DATA FOR U.S. GEOLOGICAL SURVEY CIRCULAR 860

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

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INTRODUCTION

The Nation's undiscovered recoverable conventional resources of natural gas were recently appraised (Dolton and others, 1981). Estimates for total gas were included for Regions and other major areas, but were not for individual provinces.

For each province, estimates of associated-dissolved gas and non-associated gas were aggregated into estimates of total gas and are presented here. The estimates presented here are unconditional or "risked".

Definitions of commodity and resource terms; and a summary of the appraisal methods are included in Dolton and others, 1981. Small-scale index maps of the provinces are shown in figures 1 and 2. Large-scale index maps were published by Varnes and others, 1981, U.S. Geological Survey Open-File Reports 81-84 A, B, and C.

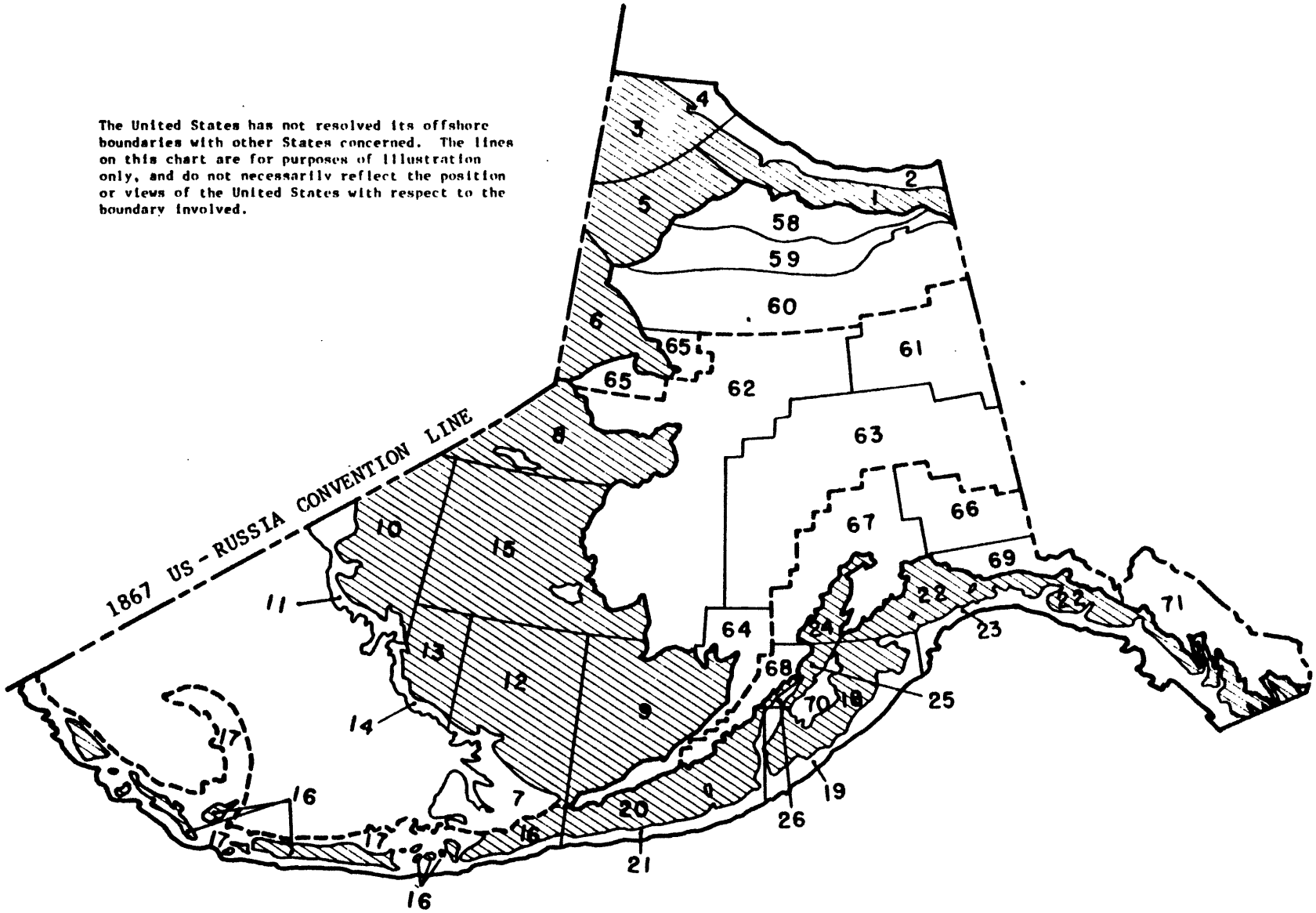

Figure 1.--Index map of Alaska showing provinces assessed. Shading denotes offshore shelf areas; names of provinces are listed by number in the table.

