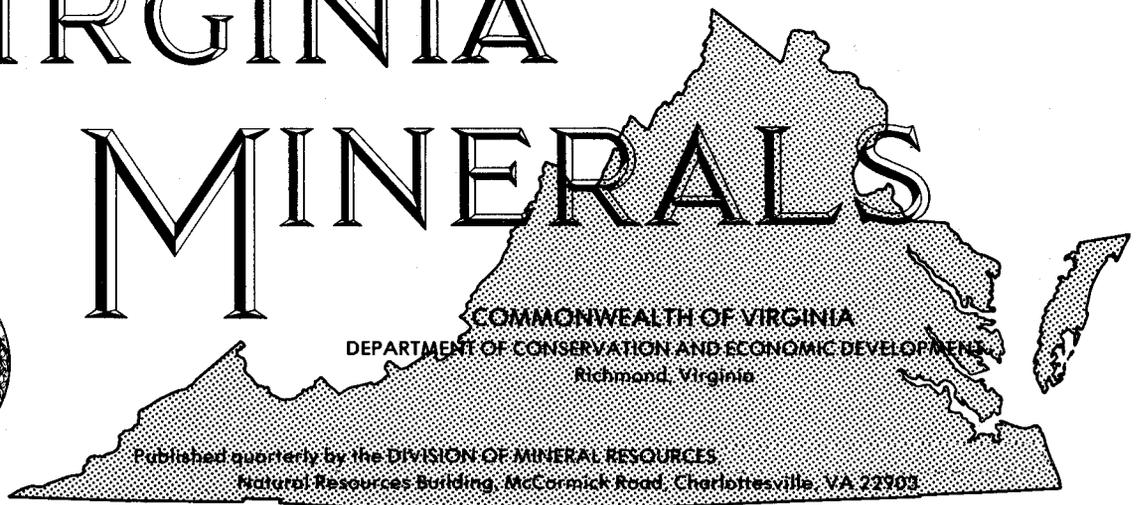


VIRGINIA

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SUMMARY OF COAL RESOURCES IN VIRGINIA

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Coal occurs in three areas in Virginia (Figure 1): the Richmond and Farmville basins, the Valley coal fields, and the Southwest Virginia coal field. In 1975 Virginia ranked 6th in total shipments of bituminous coal (Westerstrom and Harris, 1977). Production in 1977 was 37,513,131 million short tons (34,025,515 metric tons) from the Southwest Virginia coal field. Approximately 33 percent of the total production in 1977 was by strip-mining methods (Virginia Department of Labor and Industry, 1978).



Figure 1. Index map of Virginia coal fields.

Coal has been mined in Virginia since colonial times from Triassic-age rocks in the Richmond and Farmville basins. Initial production was from the Richmond basin that lies within parts of Amelia, Chesterfield, Goochland, Henrico, and Powhatan counties. The coal in this field is chiefly bituminous and in some areas has been altered to coke by igneous intrusions. Mining began in the Richmond basin in the early 1700's and continued into the early part of this century. Cumulative production for the Richmond

basin was slightly more than 8 million short tons (7 million metric tons) (Brown & Others, 1952). The Farmville basin contains some coal that was mined in Cumberland County in the late 1800's.

The Valley coal fields lie within 10 small areas in Augusta, Bland, Botetourt, Montgomery, Pulaski, Roanoke, Rockingham, Smyth, and Wytche counties. The coal in these fields is Mississippian in age and is of semianthracite and bituminous rank. Mining began in the Valley fields before the 1860's and continued until 1971. Cumulative production from the Valley coal fields is about 7 million short tons (6 million metric tons) (Brown and Others, 1952).

All current production is from the Southwest Virginia coal field in Buchanan, Dickenson, Lee, Russell, Scott, Tazewell, and Wise counties. The coal is of Pennsylvanian age and ranges from high- to low-volatile bituminous in rank. Mining in this field began in the 1880's.

The coal-bearing strata in the Southwest Virginia coal field are generally flat lying to gently dipping. The upturned leading edge of the Cumberland thrust sheet forms the northwestern limit of the coal field in Dickenson and Wise counties. To the northeast and southwest, the Southwest Virginia field extends to the West Virginia and Kentucky state lines respectively. The southeastern edge of the coal field is bounded in Russell and Tazewell counties by a series of thrust faults. In Wise County the Pigeon Creek flexure and the Powell Valley anticline form the southeastern edge of the coal field. Other major structural features of the field are the Russell Fork fault, a northwest

