

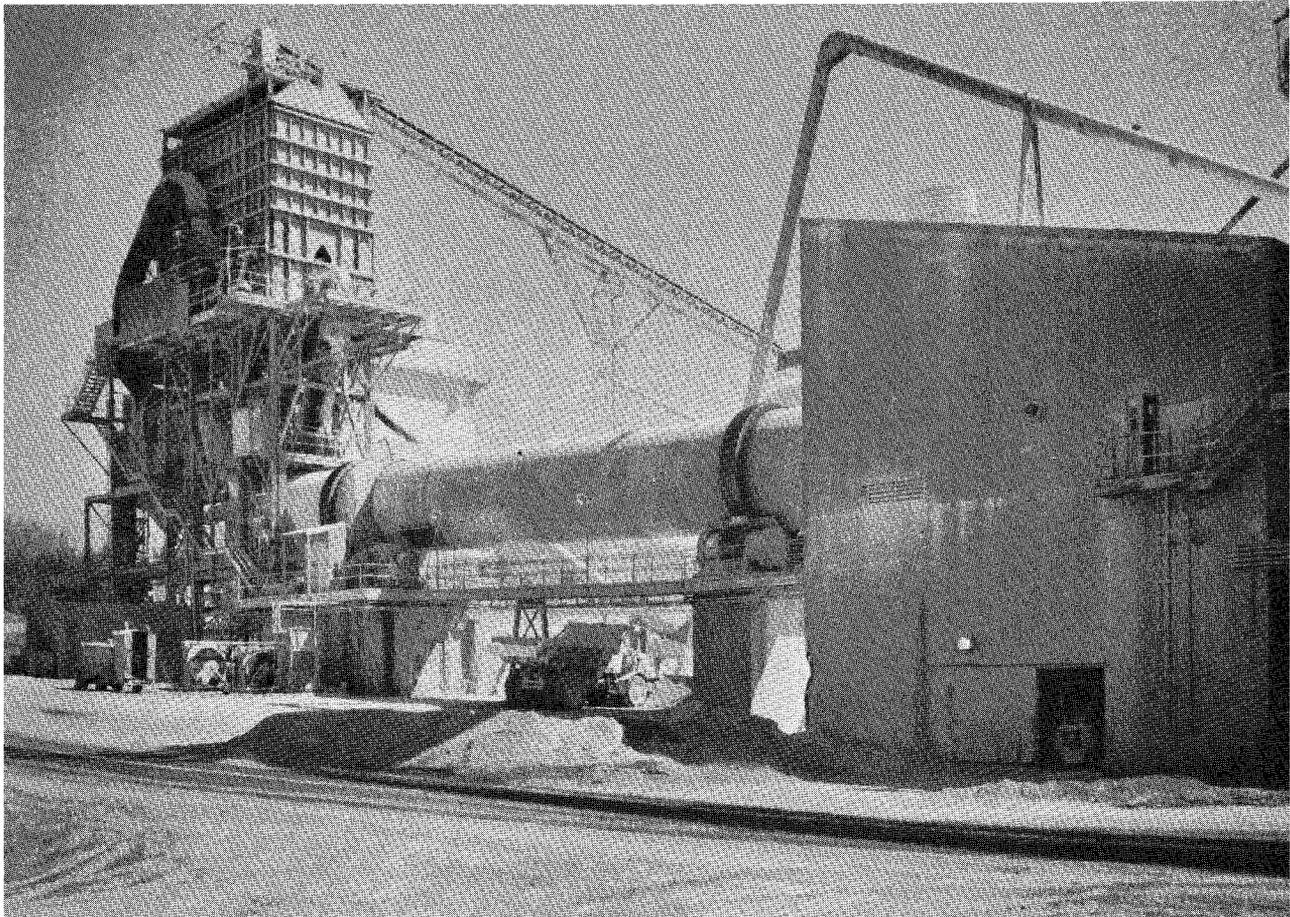


VIRGINIA DIVISION OF MINERAL RESOURCES
PUBLICATION 95



**COAL, OIL AND GAS, AND INDUSTRIAL AND METALLIC
MINERALS INDUSTRIES IN VIRGINIA, 1986-1987**

Palmer C. Sweet



COMMONWEALTH OF VIRGINIA

DEPARTMENT OF MINES, MINERALS AND ENERGY
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Robert C. Milici, Commissioner of Mineral Resources and State Geologist

CHARLOTTESVILLE, VIRGINIA
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FRONT COVER: Rotary kiln, used to produce quicklime from high-calcium New Market limestone, Chemstone Corporation, Strasburg.

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DEPARTMENT OF MINES, MINERALS AND ENERGY
O. Gene Dishner, Director

Commonwealth of Virginia
Department of Purchases and Supply
Richmond

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COAL, OIL AND GAS, AND INDUSTRIAL AND METALLIC MINERALS INDUSTRIES IN VIRGINIA, 1986-1987

Palmer C. Sweet

INTRODUCTION

Virginia's mineral industry produces almost 2 billion dollars worth of energy and mineral materials annually from a wide variety of commodities. The data on coal production and oil and gas exploration and development are from the Division of Mines and the Division of Gas and Oil respectively. Data on industrial minerals are from the U. S. Bureau of Mines. The locations of producers of rock and mineral materials, exclusive of coal mines, are indicated on Plate 1.

Total mineral production in Virginia in 1986 was 1.86 billion dollars (Table 1). About 1.43 billion dollars of this amount was from coal and more than 38 million dollars from petroleum and natural gas. The remaining 392 million dollars of non-fuel production was from a variety of industrial rocks and minerals (Table 3).

During 1987 total mineral production in the State was 2.01 billion dollars (Table 2); 1.50 billion dollars of this amount was from coal and more than 40 million dollars from petroleum and natural gas. The remaining approximately 461 million dollars of non-fuel production was from a variety of industrial rocks and minerals (Table 4).

Virginia led the nation in the production of kyanite, was the only producer of feldspar, marketed as "Virginia aplite," and was one of three states mining vermiculite. Several mineral commodities — lithium carbonate, magnetite, manganese, mica, perlite, and phosphate, were imported into the State for processing.

1986

COAL¹

About 42.1 million tons (Table 1) of bituminous coal were produced from the southwest coalfields (Plate 1) in Buchanan, Dickenson, Lee, Russell, Scott, Tazewell, and Wise counties from more than 650 surface and underground mines. Tables 5 through 8 provide production data by county and coal bed, and employment statistics. Tables 9 and 10 provide fatal accident data for coal and mineral mines. Coal from Virginia is used for metallurgical purposes, electrical power generation (steam coal), industrial purposes, and residential heating. A large percentage of Virginia's coal is

contracted for export to overseas markets through the ports of the Hampton Roads area in Virginia and through ports in North Carolina.

Table 1. Mineral Production in Virginia, 1986¹.

Mineral Commodity	Quantity	Value (thousands)
Clays— thousand short tons ———	890	\$ 7,700
Coal (bituminous) ² (\$34/ton)— do ———	42,061	1,430,074
Gem stones ———	NA	20
Lime— thousand short tons ———	624	27,362
Natural Gas ² (\$2.45/1000 ft ³)-million cubic feet -	15,427	38,355
Petroleum (crude) ² (\$14.50/bl.)-42-gal. barrels -	18,342	266
Sand and gravel— thousand short tons —	11,670	46,448
Stone:		
Crushed— do ———	e 2,000	e 224,700
Dimension— do ———	e 10	e 3,128
Combined value of cement, feldspar, gypsum, industrial sand and gravel, iron-oxide pigments (crude), kyanite, sulfur, vermiculite ———	XX	83,639
Total	XX	\$ 1,861,692

NA Not available. XX Not applicable. e Estimated.

¹ Production as measured by mine shipments, sales, or marketable production (including consumption by producers) - from U.S. Bureau of Mines.

² Virginia Department of Mines, Minerals and Energy

Table 2. Mineral Production in Virginia, 1987¹.

Mineral Commodity	Quantity	Value (thousands)
Clays— thousand short tons ———	1,171	\$ 6,291
Coal (bituminous) ² (\$33/ton)— do ———	45,538	1,502,754
Gem stones ———	NA	20
Lime— thousand short tons ———	699	29,435
Natural Gas ² (\$2.08/1000 ft ³)-million cubic feet -	19,520	40,602
Petroleum (crude) ² (\$16.58/bl.)-42-gal barrels—	17,141	284
Sand and gravel— thousand short tons ———	e 12,100	e 43,400
Stone:		
Crushed— do ———	60,376	295,903
Dimension— do ———	9	2,720
Combined value of cement, clay (Fuller's earth), feldspar, gypsum, industrial sand and gravel, iron oxide pigments (crude), kyanite, sulfur, vermiculite ———	XX	83,673
Total	XX	\$ 2,005,082

NA Not available. XX Not applicable. e Estimated.

¹ Production as measured by mine shipments, sales, or marketable production (including consumption by producers) - from U.S. Bureau of Mines.

² Virginia Department of Mines, Minerals and Energy

¹ Information supplied by Division of Mines, 219 Wood Avenue, Big Stone Gap, Virginia 24219.

Table 3. Summary of Metal/Nonmetal Mining and Quarrying, 1986.

COMMODITY	TONS	OFFICE WORKERS	OFFICE HOURS	OFFICE WAGES	PLANT WORKERS	QUARRY WORKERS	PRODUCTION HOURS	PRODUCTION WAGES
Aplite	320,507	1	76,506	\$ 869,351	26	23	9,736	\$ 176,187
Clay	715,179	31	87,960	833,198	365	31	819,653	4,668,823
Dirt/Fill Matl.	1,572,512	2	2,111	10,867	1	52	65,893	424,678
Granite	27,221,593	90	178,075	2,031,924	266	408	1,633,197	14,081,594
Gravel	52,219	2	1,158	20,180	0	10	2,591	17,270
Greenstone	595,372	1	2,835	20,034	0	13	33,713	282,738
Gypsum	500,674	3	101,281	865,672	0	41	0	0
Kyanite	414,470	13	28,223	288,680	85	25	244,147	1,906,974
Limestone	21,167,703	359	876,056	8,055,684	760	523	2,378,167	20,428,269
Other	1,668,701	36	59,067	1,066,811	104	75	347,154	2,221,420
Quartzite	1,048,568	7	11,884	155,779	32	45	146,563	1,387,292
Sand	4,243,443	53	60,960	519,038	35	169	234,951	5,563,639
Sand & Gravel	11,475,855	68	134,278	1,371,974	247	177	947,277	11,053,486
Sandstone	733,527	2	2,695	24,720	9	20	44,764	368,825
Shale	454,471	44	83,699	1,257,766	326	20	67,779	5,453,371
Slate	376,701	21	39,725	947,567	168	46	343,208	1,797,539
Soapstone	0	0	0	0	0	0	0	0
Traprock	6,787,711	42	38,744	1,236,522	85	115	499,978	4,017,211
Vermiculite	40,000	3	9,000	0	20	4	54,000	400,000
	<u>79,390,306</u>	<u>794</u>	<u>1,794,261</u>	<u>\$19,675,766</u>	<u>2,529</u>	<u>1,898</u>	<u>7,872,764</u>	<u>\$74,249,515</u>

Table 4. Summary of Metal/Nonmetal Mining and Quarrying, 1987.

COMMODITY	TONS	OFFICE WORKERS	OFFICE HOURS	OFFICE WAGES	PLANT WORKERS	QUARRY WORKERS	PRODUCTION HOURS	PRODUCTION WAGES
Aplite	368,666.00	7	16,968	\$ 152,066	28	22	118,792	\$ 966,918
Clay	652,394.59	31	51,024	620,170	485	26	1,070,246	6,928,902
Coal Refuse	50,000.00	0	0	0	0	4	6,720	26,880
Diabase	4,050.00	0	0	0	0	8	2,000	114,000
Diorite	285,431.00	6	13,613	131,501	10	13	56,925	337,034
Dirt/Fill Matl.	1,311,157.50	5	202	1,226	1	57	50,024	413,541
Dolomite	2,534,674.00	18	40,559	612,833	59	48	225,054	2,484,583
Fuller's Earth	105,000.00	4	8,320	102,229	40	2	87,360	535,871
Gemstones	1.00	1	40	0	0	0	0	0
Gneiss	510,617.00	5	9,702	95,410	16	5	47,525	273,791
Granite	30,613,200.90	149	326,364	3,780,149	431	317	1,715,634	17,073,228
Gravel	121,677.00	4	1,330	16,283	1	6	3,412	27,898
Greenstone	693,603.00	2	3,420	29,474	0	16	35,667	326,151
Gypsum	495,456.00	3	6,538	98,405	0	41	100,121	879,678
Iron Oxide	300.00	0	0	0	0	0	0	0
Kyanite	534,765.00	16	29,849	302,246	98	28	272,397	2,165,299
Limestone	18,707,939.77	287	584,793	7,186,688	722	553	2,413,326	20,213,021
Limonite	502.00	7	14,168	230,610	23	1	36,451	302,268
Marble	216,050.00	2	4,649	0	8	5	35,161	268,712
Marl	34,255.00	0	0	0	0	1	1,500	9,000
Other	20,612.00	2	3,220	14,972	18	22	42,991	304,651
Pegmatite	0	0	0	0	0	0	0	0
Quartz	1,400.00	2	840	21,000	1	1	411	13,737
Quartzite	1,079,625.00	10	6,909	305,945	27	30	122,695	1,061,628
Sand	4,728,190.98	58	78,582	676,577	61	164	239,234	1,859,906
Sand & Gravel	12,741,735.40	64	131,769	1,622,847	248	166	949,386	7,698,748
Sandstone	602,652.86	3	5,760	45,920	10	17	41,084	421,494
Shale	585,643.00	56	104,240	1,464,150	532	26	719,648	5,944,443
Silt	1,204.00	0	0	0	2	0	2,160	14,040
Slate	513,928.00	20	43,430	668,515	145	29	345,740	2,104,371
Soapstone	1,954.81	0	0	0	14	4	32,765	216,878
Traprock	8,010,312.00	38	92,123	1,276,124	85	112	487,700	5,585,899
Vermiculite	44,000.00	3	8,000	0	17	3	46,000	400,000
	<u>85,570,997.81</u>	<u>803</u>	<u>1,586,412</u>	<u>\$19,455,340</u>	<u>3,082</u>	<u>1,727</u>	<u>9,308,129</u>	<u>\$78,972,570</u>

OIL AND GAS²

INTRODUCTION

Crude oil production totaled 18,342 barrels in 1986, a decline of 31 percent from the 1985 production of 26,654 bbls. Production was by 11 companies from 50 wells in five fields (Plate 1, Table 11). The average price paid by refineries for Virginia oil in 1986 was \$14.50 per barrel.

Natural gas production in 1986 was a record 15,427,109 Mcf from 573 wells in Buchanan, Dickenson, Rockingham, Russell, Scott, Tazewell, Washington, and Wise counties (Table 12). This reflects an increase of two percent over the 1985 production of 15,041,438 Mcf. Also, in 1986 there was considerable interest in recovering methane from mineable and unmineable coal in Virginia.

DRILLING ACTIVITY

In 1986, a total of 147 wells were drilled in Virginia (Table 13). This represents a 55 percent increase over the 95 wells drilled in 1985. The total footage drilled in 1986 was 782,380 feet (Table 14), a 54 percent increase over the 1985 total of 507,628 feet. In 1986, the average depth for the 134 development wells was 5274 feet and the average depth for the thirteen exploratory wells was 5821 feet. Of the 147 wells (134 development and 13 exploratory) drilled during 1986, 140 were completed as producers and seven were dry holes. All of the dry holes were drilled in search of oil. In exploratory drilling (13 wells) there were six wells completed or soon to be completed as producers and seven wells were dry holes. Development drilling had a success rate of 99 percent with 133 wells being completed as producers. Tables 15 through 18 provide data on company delivery of gas to pipelines, reserves of gas, acreage leased, and 1986 well-completion data.

Buchanan County

Berea Oil and Gas drilled one development well to a depth of 5229 feet to test the Devonian shale, Berea, and Big Lime. After treatment, the well produced 6300 Mcf. Columbia Natural Resources drilled a total of 5364 feet for one development well. This well produced some 420 Mcf from the Lower and Middle Devonian.

Caroline, Essex, and Westmoreland counties

Texaco drilled six stratigraphic wells to obtain

² Information supplied by Division of Gas and Oil, P. O. Box 1416, Abingdon, Virginia 24210.

samples from the Taylorsville Basin (Mesozoic-age rocks) where it is overlain by Coastal Plain deposits in Caroline, Essex, and Westmoreland counties. Two wells were drilled in each county. All of the wells, with the exception of one in Westmoreland County, reached a total depth of 5500 feet. One of the wells in Westmoreland County (WM-2) was drilled to a depth of 3533 feet; WM-2 drilled through Cenozoic and Mesozoic strata and cored Triassic-age rock. After the wells were logged and evaluated, they were plugged and abandoned.

Dickenson County

Philadelphia Oil Company successfully drilled 84 development wells with a total footage of 420,024 feet. They also drilled four deeper tests of the Clinton Formation of Silurian age. Only one well was successful in producing from the Clinton Formation. Also, one out-post-extension test (DI-214) was drilled to a depth of 5142 feet and was completed successfully in the Upper and Lower Devonian and Berea by Philadelphia Oil Company.

Lee County

Two development wells were drilled in search of oil. Adkinson Drilling (LE-153) drilled into the Trenton to a depth of 2569 feet, but the outcome was a dry hole. Southern Exploration (LE-152) successfully completed an oil producer in the Trenton, with a total depth of 2308 feet.

Wise County

ANR Production Company successfully drilled and completed 41 development wells in Wise County, with a total of 243,318 feet being drilled. Philadelphia Oil Company drilled three development wells in the county, with a total of 15,801 feet being drilled. They also drilled a deeper test (WS-179) to the Silurian-age rock. Total depth for that well was 6819 feet. One wildcat well was drilled southeast of Coeburn (WS-224) near the crest of the Powell Valley anticline. The total depth was 5153 feet for the successfully completed gas producer from the Berea by Philadelphia Oil Company.

