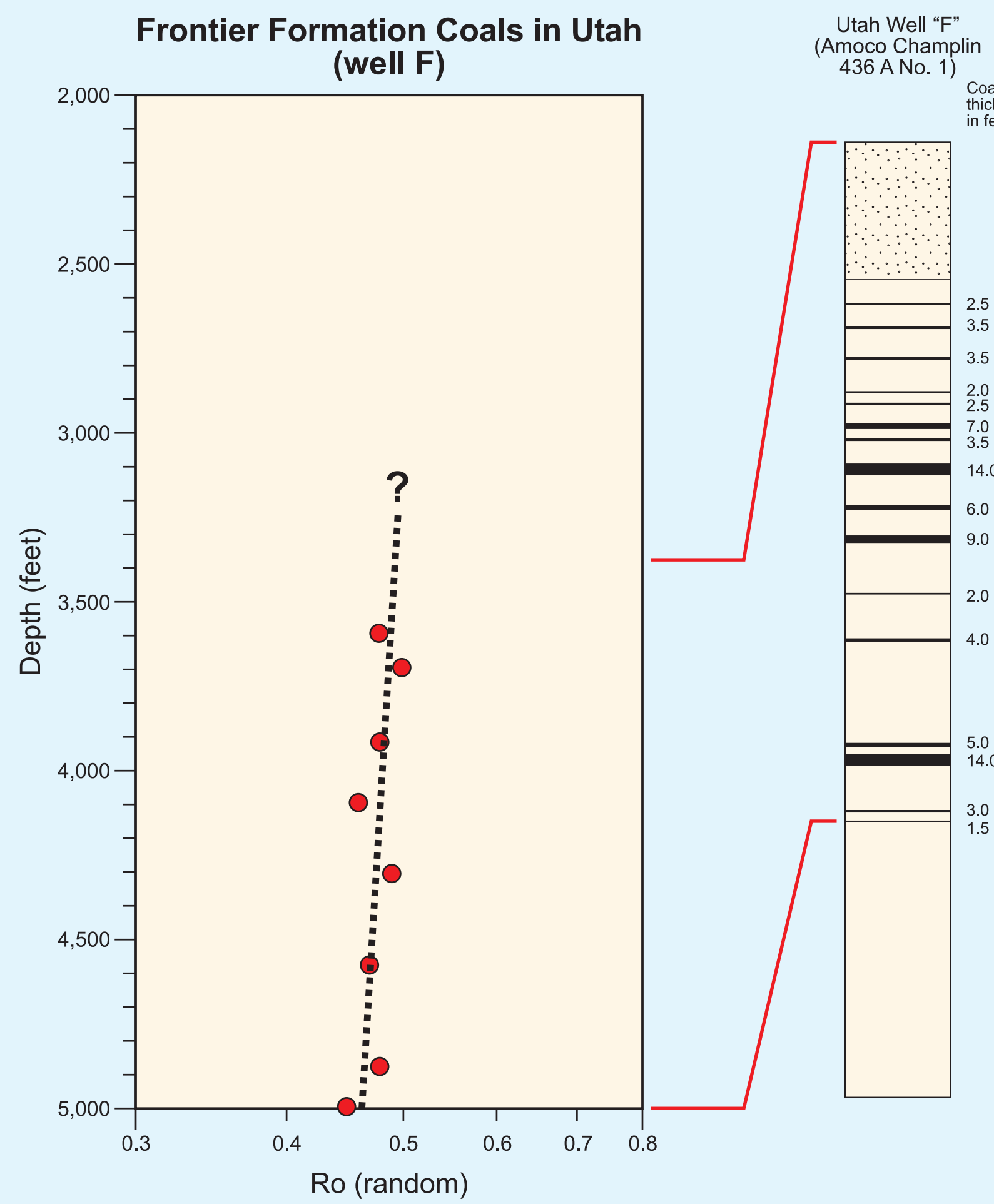
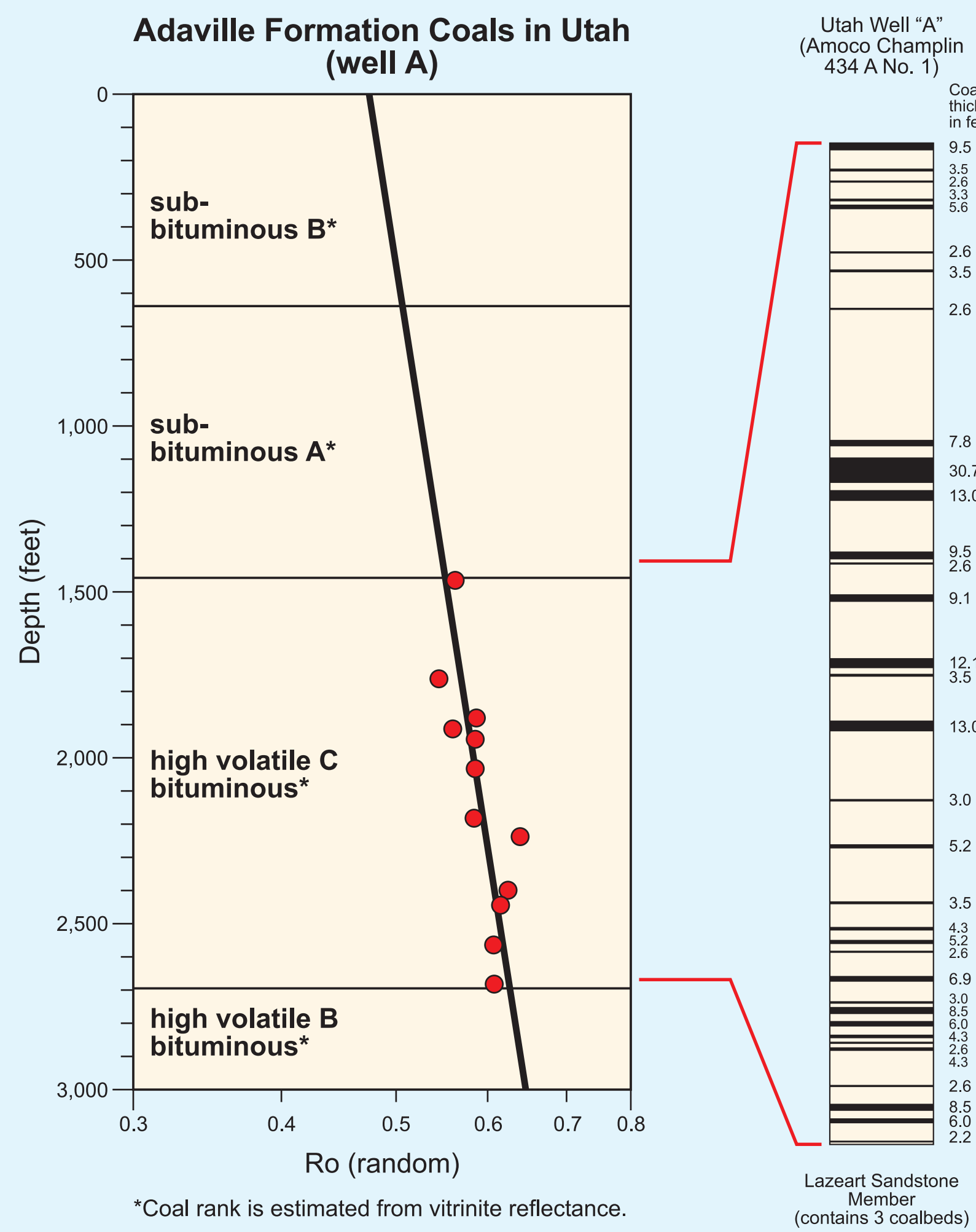
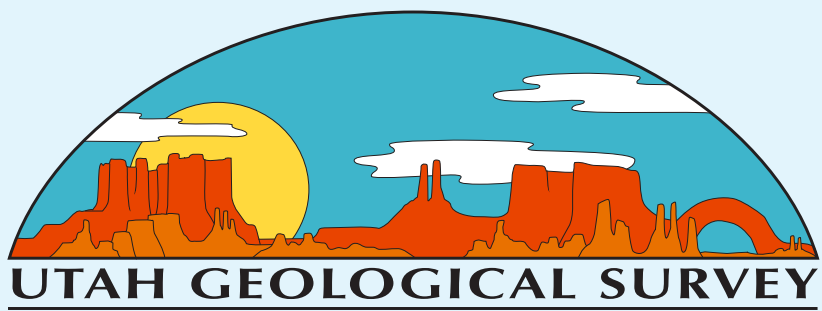