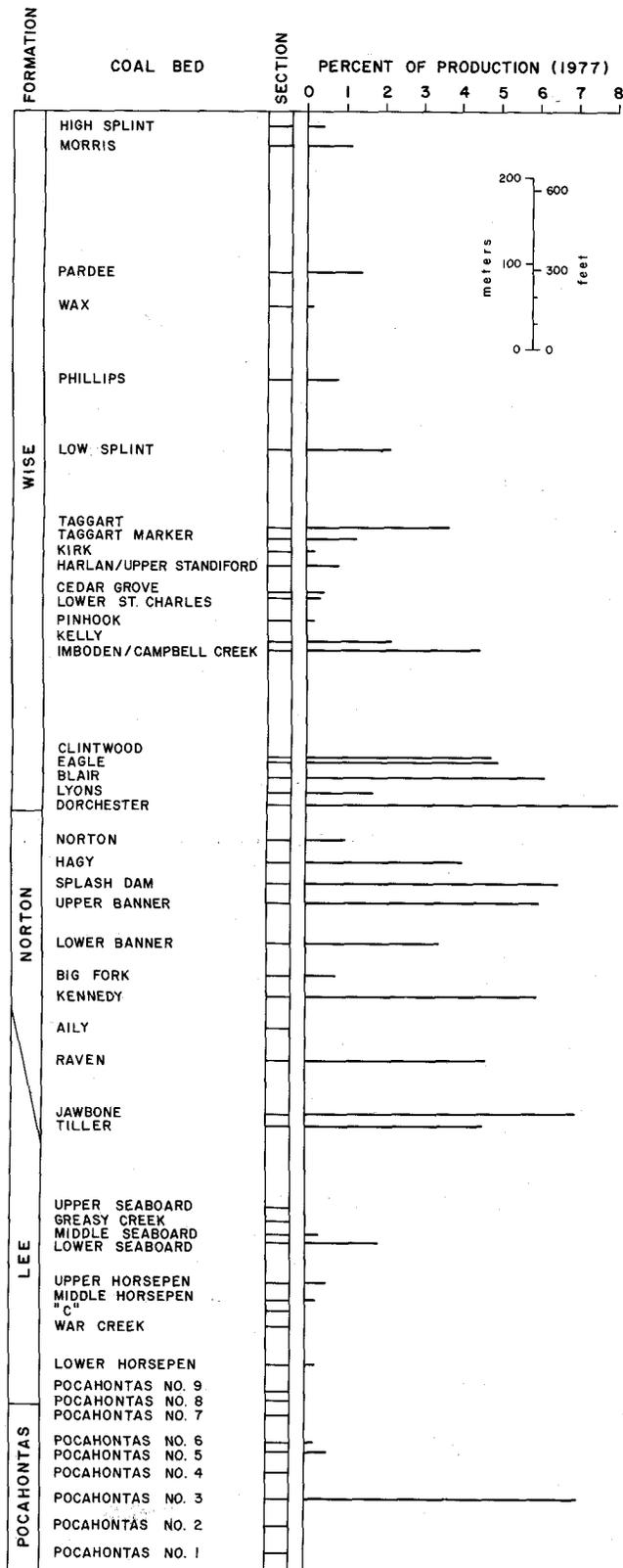


Figure 2. Generalized stratigraphic section of the Southwest Virginia coal field and percent of production data by bed for 1977.

trending strike-slip fault in Buchanan and Dickenson counties and the Middlesboro syncline that extends northeastward from Kentucky into Wise County.

The coal occurs in a sequence of sandstone, siltstone, shale, and occasional thin clastic and calcareous zones of marine origin. The oldest formation is the Pocahontas Formation, which is exposed at the surface in Tazewell County. This formation is present in the subsurface in Buchanan, Dickenson, Russell, Scott, and Wise counties. The Pocahontas coals (Figure 2, Nos. 1-7) are the important coals in this formation and are low-volatile bituminous in rank. The Pocahontas Formation is overlain in the central and southwestern part of the coal field by the Lee Formation. The Lee Formation may be partially equivalent to the New River Formation of West Virginia. Coals of the Lee Formation are shown in Figure 2. It contains three prominent quartz arenite beds 100 to 450 feet (30 to 137 m) thick and separated by 200 to 500 feet (61 to 152 m) of siltstone, sandstone, shale, and coal (Miller, 1974). Immediately above the Lee Formation is the Norton Formation, which includes the Kennedy, Big Fork, Lower Banner, Upper Banner, Splash Dam, Hagy, and Norton coals. The Norton Formation in places includes the Tiller, Jawbone, Raven, and Aily coals because of a thinning of the Lee Formation in a southeasterly direction (Miller, 1974). The youngest coal-bearing formation in the Southwest Virginia field is the Wise Formation. Coal beds in this formation are shown in Figure 2.

Total coal production and strip mine production for the years 1915 to present are shown in Figure 3. Pre-1950 data are from Brown and Others (1952), and data for 1950 to the present are from the Annual Reports of the Virginia Department of Labor and Industry. Strip mining began prior to 1950, but because of incomplete data, the production curve is not shown before that year.