PIPELINE CONSTRUCTION

In Buchanan County, Cities Service laid 458 feet of three-and-one-half inch pipeline to tie in one well to the Columbia Gas Transmission's system.

In Dickenson County, Pine Mountain Oil and Gas constructed 4500 feet of two inch line to connect one well.

Philadelphia Oil Company expanded its present system to allow for its production from its Nora Field to be

tied into the new line being constructed by East Tennessee Gas to Abingdon, Washington County. There were 32 wells tied in to its existing system. A total of 364,875 feet of pipe was laid in Dickenson County in the following increments: 939 feet of 20-inch, 3420 feet of 16-inch, 54,276 feet of eight-inch, 96,756 feet of six-inch, 37,703 feet of four-inch, 97,216 feet of three-inch, and 74,565 feet of two-inch pipe.

Also, 13,920 feet of four-inch and 5673 feet of two-inch pipeline was constructed by Philadelphia Oil Company in Wise County.

ANR Production Company laid 113,000 feet of four-inch pipeline to tie in 40 wells to its existing system in the Roaring Fork Field in Wise County.

Table 5. Summary of Coal Mining in Virginia, 1986.

	Buchanan	Dickenson	Lee	Russell	Scott	Tazewell	Wise	Total
Tonnage	16,324,852	8,111,319	2,330,742	880,256	123,836	2,257,748	11,739,389	41,768,142
Auger	95,140	31,907	130,280	0	0	0	168,191	425,519
Strip	880,438	1,187,592	70,663	130,624	3,000	954	4,402,894	6,676,166
Tipple	6,284,409	3,356,923	1,138,796	280,796	0	882,966	2,212,935	14,156,825
Truck	9,064,865	3,534,896	991,003	468,836	120,836	1,373,828	4,955,369	20,509,633
Tons mined by:								
Machine	3,639,455	2,352,415	362,927	296,483	3,000	360,028	5,334,523	12,348,832
Auger	95,140	31,907	130,280	0	0	0	168,191	425,519
Strip	880,438	1,187,592	60,410	130,624	3,000	954	4,401,107	6,664,126
Tipple	52,951	0	0	0	0	0	0	52,951
Truck	2,610,927	1,132,915	172,237	165,859	0	359,074	765,225	5,206,236
Continuous Miner	9,009,657	4,378,228	1,235,646	583,773	120,836	1,897,720	5,554,240	22,780,101
Strip	0	0	10,253	0	0	0	0	10,253
Tipple	2,555,719	2,009,615	406,628	280,796	0	882,966	1,364,617	7,500,341
Truck	6,453,938	2,368,613	818,766	302,977	120,836	1,014,754	4,189,623	15,269,508
Longwall	3,675,739	1,380,676	732,168	0	0	0	846,318	6,636,901
Tipple	3,675,739	1,347,308	732,168	0	0	0	846,318	6,603,533
Truck	0	33,368	0	0	0	0	0	33,368
Production Workers	5,281	2,421	805	230	43	548	3,197	12,525
Surface	945	562	133	51	12	55	1,414	3,172
Auger	33	58	30	0	0	0	185	307
Strip	269	311	64	30	4	8	1,074	1,760
Tipple	244	52	6	7	0	7	23	339
Truck	399	141	33	14	8	40	131	766
Underground	4,336	1,859	672	179	31	493	1,783	9,353
Tipple	1,479	790	222	73	0	226	518	3,308
Truck	2,857	1,069	450	106	31	267	1,265	6,045
Production Wages	116,806,174	54,641,276	16,083,506	5,573,530	844,802	13,394,341	104,485,842	311,829,472
Auger	382,295	772,902	634,242	0	0	0	1,705,528	3,494,966
Strip	5,051,231	4,973,330	790,570	796,397	17,000	0	28,463,889	40,092,418
Tipple	56,254,350	30,121,448	7,795,939	2,568,291	0	7,660,936	19,029,418	123,430,382
Truck	55,118,298	18,773,599	6,862,755	2,208,843	827,802	5,733,405	55,287,007	144,811,706
Office Workers	172	60	21	10	1	7	199	470
Auger	0	5	2	0	0	0	9	16
Strip	7	20	3	5	0	0	101	136
Tipple	31	4	7	1	0	0	23	66
Truck	134	31	9	4	1	7	66	252
Office Wages	3,017,485	2,548,163	764,689	106,707	0	1,056,463	8,646,003	16,139,510
Auger	0	0	86,838	0	0	0	124,928	211,766
Strip	350,242	1,013,899	86,838	45,106	0	0	3,849,657	5,300,742
Tipple	513,270	114,472	250,636	18,901	0	0	680,880	1,578,159
Truck	2,198,974	1,419,792	340,377	42,700	0	1,056,463	3,990,538	9,048,844
Number of Mines	265	115	43	14	5	37	177	656
Auger	9	8	5	0	1	1	27	51
Strip	27	26	10	3	2	1	75	144
Tipple	18	8	1	2	0	4	8	41
Truck	211	73	27	9	2	31	67	420

Table 6. Summary of Coal Mining in Virginia, by Coal Bed, 1986 (short tons).

	Buchanan	Dickenson	Lee	Russell	Scott	Tazewell	Wise
Aily	0	0	0	0	0	0	20,690
Big Fork	0	0	0	38,114	0	0	0
Blair	1,325,289	15,048	0	0	0	0	810,514
Campbell Creek	29,461	0	21,100	0	0	0	594,253
Cedar Grove	193,026	0	0	0	0	0	25,226
Clintwood	175,083	587,632	0	0	0	0	1,660,549
Cove Creek	0	0	0	0	120,836	0	0
Dorchester	305,970	456,835	0	0	0	0	3,029,004
Eagan	0	0	0	0	3,000	0	0
Eagle	495,595	115,179	0	0	0	0	0
Greasy Creek	0	0	0	0	0	49,717	0
Hagy	690,720	0	0	0	0	0	0
High Splint	0	0	37,498	0	0	0	452,524
Jawbone	2,516,088	1,418,222	0	343,305	0	112,612	246,553
Kelly	0	0	0	0	0	0	1,203,519
Kennedy	1,452,903	37,529	0	56,484	0	0	0
Kirk	0	0	2,726	0	0	0	0
Lower Banner	59,088	1,023,621	0	227,150	0	0	0
Lower Horsepen	0	0	66,601	0	0	140,836	0
Low Splint	0	0	49,995	0	0	0	513,493
Lower Seaboard	0	0	0	0	0	882,966	0
Lower St. Charles	0	0	61,213	0	0	0	0
Lyons	0	59,643	0	0	0	0	251,819
Morris	0	0	0	0	0	0	228,877
Middle Seaboard	0	0	0	0	0	20,328	0
Pardee	0	0	105,036	0	0	0	992,491
Phillips	0	0	0	0	0	0	0
Pocahontas #3	5,574,216	0	0	0	0	230,254	0
Pocahontas #5	0	0	0	0	0	141,678	0
Raven	783,579	1,031,579	0	92,291	0	81,045	19,061
Splashdam	1,984,377	1,124,790	0	0	0	0	158,020
Tacus	0	0	0	0	0	0	0
Taggart	0	0	1,171,605	0	0	0	530,159
Taggart Marker	0	0	1,000	0	0	0	299,630
Tiller	737,059	203,871	0	120,793	0	80,864	0
Upper Banner	2,399	2,037,711	0	2,119	0	0	204,165
Upper Horsepen	0	0	0	0	0	487,114	0
Upper Seaboard	0	0	0	0	0	30,335	0
Upper Standiford	0	0	337,722	0	0	0	497,784
Wax	0	0	476,246	0	0	0	0
TOTAL	16,324,852	8,111,319	2,330,742	880,256	123,836	2,257,748	11,739,389

VIRGINIA DIVISION OF MINERAL RESOURCES

Table 7. Summary of Coal Mining in Virginia, Small Company (less than 50 employees).

	Buchanan	Dickenson	Lee	Russell	Scott	Tazewell	Wise	Total
Number of Mines								
Auger	9	8	5	0	1	1	27	51
Strip	26	26	10	3	2	1	74	143
Surf. Total	35	34	15	3	3	2	101	194
Tipple	11	3	0	2	0	2	4	22
Truck	206	71	25	9	2	31	64	408
Undg. Total	217	74	25	11	2	33	68	430
TOTAL	252	108	40	14	5	35	169	624
Tonnages								
Auger	95,140	31,907	130,280	0	0	0	168,191	425,519
Strip	656,163	1,187,592	70,663	130,624	3,000	954	4,184,458	6,233,454
Surf. Total	751,303	1,219,499	200,943	130,624	3,000	954	4,352,648	6,658,973
Tipple	52,951	346,480	0	280,796	0	0	146,999	827,226
Truck	7,870,214	3,147,399	627,939	468,836	120,836	1,373,828	4,374,359	17,983,411
Undg. Total	7,923,165	3,493,879	627,939	749,632	120,836	1,373,828	4,521,358	18,810,637
TOTAL	8,674,468	4,713,379	828,882	880,256	123,836	1,374,782	8,874,007	25,469,610
Mining Methods:								
Underground								
Longwall								
Tipple	0	0	0	0	0	0	0	0
Truck	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0
Cont. Miner								
Tipple	0	346,480	0	280,796	0	0	146,999	774,275
Truck	5,421,191	2,014,484	455,702	302,977	120,836	1,014,754	3,736,634	13,066,578
TOTAL	5,421,191	2,360,964	455,702	583,773	120,836	1,014,754	3,883,633	13,840,853
Other								
Tipple	52,951	0	0	0	0	0	0	52,951
Truck	2,449,023	1,132,915	172,237	165,859	0	359,074	637,204	4,916,312
TOTAL	2,501,974	1,132,915	172,237	165,859	0	359,074	637,204	4,969,263
Undg. Total	7,923,165	3,493,879	627,939	749,632	120,836	1,373,828	4,520,837	18,810,116
Surface								
Auger	95,140	31,907	130,280	0	0	0	168,191	425,519
Strip	656,163	1,187,592	60,410	130,624	3,000	954	4,182,671	6,221,414
Surf. Total	751,303	1,219,499	190,690	130,624	3,000	954	4,350,861	6,646,933
Prod. Employees								
Auger	33	58	30	0	0	0	186	307
Strip	219	311	64	30	4	8	1,023	1,659
Surf. Total	252	369	94	30	4	8	1,209	1,966
Tipple	43	90	0	80	0	0	44	257
Truck	2,888	1,050	332	120	39	307	1,235	5,971
Undg. Total	2,931	1,140	332	200	39	307	1,279	6,228
TOTAL	3,183	1,509	426	230	43	315	2,488	8,194
Man Days								
Auger	4,225	10,696	3,798	0	0	0	14,626	33,345
Strip	41,037	50,697	6,041	7,196	160	0	163,548	268,679
Surf. Total	45,262	61,393	9,839	7,196	160	0	178,174	302,024
Tipple	2,232	22,656	0	19,840	0	0	10,412	55,140
Truck	431,634	134,700	47,327	20,640	9,051	55,810	215,366	914,528
Undg. Total	433,866	157,356	47,327	40,480	9,051	55,810	225,778	969,668

Table 7. Summary of Coal Mining in Virginia, Small Company (less than 50 employees) cont.

	Buchanan	Dickenson	Lee	Russell	Scott	Tazewell	Wise	Total
Man Hours								
Auger	32,141	90,198	36,368	0	0	0	145,172	303,878
Strip	302,102	480,445	46,842	57,331	800	0	15,800,550	16,688,069
Surf. Total	334,242	570,643	83,210	57,331	800	0	15,945,722	16,991,947
Tipple	31,918	171,181	0	142,828	0	0	75,367	421,295
Truck	3,489,556	1,082,148	345,009	129,320	69,386	503,756	1,688,021	7,307,194
Undg. Total	3,521,474	1,253,329	345,009	272,148	69,386	503,756	1,763,388	7,728,488
TOTAL	3,855,716	1,823,972	428,219	329,479	70,186	503,756	17,709,109	24,720,436
Prod. Wages								
Auger	382,295	772,902	634,242	0	0	0	1,705,528	3,494,966
Strip	2,951,996	4,973,330	790,570	796,397	17,000	0	26,985,818	36,515,112
Surf. Total	3,334,291	5,746,232	1,424,813	796,397	17,000	0	28,691,346	40,010,078
Tipple	273,438	3,091,113	0	2,568,291	0	0	1,272,454	7,205,296
Truck	43,629,712	13,970,228	4,122,053	2,208,843	827,802	5,733,405	51,081,026	121,573,069
Undg. Total	43,903,150	17,061,341	4,122,053	4,777,134	827,802	5,733,405	52,353,480	128,778,365
TOTAL	47,237,441	22,807,573	5,546,865	5,573,530	844,802	5,733,405	81,044,826	168,788,443
Office Employees								
Auger	0	5	2	0	0	0	9	16
Strip	6	20	3	5	0	0	97	131
Surf. Total	6	25	5	5	0	0	106	147
Tipple	0	1	0	1	0	0	5	7
Truck	114	30	9	4	1	7	64	229
Undg. Total	114	31	9	5	1	7	69	236
TOTAL	120	56	14	10	1	7	175	383
Office Wages								
Auger	0	0	86,838	0	0	0	124,928	211,766
Strip	305,242	1,013,899	86,838	45,106	0	0	3,803,377	5,254,462
Surf. Total	305,242	1,013,899	173,676	45,106	0	0	3,928,305	5,466,228
Tipple	0	35,569	0	18,901	0	0	64,708	119,178
Truck	1,359,796	1,395,733	340,377	42,700	0	1,056,463	3,990,538	8,185,606
Undg. Total	1,359,796	1,431,302	340,377	61,601	0	1,056,463	4,055,246	8,304,784
TOTAL	1,665,037	2,445,201	514,053	106,707	0	1,056,463	7,983,551	13,771,012

Table 8. Summary of Coal Mining in Virginia, Large Company (50 or more employees).

	Buchanan	Dickenson	Lee	Tazewell	Wise	Total
Number of Mines						
Auger	0	0	0	0	0	0
Strip	1	0	0	0	1	2
Surf. Total	1	0	0	0	1	2
Tipple	7	5	1	2	4	19
Truck	5	2	2	0	3	12
Undg. Total	12	7	3	2	7	31
TOTAL	13	7	3	2	8	33
Tonnages						
Auger	0	0	0	0	0	0
Strip	224,275	0	0	0	218,437	442,712
Surf. Total	224,275	0	0	0	218,437	442,712
Tipple	6,231,458	3,010,443	1,138,796	882,966	2,065,936	13,329,599
Truck	1,194,651	387,497	363,064	0	581,010	2,526,222
Undg. Total	7,426,109	3,397,940	1,501,860	882,966	2,646,946	15,855,821
TOTAL	7,650,384	3,397,940	1,501,860	882,966	2,865,382	16,298,533
Mining Methods:						
Underground						
Longwall						
Tipple	3,675,739	1,347,308	732,168	0	848,318	6,603,533
Truck	0	33,368	0	0	0	33,368
TOTAL	3,675,739	1,380,676	732,168	0	848,318	6,636,901
Cont. Miner						
Tipple	2,555,719	1,663,135	406,628	882,966	1,217,618	6,726,066
Truck	1,032,747	354,129	363,064	0	452,989	2,202,930
TOTAL	3,588,466	2,017,264	769,692	882,966	1,670,607	8,928,996
Other						
Tipple	0	0	0	0	0	0
Truck	161,904	0	0	0	128,020	289,924
TOTAL	161,904	0	0	0	128,020	289,924
Undg. Total	7,426,109	3,397,940	1,501,860	882,966	2,646,946	15,855,821
Surface						
Auger	0	0	0	0	0	0
Strip	224,275	0	0	0	218,437	442,712
Surf. Total	224,275	0	0	0	218,437	442,712
Prod. Employees						
Auger	0	0	0	0	0	0
Strip	50	0	0	0	51	101
Surf. Total	50	0	0	0	51	101
Tipple	1,680	752	228	233	497	3,390
Truck	368	160	151	0	161	840
Undg. Total	2,048	912	379	233	658	4,230
TOTAL	2,098	912	379	233	709	4,331

Table 8. Summary of Coal Mining in Virginia, Large Company (50 or more employees) cont.

