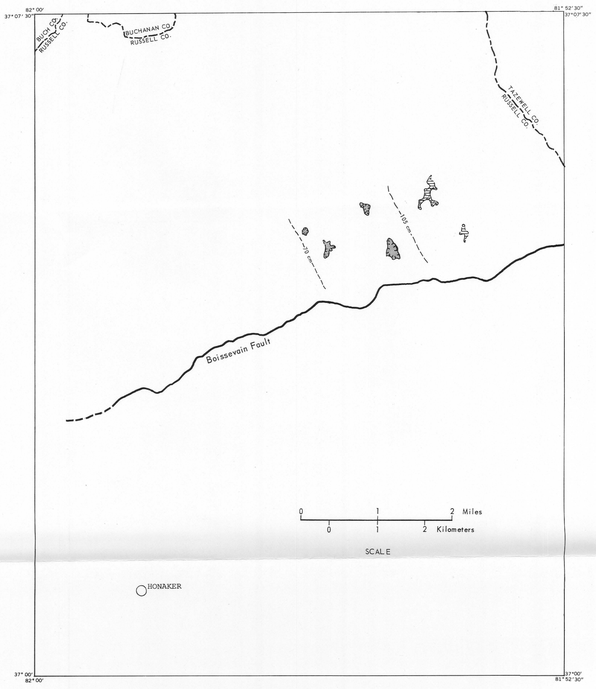


Figure 1.--Map showing distribution of the Upper Banner coal bed.

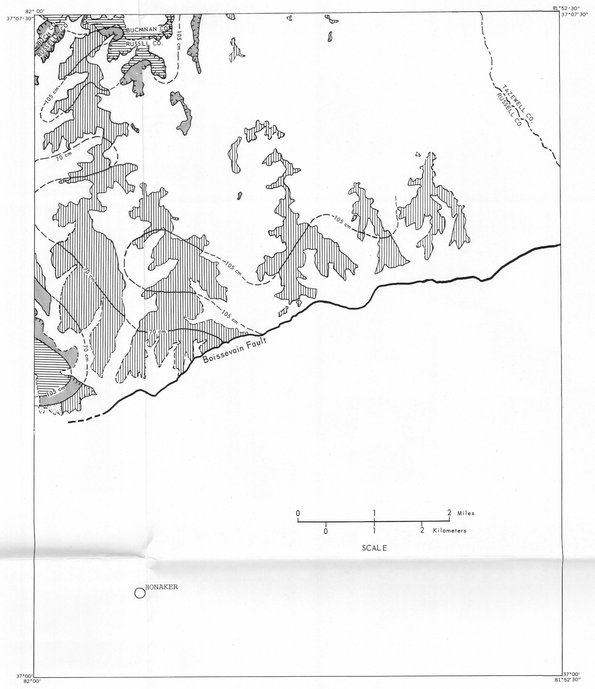


Figure 2.--Map showing distribution of the Lower Banner coal bed.

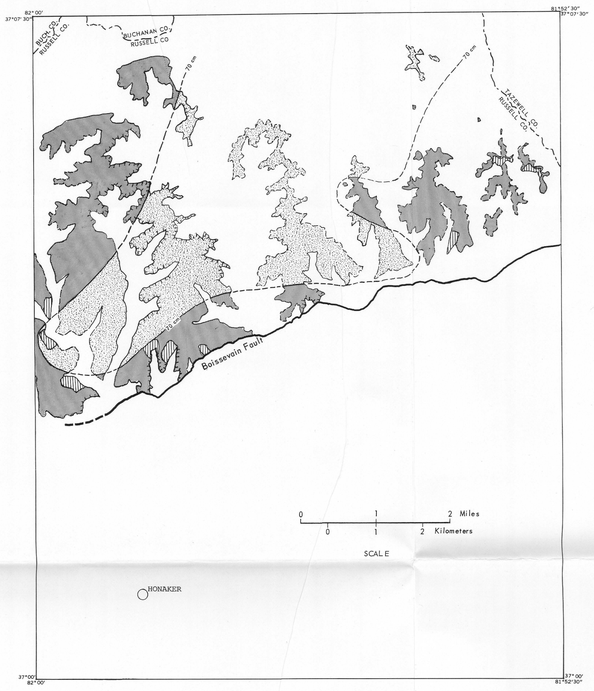


Figure 3.--Map showing distribution of the Big Fork coal bed.