Henrys Fork play maturity data



Book Cliffs and Sego plays



BOOK CLIFFS PLAY

The best defined and most mature frontier coalbed-gas play in Utah consists of the thick, gassy, high-volatile bituminous coals of the Blackhawk Formation in the Book Cliffs coalfield. Exploration in this play began in the early 1970s, and there was a modest amount of coalbed-gas production during the 1990s. The area may be poised for full-scale development if the current efforts can overcome the water-disposal and well-completion problems that plagued the earlier development efforts. Although the Book Cliffs coalfield has had extensive mining, there are still about 70,000 acres underlain by deeper and unmined coal in the Blackhawk Formation where the aggregate coal thickness ranges from 10 to 70 feet, and drilling depths range from 1,500 to 6,000 feet (see summary table). The measured gas content of these coals ranges from a modest 3 cubic feet per ton, to an attractive 429 cubic feet per ton of coal. The in-place gas resource in the undeveloped play is estimated to range from 0.8 to 1.9 trillion cubic feet (Tcf). A joint venture of the J.M. Huber Corporation and the Patina Oil and Gas Corporation is redeveloping the previously abandoned Castlegate field, which is reported to contain over 27 billion cubic feet of proven gas reserves for its 17 producing wells. Meanwhile, the J-W Operating Company has recently completed drilling a six-well pilot test of the Blackhawk coals farther to the east.

SEGO PLAY

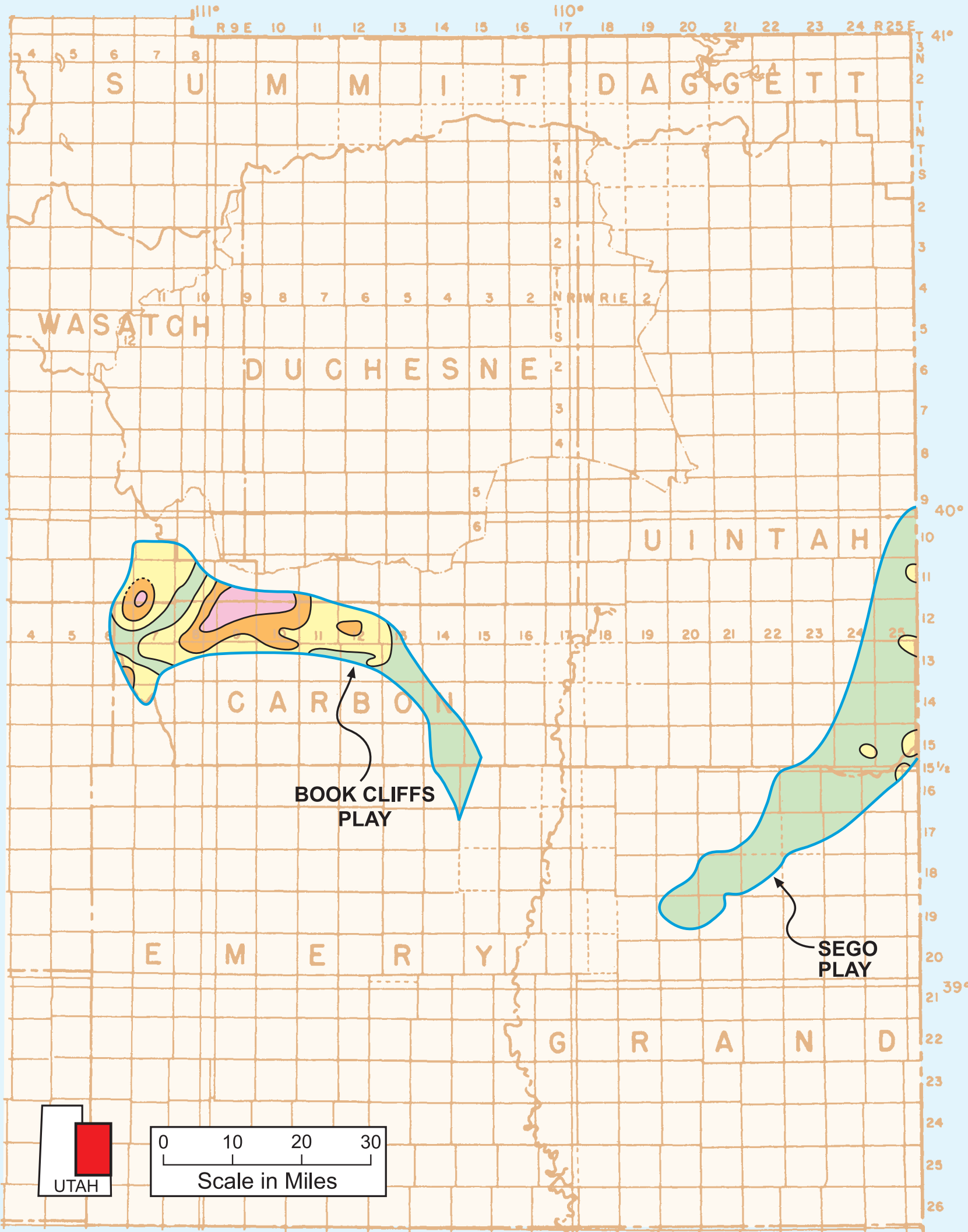
The Neslen Formation coalbeds are known from the Sego coalfield where they are exposed along the Book Cliffs of Grand County; these coalbeds can be traced northward into the subsurface in Uintah County near the Colorado-Utah state line, and underlie roughly 240,000 acres. The 400- to 700-foot-thick Neslen Formation contains an average of 14 feet of coal in one to seven beds. Shallow core samples taken near the outcrop of the beds provided gas-content measurements only as high as 48 cubic feet per ton of coal, but there are indications that the deeper coals may be gassier. CDX Rockies, LLC has drilled a well to test the gas content of deeper coalbeds in the Uintah County portion of the play, but no results have been released. The in-place gas resource of this play is estimated to range from 0.3 to 1.8 Tcf.