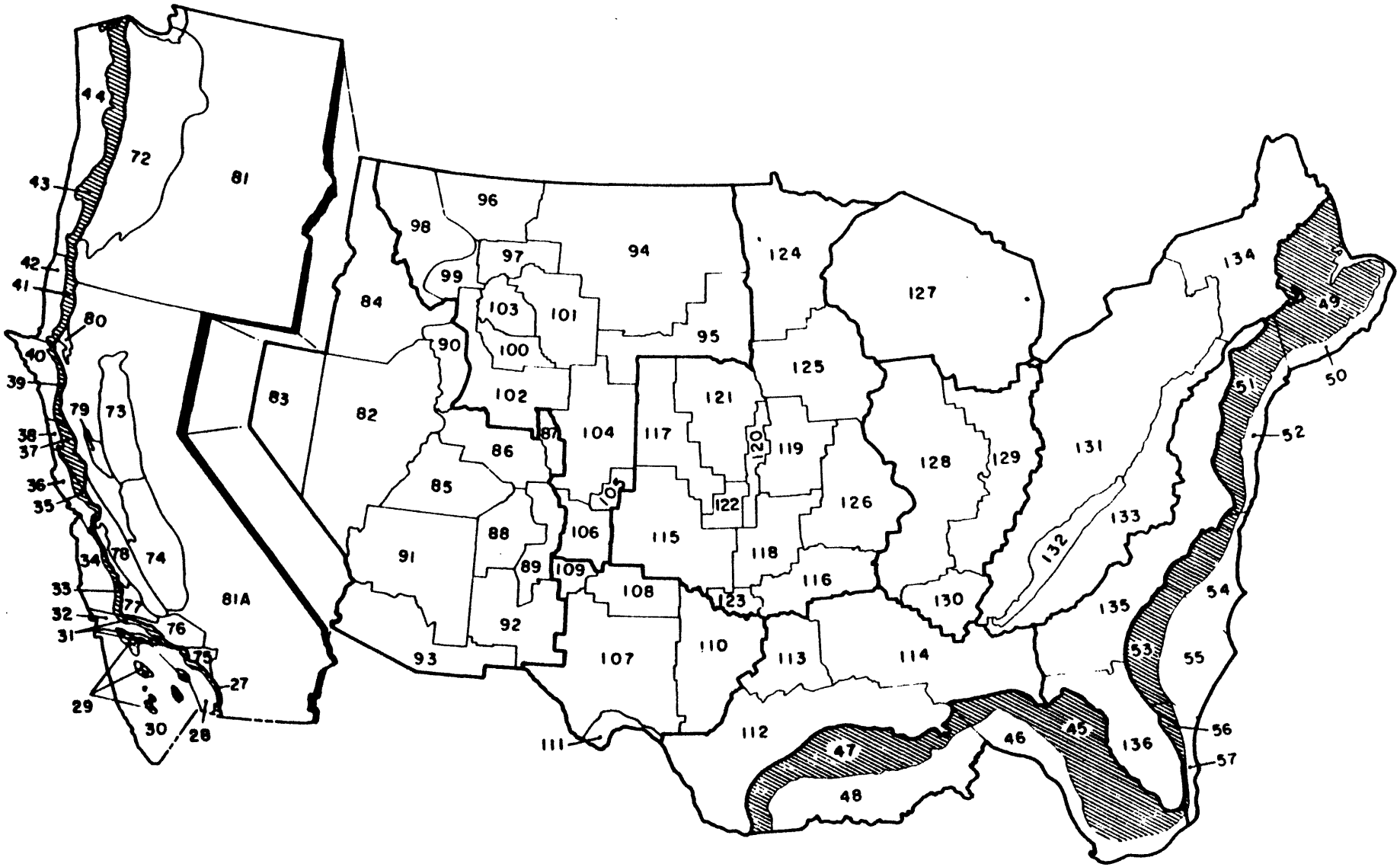

Figure 2.--Index map of lower 48 States showing provinces assessed. Shading denotes offshore shelf areas; names of provinces are listed by number in table.

Total gas--Estimates[1] of undiscovered recoverable resources by petroleum province, Circular 860 study, 1980

[Negl., negligible, less than or equal to 0.005 trillion cubic feet of gas]

Region, province and water depth category (meters)	Estimated amounts (trillion cubic feet)			
	Low $^2F_{95}$	High $^2F_5$	Mean	Standard deviation
1A Alaska				
1 Beaufort Shelf (0-200)	13.54	71.92	35.03	20.27
2 Beaufort Slope (200-2400)	0	15.78	4.31	11.52
3 North Chukchi Shelf (0-200)	0	14.10	3.47	5.36
4 North Chukchi Slope (200-2400)	0	4.35	1.09	3.43
5 Central Chukchi (0-200)	0	11.88	3.07	4.72
6 Hope Basin (0-200)	0	1.71	0.31	0.90
7 Umnak Plateau (200-2400)	0	0	0	0
8 Norton Basin (0-200)	0	4.65	1.24	1.82
9 Bristol Basin (0-200)	0	4.77	1.00	2.15
10 Navarin Basin Shelf (0-200)	0	19.63	5.11	7.60

[1]These estimates are unconditional or "risked".