	Buchanan	Dickenson	Lee	Tazewell	Wise	Total
Man Days						
Auger	0	0	0	0	0	0
Strip	12,100	0	0	0	12,801	24,901
Surf. Total	12,100	0	0	0	12,801	24,901
Tipple	345,616	185,800	53,580	47,931	116,795	749,722
Truck	74,464	39,680	15,343	0	41,827	171,314
Undg. Total	420,080	225,480	68,923	47,931	158,622	921,036
TOTAL	432,180	225,480	68,923	47,931	171,423	945,937
Man Hours						
Auger	0	0	0	0	0	0
Strip	162,225	0	0	0	111,984	274,209
Surf. Total	162,225	0	0	0	111,984	274,209
Tipple	3,719,887	1,475,010	420,100	503,651	954,927	7,073,574
Truck	648,323	261,902	156,907	0	297,168	1,364,299
Undg. Total	4,368,209	1,736,912	577,007	503,651	1,252,095	8,437,874
TOTAL	4,530,434	1,736,912	577,007	503,651	1,364,078	8,712,082
Prod. Wages						
Auger	0	0	0	0	0	0
Strip	2,099,235	0	0	0	1,478,071	3,577,306
Surf. Total	2,099,235	0	0	0	1,478,071	3,577,306
Tipple	55,980,912	27,030,335	7,795,939	7,660,936	17,756,964	116,225,086
Truck	11,488,586	4,803,368	2,740,702	0	4,205,981	23,238,637
Undg. Total	67,469,498	31,833,703	10,536,641	7,660,936	21,962,946	139,463,723
TOTAL	69,568,733	31,833,703	10,536,641	7,660,936	23,441,016	143,041,029
Office Employees						
Auger	0	0	0	0	0	0
Strip	1	0	0	0	4	5
Surf. Total	1	0	0	0	4	5
Tipple	31	3	7	0	18	59
Truck	20	1	0	0	2	23
Undg. Total	51	4	7	0	20	82
TOTAL	52	4	7	0	24	87
Office Wages						
Auger	0	0	0	0	0	0
Strip	0	0	0	0	46,280	46,280
Surf. Total	0	0	0	0	46,280	46,280
Tipple	513,270	78,903	250,636	0	616,172	1,458,981
Truck	839,178	24,059	0	0	0	863,237
Undg. Total	1,352,448	102,962	250,636	0	616,172	2,322,218
TOTAL	1,352,448	102,962	250,636	0	662,452	2,368,498

Table 9. Fatal Accidents in Coal Mines, 1986

TOTAL	11
Age:	
20 to 30	4
31 to 40	5
41 to 60	2
Total Years Mining Experience:	
One to ten years	4
Ten years and over	7
Experience with present company:	
Less than one month, no more than three months.....	
Three months to two years	
Two years to five years	
Five years to fifteen years	1
More than fifteen years	2
Cause:	
Rock Fall (Outside)	1
Roof Fall	
Haulage	
Gasoline Ignition	1
Electrical	
Explosion	1
Machinery	
Occupation:	
Beltman	
Continuous Miner Operator	
Continuous Miner Operator - Helper	
Cutting Machine	
Erection Worker	1
General Laborer	1
Longwall Jack Machine Operator	
Longwall Jack Setter	
Mine/Section Foreman	1
Roof Bolter	
Roof Bolter - Helper	

Table 10. Fatal Accidents in Mineral Mines, 1986

TOTAL	0
Age:	
20 to 30	
31 to 40	
Over 60	
Total Years Mining Experience:	
One to ten years	
Ten years and over	
Experience with present company:	
Less than one month, no more than three months	
Three months to two years	
Two years to five years	
Five years to fifteen years	
More than fifteen years	
Cause:	
Heavy Equipment	
Highwall Collapsed	
Occupation:	
Contractor	
Crane Operator	

Table 11. Oil production by company and field in 1986.

FIELD	COMPANY	PRODUCING WELLS	
		NUMBER	BBLs.
Rose Hill	Pride Oil Company	1	2,133
	Stonewall Gas Company	2	1,423
Ben Hur	APACO Petroleum	5	331
	Ben Hur Oil	5	2,472
	Eastern States Exploration	1	4,227
	Mountain Empire Oil & Gas	1	1,505
	Penn Virginia Resources	5	1,850
	Raintree Oil	5	911
	Southern Exploration	1	740
	Stonewall Gas Company	1	246
Knox	Witt Oil and Gas	1	563
	Stonewall Gas Company	1	355
Clinch	Witt Oil and Gas	1	100
Big Lime*	ANR Production	20	1,486
TOTALS		50	18,342

*Oil associated in gas-producing formation
Roaring Fork field-Wise County

Table 12. Natural Gas Production by Company in each County, 1986.

COUNTY	COMPANY	WELLS	VOLUME PRODUCED (Mcf)
Buchanan	Ashland Exploration	43	517,369
	Cabot Oil and Gas	1	16,056
	Cities Service	1	22,994
	Columbia Natural Res.	98	2,255,082
	NRM Petroleum	6	100,631
	P&S Oil and Gas Corp.	6	39,887
	Panther Creek Ltd.	2	37,797
	Peake Operating	1	43,728
	Total	158	3,033,544
Dickenson	Columbia Natural Res.	32	842,451
	W. E. Elliott	2	28,136
	Philadelphia Oil Co.	173	3,922,364
	Pine Mtn. Oil and Gas	9	162,313
	Total	187	4,955,264
Rockingham	Yankee Exploration	3	4,503
Rusell	Pine Mtn. Oil and Gas	1	11,601
Scott	Early Grove Gas Co.	9	367,653
Tazewell	CNG Development Corp.	1	9,646
	Columbia Natural Res.	6	241,284
	Consol-Ray Res.	14	295,315
	R&B Petroleum	2	34,019
	James F. Scott Oil & Gas Co.	2	99,014
	Total	25	679,278
Washington	Early Grove Gas Co.	6	61,805
Wise	ANR Production Co.	143	5,985,063
	Philadelphia Oil Co.	12	328,398
	Total	155	6,313,461
	TOTAL	573	15,427,109

Table 13. Drilling Activity for Gas by County, 1986.

COUNTY	DEVELOPMENT WELLS	EXPLORATORY WELLS	TOTAL WELLS
Buchanan	2	0	2
Caroline	0	2	2
Dickenson	86	5	91
Essex	0	2	2
Lee	2	0	2
Westmoreland	0	2	2
Wise	44	2	46
TOTAL	134	13	147

Table 14. Footage Drilled for Gas, 1986.

COUNTY	DEVELOPMENT FOOTAGE	EXPLORATORY FOOTAGE	TOTAL FOOTAGE
Buchanan	10,589	0	10,589
Caroline	0	11,000	11,000
Dickenson	432,121	32,669	464,790
Essex	0	11,000	11,000
Lee	4,877	0	4,877
Westmoreland	0	9,033	9,033
Wise	259,119	11,972	271,091
TOTAL	706,706	75,674	782,380

Table 15. Natural Gas Delivery to Pipelines, 1986; gas volume reported in Mcf.

QUARTER	COLUMBIA NATURAL RESOURCES	CONSOLIDATED GAS SUPPLY	EAST TENNESSEE NATURAL GAS COMPANY	KENTUCKY-WEST VIRGINIA GAS CORPORATION
First	2,735,507	168,482	156,626	1,135,867
Second	2,674,720	196,154	67,679	1,105,287
Third	1,895,109	179,683	82,790	1,141,219
Fourth	2,294,724	169,831	121,663	1,030,702
TOTAL	9,600,060	714,758	428,758	4,413,075

Table 16. Reported Estimated Reserves of Natural Gas.

COUNTY	PRODUCING WELLS		SHUT-IN WELLS		TOTAL NO. OF WELLS	REMAINING RESERVES (Mcf)
	NO. OF WELLS	REMAINING RESERVES (Mcf)	NO. OF WELLS	REMAINING RESERVES (Mcf)		
Buchanan	158	38,135,559	10	3,118,082	168	41,253,641
Dickenson	216	87,190,305	95	31,369,277	311	118,559,582
Lee	0	0	7	514,848	7	514,848
Rockingham	3	100,000	2	200,000	5	300,000
Russell	1	81,813	0	0	1	81,813
Scott	9	1,825,318	1	163,000	10	1,988,318
Tazewell	25	2,439,445	0	0	25	2,439,445
Washington	6	661,444	1	8,665	7	670,109
Wise	<u>155</u>	<u>89,268,395</u>	<u>27</u>	<u>4,200,000</u>	<u>182</u>	<u>93,468,395</u>
TOTAL	573	219,702,279	143	39,573,872	716	259,276,151

Table 17. Acreage Leased by Oil and Gas Companies, 1986.

COMPANY NAME	DEVELOPED ACRES	UNDEVELOPED ACRES	FEDERAL UNDEVELOPED ACRES	TOTAL
AMOCO	0	36,700	0	36,700
ANR PRODUCTION COMPANY	22,800	240,797	13,114	276,791
APACO PETROLEUM	250	0	0	250
ARCO	0	18,934	0	18,934
ASHLAND EXPLORATION COMPANY	9,000	4,780	0	13,780
BARTLETT ENERGY CORPORATION	0	297	0	297
CNG DEVELOPMENT CORPORATION	0	6,864	0	6,864
CABOT OIL AND GAS CORPORATION	630	17,047	0	17,677
CHEVRON U.S.A., INCORPORATED	0	226,514	0	226,514
CITIES SERVICE	2,845*	3,293	0	6,138
COLUMBIA NATURAL RESOURCES	49,546	203,792	0	253,338
CONSOLIDATED GAS SUPPLY	8,073	8,190	0	8,263
EARLY GROVE GAS COMPANY	1,280	47,601	0	48,881
EASTERN STATES EXPLORATION	80	0	0	80
W. E. ELLIOTT	192	160	0	352
ENERGY USA	0	6	0	6
EXXON CORPORATION	0	125,164	0	125,164
HOWARD BROTHERS	0	0	5,600	5,600
NRM PETROLEUM	3,708	0	0	3,708
P&S OIL AND GAS	8,629	0	0	8,629
PANTHER CREEK	2	498	0	500
PEAKE OPERATING	72	0	0	72
PENN-VA RESOURCES	1,618	60,231	0	61,849
PENNZOIL	0	18,469	27,646	46,115
PHILADELPHIA OIL COMPANY	220,363	61,808	0	282,171
PHILLIPS PETROLEUM	0	113,256	0	113,256
PINE MOUNTAIN OIL AND GAS	3,013	0	0	3,013
PRIDE OIL AND GAS COMPANY	0	12,327	0	12,327
R & B PETROLEUM	400	2,600	0	3,000
ROYAL RESOURCES	0	56,286	0	56,286
JAMES F. SCOTT OIL AND GAS	210	46	0	256
SHORE EXPLORATION	0	22,000	0	22,000
SOVERIGN PETROLEUM	0	1,597	0	1,597
STONEWALL GAS COMPANY	345	7,792	17,663	25,800
SUN EXPLORATION	0	44,000	53,000	97,000
SOUTHERN EXPLORATION	44	0	0	44
TXO	0	2,600	0	2,600
TEXACO	0	129,520	27,700	157,220
UNION TEXAS	0	82,179	565	82,744
WITT OIL AND GAS	50	0	0	50
TOTALS	327,100	1,588,192	145,288	2,062,785

* 2,205 Federal developed acres included.

Table 18. Virginia Well Completions, 1986.

No.	County	Permit No.	Operator	Well Name	7.5' Quadrangle	Latitude	Longitude	Well Class	Total Depth (feet)	Formation at T.D.	Producing Formation	Initial Flow (Mcf/d)	Final Flow (Mcf/d)
BU-226	Buchanan	937	Berea Oil & gas	Jewell #2	Patterson	10650'S. 37°20'00"	575'W. 82°52'30"	D	5229	Dev.	Berea, Big Lime	84	6300
BU-229	Buchanan	991	CNR	21495	Elkhorn City	8100'S. 37°20'00"	8850'W. 82°15'00"	D	5364	Dev.	Lower and Middle Devonian	38	420
CA-1	Caroline	833	Texaco	Butler #1		9700'S. 38°10'00"	5900'W. 77°07'30"	WC	5500	Tri.	Plugged and Abandoned		
CA-2	Caroline	836	Texaco	Campbell #1		3220'S. 38°00'00"	2620'W. 77°20'00"	WC	5500	Tri.	Plugged and Abandoned		
DI-214	Dickenson	518	Philadelphia Oil	P-152	Clintwood	13450'S. 37°12'30"	8125'W. 82°27'30"	WC	5142	Corniferous	Berea, Upper and Lower Devonian	60	231
DI-250	Dickenson	840	Philadelphia Oil	P-200	Caney Ridge	11110'S. 37°02'30"	10500'W. 82°22'30"	D	5764	Dev.	Berea	60	825
DI-251	Dickenson	841	Philadelphia Oil	P-180	Nora	4250'S. 37°02'30"	7540'W. 82°17'30"	D	5608	Dev.	Berea	0	94
DI-252	Dickenson	842	Philadelphia Oil	P-194	Duty	80'S. 37°07'30"	10580'W. 82°12'30"	D	4784	Dev.	Berea	0	380
DI-253	Dickenson	843	Philadelphia Oil	P-207	Haysi	7400'S. 37°10'00"	6850'W. 82°17'30"	WC	6994	Ord.	Berea, Lower and Middle Devonian	0	270
DI-254	Dickenson	844	Philadelphia Oil	P-193	Nora	10000'S. 37°05'00"	11850'W. 82°20'00"	D	5051	Dev.	Berea	582	1115
DI-255	Dickenson	845	Philadelphia Oil	P-209	Haysi	10820'S. 37°10'00"	7240'W. 82°15'00"	D	5126	Dev.	Berea, Big Lime	84	1858
DI-256	Dickenson	846	Philadelphia Oil	P-210	Caney Ridge	4000'S. 32°02'30"	2250'W. 82°22'30"	D	5366	Dev.	Berea	304	1245
DI-257	Dickenson	847	Philadelphia Oil	P-211	Caney Ridge	9675'S. 37°07'30"	9200'W. 82°22'30"	D	4790	Dev.	Berea	0	492
DI-258	Dickenson	848	Philadelphia Oil	P-212	Haysi	8500'S. 37°10'00"	3100'W. 82°15'00"	WC	6965	Ord.	Berea, Devonian, Weir	84	581, 364
DI-259	Dickenson	849	Philadelphia Oil	P-213	Prater	13000'S. 37°10'00"	11280'W. 82°12'30"	D	4996	Dev.	Berea, Big Lime	0	421, 60
DI-260	Dickenson	850	Philadelphia Oil	P-217	Nora	14870'S. 37°05'00"	9590'W. 82°20'00"	WC	7343	Ord.	Berea, Big Lime, Corniferous, Devonian, Ravencliff	119	1071
DI-261	Dickenson	854	Philadelphia Oil	P-51	Caney Ridge	15080'S. 37°07'30"	3630'W. 82°25'00"	D	5071	Dev.	Berea	21	1055
DI-262	Dickenson	858	Philadelphia Oil	P-199	Haysi	1470'S. 37°10'00"	6330'W. 82°20'00"	D	4598	Dev.	Berea, Big Lime, Maxon	260	2268
DI-263	Dickenson	863	Philadelphia Oil	P-221	Clintwood	4650'S. 37°10'00"	2300'W. 82°22'30"	D	4431	Dev.	Berea	47	1615
DI-264	Dickenson	864	Philadelphia Oil	P-224	Duty	2150'S. 37°07'30"	11350'W. 82°12'30"	D	5203	Dev.	Berea, Big Lime	0	133, 103
DI-265	Dickenson	875	Philadelphia Oil	P-216	Nora	1650'S. 37°07'30"	1300'W. 82°17'30"	D	5283	Dev.	Berea	0	482
DI-266	Dickenson	866	Philadelphia Oil	P-201	Nora	9260'S. 37°07'30"	2320'W. 82°15'00"	D	5260	Dev.	Berea, Big Lime, Weir	0	730
DI-267	Dickenson	867	Philadelphia Oil	P-202	Haysi	12130'S. 37°12'30"	11000'W. 82°17'30"	D	4586	Dev.	Berea	0	377
DI-268	Dickenson	868	Philadelphia Oil	P-206	Clintwood	789'S. 37°10'00"	3100'W. 82°22'30"	WC	6225	Ord.	Berea, Devonian, Maxon	246	1186
DI-269	Dickenson	872	Philadelphia Oil	P-214	Nora	11200'S. 37°07'30"	9800'W. 82°15'00"	D	5269	Dev.	Berea	60	284
DI-270	Dickenson	873	Philadelphia Oil	P-215	Nora	2950'S. 37°07'30"	11750'W. 82°15'00"	D	5334	Dev.	Berea, Maxon	103	60, 343
DI-272	Dickenson	878	Philadelphia Oil	P-220	Clintwood	4700'S. 37°10'00"	100'W. 82°22'30"	D	4492	Dev.	Berea, Big Lime	42	60, 622
DI-273	Dickenson	879	Philadelphia Oil	P-219	Nora	11800'S. 37°07'30"	9710'W. 82°17'30"	D	5129	Dev.	Berea	0	229
DI-274	Dickenson	882	Philadelphia Oil	P-195	Haysi	14025'S. 37°10'00"	1575'W. 82°17'30"	D	4932	Dev.	Berea	823	823
DI-275	Dickenson	883	Philadelphia Oil	P-208	Haysi	6350'S. 37°10'00"	5000'W. 82°17'30"	D	4817	Dev.	Berea	27	387
DI-276	Dickenson	884	Philadelphia Oil	P-223	Nora	10175'S. 37°07'30"	7250'W. 82°17'30"	D	5551	Dev.	Berea	10	316
DI-278	Dickenson	886	Philadelphia Oil	P-229	Prater	11925'S. 37°10'00"	5650'W. 82°12'30"	D	4624	Dev.	Berea, Ravencliff	696	696, 215
DI-279	Dickenson	887	Philadelphia Oil	P-232	Prater	6000'S. 37°10'00"	10150'W. 82°12'30"	D	4627	Dev.	Berea, Big Lime, Maxon, Ravencliff	103	822
DI-280	Dickenson	888	Philadelphia Oil	P-250	Duty	3350'S. 37°07'30"	9350'W. 82°12'30"	D	4845	Dev.	Berea, Weir	0	58, 223
DI-281	Dickenson	889	Philadelphia Oil	P-236	Haysi	2100'S. 37°10'00"	8110'W. 82°15'00"	D	4719	Dev.	Berea, Big Lime	0	984, 1122
DI-282	Dickenson	890	Philadelphia Oil	P-244	Caney Ridge	13380'S. 37°05'00"	1010'W. 82°22'30"	D	5327	Dev.	Berea	603	582
DI-283	Dickenson	891	Philadelphia Oil	P-222	Nora	8825'S. 37°07'30"	3550'W. 82°17'30"	D	5600	Dev.	Berea, Big Lime	29	169, 188
DI-284	Dickenson	892	Philadelphia Oil	P-240	Haysi	13875'S. 37°12'30"	7575'W. 82°15'00"	D	4900	Dev.	Berea, Maxon	84	1264, 150
DI-285	Dickenson	894	Philadelphia Oil	P-218	Nora	11680'S. 37°07'30"	4600'W. 82°17'30"	D	5633	Dev.	Berea	14	204
DI-286	Dickenson	895	Philadelphia Oil	P-230	Prater	12975'S. 37°10'00"	7600'W. 82°12'30"	D	5177	Dev.	Berea, Big Lime	174	263, 300
DI-287	Dickenson	896	Philadelphia Oil	P-242	Nora	1425'S. 37°07'30"	4525'W. 82°15'00"	D	5407	Dev.	Berea	60	408
DI-288	Dickenson	897	Philadelphia Oil	P-243	Nora	2490'S. 37°07'30"	2275'W. 82°15'00"	D	5413	Dev.	Berea, Big Lime, Weir	0	492, 162, 460

Table 18. Virginia Well Completions, 1986 cont.

