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# **Analyses of Tipple and Delivered Samples of Coal**

**Collected During the Period July 1975  
Through September 1976**



**UNITED STATES DEPARTMENT OF THE INTERIOR**



**Report of Investigations 8213**

**Analyses of Tipple and Delivered  
Samples of Coal**

**Collected During the Period July 1975  
Through September 1976**

**By J. B. Janus**



**UNITED STATES DEPARTMENT OF THE INTERIOR  
Cecil D. Andrus, Secretary  
BUREAU OF MINES**

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

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# ANALYSES OF TIPPLE AND DELIVERED SAMPLES OF COAL

Collected During the Period July 1975 Through September 1976

by

J. B. Janus<sup>1</sup>

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## ABSTRACT

This Bureau of Mines publication updates a series of reports on the quality of coal purchased under specifications for Government use. Listed are analytical data on the composition and quality of tipple and delivered samples of coal collected during the period July 1975 through September 1976.

## INTRODUCTION

The Bureau of Mines has long been active in promoting the purchase of coal for Government use under specifications that define the requirements in terms of heating value of the coal, expressed in British thermal units, and the composition as shown by proximate analyses. To these, when required, are added the ash-softening temperature, the free-swelling index, and the Hard-grove grindability index. Under most of these specification contracts, the bidders guarantee the quality of the coal, and the quality guaranteed by the successful bidder becomes the standard of his contract. The deliveries are sampled in accordance with instructions issued by the Bureau of Mines,<sup>2</sup> and the samples are analyzed in the Bureau laboratory to determine whether the coal is of the quality guaranteed by the contractor; if it is not, a price adjustment is made.

Tipple samples (breaker samples in the anthracite region) are collected after the coal has received final treatment at the tipple or cleaning plant, or as it is loaded into railroad cars or trucks. The increments of a sample are complete cross sections of the entire stream of coal and are taken regularly throughout the period of loading, so that all parts of the shipment are represented equally. The increments comprise the gross sample, which weighs not less than 1,000 pounds; this gross sample is reduced by mechanical crushing and riffing to approximately 4 pounds and a fineness of about 8 mesh and shipped to the laboratory for further reduction of both particle size and quantity and analysis. Delivered coal samples are collected during unloading. The method of sampling, size of sample, and precautions observed are the same as in the collection of tipple samples.

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<sup>1</sup>Chief, Coal Sampling and Inspection, Bureau of Mines, College Park, Md.

<sup>2</sup>Snyder, N. H. (rev. by S. J. Aresco). Coal Sampling (Revision of Technical Paper 133). BuMines Handbook, 1957, 16 pp.

The Government, with the exception of the Tennessee Valley Authority, purchased approximately 3-1/2 million tons of coal during the 15-month period reported herein. In connection with these purchases, the Bureau analyzed 2,904 samples. These are published (table 1) for use of Government officials and the public. Such analyses of delivered coal and tipple samples provide valuable data for use in evaluating future bids. In addition, the continuous sampling of coal as delivered is a check on the practical results obtained in burning the coal.

#### ACKNOWLEDGMENTS

Samples were analyzed by the Coal Preparation and Analysis Laboratory, Bureau of Mines, Pittsburgh, Pa., under the supervision of Forrest E. Walker, chemist-in-charge. Computerization of data was done by the division of Automatic Data Processing, Denver, Colo.

#### EXPLANATION OF TABLE OF ANALYSES

The analyses in table 1 are arranged alphabetically with respect to States, counties, towns, and mines, and are listed as follows:

1. Proximate analysis--moisture, volatile matter, fixed carbon, and ash.
2. Ultimate analysis--ash, sulfur, hydrogen, carbon, nitrogen, and oxygen.
3. Caloric value--the heat of combustion of a substance, expressed in British thermal units (Btu) per pound.
4. Softening temperature of ash, when such determinations were made. Numbers above 1 indicate the number of deliveries averaged.
5. Free-swelling index, when such tests were made. Numbers in parentheses indicate the number of determinations made.
6. Hardgrove grindability index, when such tests were made.
7. Numbers above 1 in column 18 indicate the number of deliveries averaged.

The analyses are given to the nearest 0.1 percent and the British thermal units to the nearest 10, although the laboratory determinations are recorded to 0.01 percent and the nearest British thermal unit.

The tipple samples were taken by Bureau engineers at the mine tipple or breaker as the coal was loaded into railroad cars or trucks. These samples represent as nearly as possible the quality of the coal shipped. They are designated in column 5 as tipple; individual analyses are given for them.

The delivered samples were collected systematically throughout all deliveries by representatives of the Government Departments under directions

supplied by the Bureau of Mines. Yearly average analyses are given for these samples.

#### FREE-SWELLING INDEX

The free-swelling index indicates fairly closely the coking characteristics of bituminous coal when burned in fuel beds.<sup>3</sup>

#### HARDGROVE GRINDABILITY INDEX

The grindability index indicates the relative grindability or ease of pulverizing coals in comparison with a coal chosen as having a grindability of 100.

#### EXPLANATION OF SYMBOLS USED IN TABLE OF ANALYSES

Kind of sample (column 5, table 1):	Preparation (column 6, table 1):
T--tipple or breaker sample.	W--washed.
D--delivered sample.	Q--partially washed.
Temperature (column 19, table 1): 2910[ means 2910+	

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<sup>3</sup>Selvig, W. A., and W. H. Ode. An Investigation of a Laboratory Test for Determination of the Free-Swelling Index of Coal. BuMines RI 4238, 1948, 11 pp.