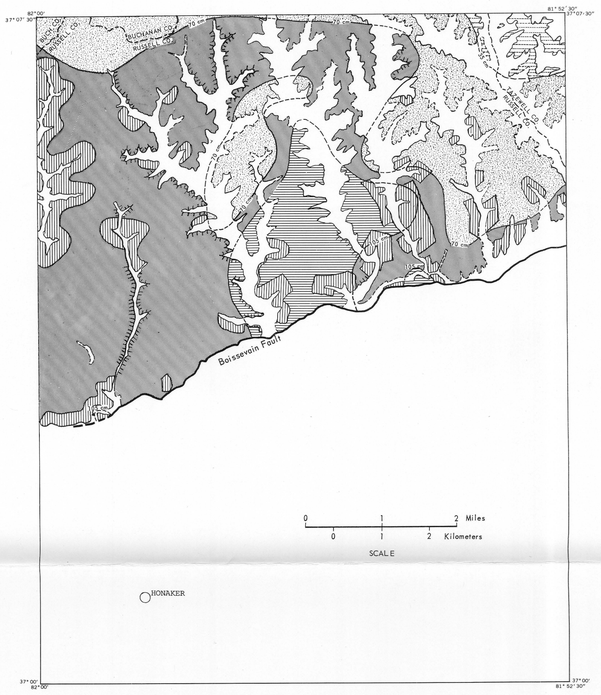


Figure 4.--Map showing distribution of the Kennedy coal bed.

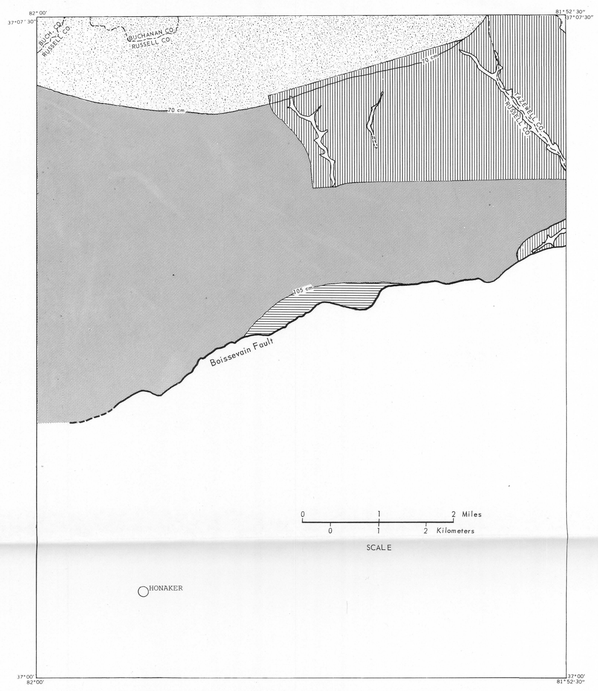


Figure 5.--Map showing distribution of the Raven No. 1 (Raven-Jewell) coal bed.