No.	County	Permit No.	Operator	Well Name	7.5' Quadrangle	Latitude	Longitude	Well Class	Total Depth (feet)	Formation at T.D.	Producing Formation	Initial Flow (Mcfd)	Final Flow (Mcfd)
DI-289	Dickenson	898	Philadelphia Oil	P-245	Nora	2015'S.	5875'W.	D	5288	Dev.	Berea, Big Lime, Upper Devonian	84	381, 84
DI-292	Dickenson	902	Philadelphia Oil	P-237	Haysi	7400'S.	82°17'30" 10610'W.	D	4844	Dev.	Berea, Big Lime	84	1668, 348
DI-293	Dickenson	903	Philadelphia Oil	P-238	Haysi	37°10'00" 9875'S.	82°15'00" 9960'W.	D	4930	Dev.	Berea, Big Lime, Weir	103	220
DI-298	Dickenson	909	Philadelphia Oil	P-192	Haysi	14550'S.	8880'W.	D	4833	Dev.	Berea	0	357
DI-299	Dickenson	915	Philadelphia Oil	P-107	Haysi	15090'S.	5300'W.	D	4679	Dev.	Berea, Maxon	207	933, 103
DI-300	Dickenson	916	Philadelphia Oil	P-265	Nora	37°12'30" 4625'S.	82°17'30" 10100'W.	D	5751	Dev.	Berea	14	303
DI-301	Dickenson	917	Philadelphia Oil	P-287	Prater	37°05'00" 10150'S.	82°17'30" 8400'W.	D	4772	Dev.	Berea, Big Lime, Weir	0	265, 177 830
DI-305	Dickenson	922	Philadelphia Oil	P-258	Haysi	37°10'00" 3900'S.	82°12'30" 11650'W.	D	4448	Dev.	Berea, Big Lime	0	1338, 220
DI-306	Dickenson	926	Philadelphia Oil	P-247	Nora	37°10'00" 475'S.	82°15'00" 12415'W.	D	4915	Dev.	Berea, Big Lime, Upper Devonian	94	1122, 119
DI-307	Dickenson	927	Philadelphia Oil	P-266	Nora	1225'S.	8050'W.	D	5597	Dev.	Berea, Big Lime	119	823, 1154
DI-312	Dickenson	932	Philadelphia Oil	P-312	Nora	37°05'00" 7950'S.	82°17'30" 8635'W.	D	5456	Dev.	Berea, Big Lime	304	746, 467
DI-314	Dickenson	934	Philadelphia Oil	P-317	Nora	37°07'30" 5750'S.	82°17'30" 8575'W.	D	5108	Dev.	Berea, Big Lime	158	1066, 641
DI-315	Dickenson	935	Philadelphia Oil	P-318	Nora	37°07'30" 5725'S.	82°17'30" 4450'W.	D	4780	Dev.	Berea, Big Lime	1113	60, 1113
DI-316	Dickenson	936	Philadelphia Oil	P-322	Nora	37°07'30" 12590'S.	82°17'30" 1700'W.	D	5485	Dev.	Berea	253	316
DI-319	Dickenson	943	Philadelphia Oil	P-108	Haysi	37°07'30" 12200'S.	82°20'00" 6200'W.	D	4995	Dev.	Berea	0	984
DI-320	Dickenson	944	Philadelphia Oil	P-160	Duty	37°12'30" 4250'S.	82°17'30" 11850'W.	D	5491	Dev.	Berea, Big Lime	57	3273
DI-324	Dickenson	948	Philadelphia Oil	P-306	Haysi	37°05'00" 9300'S.	82°12'30" 9900'W.	D	4873	Dev.	Berea, Big Lime	169	2768
DI-327	Dickenson	958	Philadelphia Oil	P-324	Nora	37°12'30" 13050'S.	82°17'30" 7010'W.	D	4878	Dev.	Berea, Upper Devonian	25	800
DI-328	Dickenson	959	Philadelphia Oil	P-332	Nora	37°07'30" 6360'S.	82°20'00" 6675'W.	D	5430	Dev.	Berea, Big Lime	133	4836
DI-329	Dickenson	965	Philadelphia Oil	P-165	Caney Ridge	37°05'00" 13880'S.	82°22'30" 8000'W.	D	5458	Dev.	Berea, Upper Devonian	60	582
DI-330	Dickenson	966	Philadelphia Oil	P-337	Caney Ridge	37°05'00" 8820'S.	82°22'30" 10690'W.	D	5804	Dev.	Berea, Big Lime, Upper Devonian	231	3916
DI-331	Dickenson	967	Philadelphia Oil	P-326	Nora	37°02'30" 12810'S.	82°22'30" 7350'W.	D	5411	Dev.	Berea	14	327
DI-332	Dickenson	970	Philadelphia Oil	P-248	Nora	37°07'30" 10325'S.	82°17'30" 9450'W.	D	5062	Dev.	Berea, Big Lime	189	762, 823
DI-333	Dickenson	971	Philadelphia Oil	P-267	Nora	37°05'00" 9215'S.	82°20'00" 10850'W.	D	5495	Dev.	Berea	0	315
DI-335	Dickenson	973	Philadelphia Oil	P-331	Nora	37°07'30" 3900'S.	82°17'30" 6275'W.	D	5369	Dev.	Berea, Big Lime	133	7728
DI-336	Dickenson	975	Philadelphia Oil	P-256	Nora	37°05'00" 100'S.	82°20'00" 11400'W.	D	4637	Dev.	Berea, Upper Devonian	60	1205
DI-337	Dickenson	976	Philadelphia Oil	P-294	Clintwood	37°07'30" 4190'S.	82°20'00" 5300'W.	D	5015	Dev.	Berea, Upper Devonian	103	1459
DI-338	Dickenson	977	Philadelphia Oil	P-310	Haysi	37°10'00" 1200'S.	82°22'30" 2700'W.	D	4642	Dev.	Berea, Maxon	42	1476, 696
DI-340	Dickenson	979	Philadelphia Oil	P-353	Caney Ridge	37°12'30" 10090'S.	82°20'00" 2100'W.	D	5539	Dev.	Berea, Big Lime	0	678,235
DI-341	Dickenson	980	Philadelphia Oil	P-355	Clintwood	37°05'00" 10490'S.	82°22'30" 1510'S.	D	4693	Dev.	Berea, Big Lime, Upper Devonian	189	3275
DI-342	Dickenson	982	Philadelphia Oil	P-356	Clintwood	37°12'30" 12970'S.	82°22'30" 725'W.	D	4946	Dev.	Berea, Big Lime	189	2768
DI-343	Dickenson	983	Philadelphia Oil	P-333	Nora	37°12'30" 3330'S.	82°22'30" 2975'W.	D	4979	Dev.	Berea, Big Lime, Weir	60	1328, 148 235
DI-344	Dickenson	984	Philadelphia Oil	P-286	Nora	37°07'30" 8200'S.	82°17'30" 8725'W.	D	5414	Dev.	Berea, Big Lime	33	807, 545
DI-345	Dickenson	985	Philadelphia Oil	P-227	Nora	37°05'00" 4450'S.	82°20'00" 10925'W.	D	5405	Dev.	Berea	0	750
DI-346	Dickenson	986	Philadelphia Oil	P-334	Clintwood	37°07'30" 9560'S.	82°17'30" 6590'W.	D	4948	Dev.	Berea, Big Lime, Maxon, Upper Devonian	158	2600, 895
DI-347	Dickenson	987	Philadelphia Oil	P-354	Clintwood	37°10'00" 8590'S.	82°22'30" 710'W.	D	4751	Dev.	Berea, Ravencloft, Upper Devonian	223	1780, 144
DI-348	Dickenson	988	Philadelphia Oil	P-357	Haysi	37°12'30" 9325'S.	82°22'30" 4150'W.	D	5215	Dev.	Berea, Big Lime, Upper Devonian	60	4000
DI-349	Dickenson	989	Philadelphia Oil	P-358	Haysi	37°10'00" 4015'S.	82°20'00" 9800'W.	D	4801	Dev.	Berea, Upper Devonian	103	1774
DI-350	Dickenson	990	Philadelphia Oil	P-362	Haysi	37°10'00" 7900'S.	82°20'00" 11800'W.	D	4830	Dev.	Berea, Upper Devonian	0	622
DI-351	Dickenson	992	Philadelphia Oil	ANR-20	Coeburn	37°12'30" 2930'S.	82°17'30" 8190'W.	D	6046	Dev.	Berea, Big Lime, Weir	0	3500
DI-352	Dickenson	996	Philadelphia Oil	P-271	Haysi	37°00'00" 12550'S.	82°22'30" 11100'W.	D	4855	Dev.	Berea, Big Lime	14	1600, 512
DI-353	Dickenson	997	Philadelphia Oil	P-328	Clintwood	37°10'00" 12910'S.	82°17'30" 1290'W.	D	5103	Dev.	Berea, Big Lime, Upper Devonian	119	2200, 492
DI-354	Dickenson	998	Philadelphia Oil	P-370	Clintwood	37°10'00" 6325'S.	82°22'30" 4210'W.	D	4986	Dev.	Berea, Big Lime, Upper Devonian	133	1095
DI-355	Dickenson	1000	Philadelphia Oil	P-269	Haysi	37°10'00" 13050'S.	82°22'30" 5475'W.	D	4837	Dev.	Berea, Upper Devonian	603	2160
DI-356	Dickenson	1002	Philadelphia Oil	P-371	Clintwood	37°10'00" 8715'S.	82°17'30" 3450'W.	D	5011	Dev.	Berea, Big Lime, Upper Devonian	0	1841

Table 18. Virginia Well Completions, 1986 cont.

No.	County	Permit No.	Operator	Well Name	7.5' Quadrangle	Latitude	Longitude	Well Class	Total Depth (feet)	Formation at T.D.	Producing Formation	Initial Flow (Mcf/d)	Final Flow (Mcf/d)
DI-357	Dickenson	1003	Philadelphia Oil	ANR-14	Coeburn	2830'S. 37°00'00"	10350'W. 82°22'30"	D	6051	Dev.	Berea	0	1453
DI-359	Dickenson	1005	Philadelphia Oil	P-361	Caney Ridge	2650'S. 37°05'00"	4390'W. 82°25'00"	D	5228	Dev.	Berea, Upper Devonian	60	1400
DI-361	Dickenson	1009	Philadelphia Oil	P-372	Nora	10500'S. 37°05'00"	3890'W. 82°20'00"	D	5575	Dev.	Berea	0	750
DI-365	Dickenson	1017	Philadelphia Oil	P-359	Clintwood	37°05'00" 37°10'00"	82°20'00" 82°22'30"	D	4808	Dev.	Berea, Big Lime, Upper Devonian	133	1220, 1242
DI-366	Dickenson	1018	Philadelphia Oil	P-390	Caney Ridge	13700'S. 37°05'00"	4925'W. 82°22'30"	D	5212	Dev.	Berea, Upper Devonian	60	1085
DI-367	Dickenson	1019	Philadelphia Oil	P-391	Caney Ridge	10900'S. 37°05'00"	1525'W. 82°25'00"	D	5001	Dev.	Berea, Big Lime, Upper Devonian	14	146
DI-368	Dickenson	1020	Philadelphia Oil	P-387	Caney Ridge	8120'S. 37°05'00"	10625'W. 82°25'00"	D	5125	Dev.	Upper Devonian	0	262
DI-369	Dickenson	1021	Philadelphia Oil	P-373	Haysi	14300'S. 37°15'00"	5250'W. 82°20'00"	D	4588	Dev.	Berea, Big Lime, Upper Devonian	119	1750
ES-1	Essex	834	Texaco	Payne #1		13400'S. 38°07'30"	6850'W. 77°02'30"	WC	5500	Tri.	Plugged and Abandoned		
ES-2	Essex	835	Texaco	Ellis #1		12700'S. 38°02'30"	7100'W. 76°57'30"	WC	5500	Tri.	Plugged and Abandoned		
WM-1	Westmoreland	859	Texaco	Bowie		10500'S. 38°12'30"	4300'W. 76°57'30"	WC	5500	Tri.	Plugged and Abandoned		
WM-2	Westmoreland	869	Texaco	Fogg Roberts #1		10500'S. 38°12'00"	9500'W. 76°50'00"	WC	3533	Basement Complex	Plugged and Abandoned		
LE-152	Lec	942	Southern	Ely #9	Hubbard Spring	63'S. 36°42'30"	4499'W. 83°07'30"	D	2308	Trenton	Trenton	30	6
LE-153	Lec	798	Adkinson	Lec #2	Hubbard Spring	2150'S. 36°42'30"	795'W. 83°07'30"	D	2569	Trenton	Plugged and Abandoned		
WS-149	Wise	770	ANR Prod.	10080-A	Flat Gap	3500'S. 37°02'30"	4000'W. 82°42'30"	D	6207	Corniferous	Upper and Lower Devonian, Weir	0	253, 310
WS-155	Wise	783	ANR Prod.	10131	Norton	1000'S. 37°00'00"	7200'S. 82°40'00"	D	5996	Corniferous	Upper and Lower Beres, Upper and Lower Devonian, Weir	0	133, 133
WS-163	Wise	800	ANR Prod.	10130	Flat Gap	13700'S. 37°02'30"	8300'W. 82°40'00"	D	6070	Corniferous	Upper and Lower Devonian, Weir	0	358
WS-169	Wise	809	ANR Prod.	10181	Norton	10150'S. 36°57'30"	6000'W. 82°42'30"	D	5750	Corniferous	Berea, Upper and Lower Devonian, Weir	0	492
WS-173	Wise	819	ANR Prod.	10114	Flat Gap	9200'S. 37°02'30"	5400'W. 82°40'00"	D	6085	Corniferous	Berea, Upper and Lower Devonian, Weir	0	60
WS-174	Wise	820	ANR Prod.	180-A	Flat Gap	10600'S. 37°02'30"	4150'W. 82°42'30"	D	5814	Corniferous	Upper and Lower Devonian, Weir	0	332
WS-179	Wise	838	Philadelphia Oil	P-204	Caney Ridge	8915'S. 37°02'30"	4290'W. 82°27'30"	WC	6819	Corniferous	Berea, Devonian	60	84, 119
WS-180	Wise	839	Philadelphia Oil	P-203	Coeburn	7050'S. 37°00'00"	4050'W. 82°27'30"	D	5223	Dev.	Berea	103	223
WS-181	Wise	851	ANR Prod.	10200	Norton	4125'S. 37°00'00"	10925'W. 82°42'30"	D	5608	Corniferous	Berea, Upper and Lower Devonian, Weir	0	561
WS-182	Wise	852	ANR Prod.	10201	Appalachia	5450'S. 37°00'00"	1600'W. 82°45'00"	D	5985	Corniferous	Upper and Lower Devonian, Weir	0	444
WS-183	Wise	853	ANR Prod.	10202	Norton	7850'S. 37°00'00"	7225'W. 82°42'30"	D	5240	Corniferous	Berea, Upper and Lower Devonian, Weir	0	377
WS-184	Wise	855	ANR Prod.	10194	Appalachia	5050'S. 36°55'00"	1250'W. 82°47'30"	D	5685	Corniferous	Big Lime, Upper and Lower Devonian, Weir	0	1719
WS-185	Wise	856	ANR Prod.	10204	Norton	8500'S. 37°00'00"	9950'W. 82°42'30"	D	5705	Corniferous	Berea, Upper and Lower Devonian, Weir	0	270
WS-186	Wise	857	ANR Prod.	10205	Norton	10150'S. 37°00'00"	8700'W. 82°42'30"	D	5580	Corniferous	Berea, Upper and Lower Devonian, Weir	0	539
WS-187	Wise	860	ANR Prod.	10193	Appalachia	7625'S. 36°55'00"	3675'W. 82°47'30"	D	5803	Corniferous	Berea, Upper and Lower Devonian, Weir	0	233
WS-188	Wise	861	ANR Prod.	10300	Appalachia	10600'S. 37°00'00"	11500'W. 82°47'30"	D	5425	Corniferous	Berea, Upper and Lower Devonian, Weir	0	492
WS-190	Wise	870	ANR Prod.	10023-R	Appalachia	3450'S. 37°00'00"	11300'W. 82°45'00"	D	5475	Corniferous	Upper and Lower Devonian, Weir	0	1257
WS-191	Wise	871	ANR Prod.	10203	Appalachia	8500'S. 37°00'00"	500'W. 82°45'00"	D	5253	Corniferous	Upper and Lower Devonian, Weir	0	1174
WS-192	Wise	865	Philadelphia Oil	P-225	Coeburn	3400'S. 37°00'00"	5700'W. 82°27'30"	D	5049	Dev.	Berea	0	292
WS-193	Wise	874	ANR Prod.	10156	Appalachia	14375'S. 37°00'00"	3525'W. 82°50'00"	D	5920	Corniferous	Berea, Upper and Lower Devonian, Weir	0	742
WS-194	Wise	867	Philadelphia Oil	P-226	Coeburn	1900'S. 37°00'00"	3400'W. 82°27'30"	D	5529	Dev.	Berea, Big Lime	84	267,183
WS-195	Wise	880	ANR Prod.	10169	Appalachia	2500'S. 37°00'00"	4480'W. 82°45'00"	D	6194	Corniferous	Upper and Lower Devonian, Weir	0	1719
WS-196	Wise	881	ANR Prod.	10168	Appalachia	2500'S. 37°00'00"	6650'W. 82°45'00"	D	6701	Corniferous	Berea, Upper and Lower Devonian, Weir	0	2477
WS-199	Wise	905	ANR Prod.	10301	Appalachia	7950'S. 37°00'00"	11600'W. 82°47'30"	D	6200	Corniferous	Upper and Lower Devonian, Weir	0	270
WS-201	Wise	911	ANR Prod.	10113	Flat Gap	6550'S. 37°02'30"	1725'W. 82°40'00"	D	5600	Corniferous	Berea, Big Lime, Upper and Lower Devonian, Weir	0	467

Table 18. Virginia Well Completions, 1986 cont.