ANALYSES OF TIPPLE AND DELIVERED SAMPLES OF COAL

T TABLE 1. - Analyses of tipples and delivered samples during the period July 1975 through September 1976

County, town, and mine	Bed	Size of coal	Approximate tons sampled	Kind of sample	Preparation	Proximate, percent					Ultimate, percent					Calorific value, Btu			Ash-softening temperatures		Free-swelling index	Hardness/stirability index
						Moisture, as-received coal	Volatile matter	Fixed carbon	Ash	Sulfur	Hydrogen	Carbon	Nitrogen	Oxygen	As received	Dry	Number of analyses	°F	Number			
																				Dry coal		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
ALABAMA																						
MARION COUNTY																						
GLEN ALLEN: BRILLIANT TIPPLE DO	BLACK CREEK -DO-	RUN-OF-MINE, CRUSHED 1-1/2" BY 1/4"-INCH	5,064 1,511	D D	W W	5.3 6.1	39.6 40.0	56.3 55.8	4.1 4.2	1.0 1.0	- -	- -	- -	- -	13,380 13,260	14,130 14,120	7 2	2,170 2,330	1 2	3-1/2 (1) 2 (1) 2-1/2 (1)	- -	
HAMILTON: HAMILTON WINFIELD: NEW RIVER	-DO- -DO- -DO- -DO-	1-1/2" BY 3/8"-INCH -DO- -DO-	410 4,791	D D	- -	5.4 5.5	37.8 37.1	56.3 57.2	5.9 5.7	1.0 1.0	- -	- -	- -	- -	13,010 13,100	13,750 13,860	2 8	2,190 2,250	1 3	1-1/2 (1) 2-1/2 (1) 4 (1)	- -	
WALKER COUNTY																						
SUNLIGHT: SUNLIGHT	-DO- -DO-	1-1/4" BY 1/4"-INCH -DO-	3,113	D	W	2.7	40.8	52.3	6.9	1.9	-	-	-	-	13,380	13,750	5	-	-	-	-	
WINSTON COUNTY																						
POPULAR SPRINGS: BLACK POND	-DO- -DO-	RUN-OF-MINE, CRUSHED -DO-	15,044	D	-	8.1	35.7	56.2	8.1	1.0	-	-	-	-	12,370	13,460	17	2,430	3	2 (3)	-	
ALASKA																						
NENANA FIELD																						
HEALY FORK: USIBELLI	VARIOUS -DO-	RUN-OF-MINE, CRUSHED -DO-	450-616	D	-	22.3	46.6	42.1	11.3	.2	-	-	-	-	8,730	11,230	476	2,210	2	-	-	
COLORADO																						
ROUTT COUNTY																						
OAK CREEK: EDNA	WADGE -DO-	1-1/4" BY 1/4"-INCH -DO-	11,056	D	-	9.6	40.5	47.9	11.6	.8	-	-	-	-	10,830	11,920	28	2,770	3	-	-	
ILLINOIS																						
DOUGLAS COUNTY																						
MURDOCK: MURDOCK	NO. 6 -DO-	RUN-OF-MINE, CRUSHED -DO-	43,530	D	W	13.2	42.7	48.2	9.1	2.2	-	-	-	-	11,470	13,220	50	2,190	6	2-1/2 (1) 3-1/2 (4) 4 (1)	-	
KNOX COUNTY																						
VICTOPIA: MECCO	-DO- -DO-	1-1/4"-INCH BY 28-MESH -DO-	473	D	W	14.7	42.3	49.8	7.9	2.9	-	-	-	-	11,030	12,930	1	-	-	-	-	
STARK COUNTY																						
WYOMING: ALLEDALE	-DO- -DO-	RUN-OF-MINE, CRUSHED -DO-	47,077	D	W	16.6	43.1	48.8	8.1	2.8	-	-	-	-	10,870	13,030	50	2,080	9	2-1/2 (1) 3 (1) 3-1/2 (1)	-	
WILLIAMSON COUNTY																						
PITTSBURG: ORIENT NO. 04	-DO- -DO-	3/4"-INCH BY 28-MESH -DO-	2,842	D	W	4.8	39.2	50.7	10.1	2.9	-	-	-	-	12,440	13,070	3	2,080	1	6-1/2 (1)	-	

ANALYSES OF TIPPLE AND DELIVERED SAMPLES OF COAL

TABLE 1. - Analyses of tipple and delivered samples during the period July 1975 through September 1976--Continued