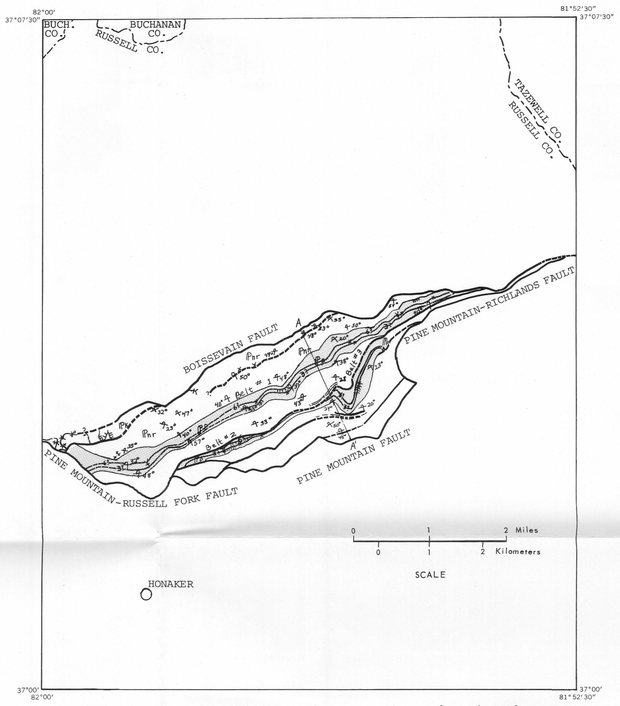


Figure 6.--Map of the faulted coal field south of the Boissevain Fault.

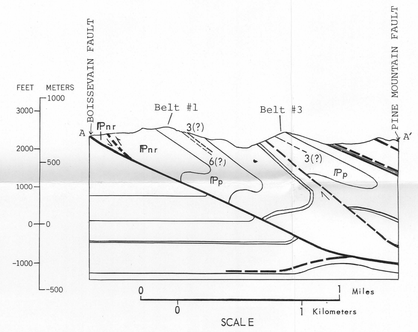


Figure 7.--Generalized structure section along A-A' of the faulted coal field south of the Boissevain Fault. No vertical exaggeration.

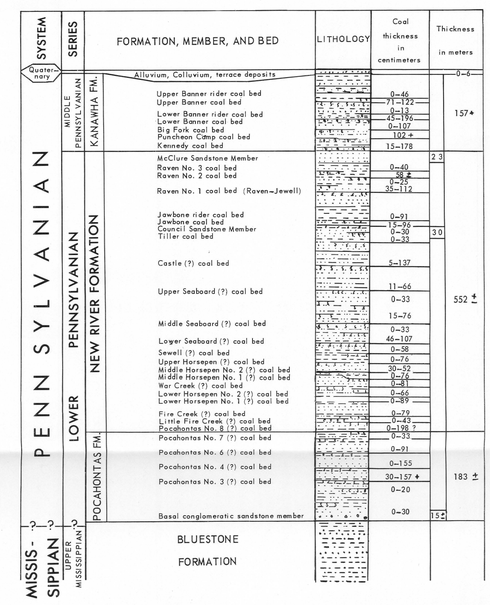


Figure 8.--Stratigraphic column of coal-bearing formations.

Coal Geology

The Honaker quadrangle lies in two physiographic provinces. The northern half of the quadrangle is part of the Appalachian Plateaus province, where the coal-bearing formations of Pennsylvanian age are nearly flat lying or very gently dipping. Diagonally extending east-northeastward across the middle of the quadrangle are several belts of faulted, overturned, and steeply dipping rocks of Mississippian and Pennsylvanian age which are in the fault system that separates the Appalachian Plateaus from the Valley and Ridge provinces. Several belts of Pennsylvanian rocks in this area contain coal beds that are exposed at the surface. South of the faulted and overturned belts of Mississippian and Pennsylvanian rocks is an area of older faulted and folded noncoal-bearing rock formations, which are also part of the Appalachian Valley and Ridge province and which form much of the southern half of the Honaker quadrangle.

The nearly flat-lying coal-bearing area in the northern half of the quadrangle is referred to herein as the coal field north of the Boissevain Fault, which is the northernmost fault separating the Appalachian Plateaus and the Valley and Ridge provinces. The faulted, steeply dipping coal-bearing area extending across the middle of the quadrangle is referred to as the faulted coal field.

Coal resources were estimated for 23 coal beds in the Kanawha, New River, and Pocahontas Formations in the coal field north of the Boissevain Fault (see table 1 and fig. 8). Five of these beds crop out at the surface. (Data on other outcropping coal beds were insufficient to estimate resources.) The remaining beds are in the subsurface below drainage. The distribution and thickness of only the five beds mapped at the surface are illustrated in this report.

The coal resources below drainage were prospected by the core drilling efforts of coal companies. Much company confidential information was used in estimating these resources; for this reason the coal distribution of individual beds is not illustrated.