[2]F_{95} denotes the 95th fractile; the probability of *more than* the amount F_{95} is 95 percent. F_{95} is defined similarly. Fractile values are not additive.

Total gas--Estimates[1] of undiscovered recoverable resources by petroleum province,

Circular 860 study, 1980--continued

Region, province and water depth category (meters)	Estimated amounts (trillion cubic feet)			
	Low $^2F_{95}$	High $^2F_5$	Mean	Standard deviation
11 Navarin Basin Slope (200-2400).....	0	2.23	0.46	0.89
12 St. George Basin (0-200).....	0	8.90	2.36	3.27
13 Zhemchug Shelf (0-200).....	0	0.93	0.15	0.52
14 Zhemchug Slope (200-2400).....	0	0	0	0
15 St Matthew-Hall Basin (0-200).....	0	0	0	0
16 Aleutian Shelf (0-200).....	0	0	0	0
17 Aleutian Slope (200-2400).....	0	0	0	0
18 Kodiak Shelf (0-200).....	0	5.62	1.31	2.47
19 Kodiak Slope (200-2400).....	0	3.56	0.66	1.91
20 Shumagin Shelf (0-200).....	0	1.73	0.31	0.76
21 Shumagin Slope (200-2400).....	0	1.74	0.29	0.93
22 Gulf of Alaska Shelf (0-200).....	0	6.93	1.67	2.75
23 Gulf of Alaska Slope (200-2400).....	0	2.15	0.43	1.02

Total gas--Estimates[1] of undiscovered recoverable resources by petroleum province,