County, town, and mine	Bed	Size of coal	Approximate tons sampled	Kind of sample	Preparation	Proximate, percent						Ultimate, percent					Calorific value, Btu		Ash-softening temperatures		Free-swelling index	Hardgrove grindability index
						Moisture, as-received coal	Dry coal					As received	Dry	Number of analyses	°F	Number						
							Volatiles matter	Fixed carbon	Ash	Sulfur	Hydrogen						Carbon	Nitrogen	Oxygen			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
INDIANA																						
DAVISS COUNTY																						
MONTGOMERY: CENTRAL UTILITY.....	NO. IV.....	RUN-OF-MINE, CRUSHED.....	13,915	D	W	12.2	38.4	49.2	12.4	1.7	-	-	-	-	11,090	12,630	18	2,590	7	2-1/2 ( 2 ) 3 ( 3 ) 4 ( 2 )	-	
WARRICK COUNTY																						
LYNNVILLE: LYNNVILLE.....	NO. VI.....	..DO.....	6,629	D	W	12.2	42.1	46.6	11.3	3.4	-	-	-	-	11,160	12,710	10	2,090	4	3 ( 2 ) 3-1/2 ( 2 )	-	
KENTUCKY (EAST)																						
BREATHITT COUNTY																						
JACKSON: UNITED STATES COAL.....	VARIOUS.....	1-1/4" BY 1/4-INCH.....	800	T		8.2	36.3	54.1	9.6	1.0	4.8	74.5	1.5	8.6	12,060	13,140	1	2,910	1	2 ( 1 )	45	
CLAY COUNTY																						
MANCHESTER: DEBY TIPPLE.....	HORSE CREEK.....	RUN-OF-MINE, CRUSHED.....	800	T		5.7	37.2	50.3	12.5	1.7	4.8	71.3	1.4	8.3	11,990	12,710	1	2,530	1	1-1/2 ( 1 )	42	
DO.....	HAZARD NO. 4 AND HORSE CREEK	3-INCH BY 0, CRUSHED.....	250	T		5.6	36.3	51.5	12.2	1.5	4.9	72.4	1.6	7.4	12,270	13,000	1	2,460	1	4-1/2 ( 1 )	47	
KENTUCKY GEM TIPPLE.....	HAZARD NO. 4.....	RUN-OF-MINE, CRUSHED.....	1,300	T		5.5	36.8	55.0	8.2	1.0	5.3	76.0	1.7	8.1	12,770	13,510	1	2,460	1	3-1/2 ( 1 )	43	
KENTUCKY MOUNTAIN TIPPLE.....	VARIOUS.....	..DO.....	22,394	D	W	5.6	37.1	52.2	10.7	1.0	-	-	-	-	12,430	13,170	26	2,700	15	1-1/2 ( 1 ) 2 ( 2 ) 2-1/2 ( 4 ) 3 ( 2 ) 3-1/2 ( 2 ) 4 ( 1 ) 4-1/2 ( 2 ) 5 ( 1 )	-	
MANCHESTER TIPPLE.....	..DO.....	..DO.....	23,062	D		4.2	38.4	53.7	7.9	.9	-	-	-	-	13,100	13,670	24	2,530	10	2 ( 1 ) 2-1/2 ( 2 ) 3 ( 2 ) 3-1/2 ( 1 ) 4 ( 3 ) 5 ( 1 )	-	
DO.....	HORSE CREEK.....	1-1/4" BY 1/4-INCH.....	250	T		4.2	39.5	57.3	3.2	.6	5.4	81.3	1.9	7.6	13,900	14,510	1	2,910	1	4-1/2 ( 1 )	-	
DO.....	..DO.....	..DO.....	138	D		4.8	37.5	52.0	10.5	2.7	-	-	-	-	12,690	13,330	1	-	-	-	-	
DO.....	HORSE CREEK AND BLUE GEM	..DO.....	250	T		4.0	40.1	56.2	3.7	.7	5.4	80.8	1.9	7.5	13,860	14,440	1	2,910	1	4 ( 1 )	-	
ROCKET TIPPLE.....	HAZARD NO. 4.....	RUN-OF-MINE, CRUSHED.....	21,448	D		4.3	37.5	54.0	8.5	1.1	-	-	-	-	13,040	13,630	25	2,400	8	4 ( 2 ) 4-1/2 ( 1 ) 5 ( 4 )	-	
DO.....	..DO.....	1-1/4" BY 1/4-INCH.....	8,647	D		3.5	38.6	55.9	5.5	.9	-	-	-	-	13,650	14,140	9	2,870	3	4-1/2 ( 1 ) 5-1/2 ( 2 )	-	
QUEENDALE: SHAMROCK NO. 18.....	HAZARD NO. 4-A.....	RUN-OF-MINE, CRUSHED.....	1,200	T		3.8	37.2	54.3	8.5	1.2	5.2	76.5	1.6	7.0	13,220	13,740	1	2,910	1	6-1/2 ( 1 )	40	
FLOYD COUNTY																						
MARTIN: SPURLOCK PREP. PLANT.....	ELKHORN NO. 2.....	..DO.....	780	D	W	3.9	39.8	54.9	5.3	.7	-	-	-	-	13,540	14,090	1	2,910	1	4-1/2 ( 1 )	-	
DO.....	..DO.....	1-1/4" BY 1/2-INCH.....	4,990	D	W	4.7	41.2	54.3	4.5	.9	-	-	-	-	13,580	14,250	8	2,760	3	4 ( 1 ) 4-1/2 ( 1 ) 5-1/2 ( 1 )	-	
WHEELWRIGHT: WHEELWRIGHT PREP. PLANT.....	VARIOUS.....	RUN-OF-MINE, CRUSHED.....	697	D	W	4.4	37.4	55.5	7.1	.8	-	-	-	-	13,370	13,990	1	2,420	1	5 ( 1 )	-	
DO.....	ELKHORN NOS. 2 AND 3.....	1-1/4" BY 3/8-INCH.....	518	D	W	3.0	39.3	57.7	3.0	.7	-	-	-	-	14,070	14,510	1	2,450	1	5 ( 1 )	-	

ANALYSES OF TIPPLE AND DELIVERED SAMPLES OF COAL

TABLE 1. - Analyses of tipples and delivered samples during the period July 1975 through September 1976--Continued

County, town, and mine	Bed	Size of coal	Approximate tons sampled	Kind of sample	Preparation	Proximate, percent						Ultimate, percent					Calorific value, Btu		Ash-softening temperatures		Free-swelling index	Hardgrove grindability index
						Moisture, as-received coal	Dry coal				Sulfur	Hydrogen	Carbon	Nitrogen	Oxygen	As received	Dry	Number of analyses	°F			
							Volatiles matter	Fixed carbon	Ash										Number	Number		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	