Analyses of the mined outcropping coal beds in the coal field north of the Boissevain Fault show that the coal is of medium- to high-volatile A bituminous rank, containing 20.7 to 36.4 percent volatiles, 2.4 to 21.4 percent ash (most have less than 8 percent), and 0.4 to 2.2 percent sulfur (most have less than 1 percent). Heating values range from 11,440 to 14,940 Btu's on an as-received basis. Trace element and major and minor oxide compositions, of both laboratory ash and whole coal, were obtained for 14 samples within or near the quadrangle. None of the compositions revealed unusual amounts of toxic elements such as arsenic, lead, mercury, and selenium. There were no indications of significant amounts of germanium, uranium, thorium, or other potentially valuable elements in the coal.

In 1978, in the area north of the Boissevain Fault, both strip and underground mining were active, and exploration drilling was in progress to sample and delineate the many unexploited coal beds.

The faulted coal field contains parts of the same coal-bearing units--the Kanawha, New River, and Pocahontas Formations--as the nonfaulted field to the north. A number of the subsurface coal beds of the nonfaulted field have been brought to the surface by faulting and folding. However, except for the partly mapped Pocahontas No. 3(?) and No. 6(?) coal beds in the Pocahontas Formation, there is insufficient evidence to map and estimate the coal resources of other beds beds that are indicated by a few scattered prospects and small mines in the Kanawha and New River Formations. The Pocahontas No. 3(?) and No. 6(?) coal beds in the faulted coal field contain small strip mines in three belts of the Pocahontas Formation.

REFERENCE

Meissner, C. R., Jr., and Miller, R. L., 1979, Geologic map of the Honaker quadrangle, Russell, Tazewell, and Buchanan Counties, Virginia: U.S. Geological Survey Open-File Report 79-528, 34 p.

Table 1.--Estimated original and remaining coal resources of the Honaker quadrangle, in thousands of metric tons, as of August 1978