GAS CONTENT DATA

GAS CONTENT DATA FOR THE BOOK CLIFFS COALFIELD (for samples from greater than 200 feet deep)									
Coalbed Name	Number of Samples	Township	Range	Depth (feet)	Ash Content Rge. (wt. %)	Ash Content Ave. (wt. %)	Gas Content Rge. (scf/ton)	Gas Content Ave. (scf/ton)	
Subseam 3	4	12-13S	09E	961-2221	6.4-6.8	6.6	13 to 74	40	
Subseam 2	6	12-13S	09E	935-2186	5.2-7.7	6.1	48 to 270	100	
Subseam 1	4	12S	09E	1394-2820	5.9-20.8	10.4	70 to 317	222	
Castlegate A	20	12-13S	09-11E	591-3354	3.0-10.9	6.2	5 to 301	127	
Castlegate B	9	12-13S	09-10E	315-1233	3.8-8.9	5.7	30 to 230	66	
Castlegate C	6	12-13S	09-10E	300-3291	3.5-5.9	5.0	22 to 340	95	
Castlegate D	4	12-13S	09E	1099-1430	4.4-8.4	6.4	48 to 178	93	
Kenilworth	6	12-13S	10-11E	245-2826	4.1-8.8	6.7	43 to 353	161	
Gilson	7	12-13S	11-12E	475-3099	2.5-11.6	5.0	16 to 350	202	
Fish Creek	2	12-13S	12E	1727-2877	15.6	15.6	221 to 348	284	
Rock Canyon	5	12-13S	11-12E	435-2864	4.8-10.9	6.7	42 to 392	165	
Sunnyside	16	12-17S	10-15E	353-2720	1.5-36.8	7.1	0 to 429	130	
Beckwith	2	13-16S	11-15E	283-1073	4.6-10.9	7.8	3 to 94	48	

GAS CONTENT DATA FOR THE SEGO COALFIELD									
Coalbed Name	Number of Samples	Township	Range	Depth (feet)	Ash Content Rge. (wt. %)	Ash Content Ave. (wt. %)	Gas Content Rge. (scf/ton)	Gas Content Ave. (scf/ton)	
Palisade	6	16-20S	20-25E	408-860	6.7-12.6	9.4	0 to 50	19	
Green	4	16-17S	24-25E	370-626	12.7-27.9	18.4	0 to 45	20	
Ballard	3	17-20S	20-24E	253-529	7.8-20.3	13.2	0 to 48	29	
Chesterfield	6	16-20S	20-25E	311-742	3.1-12.1	7.2	2 to 25	12	
Carbonera	8	16-17S	24-25E	191-422	2.6-11.7	7.0	0 to 48	24	