KENTUCKY--CONTINUED  
(EAST)--CONTINUED

HARLAN COUNTY																					
CAWOOD:																					
MILL RIDGE TIPPLE.....	HARLAN AND DARBY.....	RUN-OF-PINE, CRUSHED.....	30,855	D		6.7	35.4	52.4	12.2	1.1	-	-	-	-	12,070	12,940	33	2,420	10	1 ( 1 ) 1-1/2 ( 1 ) 2 ( 1 ) 2-1/2 ( 2 ) 3 ( 2 ) 3-1/2 ( 1 ) 5 ( 2 )	-
GRAYS KNOB:																					
GRAYS KNOB.....	VARIOUS.....	..DO.....	23,100	D	W	5.0	38.0	53.4	8.6	1.0	-	-	-	-	12,940	13,620	26	2,610	8	4 ( 2 ) 4-1/2 ( 2 ) 5 ( 1 ) 5-1/2 ( 3 )	-
DO.....	DO.....	1-1/4- BY 1/4-INCH.....	7,919	D	W	4.8	39.2	54.2	6.6	.9	-	-	-	-	13,330	14,000	13	2,900	4	4 ( 1 ) 4-1/2 ( 1 ) 5 ( 1 ) 7 ( 1 )	-
KEOKEE (VIRGINIA):																					
GLENBROOK.....	HIGH SPLINT.....	1-1/4-INCH BY 0.....	42,851	D	W	4.5	38.5	53.4	8.1	.6	-	-	-	-	13,110	13,730	47	2,550	14	4 ( 4 ) 4-1/2 ( 5 ) 5 ( 2 ) 5-1/2 ( 3 )	-
JOHNSON COUNTY																					
SITKA:																					
CONTELL.....	UPPER ELKHORN NO. 3.....	1-1/4- BY 1/4-INCH.....	100	T		5.4	42.8	53.2	4.0	.8	5.4	78.8	1.6	9.4	13,400	14,170	1	2,910	1	4 ( 1 )	-
KNOX COUNTY																					
BARBOURVILLE:																					
RICHLAND PREP. PLANT.....	BLUE GEM.....	7/8- BY 1/4-INCH (RUN-OF-MINE, CRUSHED TO 7/8-INCH)	400	T	W	4.2	41.5	57.4	1.1	.8	5.7	82.8	1.7	7.9	14,220	14,840	1	2,220	1	4 ( 1 )	48
LAUREL COUNTY																					
EAST BERNSTADT:																					
MARGIN PREP. PLANT.....	VARIOUS.....	RUN-OF-PINE, CRUSHED.....	42,341	D	W	7.0	37.7	52.2	10.1	1.6	-	-	-	-	12,300	13,230	54	2,350	31	3 ( 1 ) 3-1/2 ( 5 ) 4 ( 12 ) 4-1/2 ( 8 ) 5 ( 5 )	-
LONDON:																					
MOSS TIPPLE.....	HORSE CREEK.....	..DO.....	600	T		4.7	38.4	53.6	8.0	1.8	5.2	76.9	1.6	6.5	13,040	13,680	1	2,160	1	5 ( 1 )	46
LONDON:																					
RODA NO. 01 STRIP.....	UPPER ELKHORN NO. 1.....	..DO.....	44,713	D		4.3	36.6	54.6	8.8	.9	-	-	-	-	12,960	13,540	52	2,590	15	2-1/2 ( 2 ) 3 ( 1 ) 3-1/2 ( 1 ) 4 ( 3 ) 4-1/2 ( 3 ) 5 ( 3 ) 5-1/2 ( 1 )	-
DO.....	UPPER ELKHORN NO. 1.....	1-1/4- BY 1/4-INCH.....	27,909	D		4.2	37.3	54.5	8.2	1.0	-	-	-	-	13,100	13,670	34	2,590	12	1-1/2 ( 1 ) 3-1/2 ( 2 ) 4 ( 3 ) 4-1/2 ( 2 ) 5 ( 3 ) 6-1/2 ( 1 )	-
MAGOFFIN COUNTY																					
SALYERSVILLE:																					
POLAND CREST TIPPLE.....	OAKLEY.....	RUN-OF-PINE, CRUSHED.....	500	T		7.9	38.9	51.9	9.2	.8	5.3	74.2	1.4	9.4	12,230	13,280	1	2,910	1	2 ( 1 )	38
MARTIN COUNTY																					
DEVILLA:																					
PEVLER PREP. PLANT.....	VARIOUS.....	..DO.....	47,716	D	W	6.1	37.8	53.6	8.6	.7	-	-	-	-	12,430	13,240	59	2,910	15	1-1/2 ( 5 ) 2 ( 1 )	-
DO.....	DO.....	2- BY 1/4-INCH.....	25,234	D	W	7.0	38.1	53.8	8.1	.7	-	-	-	-	12,400	13,330	27	2,910	6	1-1/2 ( 2 ) 2 ( 3 )	-

ANALYSES OF TIPPLE AND DELIVERED SAMPLES OF COAL

TABLE 1. - Analyses of tipples and delivered samples during the period July 1975 through September 1976—Continued

County, town, and mine	Bed	Size of coal	Approximate tons sampled	Kind of sample	Preparation	Proximate, percent			Ultimate, percent						Calorific value, Btu			Ash-softening temperatures		Free-swelling index	Hardgrove grindability index
						Moisture, as-received coal	Dry coal		Ash	Sulfur	Hydrogen	Carbon	Nitrogen	Oxygen	As received	Dry	Number of analyses	°F	Number		
							Moisture, as-received coal	Volatile matter													
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22

KENTUCKY—CONTINUED  
(EAST)—CONTINUED

MARTIN COUNTY  
--CONTINUED

DEVILLA: PEVLER PREP. PLANT (CONTINUED)	VARIOUS	1-1/4- BY 1/4-INCH	19,029	D	W	6.9	38.7	53.5	7.8	.7	-	-	-	-	12,460	13,380	26	2,910	8	1-1/2 ( 4 ) 2 ( 3 ) 2-1/2 ( 1 )	-
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MORGAN COUNTY

RELIEF: DANIS	UPPER ELKHORN NO. 3	DO	100	T		6.1	42.1	54.7	3.2	.6	5.4	80.1	1.6	9.1	13,440	14,310	1	2,910	1	2 ( 1 )	-
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ROCKCASTLE COUNTY

CONWAY: BEREA TIPPLE DO	HORSE CREEK	1-1/4- BY 3/8-INCH DO	480 4,345	T D		4.5 4.9	39.4 38.6	53.7 55.8	6.9 7.6	1.0 .9	5.2 -	77.1 -	1.5 -	8.3 -	13,220 13,070	13,840 13,740	1 5	2,980 2,910	1 3	4 ( 1 ) 4 ( 1 ) 6-1/2 ( 1 ) 5 ( 1 )	41 -
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KENTUCKY  
(WEST)

BUTLER COUNTY

SOUTH HILL: WILLIAMS	NO. 6	1-1/4- BY 1/4-INCH	3,937	D		8.6	43.1	49.6	7.3	2.2	-	-	-	-	12,410	13,580	6	2,130	2	4 ( 2 )	-
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HOPKINS COUNTY