No.	County	Permit No.	Operator	Well Name	7.5' Quadrangle	Latitude	Longitude	Well Class	Total Depth (feet)	Formation at T.D.	Producing Formation	Initial Flow (Mcf/d)	Final Flow (Mcf/d)
WS-202	Wise	912	ANR Prod.	10268	Appalachia	400°S, 37°00'00"	4600°W, 82°45'00"	D	5760	Corniferous	Berea, Upper and Lower Devonian	0	2876
WS-204	Wise	923	ANR Prod.	10180	Norton	12750°S, 36°57'30"	5125°W, 82°42'30"	D	5390	Corniferous	Berea, Upper and Lower Devonian, Weir	0	235
WS-205	Wise	924	ANR Prod.	10151	Appalachia	14300°S, 36°57'30"	6550°W, 82°50'00"	D	6009	Corniferous	Berea, Upper and Lower Devonian, Weir	0	492
WS-206	Wise	925	ANR Prod.	10170	Appalachia	100°S, 37°00'00"	10450°W, 82°45'00"	D	5945	Corniferous	Upper and Lower Devonian, Weir	0	936
WS-207	Wise	940	ANR Prod.	10366	Flat Gap	7950°S, 37°02'30"	11625°W, 82°42'30"	D	6205	Corniferous	Upper and Lower Devonian, Weir	0	1400
WS-209	Wise	951	ANR Prod.	10360	Norton	10600°S, 36°57'30"	8575°W, 82°42'30"	D	5660	Corniferous	Berea, Upper and Lower Devonian, Weir	0	368
WS-210	Wise	953	ANR Prod.	10171	Appalachia	7775°S, 37°00'00"	8050°W, 82°45'00"	D	5992	Corniferous	Berea, Upper and Lower Devonian, Weir	0	581
WS-211	Wise	954	ANR Prod.	10270	Appalachia	1500°S, 37°00'00"	8675°W, 82°45'00"	D	6511	Corniferous	Berea, Upper and Lower Devonian, Weir	0	1950
WS-212	Wise	955	ANR Prod.	10272	Appalachia	4200°S, 37°00'00"	8750°W, 82°45'00"	D	5571	Corniferous	Berea, Upper and Lower Devonian, Weir	0	1342
WS-213	Wise	956	ANR Prod.	10379	Flat Gap	10350°S, 37°02'30"	10175°W, 82°42'30"	D	6023	Corniferous	Berea, Upper and Lower Devonian, Weir	0	1289
WS-214	Wise	957	ANR Prod.	10382	Flat Gap	12300°S, 37°02'30"	8225°W, 82°42'30"	D	6080	Corniferous	Berea, Upper and Lower Devonian, Weir	0	730
WS-215	Wise	960	ANR Prod.	10251	Appalachia	9000°S, 36°57'30"	3600°W, 82°50'00"	D	5906	Corniferous	Berea, Upper and Lower Devonian, Weir	0	628
WS-217	Wise	962	ANR Prod.	10277	Appalachia	1450°S, 37°00'00"	1825°W, 82°45'00"	D	5712	Corniferous	Berea, Upper and Lower Devonian, Weir	0	1858
WS-218	Wise	963	ANR Prod.	10126	Norton	4900°S, 36°57'30"	3050°W, 82°40'00"	D	5918	Corniferous	Berea, Upper and Lower and Middle Devonian	0	434
WS-219	Wise	974	ANR Prod.	10128	Norton	7450°S, 36°57'30"	5500°W, 82°40'00"	D	5721	Corniferous	Berea, Upper, Lower and Middle Devonian	0	492
WS-220	Wise	981	ANR Prod.	10123	Norton	1950°S, 36°57'30"	1150°W, 82°40'00"	D	5782	Corniferous	Berea, Upper, Lower and Middle Devonian	0	372
WS-222	Wise	994	ANR Prod.	10368	Flat Gap	1200°S, 37°02'30"	9800°W, 82°42'30"	D	6085	Corniferous	Upper and Lower Devonian, Weir	0	539
WS-223	Wise	995	ANR Prod.	10369	Flat Gap	2250°S, 37°02'30"	7480°W, 82°42'30"	D	6150	Corniferous	Upper and Lower Devonian, Weir	0	492
WS-224	Wise	1001	Philladelphia Oil	P-348	Coeburn	6980°S, 36°57'30"	3080°W, 82°25'00"	WC	5153	Devonian	Berea	84	1425
WS-228	Wise	1013	ANR Prod.	10154	Appalachia	425°S, 36°57'30"	8200°W, 82°50'00"	D	7108	Corniferous	Upper and Lower Devonian, Weir	0	539
WS-229	Wise	1015	ANR Prod.	10323	Appalachia	1800°S, 37°00'00"	2800°W, 82°47'30"	D	6494	Corniferous	Upper and Lower Devonian, Weir	0	335

INDUSTRIAL AND METALLIC MINERALS

CEMENT

Three companies, located in Warren and Botetourt counties and in the City of Chesapeake, produce cement in Virginia. Riverton Corporation in Warren County produces masonry cement at their plant north of Front Royal. Crushed limestone (Edinburg Formation) is calcined, hydrated, and mixed with portland cement from out-of-state sources. Sales are made to building supply dealers in Virginia and surrounding states. Tarmac-LoneStar, Inc. operates a plant in western Botetourt County; this is the largest operation owned by the company. The facility produces portland cement from lo-

cally mined limestone, shale, and iron scale from Roanoke Electric Steel Company. Clinker is manufactured in five coal-fired kilns and ground into cement. Three-quarters of the cement is sold to ready-mix companies. LaFarge Calcium Aluminate, Inc. operates a cement manufacturing plant in the City of Chesapeake. Cement clinker is imported and ground into low- and medium-calcium aluminate cement. Advantages of this cement include rapid hardening as well as resistance to wear, extreme temperatures, and corrosion.

CLAY MATERIALS

Residual and transported clay, weathered phyllite and schist, and shale are used as raw material to produce almost one-half billion bricks in Virginia annually, when all

the plants in the State are working at full capacity. The clay-material industry in the western part of the State mines Paleozoic shale, with the primary end-products being common and face brick. Tazewell Clay Products Company in Tazewell County extrudes clay to produce clay dummies used by the coal industry to tamp shot holes. Face-brick producers mine Triassic shale and clay residuum in Orange and Prince William counties; and Precambrian schist, residual clay, and transported clay in Amherst (Figure 1), Brunswick, Chesterfield, Greensville, and Henrico counties.

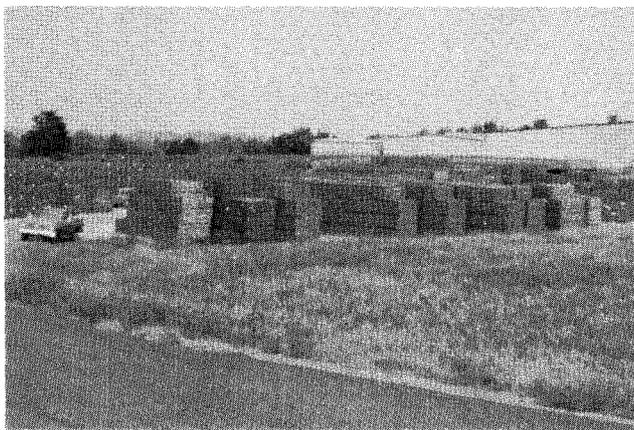


Figure 1. Brick, produced from residual clay and weathered schist of the Candler Formation, on yard of Boral Brick, Inc., in southern Amherst County, four miles north of Lynchburg.

Lightweight aggregate is produced in Botetourt, Buckingham, and Pittsylvania counties. Weblite Corporation in Botetourt County mines shale from the Rome Formation to produce lightweight aggregate by the sintering process, using semi-anthracite waste coal from Montgomery County to fire the kilns. They utilize about 100 tons of coal per day to yield a lightweight-product having a weight as low as 31 lb/ft³ for 5/16- to 3/4- inch particle sizes. Triassic shale is used by Virginia Solite Company southwest of Danville, Pittsylvania County, to obtain a similar product. Solite Corporation in northern Buckingham County uses the Arvonian slate of Ordovician age to produce lightweight aggregate.

Clay from the Cold Spring kaolin deposit in southeastern Augusta County is intermittently utilized by James River Limestone Co., Inc. to mix with the material at their operation near Buchanan to produce various grades of filler material and for an ingredient in white cement.

Bennett Mineral Company in the Walkerton area of King and Queen County in eastern Virginia mines and processes montmorillonite clay to produce an industrial and sanitary absorbent. The facility uses wood wastes as a plant fuel to dry the clay in a rotary kiln.

FELDSPAR

The Feldspar Corporation operates a mine and plant near Montpelier in Hanover County in east-central Virginia and produces a material marketed as "Virginia aplite," which is sold to the glass industry to improve the workability of the molten material and impart a chemical stability to the finished glassware. Feldspar is mined from pegmatites by open pit methods. The rock is trucked to the plant adjacent to the mine for crushing, grinding, classifying, and drying. Clay minerals are removed by gravity concentration. An electrostatic process and magnets remove the heavy minerals, which are then stockpiled. Processed feldspar is shipped by truck and rail to markets in New Jersey, Pennsylvania, Ohio, and Indiana.

Clay and silt, with a high percentage of kaolinite and mica, has accumulated in settling ponds. The material (accumulating at the rate of about 75,000 to 100,000 tons per year) was evaluated in the mid-1960s and was found to be suitable for face brick and drain tile; the material fires dark brown to gray. Fines may have potential as a flux material for the brick industry.

Feldspar in Amherst County is marketed as aggregate by the Dominion Stone Plant, Inc. Fines, resulting from the crushing of feldspar for use as road aggregate, are presently stockpiled. An unsuccessful attempt was made to market this as roofing material in the past. Feldspar has been mined from several pegmatite bodies in the Piedmont province in the past, including those in Amelia and Bedford counties.

GEM STONES

Mines and collectors in Virginia produced an estimated value of \$20,000 of natural gem stones in 1986. Both the Herbb #2 mine in Powhatan County and the Morefield mine in Amelia County were two of the more prominent operations open for collecting minerals for a fee.

GYPSUM

United States Gypsum Company operates a mine and plant in the southwestern part of the State and a plant in Norfolk. The underground mine is located at Locust Cove, Smyth County, and the plant is in Plasterco, near Saltville, in adjacent Washington County. The Locust Cove mine is a slope-entry, multilevel operation. Isolated masses of gypsum in the Maccrady Formation are mined by a modified stoping system. Crude gypsum is trucked to the plant at Plasterco where it is made into wallboard.

The Norfolk operation processes crude gypsum

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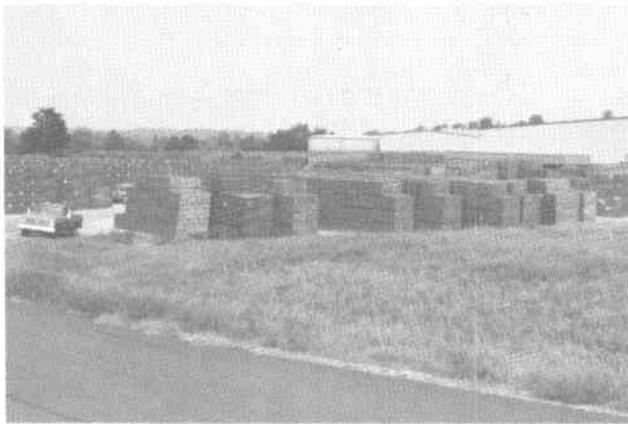


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The Norfolk operation processes crude gypsum

from Nova Scotia to produce wallboard and other gypsum-based products as well as a fertilizer ("land plaster") for the peanut industry. The Norfolk facility receives a few shipments of anhydrite from the Nova Scotia operation for sale to cement manufacturers where it is used as a source of sulfur in producing cement clinkers.

IRON-OXIDE PIGMENTS

Virginia is one of four states producing iron-oxide pigments. Hoover Color Corporation in Pulaski County produces ocher, umber, and sienna. The company is the only operation in the United States producing sienna. Raw materials are mined by open pit methods from deposits near the contact of the Erwin Formation with the overlying Shady Dolomite. Deposits, which may be associated with Cambrian gossans, are concentrated in pockets with insoluble clay and iron oxide. Some iron is also concentrated by precipitation from groundwater. The raw material is trucked to the company plant at Hiwassee where it is pulverized in a hammer mill, dried, ground, air separated, blended, and packaged prior to shipping. The finished product, used as a coloring agent in a variety of products, is shipped throughout the United States and to Canada and Mexico.

Blue Ridge Talc Company, Inc. imports crude iron-oxide pigments from a midwest supplier. The pigments are ground and calcined for use in paints and fertilizers, and for cement and mortar coloring. Their markets are domestic and foreign.

KYANITE

Kyanite, an aluminum silicate, was first produced in Prince Edward County, Virginia, in the 1920s. By September, 1986, Virginia was the only state producing kyanite. Currently, Buckingham County produces the majority of the world's kyanite, with a concentrate grade of a maximum of 61.8 percent alumina and a minimum iron content of 0.16 percent. Calcined kyanite is converted to mullite at temperatures greater than 3000 degrees Fahrenheit. The material is a super-duty refractory with a pyrometric cone equivalent of 36 to 37. Products, which are sold in 35, 48, 100, 200, and 325 mesh sizes, are used in the refractory, ceramic, glass, metallurgical, and foundry industries. Mullite helps ceramics and glass to resist cracking, warping, slagging, and deforming from high temperatures.

Kyanite Mining Corporation operates two surface mines and processing plants in central Buckingham County. Kyanite-bearing quartzite is quarried from open pits, run through primary crushers, through a log washer to remove clay, and onto the classifiers to remove some kyanite. The

material then passes through a rod mill which reduces it to a minus 35-mesh size, and then through froth flotation cells so that kyanite can be skimmed off. The kyanite is de-watered and then dried; the high temperature of the drier converts sulfides to oxides. Pyrite is converted to ferrous iron oxide (Fe_3O_4) or magnetite, which is then removed by magnetic separators and stockpiled.

The Willis Mountain plant processes the raw kyanite which is then trucked to the East Ridge facility for calcining. Mullite is ground and bagged at the Dillwyn Plant and raw kyanite is ground and bagged at Willis Mountain.

Approximately 40 percent of the output is shipped through the ports of the Hampton Roads area to worldwide customers. The company also produces a by-product sand from kyanite processing, which is sold for golf course, masonry, and concrete sand, and other applications.

LIME

Virginia's lime industry is located in Frederick, Giles, Shenandoah, and Warren counties. Production in 1986 was 624,000 short tons valued at more than \$27 million, which ranked Virginia as the sixth largest producer of lime in the nation. In northern Virginia, two companies, W. S. Frey Company, Inc. and Chemstone Corporation (Front Cover), quarry and calcine the high-calcium New Market Limestone; and Riverton Corporation in Warren County quarries and calcines limestones from the Edinburg Formation. Two companies in western Giles County (USG Industries and Virginia Lime Company) operate underground mines in the Five Oaks Limestone. Principal sales are to the paper and steel industries. The paper industry uses lime for regeneration of sodium hydroxide and the neutralization of sulfate water. Lime is used by the steel industry to control slagging and for water purification, and during the last few years, in the neutralization of acid mine water. It is used also for mason's lime, sewage treatment, and agricultural purposes.

LITHIUM

Foote Mineral Company processes lithium carbonate from brines in Nevada with calcium hydroxide from various sources to produce lithium hydroxide at their Sun-bright plant in Scott County. Lithium hydroxide is used in multipurpose grease applications. In the past, limestone from an underground mine at the site was utilized in the process and a calcium carbonate precipitate was formed as a waste product. This waste material remains on the site and may have a potential value; approximate analysis is 43-50 percent CaCO_3 , 3-6 percent Ca(OH)_2 , and 40-48 percent water.

MAGNETITE

Reiss Viking Corporation in Tazewell County processes out-of-state magnetite for use in coal preparation. The material is marketed in New York, Virginia, and Pennsylvania.

MANGANESE

Eveready Battery Company, Inc. operates a manganese processing facility in the city of Newport News. Manganese ore, imported from Mexico and Africa, is dried, crushed, ground, and shipped to other company facilities for use in the manufacture of batteries.

MICA

Asheville Mica Company and an affiliate, Mica Company of Canada, process mica at facilities in Newport News. The crude mica is purchased from Madagascar and India. Asheville Mica Company produces fabricated plate-mica; Mica Company of Canada uses splittings from Asheville to produce reconstituted plate-mica. Mica has been produced in the past from pegmatite bodies in several counties in Virginia, including Amelia, Henry, and Powhatan.

ORNAMENTAL AGGREGATE

Several materials have been utilized for ornamental aggregate in past years. Vein quartz has been quarried in Albemarle, Buckingham, Fauquier, Fluvanna, Greene, and Rappahannock counties, and quartz pebbles have been extracted from the flood plain along the Mattaponi River in Caroline County. Dolomite and quartzite from Botetourt and Rockbridge counties are marketed presently as exposed aggregate materials. Rock materials such as black limestone (Edinburg Formation) from the Valley and Ridge province and greenstone from the Piedmont province, have been used for terrazzo in the past. Exposaic Industries, Inc. in Spotsylvania County utilizes a variety of rock materials for exposed panels.