COAL FIELD NORTH OF BOISSEVAIN FAULT

FORMATION	COAL BED	ORIGINAL RESOURCES: MEASURED — In beds 35-70 centimeters thick	In beds 70-105 centimeters thick	In beds more than 105 centimeters thick	Total	INDICATED — In beds 35-70 centimeters thick	In beds 70-105 centimeters thick	In beds more than 105 centimeters thick	Total	INFERRED — In beds 35-70 centimeters thick	In beds 70-105 centimeters thick	In beds more than 105 centimeters thick	Total	HYPOTHETICAL — In beds 35-70 centimeters thick	In beds 70-105 centimeters thick	In beds more than 105 centimeters thick	Total	TOTAL — In beds 35-70 centimeters thick	In beds 70-105 centimeters thick	In beds more than 105 centimeters thick	Total	MINED AND LOST IN MINING — Total	REMAINING RESOURCES — Total
RUSSELL COUNTY (Covered by less than 300 meters of rock)																							
Kanawha	Upper Banner	-	200	140	340	-	-	140	140	-	-	-	-	-	-	-	-	-	200	280	480	210	270
	Lower Banner	2,520	9,620	8,850	21,000	60	270	490	820	-	-	-	-	-	-	-	-	2,580	9,890	9,350	21,820	17,430	4,390
	Big Fork	4,280	6,430	-	10,710	2,770	5,810	-	8,580	650	-	-	650	-	-	-	-	7,700	12,240	-	19,940	3,770	16,170
	Kennedy	5,120	25,420	8,990	39,530	3,650	10,220	2,010	15,880	-	-	-	-	-	-	-	-	8,770	35,640	11,000	55,410	9,930	45,480
New River	Raven #1	26,880	18,000	590	45,470	3,580	11,830	680	16,090	3,350	26,720	680	30,750	-	5,470	-	5,470	33,810	62,020	1,950	97,780	17,270	80,510
	Jawbone Rider	640	640	-	1,280	5,430	6,500	-	11,930	17,220	2,590	-	19,810	-	-	-	-	23,290	9,730	-	33,020	-	33,020
	Jawbone	1,040	1,510	-	2,550	4,540	7,940	-	12,480	11,980	10,000	-	21,980	110	-	-	110	17,670	19,450	-	37,120	-	37,120
	Castle (?)	1,440	1,340	90	2,870	5,910	9,410	1,000	16,320	15,050	19,830	8,150	43,030	2,300	-	-	2,300	24,700	30,580	9,240	64,520	-	64,520
	Upper Seaboard (?)	670	-	-	670	3,770	-	-	3,770	5,130	-	-	5,130	-	-	-	-	9,570	-	-	9,570	-	9,570
	Middle Seaboard (?)	720	-	-	720	1,780	-	-	1,780	1,960	180	-	2,120	-	-	-	-	4,460	160	-	4,620	-	4,620
	Lower Seaboard (?)	-	270	-	270	-	670	-	670	-	500	-	500	-	-	-	-	-	1,440	-	1,440	-	1,440
	TOTALS	43,310	63,430	18,670	125,410	31,490	52,650	4,320	88,460	55, 340	59,800	8,830	123,970	2,410	5,470	0	7,880	132,550	181,350	31,820	345,720	48,610	297,110
(Covered by more than 300 meters of rock)																							
New River	Middle Seaboard (?)	1,190	-	-	1,190	9,050	958	-	10,000	24,770	3,860	-	28,630	3,480	-	-	3,480	38,490	4,810	-	43,300	-	43,300
	Lower Seaboard (?)	-	2,960	-	2,960	200	19,370	-	19,770	7,760	33,290	-	41,050	2,350	-	-	2,350	10,310	55,820	-	66,130	-	66,130
	Sewell (?)	1,700	-	-	1,700	9,740	-	-	9,740	12,000	-	-	12,200	-	-	-	-	23,640	-	-	23,640	-	23,640
	Upper Horsepen (?)	660	580	-	1,240	5,450	1,420	-	6,870	16,450	1,690	-	18,140	4,380	-	-	4,380	26,940	3,690	-	30,630	-	30,630
	Middle Horsepen #2 (?)	1,180	1,510	-	2,690	8,120	7,980	-	16,100	11,250	30,530	-	41,780	-	4,500	-	4,500	20,550	44,520	-	65,070	-	65,070
	Middle Horsepen #1 (?)	1,560	890	-	2,450	11,710	1,980	-	13,690	31,580	420	-	32,000	3,050	-	-	3,050	47,900	3,290	-	51,190	-	51,190
