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COAL

Southwest Virginia Coalfield

Coal is mined by surface and underground methods from strata of Pennsylvanian age in the Virginia portion of the Appalachian Plateaus. More than 50 named coal beds are present. The coal ranges from low- to high-volatile bituminous in rank; large tonnages contain less than one percent sulfur. Railroad shipments of coal from this field began in 1883. Production in 1987 was 45,537,960 tons, as reported by the Virginia Department of Mines, Minerals and Energy. Cumulative coal production from this field through 1987 is approximately 1,777,000,000 tons. Export coal for steam and metallurgical use is shipped through coal-loading facilities in Newport News and Norfolk.

Coal-shipping Facilities
(port area with coal piers)

Valley Coalfields

A series of ten small coalfields in the Valley and Ridge province in western Virginia (Campbell and others, 1925) are known collectively as the Valley coal fields. The coal is of Mississippian age and is chiefly semianthracite; some coal is noted to be bituminous in rank by Brown and others (1952). Mining began prior to the Civil War and ceased in 1971. Very small tonnages were subsequently mined in 1982 and 1985. Cumulative production from the Valley fields is about 7 million tons (Brown and others, 1952).

Mesozoic Basins

Mesozoic Basin with Coal

Coal of Triassic age occurs in the Richmond basin in eastern Virginia. The coal is mostly bituminous although some natural coke occurs near igneous intrusions. Mining began in the early 1700s and continued until the early 1900s, with some later activity in 1910-13, and 1940-41. Cumulative production is reported to be slightly more than 8 million tons (Brown and others, 1952). A detailed account of mining in this coalfield is given by Wilkes (1988).

Other Mesozoic Basins

Thin coal beds of Triassic age have been noted in the Taylorsville basin north of Richmond. Traces of old mines and pits indicate early attempts at exploitation (Weems, 1980). This basin extends northward where it is concealed by overlying strata of the Coastal Plain.

Triassic coal also occurs in the Farmville and Briery Creek basins near Farmville. Limited mining was done in the Farmville basin in the late 1800s and some subsequent prospecting has taken place. A mine was operated in the Briery Creek basin in the 1800s to provide coal for local use (Wilkes, 1987). Production data are not available for these basins.

The Danville basin in southern Virginia is not known to contain coal resources. Coal prospecting and mining at one site for local use are reported (Stuckey, 1965) in the North Carolina portion of this basin, which is called the Dan River basin.

COALBED METHANE

Large amounts of methane associated with certain coal beds in the Southwest field, particularly the Pocahontas No. 3 coal, present problems in mining and the potential for recovery of the methane resource. Numerous vertical-ventilation holes have been drilled in Buchanan County to vent the methane before underground mining is done in the Pocahontas No. 3 bed.

In the Valley coal fields, large quantities of methane were reported during mining (Stevens, 1959). The Division of Mineral Resources, under a grant from the U.S. Department of Energy, drilled three diamond core holes near Blacksburg in 1982 to assess the potential of the coalbed-methane resource. Evaluation of the data suggests that a potential exists for future development if certain criteria are met (Stanley and Schultz, 1983). Subsequent tests have been drilled by industry in an attempt to evaluate and develop the methane resource.

Coalbed methane in the Richmond basin was a contributing factor in numerous explosions that resulted in many fatalities during the mining era. A potential recoverable methane resource of at least 350 billion cubic feet has been suggested for this basin (VPI & SU, 1980). A test well, funded by the Department of Energy, was drilled by industry in 1982 to investigate the coalbed-methane potential; no significant data were reported.

• Test hole drilled for coalbed methane under U.S. Department of Energy grant.

PEAT

The Dismal Swamp Peat of Holocene age is present in the Coastal Plain in southeastern Virginia. A small quantity of this peat was produced from the area during the 19th Century for use as fuel (Osbon, 1920).

ELECTRIC GENERATING FACILITIES

FOSSIL FUEL STEAM PLANT

1	Potomac Electric Power Co.	Potomac River Generating Station
2	Virginia Power	Possum Point Power Station
3	Virginia Power	Bremo Power Station
4	Virginia Power	Chesterfield Power Station
5	Virginia Power	Yorktown Power Station
6	Virginia Power	Chesapeake Energy Center
7	Appalachian Power Co.	Glen Lyn Plant
8	Appalachian Power Co.	Clinch River Plant

NUCLEAR FUEL PLANT

1	Virginia Power	North Anna Power Station
2	Virginia Power	Surry Power Station

HYDROELECTRIC PLANT
(High-level or low-level dams, other)