PERLITE

Manville Sales Corporation operates a plant (Figure 2) at Woodstock in Shenandoah County to expand perlite (volcanic glass with high water content and "onion-skin" appearance) obtained from Grants, New Mexico. Expanded perlite is used in the manufacture of roof-insulation board which is marketed throughout the eastern United States.

Product demand in 1986 for roofing installation and maintenance was strong.

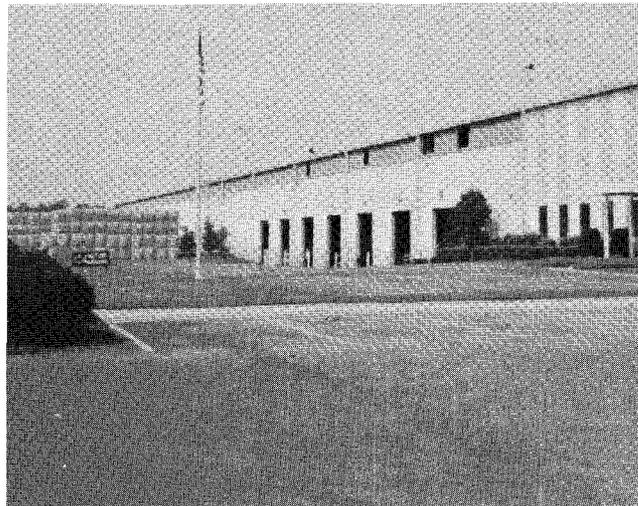


Figure 2. Plant where perlite from New Mexico is "popped" to produce roof insulation board, Manville Sales Corporation, Woodstock.

PHOSPHATE ROCK

TexasGulf Chemicals Company ships phosphate rock from its Lee Creek operation in North Carolina to Glade Spring, Washington County. From Glade Spring the raw material is transported by truck to the TexasGulf plant in Saltville, Smyth County, Virginia. A coal-fired rotary kiln is used to defluorinate the phosphate rock. The product is marketed as a poultry and animal feed supplement in the southern and midwestern states.

SAND AND GRAVEL

Construction

Construction sand and gravel producers accounted for the majority of the 11.7 million tons of material produced in 1986. Sand and gravel was extracted from the terraces and dredged from the rivers of the major drainages in central and eastern Virginia. Large tonnages of construction sand and gravel, from southeast of Fredericksburg, are shipped by rail into the northern Virginia-Washington, D. C., market area. A large portion of the production by Sadler Materials Corporation and Tarmac-LoneStar, Inc. near Richmond is barged along the James River to the Norfolk area. Shipments are also made by rail and truck to the western part of the State.

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Industrial Sand

J. C. Jones Sand Company mines industrial sand at Virginia Beach for use in foundry-casting applications and as a traction medium. Filter sand is produced in Caroline County and traction sand is also produced in Dickenson County. Glass sand is produced by Unimin Corporation near Gore in Frederick County from the Ridgeley Sandstone of Devonian age. CED Process Minerals Inc., Gore, in Frederick County, recrystallizes purchased sand in a rotary kiln to produce cristobalite, which is marketed as fine grit (Figure 3).

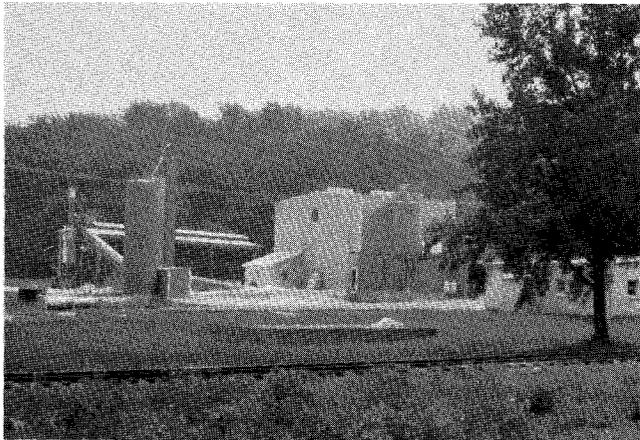


Figure 3. Plant where Ridgeley sandstone is recrystallized to produce cristobalite at CED Process Minerals, Inc., Gore.

STONE

Crushed

Crushed limestone, dolomite, sandstone, quartzite, granite, gneiss, diabase, basalt, greenstone, amphibolite, slate, "Virginia aplite," marble, and marl valued at \$225 million was produced in Virginia in 1986. Limestone, dolomite, shale, and sandstone producers are located in the Valley and Ridge and Plateau provinces in the western portion of the State. Principal end uses were for road construction, concrete aggregate, asphalt stone, and agricultural application. Mine safety dust (335,000 short tons in 1980) is produced at six quarries in southwest Virginia. More recent figures on safety dust are combined with those for acid-water treatment material. Dust is spread in coal mines to prevent explosions; it should contain less than 5 percent SiO_2 and 100 percent should pass 20 mesh with 70 percent passing minus 200 mesh. Finely-ground dolomite and limestone is also marketed by several operations for use as a filler material.

Sandstone was quarried for the production of roadstone, concrete aggregate, asphalt stone, and manufactured

fine aggregate. Similar material has been produced in Rockbridge County in the past. Shale was excavated in Frederick and Rockingham counties for use as local roadstone and fill material (Figure 4).



Figure 4. Shale pit in Martinsburg Formation; operated by Perry Engineering Co., Inc. for fill material, west of Winchester.

Granite, gneiss, diabase, basalt, amphibolite, slate, and marble are quarried in the central portion of Virginia. Major end uses were for roadstone, asphalt stone, and concrete aggregate.

Waste slate is crushed, near Arvonnia in Buckingham County, by Solite Corporation, which primarily expands slate for lightweight aggregate production. Production of crushed slate, as a by-product of dimension slate operations, increased as a result of local highway construction.

One company, Appomattox Lime Company, Inc., mines a marble (Mt. Athos Formation) near Oakville in Appomattox County for agricultural lime. Lime sales, principally to the eastern coastal areas of Virginia and North Carolina, were severely curtailed because of drought conditions.

Dimension

Dimension stone production was valued at \$3.1 million in 1986. Slate, diabase, amphibole and biotite gneiss, granite, quartzite, and soapstone were quarried in the Valley and Ridge and Piedmont provinces; slate was the leading stone type quarried, in terms of cubic feet and value. LeSueur-Richmond Slate Corporation mined slate from two quarries in the Arvonnia area of Buckingham County. Arvonnia slate production dates from the late 1700s when slate was quarried for roofing tile for the State Capitol in Richmond. Slate producers supply the building trade with a variety of products ranging from material for exterior applications,

Industrial Sand

J. C. Jones Sand Company mines industrial sand at Virginia Beach for use in foundry-casting applications and as a traction medium. Filter sand is produced in Caroline County and traction sand is also produced in Dickenson County. Glass sand is produced by Unimin Corporation near Gore in Frederick County from the Ridgeley Sandstone of Devonian age. CED Process Minerals Inc., Gore, in Frederick County, recrystallizes purchased sand in a rotary kiln to produce cristobalite, which is marketed as fine grit (Figure 3).

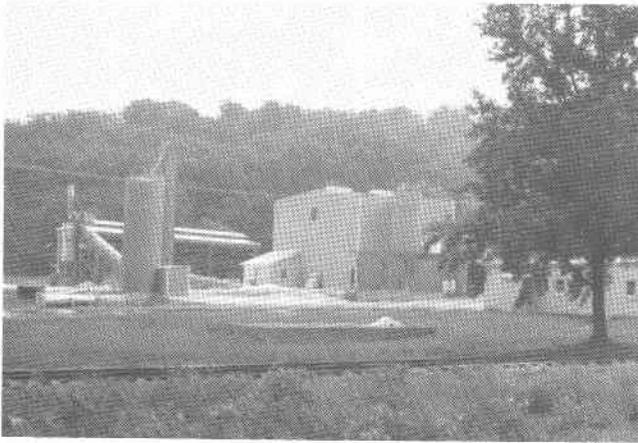


Figure 3. Plant where Ridgeley sandstone is recrystallized to produce cristobalite at CED Process Minerals, Inc., Gore.

STONE

Crushed

Crushed limestone, dolomite, sandstone, quartzite, granite, gneiss, diabase, basalt, greenstone, amphibolite, slate, "Virginia aplite," marble, and marl valued at \$225 million was produced in Virginia in 1986. Limestone, dolomite, shale, and sandstone producers are located in the Valley and Ridge and Plateau provinces in the western portion of the State. Principal end uses were for road construction, concrete aggregate, asphalt stone, and agricultural application. Mine safety dust (335,000 short tons in 1980) is produced at six quarries in southwest Virginia. More recent figures on safety dust are combined with those for acid-water treatment material. Dust is spread in coal mines to prevent explosions; it should contain less than 5 percent SiO_2 and 100 percent should pass 20 mesh with 70 percent passing minus 200 mesh. Finely-ground dolomite and limestone is also marketed by several operations for use as a filler material.

Sandstone was quarried for the production of roadstone, concrete aggregate, asphalt stone, and manufactured

fine aggregate. Similar material has been produced in Rockbridge County in the past. Shale was excavated in Frederick and Rockingham counties for use as local roadstone and fill material (Figure 4).



Figure 4. Shale pit in Martinsburg Formation; operated by Perry Engineering Co., Inc. for fill material, west of Winchester.

Granite, gneiss, diabase, basalt, amphibolite, slate, and marble are quarried in the central portion of Virginia. Major end uses were for roadstone, asphalt stone, and concrete aggregate.

Waste slate is crushed, near Arvon in Buckingham County, by Solite Corporation, which primarily expands slate for lightweight aggregate production. Production of crushed slate, as a by-product of dimension slate operations, increased as a result of local highway construction.

One company, Appomattox Lime Company, Inc., mines a marble (Mt. Athos Formation) near Oakville in Appomattox County for agricultural lime. Lime sales, principally to the eastern coastal areas of Virginia and North Carolina, were severely curtailed because of drought conditions.

Dimension

Dimension stone production was valued at \$3.1 million in 1986. Slate, diabase, amphibole and biotite gneiss, granite, quartzite, and soapstone were quarried in the Valley and Ridge and Piedmont provinces; slate was the leading stone type quarried, in terms of cubic feet and value. LeSueur-Richmond Slate Corporation mined slate from two quarries in the Arvon area of Buckingham County. Arvon slate production dates from the late 1700s when slate was quarried for roofing tile for the State Capitol in Richmond. Slate producers supply the building trade with a variety of products ranging from material for exterior applications,

such as roofing tile and flooring, to interior uses such as hearths and sills. Diabase for use as monument stone is produced by Virginia Granite Company in southern Culpeper County (Figure 5). Amphibole and biotite gneiss was quarried for dimension stone in Hanover County (not on map), and quartzite used as flagging material was extracted from three quarries, one in Campbell County, south of Lynchburg, and two in Fauquier County.



Figure 5. Drilling of diabase for monumental dimension stone at Virginia Granite Corporation, north of Rapidan.

In the summer of 1986, the former Alberene Stone Company in Albemarle and Nelson counties was sold to a Finnish firm, which will expand operations as The New Alberene Stone Company, Inc. The new company will make fireplaces, woodstoves, cooking ware, and other products of solid soapstone.

SULFUR

Elemental sulfur is recovered from hydrogen sulfide gas by the Claus process during crude-oil refining by Amoco Oil Company. The refinery is adjacent to the York River, near Yorktown. Crude oil is heated in a furnace and fed under pressure into a cylinder where it vaporizes, expands, and condenses into liquid. Hydrogen sulfide is produced and then converted into elemental sulfur. About 50 tons of sulfur is produced per day and is marketed to one buyer for eventual use in fertilizer.

VERMICULITE

Virginia is one of three states in which vermiculite,

a hydrated magnesium-iron-aluminum silicate, is mined. Virginia Vermiculite, Ltd. operates an open-pit mine and processing facility near Boswells Tavern in Louisa County. Material mined with a backhoe and front-end loader is trucked to the adjacent plant where desliming, flotation, drying, and screening are performed to produce four basic size products. Most of the crude vermiculite is shipped by rail in unexfoliated form to North Carolina, West Virginia, Ohio, and other eastern states. Uses for the exfoliated material include packing, insulation, lightweight aggregate, and potting material.

1987

COAL³

A record 45.5 million tons (Table 2) of bituminous coal were produced from the southwest coalfields (Plate 1) in Buchanan, Dickenson, Lee, Russell, Scott, Tazewell, and Wise counties from more than 600 surface and underground mines. Tables 19 through 23 provide production data by county and coal bed, employment statistics and fatal accident statistics. Table 24 provides data on fatal accidents in mineral mines. Coal from Virginia is used for metallurgical purposes, electrical power generation (steam coal), industrial purposes, and residential heating. A large percentage of Virginia coal is contracted for export to overseas markets; through the ports of the Hampton Roads area in Virginia and through the ports in North Carolina.

OIL AND GAS⁴

INTRODUCTION

Crude oil production totaled 17,141 barrels in 1987, a decline of 7 percent from the 1986 production of 18,342 bbls. Production was by 12 companies from 52 wells in five fields (Plate 1, Table 25). The average price paid by refineries for Virginia oil in 1987 was \$16.58 per barrel.

Natural gas production in 1987 was a record 19,520,312 Mcf from 689 wells in Buchanan, Dickenson, Russell, Scott, Tazewell, Washington, and Wise counties (Table 26). This reflects an increase of 27 percent over the 1986 production of 15,427,109 Mcf. Most of this year's increase can be attributed to deliveries of natural gas by EREX, Incorporated (formerly Philadelphia Oil Company) to a new extension of East Tennessee Natural Gas Trans-

³ Information supplied by Division of Mines, 219 Wood Avenue, Big Stone Gap, Virginia 24219.

⁴ Information supplied by Division of Gas and Oil, P.O. Box 1416, Abingdon, Virginia 24210.

such as roofing tile and flooring, to interior uses such as hearths and sills. Diabase for use as monument stone is produced by Virginia Granite Company in southern Culpeper County (Figure 5). Amphibole and biotite gneiss was quarried for dimension stone in Hanover County (not on map), and quartzite used as flagging material was extracted from three quarries, one in Campbell County, south of Lynchburg, and two in Fauquier County.



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mission's main utility pipeline (Table 27). This new pipeline connects the Nora field in Dickenson County to East Tennessee's main distribution pipeline in Washington County, Virginia. Since August 1987, deliveries through East Tennessee's compressor station at Nora, Virginia have averaged over 30,000 Mcf per day.

DRILLING ACTIVITY

In 1987, a total of 51 wells were drilled in Virginia (Table 28). This represents almost a 200 percent decrease from the record number of 147 wells drilled in 1986. The total footage drilled in 1987 was 245,275 feet (Table 29), a 219 percent decrease from the 1986 total of 782,380 feet. In 1987 the average depth for the 36 development wells was 5069 feet and the average depth for the 15 exploratory wells was 4185 feet. Of the 51 wells (36 development and 15 exploratory) drilled during 1987, 48 were completed as producers and two were dry holes. Development drilling had a success rate of 100 percent with 36 wells being completed as producers. Tables 30 and 31 note reserves of natural gas and 1987 well-completion data.

Buchanan County

Ashland Exploration drilled a total of 9683 feet in two development wells in the Berea in the Glick field. Columbia Natural Resources drilled a total of 14,257 feet for three development wells producing from the Devonian shale, Big Lime and Berea in the Breáks-Haysi field. Berea Oil and Gas drilled one development well in the Glick field to a total depth of 4921 feet.

Dickenson County

EREX (formerly Philadelphia Oil Company) successfully drilled 21 development wells in the Nora field for a total of 101,813 feet and one successful exploratory well (DI-364) three miles northeast of Clintwood, Virginia to a total depth of 4586 feet. ANR Production Company drilled one successful wildcat (DI-397) two-and-one-half miles west of Dante, Virginia to a total depth of 5710 feet.

Lee County

Penn Virginia Resources successfully completed three wildcat gas discovery wells and one producing oil well with a total of 14,301 feet being drilled. Sovereign Petroleum drilled a multiple pay well (LE-154) in the Rose Hill field to a total depth of 3853 feet. Robert F. Spear drilled a well (LE-155) to a depth of 1150 feet and then abandoned efforts to

drill through the Pine Mountain fault after encountering large quantities of water.

Louisa County

Energy USA abandoned an oil test (LU-1) as a water well one-half mile southwest of Mount Garland, Virginia. The total footage drilled was 2215 feet.

Pulaski County

Valley Basin Gas and its affiliate, New River Gas drilled two exploratory wells in an effort to evaluate the production of methane from unminable coal beds near Radford, Virginia. The total footage drilled for both wells was 9025 feet.

Washington County

Penn Virginia Resources plugged and abandoned an unsuccessful exploratory well (WA-11) located two miles northeast of the Early Grove Gas field. Total depth was 5703 feet.

INDUSTRIAL AND METALLIC MINERALS SUMMARY

An increase of more than 68 million dollars (about 17 percent) worth of nonfuel mineral production took place in 1987, as compared to 1986. The largest increase was crushed stone, which was up by more than 30 percent in value; lime production increased almost 8 percent. There was almost a 7 percent decrease in sand and gravel production and a 13 percent decrease in dimension stone production.

The New Alberene Stone Company, Inc. began quarrying soapstone in Nelson County. Initially the majority of the stone is going to Europe. The American market, however, is expected to expand over the next several years. Products include soapstone fireplaces, woodstoves, cooking ware and other products of solid soapstone.

The number of producers, production, and processing of cement, clay materials, feldspar, gem stones, gypsum, iron-oxide pigments, kyanite, lithium, magnetite, manganese, mica, ornamental aggregate, perlite, phosphate rock, industrial sand, sulfur, and vermiculite remained stable during the year.