Circular 860 study, 1980--continued

Region, province and water depth category (meters)	Estimated amounts (trillion cubic feet)			
	Low $^{2}F_{95}$	High $^{2}F_{5}$	Mean	Standard deviation
24 Cook Inlet (0-200)	0.85	5.03	2.19	1.40
25 Shelikof Strait Shallow (0-200)	0	0.79	0.15	0.45
26 Shelikof Strait Deep (200-2400)	0	0	0	0
2A Pacific Coast Offshore				
27 Inner Basins Shallow (0-200)	0.07	0.82	0.31	0.28
28 Inner Basins Deep (200-2500)	0	0.86	0.18	0.47
29 Outer Basins and Ridges Shallow (0-200)	0	0.11	0.01	0.06
30 Outer Basins and Ridges Deep (200-2500)	0	4.05	0.90	1.77
31 Santa Barbara Channel Shelf (0-200)	0.29	2.68	1.05	0.98
32 Santa Barbara Channel Deep (200-2500)	0.43	3.60	1.51	1.28
33 Santa Maria Shelf (0-200)	0	0.68	0.19	0.28
34 Santa Maria Slope (200-2500)	0	1.96	0.45	1.00
35 Santa Cruz Shelf (0-200)	0	0.46	0.10	0.18
36 Santa Cruz Slope (0-2500)	0	0.45	0.09	0.28

Total gas--Estimates[1] of undiscovered recoverable resources by petroleum province,

Circular 860 study, 1980--continued

Region, province and water depth category (meters)	Estimated amounts (trillion cubic feet)			
	Low $^2F_{95}$	High $^2F_5$	Mean	Standard deviation
37 Bodega Shelf (0-200)	0	0.20	0.04	0.11
38 Bodega Slope (200-2500)	0	0.13	0.02	0.06
39 Point Arena Shelf (0-200)	0	0.19	0.03	0.10
40 Point Arena Slope (200-2500)	0	0.32	0.05	0.16
41 Eel River Shelf (0-200)	0	0.96	0.21	0.36
42 Eel River Slope (200-2500)	0	1.35	0.32	0.54
43 Oregon-Washington Shelf (0-200)	0	2.38	0.58	0.97
44 Oregon-Washington Slope (200-2500)	0	3.67	0.85	1.52

Total gas--Estimates[1] of undiscovered recoverable resources by petroleum province,

Circular 860 study, 1980--continued

	Region, province and water depth category (meters)	Estimated amounts (trillion cubic feet)			
		Low $^2F_{95}$	High $^2F_5$	Mean	Standard deviation
6A	Gulf of Mexico				
45	Eastern Gulf Shelf (0-200).....	0	7.36	2.44	2.54
46	Eastern Gulf Slope (200-2500).....	0	2.06	0.44	0.86
47	Western Gulf Shelf (0-200).....	20.43	77.59	42.87	18.32
48	Western Gulf Slope (200-2500).....	10.73	51.05	26.09	13.77
11A	Atlantic Coast				
49	North Atlantic Shelf (0-200).....	0	8.12	2.45	3.08
50	North Atlantic Slope (200-2500).....	0	10.16	3.25	3.78
51	Mid-Atlantic Shelf (0-200).....	0.69	13.13	5.61	3.97
52	Mid-Atlantic Slope (200-2500).....	0	21.11	8.61	7.30
53	South Atlantic Shelf (0-200).....	0	0.95	0.16	0.41
54	Carolina Trough (200-2500).....	0	10.91	2.82	4.73
55	Blake Plateau (200-2500).....	0	3.21	0.75	1.43

Total gas--Estimates[1] of undiscovered recoverable resources by petroleum province,