In 1977, total coal production in Virginia was approximately 37.5 million short tons (34 million metric tons) as reported by the Virginia Department of Labor and Industry. Figure 2 shows the production by individual bed; beds with reported production less than 0.1 percent of the total or approximately 37,000 short tons (33,560 metric tons) were excluded. Vertical intervals shown between coal beds are approximate. Production figures for the Imboden and Campbell Creek coals were reported separately but are shown together in this figure because they are known to be the same coal (Brown and Others, 1952). The same rationale was used for the Harlan/Upper Standiford entry. A coal may have more than one name in different parts of the Southwest Virginia coal field.

POCAHONTAS FORMATION

Pocahontas No. 1 and 2 Coal Beds: The Pocahontas No. 1 and 2 coal beds are generally thin and are not economic at present (Miller, 1974).

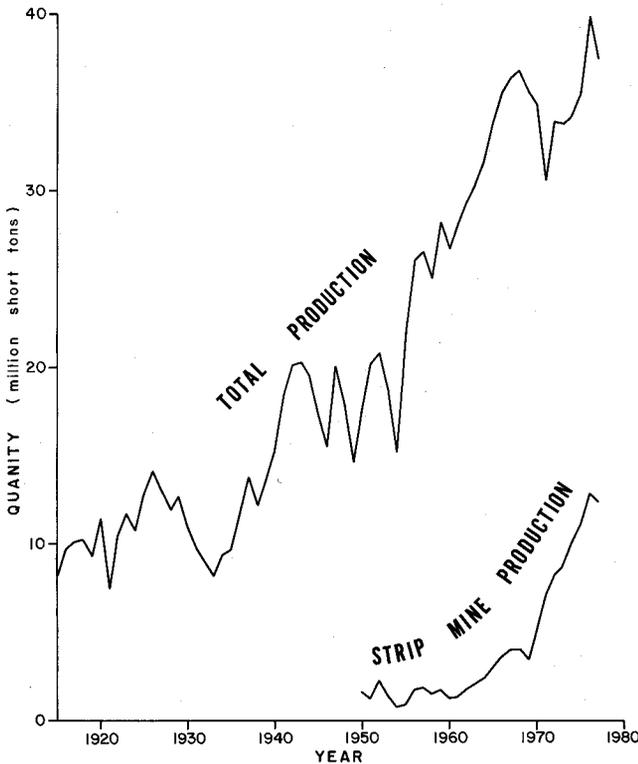


Figure 3. Total coal production since 1915 and strip mine production since 1950 for Virginia.

Pocahontas No. 3 Coal Bed: The Pocahontas No. 3 coal bed is the most economically important of the Pocahontas Formation coals. This bed crops out in Tazewell County and is present in the subsurface in Buchanan, Dickenson, Russell and Wise counties. The Pocahontas No. 3 and other coals of the Pocahontas Formation may be equivalent to the coal at Burtons Ford in Russell County and southwest into Scott County. The Pocahontas No. 3 is a medium- to low-volatile bituminous coal and ranges in thickness from 1.7 to 11 feet (0.51 to 3.35 m) with a usual thickness of between 4 to 5 feet (1.2 to 1.5 m). Most of the present Pocahontas No. 3 production is from shaft mines in Buchanan County where the coal is about 1300 feet (396 m) below the surface (Brown and Others, 1952 and Miller, 1974). The range of analyses for the Pocahontas No. 3 coal on an as-received basis is as follows (U. S. Bureau of Mines, 1944 and Swanson and Others, 1976):

Moisture (%)	0.8- 2.3
Volatile matter (%)	15.3-22.8
Fixed carbon (%)	68.9-76.0
Ash (%)	3.3-16.0
Sulfur (%)	0.5- 0.9
BTU	12,840-14,940

Pocahontas No. 4 Coal Bed: The Pocahontas No. 4 coal bed is approximately 30 to 120 feet (9 to 37 m) above the Pocahontas No. 3 coal bed. The coal crops out in Tazewell County and is present in the subsurface in Buchanan, Dickenson, Russell, and Wise coun-

ties. The Pocahontas No. 4 coal is a low-volatile bituminous coal and ranges from 1.2 to 7 feet (0.36 to 2.13 m) in thickness (Brown and Others, 1952 and Miller, 1974).

Pocahontas No. 5 Coal Bed: The Pocahontas No. 5 coal is 35 to 100 feet (11 to 30 m) above the Pocahontas No. 4 coal bed. The coal crops out in Tazewell County and is present in the subsurface in Buchanan, Dickenson, Russell, and Wise counties. The Pocahontas No. 5 coal ranges in thickness from 1.2 to 7 feet (0.36 to 2.13 m) and is a medium-volatile bituminous coal (Brown and Others, 1952 and Miller, 1974).

Pocahontas No. 6 Coal Bed: The Pocahontas No. 6 coal is approximately 200 feet (61 m) above the Pocahontas No. 3. The No. 6 crops out in Tazewell County and is present in the subsurface in Buchanan and Russell counties. This coal is generally less than two feet (0.61 m) thick (Miller, 1974).

Pocahontas No. 7 Coal Bed: The Pocahontas No. 7 coal bed crops out in Tazewell County and is present in the subsurface in Buchanan and Russell counties. This coal is generally less than two feet (0.61 m) thick (Miller, 1974).