	War Creek (?)	640	-	-	640	4,100	-	-	4,100	15,030	-	-	15,030	4,060	-	-	4,060	23,830	-	-	23,830	-	23,830
	Lower Horsepen #2 (?)	960	-	-	960	5,720	-	-	5,720	9,470	-	-	9,470	-	-	-	-	16,150	-	-	16,150	-	16,150
	Lower Horsepen #1 (?)	1,380	1,110	-	2,490	7,950	4,040	-	11,990	17,360	16,860	-	34,220	2,340	-	-	2,340	29,030	22,010	-	51,040	-	51,040
	Firecreek (?)	1,050	660	-	1,710	6,930	3,120	-	10,050	16,600	830	-	17,430	-	-	-	-	24,580	4,610	-	29,190	-	29,190
	Little Fire-creek (?)	310	-	-	310	1,100	-	-	1,100	820	-	-	820	-	-	-	-	2,230	-	-	2,230	-	2,230
Pocahontas	Pocahontas #6 (?)	1,180	-	-	1,180	8,040	-	-	8,040	14,470	-	-	14,470	-	-	-	-	23,690	-	-	23,690	-	23,690
	Pocahontas #4 (?)	210	410	390	1,010	2,510	2,410	1,560	6,480	8,440	1,200	-	9,640	-	-	-	-	11,160	4,020	1,950	17,130	-	17,130
	Pocahontas #3 (?)	2,000	-	-	2,000	9,460	-	-	9,460	2,110	-	-	2,110	2,860	-	-	2,860	16,430	-	-	16,430	-	16,430
	TOTALS	14,020	8,120	390	22,530	90,080	41,470	1,560	133,110	188,310	88,680	0	276,990	22,520	4,500	0	27,020	314,930	142,770	1,950	459,650	-	459,650
	Russell County TOTALS	57,330	71,550	19,060	147,940	121,570	94,120	5,880	221,570	243,650	148,480	8,830	400,960	24,930	9,970	0	34,900	447,480	324,120	33,770	805,370	48,610	756,760
TAZEWELL COUNTY (Covered by less than 300 meters of rock)																							
Kanawha	Kennedy	-	-	-	-	360	-	-	360	-	-	-	-	-	-	-	-	360	-	-	360	-	360
New River	Raven #1	-	3,890	3,890	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,890	-	3,890	3,890	0
	Jawbone Rider	-	-	-	-	-	300	-	300	-	-	-	-	-	-	-	-	300	-	-	300	-	300
	Jawbone	-	110	-	110	-	2,000	-	2,000	-	1,440	-	1,440	-	-	-	-	-	3,550	-	3,550	-	3,550
	Castle (?)	-	110	-	110	900	840	130	1,870	30	1,110	760	1,900	-	-	-	-	930	2,060	890	3,880	-	3,880
	Upper Seaboard (?)	50	-	-	50	1,020	-	-	1,020	400	-	-	400	-	-	-	-	1,470	-	-	1,470	-	1,470
	Middle Seaboard (?)	-	90	-	90	920	100	-	1,020	550	-	-	550	-	-	-	-	1,470	190	-	1,660	-	1,660
	Lower Seaboard (?)	-	-	-	-	-	90	-	90	-	200	-	200	-	-	-	-	-	290	-	290	-	290
	TOTALS	50	4,200	0	4,250	3,200	3,030	130	6,360	1,280	2,750	760	4,790	0	0	0	0	4,530	9,980	890	15,400	3,890	11,510
(Covered by more than 300 meters of rock)																							
New River	Middle Seaboard (?)	-	10	-	10	550	10	-	560	-	-	-	-	-	-	-	-	550	20	-	570	-	570
	Lower Seaboard (?)	-	110	-	110	-	1,920	-	1,920	-	1,220	-	1,220	-	-	-	-	-	3,250	-	3,250	-	3,250
	Sewell (?)	70	-	-	70	1,210	-	-	1,210	870	-	-	870	-	-	-	-	2,150	-	-	2,150	-	2,150
	Upper Horsepen (?)	80	-	-	80	690	-	-	690	810	-	-	810	-	-	-	-	1,580	-	-	1,580	-	1,580
	Middle Horsepen #2 (?)	-	90	-	90	70	2,060	-	2,130	400	700	-	1,100	-	-	-	-	470	2,850	-	3,320	-	3,320
	Middle Horsepen #1 (?)	80	-	-	80	1,340	-	-	1,340	940	-	-	940	-	-	-	-	2,360	-	-	2,360	-	2,360
	War Creek (?)	60	-	-	60	580	-	-	580	200	-	-	200	-	-	-	-	840	-	-	840	-	840
	Lower Horsepen #2 (?)	70	-	-	70	580	-	-	580	300	-	-	300	-	-	-	-	950	-	-	950	-	950