MADISONVILLE: FIES	NO. 11	7- BY 2-INCH	3,225	D	W	5.6	45.0	48.8	6.2	3.3	-	-	-	-	12,850	13,610	6	2,110	2	3-1/2 ( 1 ) 4 ( 1 )	-
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MUHLBERG COUNTY

GREENVILLE: CANEY CREEK	NO. 12	1-1/2- BY 1/4-INCH	4,489	D	W	9.9	39.8	48.8	11.4	2.2	-	-	-	-	11,460	12,720	9	2,350	3	3-1/2 ( 1 ) 4 ( 1 ) 5 ( 1 )	-
DO	NO. 11	5- BY 2-INCH	1,634	D	W	7.5	45.1	48.6	6.3	3.3	-	-	-	-	12,520	13,530	4	2,080	1	3 ( 1 )	-
DO	DO	1-1/4-INCH BY 28-MESH	915	D	W	8.3	42.5	49.8	7.7	3.3	-	-	-	-	12,600	13,740	2	2,110	2	3-1/2 ( 1 ) 4-1/2 ( 1 )	-

MADISONVILLE (HOPKINS COUNTY):

VOGUE	DO	DO	572	D	W	8.6	41.7	51.2	7.1	3.0	-	-	-	-	12,260	13,410	1	2,140	1	3-1/2 ( 1 )	-
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MARYLAND

GARRETT COUNTY

GRANTSVILLE: DELTA TIPPLE	UPPER FREEPORT	RUN-OF-PINF, CRUSHED	300	T	W	4.7	23.4	66.1	10.5	1.8	4.5	78.6	1.4	3.2	13,170	13,820	1	2,680	1	9 ( 1 )	95
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OHIO

COSHOCTON COUNTY

COSHOCTON: BROKEN ARO	MIDDLE KITTANNING (NO. 6)	1-1/4-INCH BY 28-MESH	16,335	D	W	7.2	45.3	47.6	7.1	3.6	-	-	-	-	12,370	13,330	17	2,040	6	3 ( 2 ) 3-1/2 ( 1 ) 4 ( 4 ) 4-1/2 ( 1 )	-
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ANALYSES OF TIPPLE AND DELIVERED SAMPLES OF COAL

TABLE 1. - Analyses of tippie and delivered samples during the period July 1975 through September 1976--Continued

County, town, and mine	Bed	Size of coal	Approximate tons sampled	Kind of sample	Preparation	Proximate, percent						Ultimate, percent					Calorific value, Btu			Ash-softening temperatures		Free swelling index	Hardgrove grindability index
						Moisture, as received coal	Dry coal					As received	Dry	Number of analyses	° F	Number							
							Volatile matter	Fixed carbon	Ash	Sulfur	Hydrogen						Carbon	Nitrogen	Oxygen				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
OHIO--CONTINUED																							
HARRISON COUNTY																							
FREEPORT: VAIL	UPPER FREEPORT (NO. 7)	1-1/4- RY 3/16-INCH	800	T	W	5-7	40.2	55.0	4.8	1.6	5.3	79.0	1.6	7.7	13,190	13,990	1	2,170	1	4	( 1 )	56	
PERRY COUNTY																							
NEW LEXINGTON: SUNNTHILL PREP. PLANT	MIDDLE KITTANNING (NO. 6)	1-1/4-INCH BY 0	21,389	D	W	9-4	40.3	46.2	13.5	2.9	-	-	-	-	11,160	12,320	22	2,140	6	2-1/2 ( 1 ) 3 ( 2 ) 3-1/2 ( 1 ) 4 ( 1 ) 4-1/2 ( 1 )	-		
PENNSYLVANIA (ANTHRACITE)																							
CARBON COUNTY																							
AUDENRIED: HONEYBROOK	VARIOUS	BARLEY	909	D	W	7-0	6.6	81.7	11.7	.7	-	-	-	-	12,080	12,990	3	2,910C	3	-	-		
LUZERNE COUNTY																							
ECKLEY: BUCKLEY	DO	PEA	439	D	W	7-2	5.5	84.9	9.6	.5	-	-	-	-	12,390	13,350	1	2,910C	1	-	-		
DO	DO	RICE	358	D	W	7-2	6.0	81.2	12.8	.7	-	-	-	-	11,890	12,810	1	-	-	-	-		
DO	DO	BARLEY	3,533	D	W	8-1	6.3	83.0	10.7	.5	-	-	-	-	11,970	13,020	4	-	-	-	-		
JEDDO: JEDDO NO. 07	DO	PEA	504	D	W	5-3	4.7	85.1	10.2	.7	-	-	-	-	12,530	13,230	2	2,910C	2	-	-		
NORTHUMBERLAND COUNTY																							
SHAMOKIN: GLEN BURN	DO	RICE	150	D	W	3-0	7.2	81.3	11.5	1.0	-	-	-	-	12,730	13,120	1	2,690	1	-	-		
DO	DO	BARLEY	5,901	D	W	8-2	6.7	78.6	12.7	.9	-	-	-	-	11,810	12,870	6	2,860	5	-	-		
SCHUYLKILL COUNTY																							
MAHANAY CITY: BLASCHAK	DO	DO	8,624	D	W	9-3	6.7	81.9	11.4	.6	-	-	-	-	11,690	12,890	13	2,910C	9	-	-		
NEW PHILADELPHIA: SILVER CREEK	DO	PEA	80	D	W	5-4	5.6	84.6	9.8	.6	-	-	-	-	12,630	13,350	1	2,910C	1	-	-		
DO	DO	BARLEY	446	D	W	8-4	5.9	79.3	14.8	.7	-	-	-	-	11,420	12,470	2	2,910C	2	-	-		
PINE GROVE: FRANKLIN	DO	CHESTNUT	1,396	D	W	4-1	7.1	81.3	11.6	.6	-	-	-	-	12,640	13,180	4	2,700	3	-	-		
SCHNECK	DO	PEA	388	D	W	3-8	8.0	77.2	14.8	.6	-	-	-	-	12,160	12,640	3	2,860	2	-	-		
SHENANDAH: ROSA	DO	DO	32	D	W	5-2	6.0	85.5	8.5	.7	-	-	-	-	12,720	13,420	1	2,910C	1	-	-		
TAMAQUA: GREENWOOD	DO	DO	527	D	W	5-6	4.5	86.4	9.1	.6	-	-	-	-	12,640	13,390	2	2,910C	2	-	-		
VALLEY VIEW: KOCHER	DO	CHESTNUT	1,213	D	W	3-6	7.2	81.5	11.3	.8	-	-	-	-	12,920	13,400	6	2,560	5	-	-		
SUPERIOR	DO	BARLEY	534	D	W	6-8	9.1	75.3	15.6	.8	-	-	-	-	11,760	12,620	2	2,780	1	-	-		
PENNSYLVANIA (BITUMINOUS)																							
ALLEGHENY COUNTY																							
MCKEESPORT: WESTMORELAND MANOR TIPPLE	PITTSBURGH	1-3/4- RY 1/4-INCH	500	T		2.7	36.3	58.2	5.5	1.0	5.3	80.6	1.7	5.9	14,020	14,410	1	2,730	1	8	( 1 )	67	
REAVER COUNTY																							
SHIPPINGPORT: PEGGS RUN NO. 2	UPPER FREEPORT (E)	5- BY 1/4-INCH CRUSHED TO 1-1/4-INCH	300	T	W	4-9	39.2	52.9	7.9	2.5	5.3	76.6	1.6	6.1	13,100	13,770	1	2,070	1	6-1/2 ( 1 )	63		