LEE FORMATION

Pocahontas No. 8 and 9 Coal Beds: The Pocahontas No. 8 and 9 coal beds are the lowest coal beds in the Lee Formation. They crop out in Tazewell County and are present in the subsurface in Buchanan County. These coals are normally less than one foot (0.3 m) thick (Miller, 1974).

Lower Horsepen Coal Bed: The Lower Horsepen coal is 100 to 150 feet (30 to 46 m) above the base of the Lee Formation. The coal crops out in Tazewell County and is present in the subsurface in Buchanan County. This coal may also be present in the subsurface in other parts of the coal field. The Lower Horsepen coal ranges in thickness from 1.5 to 2.5 feet (0.46 to 0.76 m) (Miller, 1974).

War Creek Coal Bed: The War Creek coal bed is 120 to 170 feet (37 to 52 m) above the Lower Horsepen coal and is present in Buchanan, Dickenson, Russell, Scott, Tazewell, and Wise counties. The coal is up to six feet (1.8 m) thick in Buchanan County (Miller, 1974).

Middle Horsepen Coal Bed: The Middle Horsepen coal bed is about 100 feet (30.5 m) above the War Creek coal. The coal crops out in Tazewell County and is present in the subsurface in Buchanan and possibly other counties in the coal field. The Middle Horsepen coal is generally less than two feet (0.61 m) thick (Miller, 1974). An average of two analyses of Middle Horsepen coal on an as-received basis is as follows (Thomson and York, 1975):

Moisture (%)	3.2
Ash (%)	9.2
Sulfur (%)	0.5
BTU	13,730

Upper Horsepen Coal Bed: The Upper Horsepen coal bed is about 50 feet (15 m) above the Middle Horsepen coal. The coal crops out in Tazewell County and is present in the subsurface in Buchanan County and possibly in other counties in the coal field. The Upper Horsepen coal is generally less than two feet (0.61 m) thick (Miller, 1974).

Seaboard Coal Beds: The Seaboard coal beds are made up of the Lower Seaboard coal (about 150 feet, 46 m, above the Upper Horsepen), the Middle Seaboard coal (about 30 feet, 9 m, above the Lower Seaboard), and the Upper Seaboard coal (about 90 to 110 feet, 27 to 34 m) above the Middle Seaboard. These coal beds are generally less than two feet (0.61 m) (Miller, 1974) thick. Most of the Lower and Middle Seaboard production is from Tazewell County.

Tiller Coal Bed: The Tiller coal bed is about 300 to 325 feet (91 to 99 m) above the Upper Seaboard coal and crops out in Buchanan, Dickenson, Russell, Tazewell and Wise counties. In the first four counties the Tiller coal and the overlying coals in the Lee Formation are included in the Norton Formation where the Bee Rock Sandstone Member (upper quartz arenite) of the Lee Formation is absent. The Tiller coal ranges in thickness from 1.5 to 5 feet (0.46 to 1.5 m) (Miller, 1974). Most of the production for the Tiller coal bed is from Buchanan, Dickenson, and Russell counties. The range of analyses for the Tiller coal bed on an as-received basis is as follows (U.S. Bureau of Mines, 1944 and Swanson and Others, 1976):

Moisture (%)	1.8- 3.0
Volatile Matter (%)	26.7-32.5
Fixed carbon (%)	56.8-63.8
Ash (%)	6.1-12.2
Sulfur (%)	0.4- 0.7
BTU	13,260-14,180

Jawbone Coal Bed: The Jawbone coal bed is a high-volatile A to low-volatile bituminous coal and may be as much as 100 feet (30 m) above the Tiller coal bed, although in some places the two coals join to form one bed. The Jawbone coal is present in Buchanan, Dickenson, Russell, Tazewell and Wise counties. This coal is as much as 6.5 feet (2 m) thick, and when combined with the Tiller coal may form a coal zone of more than 15 feet (4.6 m) (Miller, 1974). Most of the production for the Jawbone coal is from Buchanan, Russell, and Wise counties. The range of analyses for the Jawbone coal on an as-received basis is as follows: (U. S. Bureau of Mines, 1944 and Swanson and Others, 1976):

Moisture (%)	1.2- 4.3
Volatile Matter (%)	17.9-32.9
Fixed carbon (%)	45.2-71.2
Ash (%)	6.5-30.9
Sulfur (%)	0.5- 1.2
BTU	10,070-14,250

Raven Coal Bed: The Raven coal bed is a high-volatile A to medium-volatile bituminous coal and is as much as 200 feet (61 m) above the Jawbone coal. The

coal crops out in Buchanan, Dickenson, Russell, and Wise counties. The thickness ranges from less than 2 feet to 6 feet (0.61 to 1.8 m) (Miller, 1974). Most of the Raven coal production is from Buchanan County. The range of analyses for the Raven coal on an as-received basis is as follows (U. S. Bureau of Mines, 1944):

Moisture (%)	1.4- 5.5
Volatile matter (%)	28.9-33.4
Fixed carbon (%)	55.1-63.9
Ash (%)	2.8-12.2
Sulfur (%)	0.4- 0.8
BTU	12,980-14,940

Aily Coal Bed: The Aily coal bed is 100 to 150 feet (30 to 46 m) above the Raven coal. The coal crops out in Buchanan, Dickenson, Russell, Tazewell, and Wise counties and ranges in thickness from 1.5 to 3 feet (0.46 to .9 m) (Miller, 1974).