	Lower Horsepen #1 (?)	70	-	-	70	930	-	-	930	510	-	-	510	-	-	-	-	1,510	-	-	1,510	-	1,510
	Little Fire Creek	-	-	-	-	30	-	-	30	-	-	-	-	-	-	-	-	30	-	-	30	-	30
Pocahontas	Pocahontas #6 (?)	-	-	-	-	540	-	-	540	870	-	-	870	-	-	-	-	1,410	-	-	1,410	-	1,410
	Pocahontas #4 (?)	-	-	-	-	-	180	-	-	180	-	-	180	-	-	-	-	180	-	-	180	-	180
	Pocahontas #3 (?)	-	120	-	120	920	430	0	1,350	460	-	-	450	-	-	-	-	1,380	550	-	1,930	-	1,930
	TOTALS	430	330	0	760	7,440	4,420	0	11,860	5,540	1,920	0	7,460	0	0	0	0	13,410	6,670	0	20,080	0	20,080
TAZEWELL County TOTALS		480	4,530	0	5,010	10,640	7,450	130	18,220	6,820	4,670	760	12,250	0	0	0	0	17,940	16,650	890	35,480	3,890	31,590
BUCHANAN COUNTY (Covered by less than 300 meters of rock)																							
Kanawha	Lower Banner	-	180	510	690	-	-	-	-	-	-	-	-	-	-	-	-	-	180	510	690	190	500
	Kennedy	190	-	-	190	570	-	-	570	-	-	-	-	-	-	-	-	760	-	-	760	-	760
New River	Raven #1	-	-	-	-	230	-	-	230	430	-	-	430	-	-	-	-	660	-	-	660	-	660
	Jawbone Rider	-	-	-	-	-	-	-	-	250	-	-	250	-	-	-	-	250	-	-	250	-	250
	Jawbone	-	-	-	-	130	-	-	130	90	-	-	90	-	-	-	-	220	-	-	220	-	220
	Castle (?)	-	-	-	-	210	-	-	210	500	-	-	500	-	-	-	-	710	-	-	710	-	710
	Upper Seaboard (?)	-	-	-	-	140	-	-	140	360	-	-	360	-	-	-	-	500	-	-	500	-	500
	TOTALS	190	180	510	880	1,280	0	0	1,280	1,630	0	0	1,630	-	-	-	-	3,100	180	510	3,790	190	3,600
(Covered by more than 300 meters of rock)																							
New River	Lower Seaboard (?)	-	-	-	-	-	130	-	130	-	670	-	630	-	-	-	-	-	810	-	810	-	810
	Sewell (?)	-	-	-	-	180	-	-	180	400	-	-	400	-	-	-	-	580	-	-	580	-	580
	Upper Horsepen (?)	-	-	-	-	690	-	-	690	90	-	-	90	-	-	-	-	780	-	-	780	-	780
	Middle Horsepen #2 (?)	-	-	-	-	-	-	-	-	380	220	-	600	-	-	-	-	380	220	-	600	-	600
	Middle Horsepen #1 (?)	-	-	-	-	160	-	-	160	-	-	-	-	-	-	-	-	160	-	-	160	-	160
	War Creek (?)	-	-	-	-	150	-	-	150	400	-	-	400	-	-	-	-	550	-	-	550	-	550
	Lower Horsepen #2 (?)	-	-	-	-	-	-	-	-	300	-	-	300	-	-	-	-	300	-	-	300	-	300
	Lower Horsepen #1 (?)	-	-	-	-	210	-	-	210	200	-	-	200	-	-	-	-	410	-	-	410	-	410
Pocahontas	Pocahontas #6 (?)	-	-	-	-	70	-	-	70	390	-	-	390	-	-	-	-	460	-	-	460	-	460
	Pocahontas #4 (?)	-	-	-	-	150	-	-	150	430	-	-	430	-	-	-	-	580	-	-	580	-	580
	Pocahontas #3 (?)	-	-	-	-	190	-	-	190	430	-	-	430	-	-	-	-	620	-	-	620	-	620
	TOTALS	0	0	0	0	1,800	130	0	1,930	3,020	900	0	3,920	0	0	0	0	4,820	1,030	0	5,850	0	5,850
	Buchanan County TOTALS	190	180	510	880	3,080	130	0	3,210	4,650	900	0	5,550	0	0	0	0	7,920	1,210	510	9,640	190	9,450
(Totals covered by less than 300 meters of rock)									96,100	58,250	62,550	9,590	130,390	2,410	5,470	0	7,880	140,180	191,510	33,220	364,910	52,690	312,220
(Totals covered by more than 300 meters of rock)									146,900	196,870	91,500	0	288,370	22,520	4,500	0	27,020	333,160	150,470	1,950	485,580	0	485,580
Grand Totals of All Coal Beds																							
Grand Total		58,000	76,260	19,570	153,830	135,290	101,700	6,010	243,000	255,120	154,050	9,590	418,760	24,930	9,970	0	34,900	473,340	341,980	35,170	850,490	52,690	797,800