ANALYSES OF TIPPLE AND DELIVERED SAMPLES OF COAL

TABLE 1. - Analyses of tipple and delivered samples during the period July 1975 through September 1976--Continued

County, town, and mine	Bed	Size of coal	Approximate tons sampled	Kind of sample	Preparation	Proximate, percent						Ultimate, percent				Calorific value, Btu			Ash-softening temperatures		Free swelling index	Moisture and density index
						Moisture, as-received coal						Dry coal				As received	Dry	Number of analyses	°F	Number		
						Moisture	Volatile matter	Fixed carbon	Ash	Sulfur	Hydrogen	Carbon	Nitrogen	Oxygen								
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	

PENNSYLVANIA--CONTINUED  
(BITUMINOUS)--CONTINUED

CAMBRIA COUNTY																						
PATTON: LECHENE NO. 1 STRIP.....	UPPER KITTANNING (C-PRIME)	RUN-OF-PINE, CRUSHED.....	250	T		5.3	25.2	61.2	13.6	2.1	4.6	75.2	1.2	3.3	12,610	13,320	1	2,530	1	8	( 1 )	86
INDIANA COUNTY																						
GLEN CAMPBELL: BEAR RUN PREP. PLANT.....	LOWER KITTANNING AND LOWER FREEPORT (B AND D)	..DO.....	1,000	T	W	1.7	23.3	70.3	6.4	1.3	4.7	84.0	1.4	2.2	14,480	14,730	1	2,410	1	9	( 1 )	110
TENNESSEE																						
CAMPBELL COUNTY																						
HIGHCLIFF: APPALACHIAN TIPPLE.....	VARIOUS.....	RUN-OF-PINE, CRUSHED.....	5,882	D		8.0	37.1	53.8	9.1	1.1	-	-	-	-	12,330	13,400	8	2,440	3	1-1/2 ( 1 ) 3-1/2 ( 1 ) 5 ( 1 )	-	-
DO.....	JELICO.....	1-1/4- BY 1/4-INCH.....	7,995	D		4.8	38.0	55.0	7.0	.9	-	-	-	-	13,140	13,800	12	2,480	4	4 ( 2 ) 5 ( 2 )	-	-
MORLEY: PIC TIPPLE.....	RICH MOUNTAIN AND MASON	RUN-OF-PINE, CRUSHED.....	200	T		3.9	38.4	54.2	7.4	1.1	5.3	76.2	1.6	8.4	13,150	13,680	1	2,170	1	5-1/2 ( 1 )	44	-
SCOTT COUNTY																						
NORMA: DEAN.....	RED ASH.....	..DO.....	63,223	D		4.9	36.2	52.2	11.6	1.6	-	-	-	-	12,520	13,170	73	2,350	31	1-1/2 ( 1 ) 2 ( 1 ) 4 ( 2 ) 4-1/2 ( 4 ) 5 ( 2 ) 5-1/2 ( 3 ) 6 ( 2 )	-	-
UTAH																						
CARBON COUNTY																						
HIAMATHA: KING.....	HIAMATHA.....	1-5/8-INCH BY 0.....	2,786	D	W	6.0	46.4	46.6	7.0	.5	-	-	-	-	12,770	13,580	3	2,410	1	-	-	-
EMERY COUNTY																						
HIAMATHA: CO-OP.....	..DO.....	1-1/4- BY 1/4-INCH.....	2,588	D		5.6	46.2	46.1	7.7	.4	-	-	-	-	12,770	13,530	4	2,100	2	-	-	-
DO.....	..DO.....	1-5/8-INCH BY 0.....	8,152	D		5.6	47.3	44.9	7.8	.5	-	-	-	-	12,700	13,450	11	2,110	3	-	-	-
SEVIER COUNTY																						
SALINA: SOUTHERN UTAH FUEL NO. 01.....	UPPER IVIE.....	RUN-OF-PINE, CRUSHED.....	15,850	D		9.4	42.5	46.2	11.3	.7	-	-	-	-	11,060	12,210	95	2,140	15	-	-	-

ANALYSES OF TIPPLE AND DELIVERED SAMPLES OF COAL

TABLE 1. - Analyses of tipple and delivered samples during the period July 1975 through September 1976--Continued