NORTON FORMATION

Kennedy Coal Bed: The Kennedy coal bed is 30 to 150 feet (9 to 46 m) above the Aily coal and crops out in Buchanan, Dickenson, Russell, Tazewell and Wise counties. The coal ranges from 2 to 10 feet (0.61 to 3 m) thick (Miller, 1974). Most of the 1977 Kennedy coal production is from Buchanan County. The range of analyses on an as-received basis is as follows (U. S. Bureau of Mines, 1944 and Swanson and Others, 1976):

Moisture (%)	1.6- 4.7
Volatile matter (%)	25.0-36.4
Fixed carbon (%)	43.2-69.0
Ash (%)	3.3-27.0
Sulfur (%)	0.5- 2.0
BTU	10,380-14,790

Big Fork Coal Bed: The Big Fork coal bed is 30 to 150 feet (9 to 46 m) above the Kennedy coal in Buchanan, Russell, and Tazewell counties. The coal is from two to three feet (0.61 to 0.91 m) thick (Brown and Others, 1952). All production from the Big Fork coal was from Russell County in 1977.

Lower Banner Coal Bed: The Lower Banner coal bed is 180 to 275 feet (55 to 84 m) above the Kennedy coal and crops out in Buchanan, Dickenson, Russell, and Wise counties. The thickness of the coal ranges from two to six feet (0.61 to 1.83 m) (Brown and Others, 1952). Most of the Lower Banner coal production was from Buchanan and Dickenson counties in 1977. The range of analyses on an as-received basis is as follows (U. S. Bureau of Mines, 1944 and Swanson and Others, 1976):

Moisture (%)	1.2- 8.1
Volatile matter (%)	20.1-36.6
Fixed carbon (%)	54.6-70.9
Ash (%)	5.2-11.2
Sulfur (%)	0.4- 1.9
BTU	13,030-14,630

Upper Banner Coal Bed: The Upper Banner coal bed is approximately 30 to 150 feet (9 to 46 m) above the

Lower Banner coal. The coal crops out in Dickenson, Russell, and Wise counties and is a high-volatile A bituminous coal. The Upper Banner ranges in thickness from 4 to 7 feet (1.22 to 2.13 m) (Brown and Others, 1952). Most of the 1977 production from the Upper Banner coal was from Dickenson and Wise counties. The range of analyses on an as-received basis is as follows (U. S. Bureau of Mines, 1944 and Swanson and Others, 1976):

Moisture (%)	1.6- 3.9
Volatile matter (%)	30.4-37.4
Fixed carbon (%)	51.9-63.1
Ash (%)	4.1-14.4
Sulfur (%)	0.5- 1.3
BTU	12,660-14,690

Splash Dam Coal Bed: The Splash Dam coal bed is 60 to 90 feet (18 to 27 m) above the Upper Banner coal and crops out in Buchanan, Dickenson, Russell and Wise counties. The coal ranges in thickness from 1 to 4 feet (0.3 to 1.2 m) (Brown and Others, 1952). Most of the Splash Dam coal production in 1977 was from Buchanan and Dickenson counties. The range of analyses on an as-received basis is as follows (U. S. Bureau of Mines, 1944):

Moisture (%)	1.0- 4.3
Volatile matter (%)	25.0-31.3
Fixed carbon (%)	56.2-64.8
Ash (%)	4.4-17.6
Sulfur (%)	0.6- 1.6
BTU	12,690-14,430

Hagy Coal Bed: The Hagy coal bed ranges from 80 to 110 feet (24 to 34 m) above the Splash Dam coal and crops out in Buchanan, Dickenson, and Wise counties. The Hagy coal is from 1.2 to 4 feet (0.37 to 1.2 m) in thickness (Brown and Others, 1952). Most of the production from the Hagy coal was from Buchanan County in 1977. The average analysis for four samples on an as-received basis is as follows (Thomson and York, 1975):

Moisture (%)	2.3
Ash (%)	8.1
Sulfur (%)	1.8
BTU	13,880

Norton Coal Bed: The Norton coal bed is 90 to 370 feet (27 to 113 m) above the Hagy coal and crops out in Dickenson and Wise counties. The coal is as much as 5 feet (1.5 m) thick near Norton (Brown and Others, 1952). The range of analyses on an as-received basis is as follows (U. S. Bureau of Mines, 1944):