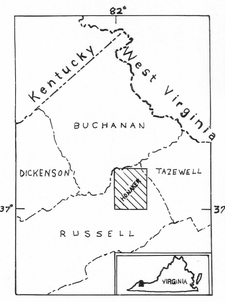
EXPLANATION

COAL FIELD NORTH OF BOISSEVAIN FAULT (FIGURES 1-5)

- Area underlain by coal less than 35 cm thick
- Area underlain by estimated coal resources 35-70 cm thick
- Area underlain by estimated coal resources 70-105 cm thick
- Area underlain by estimated coal resources greater than 105 cm thick
- Mined areas (approximate)
- Outcrop of coal bed - Dashed where approximately located
- Strip mine - Not shown in areas of underground mining
- 70cm — Coal thickness - Isopach approximately located. Dashed where eroded. Isopach interval, 35 cm

FAULTED COAL FIELD SOUTH OF BOISSEVAIN FAULT (FIGURES 6-7)

- Pk — Kanawha Formation
- Pnr — New River Formation
- P — Pocahontas Formation coal-bearing belts 1, 2, and 3, including Pocahontas No. 6 (?) and No. 3 (?) coal beds
- Contact - Dashed where located
- Coal bed - Dashed where existence uncertain
- Fault - Dashed where approximately located. Queried where uncertain
- Strip mine
- Coal prospect or outcrop
- Coal mine adit, abandoned
- 33° — Strike and dip of overturned beds



INDEX MAP

Table 2.--Estimated original and remaining coal resources of the Honaker quadrangle, in thousands of metric tons, as of August 1978

FAULTED COAL FIELD SOUTH OF BOISSEVAIN FAULT

FORMATION	COAL BED	ORIGINAL RESOURCES: MEASURED — In beds 35-70 centimeters thick	In beds 70-105 centimeters thick	In beds more than 105 centimeters thick	Total	INDICATED — In beds 35-70 centimeters thick	In beds 70-105 centimeters thick	In beds more than 105 centimeters thick	Total	INFERRED — In beds 35-70 centimeters thick	In beds 70-105 centimeters thick	In beds more than 105 centimeters thick	Total	HYPOTHETICAL — In beds 35-70 centimeters thick	In beds 70-105 centimeters thick	In beds more than 105 centimeters thick	Total	TOTAL — In beds 35-70 centimeters thick	In beds 70-105 centimeters thick	In beds more than 105 centimeters thick	Total	MINED AND LOST IN MINING — Total	REMAINING RESOURCES — Total
BELT 1																							
Pocahontas	Pocahontas	1,290	-	-	1,290	870	-	-	870	940	-	-	940	-	-	-	-	3,100	-	-	3,100	-	3,100
	Pocahontas #3 (?)	1,130	-	-	1,130	1,130	-	-	1,130	1,250	-	-	1,250	-	-	-	-	3,510	-	-	3,510	-	3,510
	Belt #1 Totals	2,420	-	-	2,420	2,000	-	-	2,000	2,190	-	-	2,190	-	-	-	-	6,610	-	-	6,610	-	6,610
BELT 2																							
	Pocahontas #6 (?)	120	-	-	120	-	-	-	-	-	-	-	-	-	-	-	-	120	-	-	120	-	120
	Pocahontas #3 (?)	140	-	-	140	20	-	-	20	-	-	-	-	-	-	-	-	160	-	-	160	-	160
	Belt #2 Totals	260	-	-	260	20	-	-	20	-	-	-	-	-	-	-	-	280	-	-	280	-	280
BELT 3																							
	Pocahontas #6 (?)	310	-	-	310	70	-	-	70	-	-	-	-	-	-	-	-	380	-	-	380	-	380
	Pocahontas #3 (?)	340	-	-	340	90	-	-	90	-	-	-	-	-	-	-	-	430	-	-	430	-	430
	Belt #3 Totals	650	-	-	650	160	-	-	160	-	-	-	-	-	-	-	-	810	-	-	810	-	810
	Faulted Area Totals	3,330	-	-	3,330	2,180	-	-	2,180	2,190	-	-	2,190	-	-	-	-	7,700	-	-	7,700	-	7,700
	Honaker Quadrangle Totals	61,330	76,260	19,570	157,160	137,470	101,700	6,010	245,180	257,310	154,050	9,590	420,950	24,930	9,970	0	34,900	481,040	341,980	35,170	858,190	52,690	805,500

MAPS SHOWING COAL RESOURCES OF THE HONAKER QUADRANGLE, RUSSELL, TAZEWELL, AND BUCHANAN COUNTIES, VIRGINIA

By
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