County, town, and mine	Bed	Size of coal	Approximate tons sampled	Kind of sample	Preparation	Proximate, percent						Ultimate, percent					Calorific value, Btu			Ash-softening temperatures		Free-swelling index	Hardgrove grindability index
						Moisture, as-received coal	Dry coal					As received	Dry	Number of analyses	°F	Number							
							Volatiles matter	Fixed carbon	Ash	Sulfur	Hydrogen						Carbon	Nitrogen	Oxygen				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
VIRGINIA																							
BUCHANAN COUNTY																							
GRUNDY:																							
WELLMORE MINES	VARIOUS	RUN-OF-PINE, CRUSHED	58,640	D		4.3	29.4	58.6	12.0	1.0	-	-	-	-	12,960	13,540	63	2,610	54	5 ( 3 ) 5-1/2 ( 1 ) 6 ( 1 ) 6-1/2 ( 1 ) 7 ( 1 ) 7-1/2 ( 5 ) 8 ( 3 ) 8-1/2 ( 1 )	54 55 58		
LEE COUNTY																							
SAINT CHARLES:																							
DEAN JONES NO. 05	PHILLIPS	DO	64,562	D		5.5	35.4	52.0	12.6	.8	-	-	-	-	11,900	12,590	73	2,880	21	1-1/2 ( 2 ) 2 ( 3 ) 2-1/2 ( 9 ) 3 ( 4 ) 3-1/2 ( 2 ) 4 ( 1 )	42		
WISE COUNTY																							
BLACKWOOD:																							
T AND H TIPPLE	DARBY NO. 5	DO	400	T		2.4	36.7	54.7	8.6	.9	5.1	77.5	1.4	6.5	13,550	13,880	1	2,610	1	7-1/2 ( 1 )	50		
NORTON:																							
NORTON TIPPLE	VARIOUS	DO	1,609	D		3.4	33.5	56.7	9.8	1.2	-	-	-	-	13,210	13,680	3	2,570	2	6-1/2 ( 2 )	49		
PARDEE:																							
PARDEE	HIGH SPLINT	3- BY 2-INCH	10,938	D		2.8	36.9	57.5	5.6	.6	-	-	-	-	13,800	14,200	30	2,910	4	4 ( 1 ) 5-1/2 ( 1 ) 6 ( 1 ) 6-1/2 ( 1 )	-		
WEST VIRGINIA																							
LOGAN COUNTY																							
AMHERSTDALE:																							
GUYAN NO. 01	CEDAR GROVE	2- BY 1/4-INCH	596	D W		1.9	36.8	54.7	8.5	1.0	-	-	-	-	13,710	13,980	1	-	-	-	-		
DO	DO	1-1/4- BY 1/4-INCH	2,325	D W		1.3	36.0	56.2	7.8	1.0	-	-	-	-	13,890	14,070	4	2,910	1	7 ( 1 )	-		
EARLING:																							
ELKAY	DO	1-1/4-INCH BY 1 (1-1/4- BY 1/4-INCH (W))	931	D O		1.7	36.4	58.1	5.5	.8	-	-	-	-	14,250	14,500	1	-	-	-	-		
KELLY:																							
GUYAN NO. 05	DO	1-1/4- PY 1/4-INCH	1,320	D W		2.0	36.0	53.2	10.8	.6	-	-	-	-	13,190	13,460	2	-	-	-	-		
DO	DO	1-1/4-INCH BY 0	3,332	D W		3.5	36.1	55.6	8.3	.9	-	-	-	-	13,460	13,950	4	2,730	3	6-1/2 ( 1 ) 7 ( 1 ) 7-1/2 ( 1 )	-		
NICHOLAS COUNTY																							
SUMMERSVILLE:																							
GAULEY EAGLE NO. 04 PREP. PLANT	VARIOUS	RUN-OF-PINE, CRUSHED	3,495	D W		3.3	36.7	55.5	7.8	.9	-	-	-	-	13,540	14,000	5	2,610	3	7 ( 2 )	-		
DO	DO	1-1/4- BY 3/8-INCH	20,002	D W		3.5	37.0	55.9	7.1	.9	-	-	-	-	13,650	14,140	21	2,920	6	7 ( 4 ) 7-1/2 ( 2 )	-		
WAYNE COUNTY																							
CRUM:																							
MARK	ALMA	1-1/4- BY 1/4-INCH	2,849	D W		3.4	41.4	54.0	4.6	.9	-	-	-	-	13,810	14,300	3	2,500	2	4 ( 1 ) 4-1/2 ( 1 )	-		
WYOMING COUNTY																							
BOLT (RALEIGH COUNTY):																							
BOLT NO. 40	VARIOUS	RUN-OF-PINE, CRUSHED	15,170	D		3.9	27.4	59.5	13.1	1.4	-	-	-	-	12,810	13,330	16	2,290	1	8-1/2 ( 1 )	-		

ANALYSES OF TIPPLE AND DELIVERED SAMPLES OF COAL

TABLE 1. - Analyses of tipples and delivered samples during the period July 1975 through September 1976--Continued

County, town, and mine	Bed	Size of coal	Approximate tons sampled	Kind of sample	Preparation	Proximate, percent			Ultimate, percent						Calorific value, Btu		Ash-softening temperatures		Free-swelling index	Hardgrove grindability index	
						Moisture, as-received coal	Dry coal		Sulfur	Hydrogen	Carbon	Nitrogen	Oxygen	As received	Dry	Number of analyses	Ash-softening temperatures				
							Volatiles matter	Fixed carbon									Ash	°F			Number
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22

WYOMING

SHERIDAN COUNTY

SHERIDAN:																						
BIG HORN.....	MONARCH.....	1-1/4- FY 1/4-INCH.....	524	D		19.2	43.4	49.7	6.9	.8	-	-	-	-	9,920	12,280	2	2,260	1	-	-	