NET COAL THICKNESS OF THE BOOK CLIFFS AND SEGO COALBED GAS PLAYS

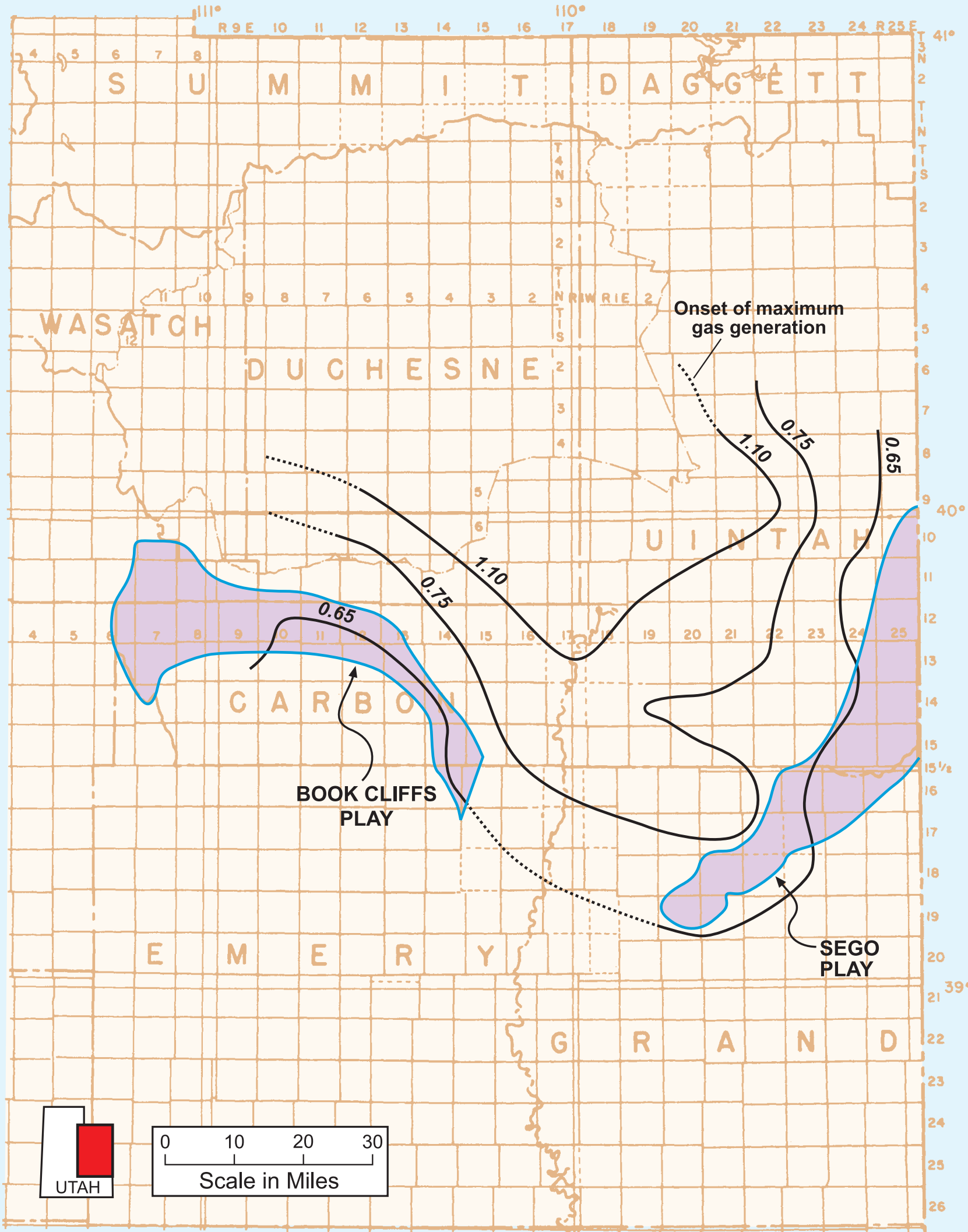


NET COAL THICKNESS

- 0' - 20'
- 20' - 40'
- 40' - 60'
- 60' - 80'