1	Potomac Edison Co.	Warren Dam
2	John S. Scully and Thomas C. Scully	Burnshire Dam
3	Shenandoah Hydro Co.	Chapman Dam
4	Fairfax County Water Authority	Occoquan Upper Dam
5	Fairfax County Water Authority	Occoquan Pumping Dam
6	Potomac Edison Co.	Luray Dam
7	Potomac Edison Co.	Newport Dam
8	Potomac Edison Co.	Shenandoah Dam
9	Rockfish Corp.	Old Mill Dam
10	Melvin R. Hall,III	Rapidan Mill Dam
11	Rockfish Corp.	Grove Mill Dam
12	Advance Mills Hydroelectric Co.	Advance Mills Dam
13	Ronald W. Denney	Coiners Mill Dam
14	Rivanna Water and Sewer Authority	South Fork Rivanna River Dam
15	Virginia Power	North Anna Dam
16	Falling Spring Hydro Power and Construction, Inc.	Falling Spring Creek (Plant under development in 1988)
17	Columbia Mills Hydroelectric Ltd.	Moomaw (Columbia Mills) Dam
18	Rockfish Corp.	Harris Bridge Dam
19	Rockfish Corp.	Walker Mill Dam
20	Craig-Botetourt Electric Cooperative	Meadow Creek Falls Dam
21	Virginia Power	Cushaw Dam
22	City of Bedford	Snowden Dam
23	Nekoosa Packaging	Big Island Dam
24	Nekoosa Packaging	Coleman Falls Dam
25	Nekoosa Packaging	Holcomb Rock Dam
26	Appalachian Power Co.	Reusens Dam
27	Synergics Inc.	Lakeview Dam (Plant under development in 1988)
28	Appalachian Power Co.	Niagara Dam
29	Appalachian Power Co.	Claytor Dam
30	City of Radford	Little River Dam
31	Appalachian Power Co.	Leesville Dam
32	Appalachian Power Co.	Buck Dam
33	Appalachian Power Co.	Byllesby Dam
34	Aquenergy Systems, Inc.	Fries Dam
35	Fields Manufacturing Co.	Fields Dam
36	City of Danville	A - Pinnacles Power Plant B - Townes Dam C - Talbott Dam
37	U.S. Army Corps of Engineers	Philpott Dam
38	City of Martinsville	Martinsville Dam
39	Dan River, Inc.	Schoolfield Dam
40	Synergics Inc.	Banister Dam (Plant under development in 1988)
41	U.S. Army Corps of Engineers	John H. Kerr Dam
42	Rockfish Corp.	Whittles Mill Dam
43	Synergics Inc.	Emporia Dam

HYDROELECTRIC PLANT
(Pump-storage)

1	Virginia Power	Bath Power Station
2	Appalachian Power Co.	Smith Mountain Plant

SOLAR PLANT

1	Virginia Power	(At North Anna Power Station)

OTHER GENERATING FACILITIES

A number of cogeneration plants that burn coal, wood, or waste material to produce both steam for industrial or military-base use and electricity for sale to utilities are in operation or planned (Randolph, 1987). These plants are not shown on this map.

FOSSIL FUEL PLANT
(Peak, supplemental, or intermittent service; diesel, gas turbine, coal, other)

1	Virginia Power	(At Possum Point Power Station)
2	Town of Culpeper	Culpeper
3	Virginia Power	Warsaw Power Station
4	A & N Electric Cooperative	Tangier Island
5	Delmarva Power	Tasley
6	Delmarva Power	Cape Charles
7	Delmarva Power	Bayview
8	Virginia Power	(At Surry Power Station)
9	Virginia Power	(At Chesapeake Energy Center)
10	Virginia Power	Lowmoor Power Station
11	VPI & SU	Blacksburg

GAS AND OIL

NATURAL GAS FIELD

Natural gas is produced from more than 650 wells in the Appalachian Plateaus area of southwestern Virginia. The gas occurs chiefly in strata of Devonian and Mississippian age. Pipeline delivery of gas from this area commenced in 1952; additional pipelines have been constructed from gas fields in the plateaus area since that time. Total production of gas from these fields in 1987 was 19,142,112 Mcf (Virginia Department of Mines, Minerals and Energy, Division of Gas and Oil, 1988)

Gas occurs in Mississippian rocks at the Early Grove field in the Valley and Ridge province. Pipeline delivery of gas from Early Grove was made from 1938 until 1957, when production ceased. New drilling resulted in resumption of production and pipeline delivery beginning in 1983. Production in the Early Grove field in 1987 was 378,200 Mcf (Virginia Department of Mines, Minerals and Energy, Division of Gas and Oil, 1988). The cumulative production since 1938 is about 3,130,758 Mcf of gas.