Circular 860 study, 1980--continued

	Region, province and water depth category (meters)	Estimated amounts (trillion cubic feet) Low $^2F_{95}$	High $^2F_5$	Mean	Standard deviation
56	Southeast Florida Shelf (0-200).....	0	0	0	0
57	Florida Straits (200-2500).....	0	0	0	0
1	Alaska Onshore				
58	Arctic Coastal Plain.....	5.99	39.69	18.18	11.84
59	Northern Foothills.....	4.63	23.75	11.70	6.33
60	Southern Foothills and Brooks Range.....	0	7.94	2.03	3.41
61	Yukon-Porcupine Basins.....	0	0	0.02	0.11
62	Yukon-Koyukuk Basins.....	0	0.55	0.08	0.34
63	Interior Lowlands.....	0	0	Negl.	0.03
64	Bristol Basin Onshore.....	0	1.92	0.51	0.79
65	Hope Basin Onshore.....	0	0	0	0
66	Copper River Basin.....	0	0.51	0.10	0.19
67	Cook Inlet Onshore.....	1.27	7.41	3.53	2.09
68	Alaska Peninsula.....	0	0.83	0.15	0.33

Total gas--Estimates[1] of undiscovered recoverable resources by petroleum province,

Circular 860 study, 1980--continued

	Region, province and water depth category (meters)	Estimated amounts (trillion cubic feet)			
		Low $^2F_{95}$	High $^2F_5$	Mean	Standard deviation
69	Gulf of Alaska Onshore	0	1.37	0.32	0.63
70	Kodiak Island	0	0	0	0
71	Southeastern Alaska	0	0	0	0
2	Pacific Coast				
72	Western Oregon-Washington	0.52	4.92	2.02	1.56
73	Sacramento Basin	0.54	3.20	1.51	0.91
74	San Joaquin Basin	0.72	4.76	2.11	1.38
75	Los Angeles Basin	0.24	1.41	0.67	0.40
76	Ventura Basin	0.45	2.21	1.12	0.59
77	Santa Maria Basin	0.04	0.41	0.16	0.14
78	Central Coastal Basins	0.02	0.23	0.09	0.08
79	Sonoma-Livermore Basins	0.01	0.07	0.03	0.02
80	Humboldt Basin	0.01	0.23	0.08	0.09

Total gas--Estimates[1] of undiscovered recoverable resources by petroleum province,

Circular 860 study, 1980--continued

	Region, province and water depth category (meters)	Estimated amounts (trillion cubic feet)			
		Low $^2F_{95}$	High $^2F_5$	Mean	Standard deviation
81	Eastern Oregon-Washington	1.86	16.55	6.96	4.98
81A	Eastern California	0	0	0	0
3	Colorado Plateau and Basin and Range				
82	Eastern Basin and Range	0.65	35.15	10.56	14.09
83	Western Basin and Range	0	5.35	1.24	4.47
84	Idaho-Snake River Downwarp	0	0	0	0
85	Paradox Basin	1.17	8.92	3.83	2.67
86	Uinta-Piceance-Eagle Basins	3.20	19.61	8.93	5.62
87	Park Basins	0.02	0.62	0.20	0.27
88	San Juan Basin	1.02	7.52	3.26	2.25
89	Albuquerque-Santa Fe-San Luis Rift Basins	0	1.40	0.31	0.69
90	Wyoming-Utah-Idaho Overthrust Belt	29.06	105.38	58.43	24.63
91	Northern Arizona	0.03	1.94	0.55	0.98
92	South-central New Mexico	0	1.24	0.33	0.54

Total gas--Estimates[1] of undiscovered recoverable resources by petroleum province, Circular 860 study, 1980--continued