Moisture (%)	2.1- 4.1
Volatile matter (%)	31.2-33.5
Fixed carbon (%)	56.1-58.2
Ash (%)	6.4-10.2
Sulfur (%)	0.8- 1.5
BTU	13,390-13,900

WISE FORMATION

Dorchester Coal Bed: The Dorchester coal bed is the

lowest coal bed in the Wise Formation. The coal ranges in thickness from 1.5 to 6 feet (0.46 to 1.83 m) and crops out in Buchanan, Dickenson, Lee, Russell, and Wise counties (Brown and Others, 1952). Most of the 1977 production from the Dorchester coal was from Buchanan and Wise counties. The range of analyses for the Dorchester coal on an as-received basis is as follows (U. S. Bureau of Mines, 1944):

Moisture (%)	1.2- 5.3
Volatile matter (%)	25.8-36.1
Fixed carbon (%)	53.4-63.4
Ash (%)	2.2-16.1
Sulfur (%)	0.6- 2.9
BTU	12,710-14,570

Lyons Coal Bed: The Lyons coal bed is 40 to 75 feet (12 to 23 m) above the Dorchester coal and crops out in Dickenson, Lee, and Wise counties. The coal ranges from 1.3 to 2.7 feet (0.4 to 0.82 m) in thickness (Brown and Others, 1952). Most of the Lyons coal production in 1977 was from Wise County.

Blair Coal Bed: The Blair coal bed is about 60 feet (18 m) above the Dorchester coal in Buchanan county and from 20 to 80 feet (6 to 24 m) above the Lyons coal in Dickenson, Lee, and Wise counties. The coal ranges from 1.5 to 4 feet (0.45 to 1.2 m) thick (Brown and Others, 1952). Most of the Blair coal production in 1977 was from Buchanan and Wise counties. The range of analyses on an as-received basis is as follows (U. S. Bureau of Mines, 1944):

Moisture (%)	1.5-11.0
Volatile matter (%)	25.9-35.2
Fixed carbon (%)	50.6-64.2
Ash (%)	2.0-20.2
Sulfur (%)	0.5- 3.9
BTU	11,910-14,490

Eagle Coal Bed: The Eagle coal bed is 45 to 50 feet (14 to 15 m) above the Blair coal and crops out in Buchanan, Dickenson, and Wise counties. The coal is from 1.3 to 5 feet (0.4 to 1.5 m) thick (Brown and Others, 1952). Most of the Eagle coal production was from Buchanan and Dickenson counties in 1977.

Clintwood Coal Bed: The Clintwood coal bed is 70 to 150 feet (21 to 46 m) above the Blair coal and crops out in Buchanan, Dickenson, Lee, and Wise counties. The coal ranges in thickness from 2.5 to 11 feet (0.76 to 3.35 m) (Brown and Others, 1952). Most of the Clintwood coal production in 1977 was from Buchanan, Dickenson and Wise counties. The range of analyses for the coal on an as-received basis is as follows (U. S. Bureau of Mines, 1944):

Moisture (%)	1.3-3.2
Volatile matter (%)	30.5-38.5
Fixed carbon (%)	56.1-61.9
Ash (%)	2.2- 8.5
Sulfur (%)	0.7- 1.7
BTU	12,780-14,530

Imboden Coal Bed: The Imboden coal bed is 225 to

500 feet (69 to 152 m) above the Clintwood coal and crops out in Buchanan, Dickenson, Lee and Wise counties. The thickness of the Imboden coal ranges from 1.5 to 10 feet (0.46 to 3 m). In Buchanan County and parts of Dickenson County, the Imboden coal is called the Campbell Creek coal (Brown and Others, 1952). Most of the 1977 production from the Imboden coal was from Wise County. The range of analyses on an as-received basis is as follows (U. S. Bureau of Mines, 1955):

Moisture (%)	1.8- 2.8
Volatile matter (%)	33.0-35.7
Fixed carbon (%)	53.6-61.3
Ash (%)	4.0-10.4
Sulfur (%)	0.6- 0.9
BTU	13,310-14,450

Kelly Coal Bed: The Kelly coal bed is 20 to 70 feet (6.1 to 21 m) above the Imboden coal in Dickenson, Lee, and Wise counties. The coal is as much as 4.8 feet (1.46 m) thick in Wise County (Brown and Others, 1952). In 1977, most of the production from the Kelly coal was from Wise County.

Harlan Coal Bed: The Harlan coal bed is approximately 250 feet (76 m) above the Kelly coal and crops out in Lee and Wise counties. In parts of its outcrop area, the Harlan coal is called the Upper Standiford coal. The coal ranges from 2.7 to 6.5 feet (0.82 to 1.98 m) thick (Brown and Others, 1952). Most of the 1977 production from the Harlan coal was from Wise County.