VITRINITE REFLECTANCE (R_m) ISOLINES - BASE OF THE MESAVERE GROUP

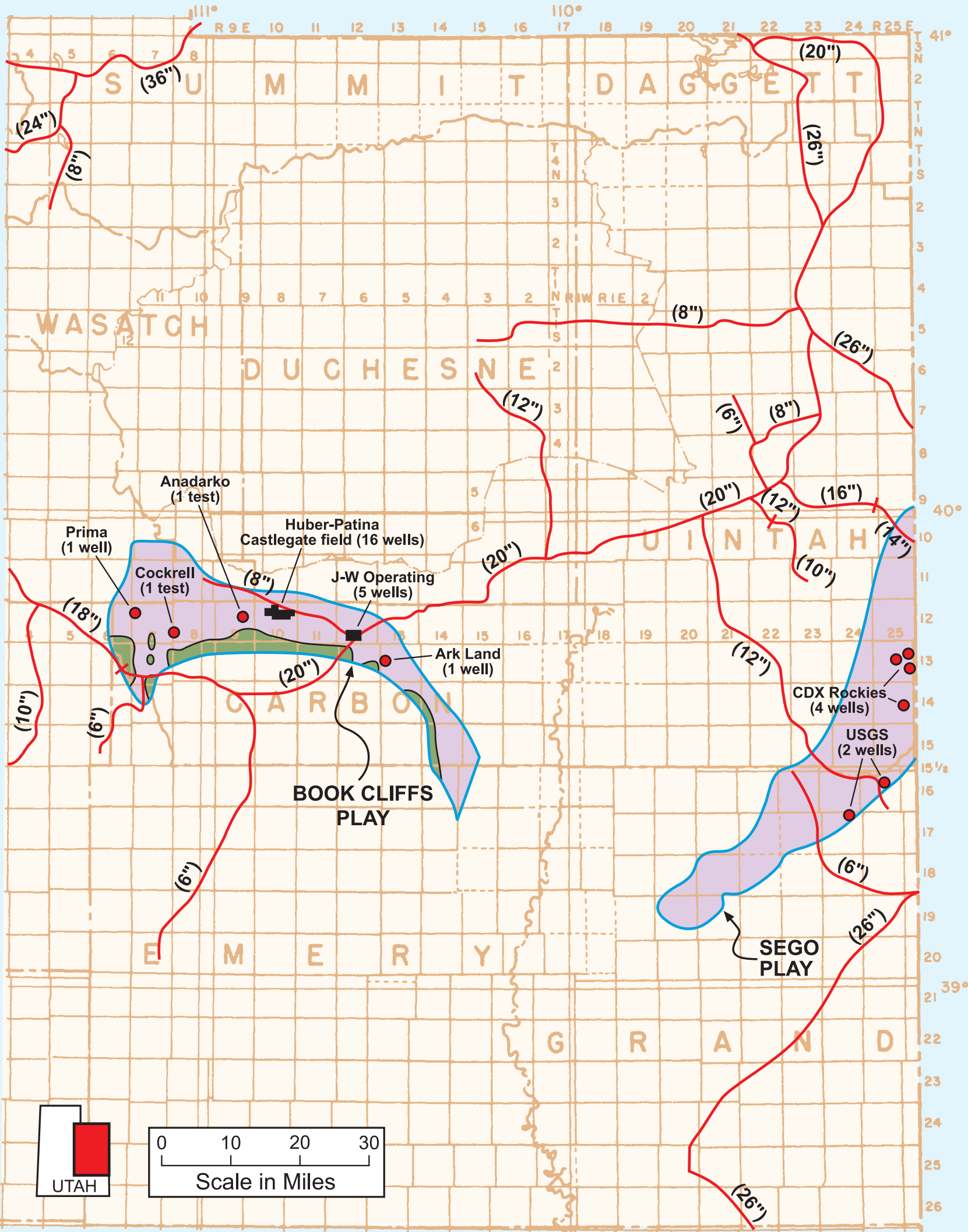
(Modified from Nuccio and others, 1992)



Play area

Vitrinite reflectance (R_m) isoline (value in percent reflectance)

LOCATION OF EXPLORATION AND DEVELOPMENT ACTIVITY IN THE BOOK CLIFFS AND SEGO COALBED GAS PLAYS



CBM test well location

Developed portion of play

Areas affected by mining

Play area

Gas pipeline (diameter in inches)