Table 19. Summary of Coal Mining in Virginia, 1987.

	Buchanan	Dickenson	Lee	Russell	Scott	Tazewell	Wise	Total
Prod. Employees								
Auger	93	38	30	2	0	0	87	250
Strip	367	346	41	21	0	0	1,023	1,798
Surf. Total	460	384	71	23	0	0	1,110	2,048
Tipple	1,550	860	205	42	0	153	612	3,422
Truck	2,888	1,052	422	80	50	437	1,367	6,296
Undg. Total	4,438	1,912	627	122	50	590	1,979	9,718
TOTAL	4,898	2,296	698	145	50	590	3,089	11,766
Man Days								
Auger	8,626	4,045	5,609	20	0	0	8,867	27,167
Strip	236,342	44,225	6,707	5,200	0	0	174,605	467,079
Surf. Total	244,968	48,270	12,316	5,220	0	0	183,472	494,246
Tipple	375,664	207,566	50,635	6,303	0	37,722	145,449	823,339
Truck	514,290	194,472	76,970	15,110	6,352	79,130	277,920	1,164,244
Undg. Total	889,954	402,038	127,605	21,413	6,352	116,852	423,369	1,987,583
TOTAL	1,134,922	450,308	139,921	26,633	6,352	116,852	606,841	2,481,829
Man Hours								
Auger	72,096	40,884	48,822	160	0	0	69,134	231,096
Strip	456,834	362,556	57,411	40,088	0	0	1,484,307	2,401,195
Surf. Total	528,929	403,440	106,233	40,248	0	0	1,553,441	2,632,291
Tipple	3,475,874	1,826,138	380,172	67,954	0	323,423	1,119,450	7,193,011
Truck	4,072,661	1,595,396	598,891	108,345	6,325	564,333	2,212,815	9,158,766
Undg. Total	7,548,535	3,421,534	979,063	176,299	6,325	887,756	3,332,265	16,351,777
TOTAL	8,077,464	3,824,974	1,085,296	216,547	6,325	887,756	4,885,706	18,984,068
Prod. Wages								
Auger	780,867	515,777	976,890	3,199	0	0	750,249	3,026,982
Strip	5,598,026	5,257,425	1,031,687	369,852	0	0	19,039,929	31,296,919
Surf. Total	6,378,893	5,773,202	2,008,577	373,051	0	0	19,790,178	34,323,901
Tipple	53,259,274	29,195,277	7,191,045	1,036,308	0	4,826,522	21,144,197	116,652,623
Truck	127,173,263	22,116,971	8,102,831	1,695,699	773,066	7,407,819	34,296,689	201,566,338
Undg. Total	180,432,537	51,312,248	15,293,876	2,732,007	773,066	12,234,341	55,440,886	318,218,961
TOTAL	186,811,430	57,085,450	17,302,453	3,105,058	773,066	12,234,341	75,231,064	352,542,862
Office Employees								
Auger	1	1	0	0	0	0	12	14
Strip	7	23	1	7	0	0	142	180
Surf. Total	8	24	1	7	0	0	154	194
Tipple	22	4	9	1	0	0	26	62
Truck	134	34	17	4	0	13	43	245
Undg. Total	156	38	26	5	0	13	69	307
TOTAL	164	62	27	12	0	13	223	501
Office Wages								
Auger	0	13,500	0	0	0	0	270,601	284,101
Strip	102,576	131,972	0	154,345	0	0	2,690,255	3,079,148
Surf. Total	102,576	145,472	0	154,345	0	0	2,960,856	3,363,249
Tipple	506,243	0	327,605	0	0	0	1,016,329	1,850,177
Truck	1,179,233	445,027	162,447	0	0	219,864	849,712	2,856,283
Undg. Total	1,685,476	445,027	490,052	0	0	219,864	4,826,897	8,069,709
TOTAL	1,788,052	590,499	490,052	154,345	0	219,864	4,826,897	8,069,709

Table 19. Summary of Coal Mining in Virginia, 1987 cont.

	Buchanan	Dickenson	Lee	Russell	Scott	Tazewell	Wise	Total
Number of Mines								
Auger	15	13	4	1	0	0	21	54
Strip	27	31	7	2	0	2	71	140
Surf. Total	42	44	11	3	0	2	92	194
Tipple	16	8	1	2	0	4	8	39
Truck	183	59	25	8	3	33	62	373
Undg. Total	199	67	26	10	3	37	70	412
TOTAL	241	111	37	13	3	39	162	606
Tonnages								
Auger	139,739	227,531	98,545	640	0	0	92,979	559,434
Strip	1,082,407	1,256,310	119,722	52,007	0	0	4,344,611	6,855,057
Surf. Total	1,222,146	1,483,842	218,267	52,647	0	0	4,437,591	7,414,492
Tipple	7,943,913	3,204,362	1,499,765	224,240	0	554,741	2,075,151	15,392,172
Truck	9,667,257	3,645,267	1,400,407	316,657	115,151	1,425,430	6,161,128	22,731,297
Undg. Total	17,611,170	6,849,628	2,900,172	430,897	115,151	1,980,171	8,236,279	38,123,468
TOTAL	18,833,316	8,333,470	3,118,439	483,544	115,151	1,980,171	12,673,869	45,537,960
Mining Methods:								
Underground								
Longwall								
Tipple	5,282,489	1,437,119	307,043	0	0	0	868,529	7,895,180
Truck	0	422,274	0	0	0	0	0	422,274
TOTAL	5,282,489	1,759,393	307,043	0	0	0	868,529	6,317,454
Cont. Miner								
Tipple	2,661,424	1,734,524	1,192,722	114,240	0	554,741	1,206,622	7,464,273
Truck	7,265,281	2,576,388	1,161,229	316,657	115,151	1,222,486	5,449,047	18,106,239
TOTAL	9,926,705	4,310,912	2,353,951	430,897	115,151	1,777,227	6,655,669	25,570,512
Other								
Tipple	0	32,719	0	0	0	0	0	32,719
Truck	2,401,976	646,604	239,178	0	0	202,945	712,081	4,202,784
TOTAL	2,401,976	679,323	239,178	0	0	202,945	712,081	4,235,502
Undg. Total	17,611,170	6,849,628	2,900,172	430,897	115,151	1,980,171	8,236,279	38,123,468
Surface								
Auger	139,739	227,531	98,545	640	0	0	92,979	559,434
Strip	1,082,407	1,483,842	218,267	52,647	0	0	4,437,591	7,414,492

Table 20. Summary of Coal Mining in Virginia, by Coal Beds, 1987, (short tons).

	Buchanan	Dickenson	Lee	Russell	Scott	Tazewell	Wise
Aily	0	0	0	0	0	0	60,540
Big Fork	0	0	0	28,573	0	0	0
Blair	1,541,269	976	0	0	0	0	406,544
Campbell Creek	37,268	8,231	0	0	0	0	707,663
Cedar Grove	283,929	0	0	0	0	0	123,027
Clintwood	88,013	717,708	7,224	0	0	0	1,868,892
Cove Creek	0	0	0	0	13,350	0	0
Dorchester	529,417	755,674	0	0	0	0	3,810,765
Eagle	739,788	48,580	0	0	0	0	0
Greasy Creek	0	0	0	0	0	442,562	0
Hagy	742,543	977	0	0	0	0	0
High Splint	0	0	0	0	0	0	293,301
Jawbone	2,403,348	1,279,039	0	177,515	0	0	228,745
Kelly	0	0	0	0	0	0	1,110,121
Kennedy	1,193,772	1,654	0	41,073	101,801	0	10,246
Kirk	0	0	0	0	0	0	0
Lower Banner	34,281	1,559,177	0	0	0	0	0
Lower Horsepen	0	0	0	0	0	107,376	0
Low Splint	0	0	129,780	0	0	0	682,478
Lower Seaboard	0	0	0	0	0	554,741	0
Lower St. Charles	0	0	145,223	0	0	0	2,700
Lyons	0	24,665	0	0	0	0	400,786
Middle Horsepen	0	0	0	0	0	1,360	0
Morris	0	0	0	0	0	0	251,516
Middle Seaboard	0	0	0	0	0	61,068	0
Pardee	0	0	392,725	0	0	0	870,929
Phillips	0	0	2,000	0	0	0	196,783
Pinhook	0	0	0	0	0	0	9,310
Pocahontas #3	7,585,324	0	0	0	0	326,901	0
Pocahontas #5	0	0	0	0	0	39,263	0
Pocahontas #8	0	0	0	0	0	101,290	0
Raven	891,245	847,171	0	101,420	0	97,426	0
Splashdam	2,398,516	995,151	0	0	0	0	121,322
Taggart	0	0	1,521,508	0	0	0	498,218
Taggart Marker	0	0	0	0	0	0	91,537
Tiller	364,603	178,705	0	114,401	0	78,280	0
Upper Banner	0	1,915,762	0	20,561	0	0	292,694
Upper Horsepen	0	0	0	0	0	469,904	0
Upper Standiford	0	0	377,771	0	0	0	635,751
Upper St. Charles	0	0	4,036	0	0	0	0
Wax	0	0	538,171	0	0	0	0

Table 21. Summary of Coal Mining in Virginia, Small Company (less than 50 employees).

	Buchanan	Dickenson	Lee	Russell	Scott	Tazewell	Wise	Total
Number of Mines								
Auger	15	13	4	1	0	0	21	54
Strip	25	31	7	2	0	2	69	136
Surf. Total	40	44	11	3	0	2	90	190
Tipple	10	4	0	2	0	3	4	23
Truck	180	58	24	8	3	33	56	362
Undg. Total	190	62	24	10	3	36	60	385
TOTAL	230	106	35	13	3	38	150	575
Tonnages								
Auger	139,739	227,531	98,545	640	0	0	92,979	559,434
Strip	761,925	1,256,310	119,722	52,007	0	0	4,126,060	6,316,024
Surf. Total	901,664	1,483,842	218,267	52,647	0	0	4,219,039	6,875,459
Tipple	0	506,904	0	114,240	0	44,338	131,477	796,959
Truck	8,509,976	3,015,165	1,173,575	316,657	115,151	1,425,430	4,394,573	18,950,527
Undg. Total	8,509,976	3,522,068	1,173,575	430,897	115,151	1,469,768	4,526,050	19,747,486
TOTAL	9,411,640	5,005,910	1,391,842	483,544	115,151	1,469,768	8,745,090	26,622,944
Mining Methods:								
Underground								
Longwall								
Tipple	0	0	0	0	0	0	0	0
Truck	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0
Cont. Miner								
Tipple	0	474,185	0	114,240	0	44,338	131,477	764,240
Truck	6,108,000	2,368,560	934,397	316,657	115,151	1,222,486	3,803,814	14,869,065
TOTAL	6,108,000	2,842,745	934,397	430,897	115,151	1,266,824	3,935,291	15,633,305
Other								
Tipple	0	32,719	0	0	0	0	0	32,719
Truck	2,401,976	646,604	239,178	0	0	202,945	590,759	4,081,462
TOTAL	2,401,976	679,323	239,178	0	0	202,945	590,759	4,114,181
Undg. Total	8,509,976	3,522,068	1,173,575	430,897	115,151	1,469,768	4,526,050	19,747,486
Surface								
Auger	139,739	227,531	98,545	640	0	0	92,979	559,434
Strip	761,925	1,256,310	119,722	52,007	0	0	4,126,060	6,316,024
Surf. Total	901,664	1,483,842	218,267	52,647	0	0	4,219,039	6,875,459
Prod. Employees								
Auger	93	38	30	2	0	0	87	250
Strip	251	346	41	21	0	0	917	1,576
Surf. Total	344	384	71	23	0	0	1,004	1,826
Tipple	11	142	0	42	0	13	38	246
Truck	2,614	917	344	80	50	437	957	5,399
Undg. Total	2,625	1,059	344	122	50	450	995	5,645
TOTAL	2,969	1,443	415	145	50	450	1,999	7,471
Man Days								
Auger	8,626	4,045	5,609	20	0	0	8,867	27,167
Strip	219,986	44,225	6,707	5,200	0	0	161,302	437,420
Surf. Total	228,612	48,270	12,316	5,220	0	0	170,169	464,587
Tipple	0	32,546	0	6,303	0	1,742	8,854	49,445
Truck	448,018	161,127	61,682	15,110	6,352	79,130	191,351	962,770
Undg. Total	448,018	193,673	61,682	21,413	6,352	80,872	200,205	1,012,215
TOTAL	676,630	241,943	73,998	26,633	6,352	80,872	370,374	1,476,802
Man Hours								
Auger	72,096	40,884	48,822	160	0	0	69,134	231,096
Strip	311,185	362,556	57,411	40,088	0	0	1,366,610	2,137,849
Surf. Total	383,280	403,440	106,233	40,248	0	0	1,435,744	2,368,945
Tipple	24,831	266,927	0	67,954	0	27,898	61,472	449,082
Truck	3,480,904	1,292,683	485,635	108,345	6,325	564,333	1,473,185	7,411,410
Undg. Total	3,505,735	1,550,610	485,635	176,299	6,325	592,231	1,534,657	7,860,492
TOTAL	3,889,015	1,963,050	591,868	216,547	6,325	592,231	2,970,401	10,229,437
Prod. Wages								
Auger	780,867	515,777	976,890	3,199	0	0	750,249	3,026,982
Strip	3,694,396	5,257,425	1,031,687	369,852	0	0	17,409,370	27,762,730
Surf. Total	4,475,263	5,773,202	2,008,577	373,051	0	0	18,159,619	30,789,712
Tipple	171,000	4,395,997	0	1,036,308	0	579,455	1,106,731	7,289,491
Truck	117,267,671	17,259,573	6,095,556	1,695,699	773,066	7,407,819	23,197,870	173,697,254
Undg. Total	117,438,671	21,655,570	6,095,556	2,732,007	773,066	7,987,274	24,304,601	180,986,745
TOTAL	121,913,934	27,428,772	8,104,133	3,105,058	773,066	7,987,274	42,464,220	211,776,457
Office Employees								
Auger	1	1	0	0	0	0	12	14
Strip	5	23	1	0	0	0	134	170
Surf. Total	6	24	1	7	0	0	146	184
Tipple	3	1	0	1	0	0	4	9
Truck	118	33	16	4	0	13	34	218
Undg. Total	121	34	16	5	0	13	38	227
TOTAL	127	58	17	12	0	13	184	411
Office Wages								
Auger	0	13,500	0	0	0	0	270,601	284,101
Strip	88,576	131,972	0	154,345	0	0	2,621,206	2,996,099
Surf. Total	88,576	145,472	0	154,345	0	0	2,891,807	3,280,200
Tipple	49,000	0	0	0	0	0	70,060	119,060
Truck	479,233	445,027	162,447	0	0	219,864	600,375	1,906,946
Undg. Total	528,233	445,027	162,447	0	0	219,864	670,435	2,026,006
TOTAL	616,809	590,499	162,447	154,345	0	219,864	3,562,242	5,306,206

Table 22. Summary of Coal Mining in Virginia, Large Company (50 or more employees).

	Buchanan	Dickenson	Lee	Tazewell	Wise	Total
Number of Mines						
Auger	0	0	0	0	0	0
Strip	2	0	0	0	2	4
Surf. Total	2	0	0	0	2	4
Tipple	6	4	1	1	4	16
Truck	3	1	1	0	6	11
Undg. Total	9	5	2	1	10	27
TOTAL	11	5	2	1	12	31
Tonnages						
Auger	0	0	0	0	0	0
Strip	320,482	0	0	0	218,551	539,033
Surf. Total	320,482	0	0	0	218,551	539,033
Tipple	7,943,913	2,697,458	1,499,765	510,403	1,943,674	14,595,213
Truck	1,157,281	630,102	226,832	0	1,766,554	3,780,770
Undg. Total	9,101,194	3,327,560	1,726,597	510,403	3,710,228	18,375,983
TOTAL	9,421,676	3,327,560	1,726,597	510,403	3,928,780	18,915,016
Mining Methods:						
Underground						
Longwall						
Tipple	5,282,489	1,437,119	307,043	0	868,529	7,895,180
Truck	0	422,274	0	0	0	422,274
TOTAL	5,282,489	1,859,393	307,043	0	868,529	8,317,454
Cont. Miner						
Tipple	2,661,424	1,260,339	1,192,722	510,403	1,075,145	6,700,033
Truck	1,157,281	207,828	226,832	0	1,645,233	3,237,174
TOTAL	3,818,705	1,468,167	1,419,554	510,403	2,720,378	9,937,207
Other						
Tipple	0	0	0	0	0	0
Truck	0	0	0	0	121,322	121,322
TOTAL	0	0	0	0	121,322	121,322
Undg. Total	9,101,194	3,327,560	1,726,597	510,403	3,710,228	18,375,983
Surface						
Auger	0	0	0	0	0	0
Strip	320,482	0	0	0	218,551	539,033
Surf. Total	320,482	0	0	0	218,551	539,033
Prod. Employees						
Auger	0	0	0	0	0	0
Strip	116	0	0	0	106	222
Surf. Total	116	0	0	0	106	222
Tipple	1,539	718	205	140	574	3,176
Truck	274	135	78	0	410	897
Undg. Total	1,813	853	283	140	984	4,073
TOTAL	1,929	853	283	140	1,090	4,295

Table 22. Summary of Coal Mining in Virginia, Large Company (50 or more employees) cont.