Taggart Marker Coal Bed: The Taggart Marker coal bed is approximately 380 feet (116 m) above the Kelly coal and crops out in Lee and Wise counties. The coal ranges in thickness from 1.5 to 3.5 feet (0.46 to 1.1 m) (Brown and Others, 1952). All of the Taggart Marker coal production in 1977 was from Wise County. The range of analyses on an as-received basis for the Taggart Marker coal is as follows (U. S. Bureau of Mines, 1944):

Moisture (%)	1.5- 6.4
Volatile matter (%)	33.5-37.5
Fixed carbon (%)	55.9-59.4
Ash (%)	2.5- 5.6
Sulfur (%)	0.5- 0.8
BTU	13,810-14,800

Taggart Coal Bed: The Taggart coal bed is 20 to 75 feet (6.1 to 23 m) above the Taggart Marker coal and crops out in Lee and Wise counties. The coal ranges in thickness from 2.8 to 6.5 feet (0.85 to 1.98 m) (Brown and Others, 1952). The range of analyses on an as-received basis is as follows (U. S. Bureau of Mines, 1944):

Moisture (%)	1.5- 4.3
Volatile matter (%)	32.8-38.4
Fixed carbon (%)	55.4-61.6
Ash (%)	1.7- 4.6
Sulfur (%)	0.4- 0.8
BTU	13,720-14,810

Low Splint Coal Bed: The Low Splint coal bed is 200 to 400 feet (61 to 122 m) above the Taggart coal and crops out in Lee and Wise counties. The coal ranges from 2.5 to 5.5 feet (0.76 to 1.68 m) thick (Brown and Others, 1952). A range of analyses on an as-received basis is as follows (U. S. Bureau of Mines, 1944):

Moisture (%)	2.1- 3.7
Volatile matter (%)	34.5-37.5
Fixed carbon (%)	51.3-54.7
Ash (%)	5.6-10.5
Sulfur (%)	0.7- 1.1
BTU	12,790-13,910

Phillips Coal Bed: The Phillips coal bed is 250 to 400 feet (76 to 122 m) above the Low Splint coal and crops out in Lee and Wise counties. The coal ranges from 2 to 4 feet (0.61 to 1.22 m) in thickness (Brown and Others, 1952).

Pardee Coal Bed: The Pardee coal bed is 275 to 400 feet (84 to 122 m) above the Phillips coal and crops out in Lee and Wise counties. The coal ranges from 4.5 to 11 feet (1.37 to 3.35 m) in thickness (Brown and Others, 1952). All of the 1977 production from the Pardee coal was from Wise County. The range of analyses on an as-received basis for the Pardee coal is as follows (U. S. Bureau of Mines, 1944):

Moisture (%)	2.0- 5.1
Volatile matter (%)	32.4-37.8
Fixed carbon (%)	48.8-57.5
Ash (%)	3.9-12.0
Sulfur (%)	0.7- 1.4
BTU	12,430-14,240

Morris Coal Bed: The Morris coal bed is 350 to 650 feet (107 to 198 m) above the Pardee coal and crops out in Lee and Wise counties. The Morris coal ranges from 3.0 to 3.5 feet (0.91 to 1.07 m) in thickness (Brown and Others, 1952). In 1977 all of the Morris coal production was from Wise county.

High Splint Coal Bed: The High Splint coal bed is about 70 feet (21 m) above the Morris coal and crops out in Lee and Wise counties. The High Splint coal ranges in thickness from 4 to 5 feet (1.22 to 1.52 m) (Brown and Others, 1952). Most of the 1977 High Splint coal production was from Wise County. A range of analyses for the High Splint coal on an as-received basis is as follows (U. S. Bureau of Mines, 1944):

Moisture (%)	2.7- 3.6
Volatile matter (%)	30.8-35.3
Fixed carbon (%)	48.6-60.2
Ash (%)	3.6-17.0
Sulfur (%)	0.5- 0.8
BTU	11,850-14,120

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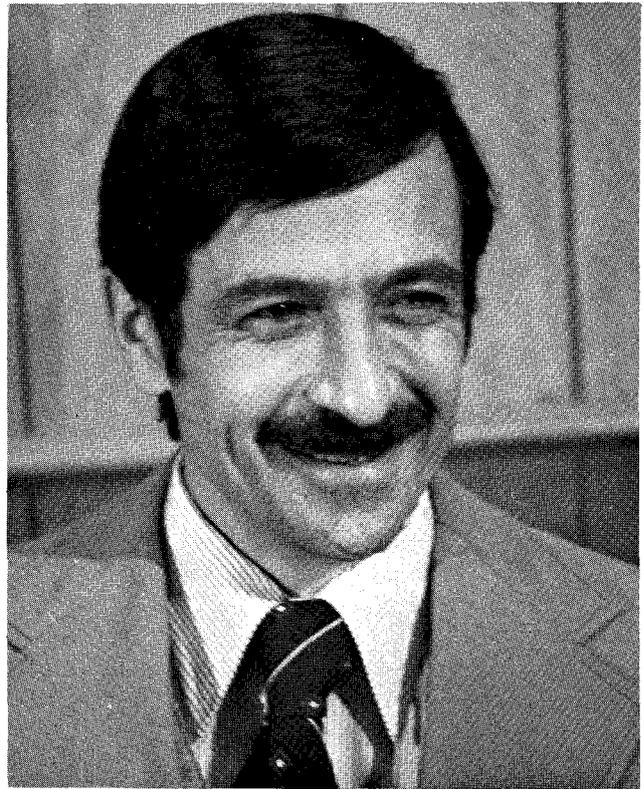
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ACADEMY GEOLOGY SECTION MEETING