	Region, province and water depth category (meters)	Estimated amounts (trillion cubic feet)			
		Low $^2F_{95}$	High $^2F_5$	Mean	Standard deviation
93	Southern Arizona-Southwestern New Mexico	0	8.47	2.44	3.72
4	Rocky Mountains and Northern Great Plains				
94	Williston Basin	1.40	6.64	3.33	1.76
95	Sioux Arch	0	0	0	0
96	Sweetgrass Arch	0.72	6.85	2.71	2.10
97	Central Montana	0.12	1.76	0.60	0.65
98	Montana Overthrust Belt	2.51	22.44	9.27	7.09
99	Southwestern Montana	0	1.35	0.40	0.53
100	Wind River Basin	0.96	4.51	2.28	1.20
101	Powder River Basin	1.09	4.85	2.53	1.21
102	Southwestern Wyoming Basins	7.89	36.90	18.55	9.74
103	Big Horn Basin	1.06	4.55	2.39	1.14
104	Denver Basin	0.96	4.20	2.21	1.06
105	Las Animas Arch	0.27	2.38	0.98	0.73

Total gas--Estimates[1] of undiscovered recoverable resources by petroleum province,

Circular 860 study, 1980--continued

Region, province and water depth category (meters)		Estimated amounts (trillion cubic feet)			
		Low $^2F_{95}$	High $^2F_5$	Mean	Standard deviation
106	Raton Basin-Sierra Grande Uplift.....	0.03	1.36	0.43	0.71
5	West Texas and Eastern New Mexico				
107	Permian Basin.....	13.89	65.26	33.33	17.43
108	Palo Duro Basin.....	0.03	0.41	0.15	0.15
109	Pedernal Uplift.....	0	0	0	0
110	Bend Arch-Fort Worth Basin.....	4.23	14.04	8.17	3.11
111	Marathon Fold Belt.....	0.06	3.61	1.12	1.61
6	Gulf Coast				
112	Western Gulf Basin.....	36.30	220.80	101.22	62.51
113	East Texas Basin.....	2.85	14.51	7.20	3.89
114	Louisiana-Mississippi Salt Basins.....	5.28	37.40	15.99	11.16
7	Mid-Continent				
115	Anadarko Basin.....	14.37	68.06	34.73	17.98
116	Arkoma Basin.....	0.85	9.06	3.57	3.09

Total gas--Estimates[1] of undiscovered recoverable resources by petroleum province,

Circular 860 study, 1980--continued

	Region, province and water depth category (meters)	Estimated amounts (trillion cubic feet)			
		Low $^2F_{95}$	High $^2F_5$	Mean	Standard deviation
117	Cambridge Arch-Central Kansas Uplift	0.30	1.35	0.70	0.34
118	Cherokee Platform	0.23	2.92	1.10	1.05
119	Forest City Basin	0.01	0.08	0.03	0.03
120	Nemaha Ridge	0.05	0.67	0.22	0.30
121	Salina Basin	0	0.03	0.01	0.01
122	Sedgwick Basin	0.27	1.52	0.73	0.43
123	Southern Oklahoma	1.22	7.23	3.42	2.03
124	Sioux Uplift	0	0	0	0
125	Iowa Shelf	0	0	0	0
126	Ozark Uplift	0	0	0	0
8	Michigan Basin				
127	Michigan Basin	1.87	10.77	5.11	3.12

Total gas--Estimates[1] of undiscovered recoverable resources by petroleum province,

Circular 860 study, 1980--continued

Region, province and water depth category (meters)	Estimated amounts (trillion cubic feet)			
	Low $^2F_{95}$	High $^2F_5$	Mean	Standard deviation
9 Eastern Interior				
128 Illinois Basin	0.16	1.74	0.66	0.78
129 Cincinnati Arch	0.13	1.75	0.64	0.66
130 Black Warrior Basin	0.47	2.89	1.39	0.84
10 Appalachians				
131 Appalachian Basin	6.05	42.28	19.06	13.00
132 Blue Ridge Overthrust Belt	0	5.04	1.07	2.13
133 Piedmont	0	0	0	0
134 New England-Adirondack	0	0	0	0
11 Atlantic Coast				
135 Atlantic Coastal Plain	0	0.30	0.06	0.32
136 Florida Peninsula	0.01	0.08	0.03	0.02

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