## APPENDIX

Previous publications in this series are--

- Snyder, N. H., and S. J. Aresco. Analyses of Tipple and Delivered Samples of Coal (Collected During the Fiscal Years 1948 to 1950, Inclusive). BuMines Bull. 516, 1953, 133 pp.
- Aresco, S. J., and C. P. Haller. Analyses of Tipple and Delivered Samples of Coal (Collected During the Fiscal Year 1951). BuMines RI 4934, 1953, 93 pp.
- \_\_\_\_\_. Analyses of Tipple and Delivered Samples of Coal (Collected During the Fiscal Year 1952). BuMines RI 4972, 1953, 84 pp.
- Aresco, S. J., C. P. Haller, and R. F. Abernethy. Analyses of Tipple and Delivered Samples of Coal (Collected During the Fiscal Year 1953). BuMines RI 5085, 1955, 82 pp.
- \_\_\_\_\_. Analyses of Tipple and Delivered Samples of Coal (Collected During the Fiscal Year 1954). BuMines RI 5221, 1956, 77 pp.
- \_\_\_\_\_. Analyses of Tipple and Delivered Samples of Coal (Collected During the Fiscal Year 1955). BuMines RI 5270, 1956, 67 pp.
- \_\_\_\_\_. Analyses of Tipple and Delivered Samples of Coal (Collected During the Fiscal Year 1956). BuMines RI 5332, 1957, 67 pp.
- \_\_\_\_\_. Analyses of Tipple and Delivered Samples of Coal (Collected During the Fiscal Year 1957). BuMines RI 5401, 1958, 59 pp.
- \_\_\_\_\_. Analyses of Tipple and Delivered Samples of Coal (Collected During the Fiscal Year 1958). BuMines RI 5489, 1959, 54 pp.
- \_\_\_\_\_. Analyses of Tipple and Delivered Samples of Coal (Collected During the Fiscal Year 1959). BuMines RI 5615, 1960, 59 pp.
- \_\_\_\_\_. Analyses of Tipple and Delivered Samples of Coal (Collected During the Fiscal Year 1960). BuMines RI 5792, 1961, 44 pp.
- \_\_\_\_\_. Analyses of Tipple and Delivered Samples of Coal (Collected During the Fiscal Year 1961). BuMines RI 6086, 1962, 41 pp.
- Aresco, S. J., J. B. Janus, and F. E. Walker. Analyses of Tipple and Delivered Samples of Coal. Collected During the Fiscal Year 1962. BuMines RI 6300, 1963, 46 pp.
- \_\_\_\_\_. Analyses of Tipple and Delivered Samples of Coal. Collected During the Fiscal Year 1963. BuMines RI 6461, 1964, 38 pp.
- \_\_\_\_\_. Analyses of Tipple and Delivered Samples of Coal. Collected During the Fiscal Year 1964. BuMines RI 6622, 1965, 38 pp.

\_\_\_\_\_. Analyses of Tipple and Delivered Samples of Coal. Collected During the Fiscal Year 1965. BuMines RI 6792, 1966, 49 pp.

Aresco, S. J., and J. B. Janus. Analyses of Tipple and Delivered Samples of Coal. Collected During Fiscal Year 1966. BuMines RI 6904, 1967, 43 pp.

\_\_\_\_\_. Analyses of Tipple and Delivered Samples of Coal. Collected During Fiscal Year 1967. BuMines RI 7104, 1968, 43 pp.

\_\_\_\_\_. Analyses of Tipple and Delivered Samples of Coal. Collected During Fiscal Year 1968. BuMines RI 7219, 1969, 31 pp.

Staff, Coal Sampling and Inspection. Analyses of Tipple and Delivered Samples of Coal. Collected During Fiscal Year 1969. BuMines RI 7346, 1970, 29 pp.

\_\_\_\_\_. Analyses of Tipple and Delivered Samples of Coal. Collected During Fiscal Year 1970. BuMines RI 7490, 1971, 20 pp.

\_\_\_\_\_. Analyses of Tipple and Delivered Samples of Coal. Collected During Fiscal Year 1971. BuMines RI 7588, 1972, 20 pp.

Janus, J. B., and B. S. Shirley. Analyses of Tipple and Delivered Samples of Coal. Collected During Fiscal Year 1972. BuMines RI 7712, 1973, 17 pp.

\_\_\_\_\_. Analyses of Tipple and Delivered Samples of Coal. Collected During Fiscal Year 1973. BuMines RI 7848, 1974, 15 pp.

Janus, J. B. Analyses of Tipple and Delivered Samples of Coal. Collected During Fiscal Year 1974. BuMines RI 7997, 1975, 13 pp.

\_\_\_\_\_. Analyses of Tipple and Delivered Samples of Coal. Collected During Fiscal Year 1975. BuMines RI 8115, 1976, 11 pp.

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HARLAN AND DARBY BED.....	6
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HAZARD NO. 4 BED.....	5
HAZARD NO. 4-A BED.....	5
HEALY FORK, AK.....	4
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HIGH SPLINT BED.....	6, 10
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JEDDO NO. 07 MINE.....	8
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JELICO BED.....	9
JOHNSON COUNTY, KY.....	6

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LECHENE NO. 1 STRIP MINE.....	9
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LOGAN COUNTY, WV.....	10
LONDON, KY.....	6
LOWER KITTANNING AND LOWER FREEPORT (B AND D) BED.....	9
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LYNNVILLE MINE.....	5

LYNNVILLE, IN.....	5
LONDON, KY.....	6
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NO. 11 BED.....	7
NO. 11 BED.....	7
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SUNNYHILL PREP. PLANT.....	8
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T AND H TIPPLE.....	10
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WAYNE COUNTY, WV.....	10
WELLMORE MINES MINE.....	10
WESTMORELAND MANOR TIPPLE.....	8
WHEELWRIGHT PREP. PLANT.....	5
WHEELWRIGHT, KY.....	5
WILLIAMS MINE.....	7
WILLIAMSON COUNTY, IL.....	4
WINFIELD, AL.....	4
WINSTON COUNTY, AL.....	4
WISE COUNTY, VA.....	10
WYOMING COUNTY, WV.....	10
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