Information on geologic research will be given at the 1979 annual meeting Geology Section of the Virginia Academy of Science at the University of Richmond on May 10-11, 1979. In addition to formal talks poster sessions, where an author explains his research with the aid of a display, will be featured. Details on making presentations at the meeting can be obtained before March 1, 1979 from Roddy V. Amenta, Dept. of Geology, James Madison University, Harrisonburg, Va. 22801. All interested in the geology of the State are invited to attend. A \$50 cash prize will be awarded for the best student paper by the Virginia Geology Field Conference.



NEW STATE GEOLOGIST

Dr. Robert C. Milici became the State Geologist and Commissioner of the Virginia Division of Mineral Resources January 1, 1979. His selection resulted from an evaluation of applicants from many parts of the nation. The recruitment committee represented consultants, private industry, and educational institutions. Since Dr. James L. Calver's retirement in mid 1978, Dr. Bruce Hobbs has ably directed the activities of the Division.

Bob was born in New Haven, Connecticut in 1931, and spent his early life in Kings Park, New York, which at that time was a small rural community on the north shore of Long Island. He spent many happy summers there, boating and working as a bayman on Long Island Sound. Upon graduating from High School, he entered Cornell University and obtained an A. B. degree from that institution in 1954, with a major in Geology. He then moved to the Southern Appalachian mountains, to the University of Tennessee, for graduate work and obtained an M. S. degree in 1955 and a Ph. D. degree in 1960. His theses were concerned with Paleozoic stratigraphy and structure of the Valley and Ridge and Cumberland Plateau. From 1958-1961 and 1964-1978 he was employed by the Tennessee Division of Geology. While there the position of Chief Geologist of Research was attained. During 1962-1963 he was an employee of the Virginia Division of Mineral Resources.

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He met his wife to be, Patricia Hankley of Galax, Virginia, in graduate school at the University of Tennessee. They have two children, Pamela Ann 18 and Craig 16. He has continued with hobbies of boating and fishing on the lakes of East Tennessee, and, along with his children, became involved with coaching recreational baseball and basketball teams in Knoxville. In addition, he enjoys landscape gardening and photography.

His numerous publications include descriptions of the structure, stratigraphy, and geomorphology of Paleozoic age rocks in the Valley and Ridge and Cumberland Plateau areas of Tennessee. He has explained his research on many field trips, especially those with Southeastern Geological Society of America meetings. While employed in Virginia he was principal compiler of the 1963 Geologic Map of Virginia. He was also a co-author of Bulletin 79, Geology and Mineral Resources of Fluvanna County.

Dr. Milici's leadership at the Division will involve accelerated geologic mapping and geophysical and geochemical studies, especially in economic interest areas. Studies of energy resources such as coal, gas, and oil in southwest Virginia will be expanded. Cooperative geologic programs will be developed with the State's colleges and universities and the U. S. Geological Survey. Industry will be assisted in the identification of mineral deposits. Regional compilations of mineral resources and commodity studies will continue. Topographic maps will be kept up-to-date. Additional base maps at scales of 1:50,000 and 1:100,000 are to be continued.

ADDITIONAL ORTHOPHOTO- QUADS AND MAP REVISION

About 15% of the State now has orthophotoquad coverage due to the addition of the 43 quadrangles along the Virginia-North Carolina boundary. These quadrangles became available upon the completion of the North Carolina-U. S. Geological Survey state-wide orthophotoquad coverage program.

Orthophotoquads are black and white aerial photographic depictions of 1:24,000 scale topographic map areas. By comparing these with their corresponding maps the following can be interpreted: land-use, differentiation of deciduous from coniferous forests, and location of individual properties. At \$1.25 each (plus \$0.05 tax to Virginia addresses) these inexpensive aerial photographs provide a useful information tool as well as an interesting wall display. A listing of available orthophotoquads is available on request.

Some 69 topographic maps in Revision Inspection Sector 2 have been selected to be updated at a meeting of Division and U. S. Geological Survey personnel. These maps will include the cities of Emporia, Franklin, Hampton, Newport News, Norfolk, Poquoson, Williamsburg, and Virginia Beach. Since obtaining modern coverage in 1972, some of these maps will now have been revised three times. This is part of a continuing effort to keep maps in growth areas up-to-date. Changes in corporate boundaries will now be shown on photorevised maps.