Gas occurs in Devonian rocks in the Bergton field, which is also in the Valley and Ridge province. Gas from this field was supplied to commercial pipelines from 1980 through 1986; there was no production reported during 1987. Cumulative production since 1980 is approximately 653,837 Mcf.

Gas has been encountered by several wells in the oil-field area of Lee County but commercial production has not been established.

Oil Field

Oil production in southwestern Virginia is chiefly from rocks of Ordovician age in Lee County; a small quantity is also obtained from Silurian and Mississippian strata. In 1987 production was 17,141 barrels of oil from 32 oil wells in Lee County and 20 gas-condensate wells in Wise County (Virginia Department of Mines, Minerals and Energy, Division of Gas and Oil, 1988). Cumulative oil production in Virginia since 1942 is about 527,000 barrels. Oil shows have been reported in several holes drilled for oil, gas, or coal in the Richmond basin and in early test wells drilled for oil in Prince William County in the Culpeper Mesozoic basin. The true economic significance of these shows is not known. There has been recent exploratory activity by industry in Mesozoic basins concealed beneath the Coastal Plain strata in eastern Virginia.

PIPELINES

Gas Pipeline

ANRP	ANR Production Co.
CC	City of Charlottesville
CD	City of Danville
CGP	Commonwealth Gas Pipeline Corp.
CGT	Columbia Gas Transmission Corp.
CGV	Columbia Gas of Virginia, Inc.
CLGS	Clinton Gas Systems, Inc.
CNT	Consolidated Gas Transmission Corp.
CPS	Commonwealth Public Service Corp.
ETNG	East Tennessee Natural Gas Co.
LG	Lynchburg Gas Co.
NT	Nora Transmission Co.
PVR	Penn-Virginia Resources Corp.
RG	Roanoke Gas Co.
SG	Shenandoah Gas Co.
SWVG	Southwestern Virginia Gas Co.
TGPL	Transcontinental Gas Pipeline Corp.
UCG	United Cities Gas Co.
VNG	Virginia Natural Gas Co.
WGL	Washington Gas Light Co.

Note: Map depicts transmission pipelines and the routes of lateral and distribution pipelines leading to communities served; the full extent of pipelines in and near communities and the locations of gate stations are not shown. Looped or double pipelines are not indicated.

Oil Products Pipeline

CPC	Colonial Pipeline Co.
PPLC	Plantation Pipe Line Co.

OTHER OIL OR GAS FACILITIES

OR — Oil Refinery
1 Amoco Oil Co.

LNG — Liquified Natural Gas Plant
1 Lynchburg Gas Co.
2 Roanoke Gas Co.
3 Commonwealth Gas Pipeline Corp.

DT — Deepwater Terminal for Liquified Petroleum Gas
1 Commonwealth Propane, Inc.

USC — Underground Storage Cavern for Liquified Petroleum Gas
1 Washington Gas Light Co.

GEOTHERMAL ENERGY

Warm springs, radiogenic heat, and normal geothermal-gradient resources are potential sources for geothermal energy in the eastern United States (Staff, Geothermal Program, Department of Geological Sciences, Virginia Polytechnic Institute and State University, 1982). An area of warm springs in the Valley and Ridge area in central western Virginia has been discussed in various reports, including Reeves (1932), Hobba and others (1979), Perry and others (1979), and Rader and Gathright (1984). Several significant warm springs are plotted on the map. Geothermal aspects of possible radiogenic igneous-rock bodies that may be concealed beneath insulating sedimentary strata in the Coastal Plain of eastern Virginia have also been investigated (e.g., Costain and others, 1980; Lambiase and others, 1980). Reservoir parameters and thermal energies for 10 locations in Valley and Ridge counties (Alleghany 3, Bath 3, Giles 1, Highland 2, Rockbridge 1) and four locations in the Coastal Plain (Accomac 3, Northumberland 1) are summarized by Sorey and others (1983) and Reed and others (1983).

Selected Warm Springs

1. Bolar Spring
2. Warm springs
3. Hot springs
4. Healing Spring
5. Rockbridge Baths springs
6. Falling Spring
7. Sweet Chalybeate Spring

URANIUM

Exploratory drilling and related work have indicated a potentially commercial uranium deposit in Pittsylvania County. Mineralization occurs in the Chatham fault zone in crystalline rocks at the western edge of the Danville Mesozoic basin. The deposit, discovered by Marline Uranium Corporation, is reported to have reserves of 30 million pounds of U_3O_8 with an average grade of more than 4 pounds per ton of ore, and larger quantities of lower-grade reserves (Marline Uranium Corporation, press release, July 21, 1982.)

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NOTE: Map compiled from data available through September 1988.

Base map from U.S. Geological Survey.

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