	Buchanan	Dickenson	Lee	Tazewell	Wise	Total
Man Days						
Auger	0	0	0	0	0	0
Strip	16,356	0	0	0	13,303	29,659
Surf. Total	16,356	0	0	0	13,303	29,659
Tipple	375,664	175,020	50,635	35,980	136,595	773,894
Truck	66,272	33,345	15,288	0	86,569	201,474
Undg. Total	441,936	208,365	65,923	35,980	223,164	975,368
TOTAL	458,292	208,365	65,923	35,980	236,467	1,005,027
Man Hours						
Auger	0	0	0	0	0	0
Strip	145,649	0	0	0	117,697	263,346
Surf. Total	145,649	0	0	0	117,697	263,346
Tipple	3,451,043	1,559,211	380,172	295,525	1,057,978	6,743,929
Truck	591,757	302,713	113,256	0	739,630	1,747,356
Undg. Total	4,042,800	1,861,924	493,428	295,525	1,797,608	8,491,285
TOTAL	4,188,449	1,861,924	493,428	295,525	1,915,305	8,754,631
Prod. Wages						
Auger	0	0	0	0	0	0
Strip	1,903,630	0	0	0	1,630,559	3,534,189
Surf. Total	1,903,630	0	0	0	1,630,559	3,534,189
Tipple	53,088,274	24,799,280	7,191,045	4,247,067	20,037,466	109,363,132
Truck	9,905,592	4,857,398	2,007,275	0	11,098,819	27,869,084
Undg. Total	62,993,866	29,656,678	9,198,320	4,247,067	31,136,285	137,232,216
TOTAL	64,897,496	29,656,678	9,198,320	4,247,067	32,766,844	140,766,405
Office Employees						
Auger	0	0	0	0	0	0
Strip	2	0	0	0	8	10
Surf. Total	2	0	0	0	8	10
Tipple	19	3	9	0	22	53
Truck	16	1	1	0	9	27
Undg. Total	35	4	10	0	31	80
TOTAL	37	4	10	0	39	90
Office Wages						
Auger	0	0	0	0	0	0
Strip	14,000	0	0	0	69,049	83,049
Surf. Total	14,000	0	0	0	69,049	83,049
Tipple	457,243	0	327,605	0	946,269	1,731,117
Truck	700,000	0	0	0	249,337	949,337
Undg. Total	1,157,243	0	327,605	0	1,195,606	2,680,454
TOTAL	1,171,243	0	327,605	0	1,264,655	2,763,503

Table 23. Fatal Accidents in Coal Mines, 1987.

TOTAL	3*
Age:	
20 to 30	1
31 to 40	
41 to 60	2
Total Years Mining Experience:	
One to ten years	1
Ten years and over	2
Experience with present company:	
Less than one month, no more than three months...	
Three months to two years	
Two years to five years	
Five years to fifteen years	1
More than fifteen years	2
Cause:	
Rock Fall (Outside)	1
Roof Fall	
Haulage	
Gasoline Ignition	1
Electrical	
Explosion	1
Machinery	
Occupation:	
Beltman	
Continuous Miner Operator	
Continuous Miner Operator - Helper	
Cutting Machine	
Erection Worker	1
General Laborer	1
Longwall Jack Machine Operator	
Longwall Jack Setter	
Mine/Section Foreman	1
Roof Bolter	
Roof Bolter - Helper	

*One fatality in 1987 occurred at a facility which is not required to be licensed by the Division of Mines and was therefore unchargeable according to State law. All fatalities as reported to the Division of Mines and the U.S. Mine Safety and Health Administration are listed in this report to accurately reflect fatal occurrences in Virginia mining operations.

Table 24. Fatal Accidents in Mineral Mines, 1987.

TOTAL	2
Age	
20 to 30	
31 to 40	
Over 60	2
Total Years Mining Experience:	
One to ten years	
Ten years and over	2
Experience with present company:	
Less than one month, no more than three months	
Three months to two years	
Two years to five years	
Five years to fifteen years	
More than fifteen years	2
Cause:	
Heavy Equipment	1
Occupation:	
Crane Operator	1

Table 25. Oil Production by Company and Field, 1987.

FIELD	COMPANY	PRODUCING WELLS	
		NUMBER	BBLs.
Rose Hill	Penn Virginia Resources	1	1,212.51
	Pride Oil Company	1	2,204.29
	Stonewall Gas Company	2	757.00
	Sovereign Petroleum	1	121.50
Ben Hur	APACO Petroleum	5	183.00
	Ben Hur Oil	5	2,136.00
	Eastern States Exploration	1	2,867.00
	Mountain Empire Oil & Gas	1	192.00
	Penn Virginia Resources	5	1,423.46
	Raintree Oil	5	363.89
	Southern Exploration	1	1,097.20
	Stonewall Gas Company	1	220.21
	Witt Oil and Gas	1	670.60
Knox	Stonewall Gas Company	1	372.50
Clinch	Witt Oil and Gas	1	55.00
Big Lime*	ANR Production	20	2,265.07
	TOTALS	52	17,141.23

*Oil associated with gas-producing formation in the Roaring Fork field, Wise County

Table 26. Natural Gas Production by Company in each County, 1987.

COUNTY	COMPANY	WELLS	VOLUME PRODUCED (Mcf)
Buchanan	Ashland Exploration	43	521,864
	Berea Oil and Gas	1	108,029
	Cabot Oil and Gas	1	10,466
	Cities Service	1	25,717
	Columbia Natural Res.	98	2,369,630
	NRM Petroleum	6	48,407
	P&S Oil and Gas Corp.	6	39,186
	Panther Creek Ltd.	2	35,722
	Peake Operating	1	80,715
	Total	159	3,239,736
Dickenson	Columbia Natural Res.	32	916,909
	W. E. Elliott	2	27,421
	EREX (Phila. Oil Co.)	275	7,153,663
	Pine Mtn. Oil & Gas	9	63,313
Total	318	8,161,306	
Russell	Pine Mtn. Oil & Gas	1	15,420
Scott	Early Grove Gas Co.*	9	321,714
Tazewell	CNG Development Corp.	1	6,929
	Columbia Natural Res.	6	272,270
	Consol-Ray Resources	14	30,041
	R&B Petroleum	2	7,893
	James F.Scott Oil&Gas Co.	2	93,952
Total	25	679,954	
Washington	Early Grove Gas Co.*	6	56,486
Wise	ANR Prod. Co.	159	6,722,971
	Philadelphia Oil Co.	12	322,725
	Total	171	7,045,696
	TOTAL	689	19,520,312

* Sold to Penn Virginia Resources May, 1987

Table 28. Drilling Activity for Gas by County, 1987.

COUNTY	DEVELOPMENT WELLS	EXPLORATORY WELLS	TOTAL WELLS
Buchanan	6	0	6
Dickenson	21	2	23
Lee	0	6	6
Louisa	0	1	1
Pulaski	0	2	2
Washington	0	1	1
Wise	9	3	12
TOTAL	36	15	51

Table 29. Footage Drilled for Gas, 1987.

COUNTY	DEVELOPMENT FOOTAGE	EXPLORATORY FOOTAGE	TOTAL FOOTAGE
Buchanan	28,861	0	28,861
Dickenson	101,813	10,296	112,109
Lee	0	19,304	19,304
Louisa	0	2,215	2,215
Pulaski	0	9,025	9,025
Washington	0	5,703	5,703
Wise	51,826	16,232	68,058
TOTAL	182,500	62,775	245,275

Table 27. Natural Gas Delivery to Pipelines, 1987; gas volume reported in Mcf.

QUARTER	COLUMBIA NATURAL RESOURCES	CONSOLIDATED GAS SUPPLY	EAST TENNESSEE NATURAL GAS COMPANY	KENTUCKY-WEST VIRGINIA GAS CORPORATION
First	2,668,094	189,937	100,090	1,316,187
Second	2,613,501	172,023	68,336	1,152,379
Third	2,679,621	161,619	1,728,592	753,600
Fourth	2,599,869	241,521	2,777,424	0
TOTAL	10,561,085	765,100	4,674,442	3,222,166

Table 30. Reported Estimated Reserves of Natural Gas.

COUNTY	PRODUCING WELLS		SHUT-IN WELLS		TOTAL	
	NO. OF WELLS	REMAINING RESERVES (Mcf)	NO. OF WELLS	REMAINING RESERVES (Mcf)	NO. OF WELLS	REMAINING RESERVES (Mcf)
Buchanan	159	32,846,352	14	2,831,565	173	35,677,917
Dickenson	318	78,117,205	14	4,484,577	332	82,601,782
Lee	0	0	10	660,375	10	660,375
Russell	1	184,580	0	0	1	184,580
Scott	9	1,671,062	4	386,000	13	2,057,062
Tazewell	25	2,401,194	0	0	25	2,401,194
Washington	6	197,862	2	200,000	8	397,862
Wise	171	88,554,302	20	7,012,000	191	95,566,302
TOTAL	689	203,972,557	64	15,574,517	753	219,547,074

Table 31. Virginia Well Completions, 1987.

No.	County	Permit No.	Operator	Well Name	7.5' Quadrangle	Latitude	Longitude	Well Class	Total Depth (feet)	Formation at T.D.	Producing Formation	Initial Flow (Mcf/d)	Final Flow (Mcf/d)
BU-225	Buchanan	918	Berea Oil and Gas #1	Matney	Patterson	11850'S.	400'W.	D	4921	Dev.	Testing Gas	Show	
BU-230	Buchanan	1040	Ashland Exploration	Clinch-field #9	Patterson	37°20'00"	81°55'00"	D	4955	Dev.	Berea	335	5213
BU-231	Buchanan	1102	Columbia Natl. Resc.	21612	Elkhorn City	37°20'00"	81°52'30"	D	5359	Dev.	Berea, Big Lime, Devonian	0	315
BU-234	Buchanan	1112	Columbia Natl. Resc.	21609	Elkhorn City	37°20'00"	82°15'00"	D	4226	Dev.	Berea, Big Lime	50	207
BU-235	Buchanan	1119	Columbia Natl. Resc.	21618	Harman	37°20'00"	82°15'00"	D	4672	Dev.	Berea	0	440
BU-236	Buchanan	1127	Ashland Exploration #2	Rogers	Patterson	6750'S.	11950'W.	D	4672	Dev.	Berea	0	377
DI-339	Dickenson	978	EREX, Inc.	P-311	Haysi	37°17'30"	82°12'30"	D	4728	Dev.	Berea	126	1391
DI-362	Dickenson	1010	EREX, Inc.	P-384	Clintwood	12000'S.	6200'W.	D	4549	Dev.	Berea, Maxon	622	1075
DI-364	Dickenson	1014	EREX, Inc.	P-378	Clintwood	37°12'30"	82°20'00"	D	4594	Dev.	Berea, Upper Devonian	146	3334
DI-370	Dickenson	1023	EREX, Inc.	P-396	Haysi	2350'S.	1200'W.	WC	4586	Dev.	Berea, Upper Devonian	0	720
DI-371	Dickenson	1024	EREX, Inc.	P-397	Haysi	37°10'00"	82°22'30"	D	4395	Dev.	Berea, Upper Devonian	325	1795
DI-372	Dickenson	1025	EREX, Inc.	P-414	Haysi	37°12'30"	82°20'00"	D	4739	Dev.	Berea, Upper Devonian	84	1390
DI-373	Dickenson	1026	EREX, Inc.	P-413	Haysi	5800'S.	6210'W.	D	4528	Dev.	Berea, Big Lime, Devonian	280	2230
DI-375	Dickenson	1028	EREX, Inc.	P-417	Nora	37°10'00"	82°20'00"	D	4954	Dev.	Berea, Upper Devonian	12	412
DI-376	Dickenson	1029	EREX, Inc.	P-422	Caney Ridge	4075'S.	3200'W.	D	5226	Dev.	Berea, Big Lime	0	340
DI-378	Dickenson	1032	EREX, Inc.	P-399	Haysi	37°05'00"	82°20'00"	D	4831	Dev.	Big Lime, Devonian, Maxon	189	207
DI-382	Dickenson	1037	EREX, Inc.	P-395	Haysi	37°05'00"	82°27'30"	D	5836	Dev.	Berea, Lower, Middle, and Upper Devonian	249	215, 151
DI-383	Dickenson	1039	EREX, Inc.	P-385	Haysi	6050'S.	8700'W.	D	4788	Dev.	Berea, Big Lime	231	1986
DI-385	Dickenson	1042	EREX, Inc.	P-407	Nora	37°12'30"	82°17'30"	D	4508	Dev.	Berea, Maxon, Upper Devonian	311	925
DI-386	Dickenson	1043	EREX, Inc.	P-409	Haysi	12790'S.	3400'W.	D	5219	Dev.	Berea, Ravenciff	273	660
DI-387	Dickenson	1044	EREX, Inc.	P-411	Haysi	2280'S.	9360'W.	D	5047	Dev.	Berea, Upper Devonian	169	1175
DI-388	Dickenson	1045	EREX, Inc.	P-434	Haysi	37°02'30"	82°20'00"	D	5186	Dev.	Berea, Big Lime	15	900
DI-392	Dickenson	1069	EREX, Inc.	P-418	Nora	37°10'00"	82°20'00"	D	4685	Dev.	Upper Devonian	198	1237
DI-394	Dickenson	1072	EREX, Inc.	P-433	Nora	12770'S.	7000'W.	D	5458	Dev.	Berea, Devonian, Ravenciff	23	218
DI-397	Dickenson	1086	ANR Production Co.	ANR-91	St. Paul	37°12'30"	82°20'00"	D	5075	Dev.	Berea	60	1940
DI-398	Dickenson	1087	EREX, Inc.	P-367	Haysi	37°05'00"	4010'W.	D	5710	Dev.	Berea, Big Lime	0	Show
						10800'S.	2750'W.	WC	5710	Dev.	Testing Gas	Show	
						37°00'00"	82°20'00"	D	4617	Dev.	Berea, Upper Devonian	0	246
						1330'S.	1075'W.	D					
						37°15'00"	82°20'00"						

Table 31. Virginia Well Completions, 1987 cont.

No.	County	Permit No.	Operator	Well Name	7.5' Quadrangle	Latitude	Longitude	Well Class	Total Depth (feet)	Formation at T.D.	Producing Formation	Initial Flow (Mcfd)	Final Flow (Mcfd)
DI-401	Dickenson	1090	EREX, Inc.	P-424	Haysi	3490'S. 37°12'30"	10210'W. 82°20'00"	D	4363	Dev.	Berea, Upper Devonian	133	3714
DI-411	Dickenson	1108	EREX, Inc.	P-394	Haysi	14980'S. 37°15'00"	8760'W. 82°17'30"	D	4643	Dev.	Berea, Upper Devonian	189	2254
DI-415	Dickenson	1121	EREX, Inc.	P-461	Haysi	10450'S. 37°10'00"	9310'W. 82°20'00"	D	4572	Dev.	Berea, Big Lime	112	1595
LE-154	Lee	1022	Sovereign Petroleum	1 Trent	Rose Hill	4660'S. 36°40'00"	2860'W. 83°20'00"	WC	3853	Knox	Clinch, Knox, Trenton	7 BOD	5 BOD
LE-155	Lee	1076	Robert F Spear	R. V. Chadwell #1	Ewing	9550'S. 36°40'00"	7250'W. 83°22'30"	WC	1150	Knox	ABD as Waterwell	Dry	
LE-156	Lee	1123	Penn Va Resources	8709	Ben Hur	1160'S. 36°45'80"	620'W. 83°02'30"	WC	5110	Knox	Testing Gas	Show	
LE-157	Lee	1124	Penn Va Resources	8712	Big Stone Gap	9900'S. 36°50'00"	9050'W. 82°50'00"	WC	3027	Knox	Testing Gas	Show	
LE-158	Lee	1137	Penn Va Resources	8713	Rose Hill	11450'S. 36°42'30"	7950'W. 83°17'30"	WC	2364	Trenton	Testing Oil	Show	
LE-159	Lee	1141	Penn Va Resources	8708	Rose Hill	7425'S. 36°40'00"	4850'W. 83°20'00"	WC	3800	Knox	Testing Gas	Show	
LU-1	Louisa	952	Energy USA	Furno 1	Buckner	10900'S. 37°57'30"	7300'W. 77°47'30"	WC	2215	Granite	ABD as Waterwell	Dry	
PU-06	Pulaski	964	New River Gas Co.	Neuhoff 1A	Radford North	9600'S. 37°10'00"	50'W. 80°37'30"	WC	4525	P	Testing Gas	Show	
PU-07	Pulaski	1078	Valley Basin Gas Assoc.	#1 Mason-cliffe	Radford North	1650'S. 37°10'00"	5500'W. 80°35'00"	WC	4500	P	Testing Gas	Show	
WA-11	Washington	1135	Penn Va Resources	8710	Mendota	14700'S. 36°42'30"	6200'W. 82°15'00"	WC	5703	P	P & A	Show	
WS-221	Wise	993	ANR Production Co.	10124	Norton	2600'S. 36°57'30"	4425'W. 82°40'00"	D	5801	Corniferous	Upper, Middle and Lower Devonian, Weir	0	713
WS-226	Wise	1007	ANR Production Co.	10014	Flat Gap	12000'S. 37°02'30"	3150'W. 82°37'30"	D	6130	Corniferous	Devonian, Weir	0	270 268
WS-230	Wise	1016	ANR Production Co.	10125	Norton	5500'S. 36°57'30"	5050'W. 82°40'00"	D	5725	Corniferous	Upper, Middle and Lower Devonian, Weir	0	1299
WS-231	Wise	1030	ANR Production Co.	10216	Flap Gap	9600'S. 37°02'30"	2225'W. 82°38'30"	D	5958	Corniferous	Big Lime, Upper, Middle and Lower Devonian	0	531
WS-232	Wise	1034	EREX, Inc.	P-366	Coeburn	13950'S. 36°57'30"	8250'W. 82°25'00"	WC	4614	Dev.	Berea, Upper Devonian	0	1060
WS-234	Wise	1048	ANR Production Co.	10135	Norton	250'S. 37°00'00"	11200'W. 82°37'30"	D	5898	Corniferous	Big Lime, Upper, Middle and Lower Devonian, Weir	0	5240
WS-236	Wise	1071	ANR Production Co.	ANR-135	Coeburn	11750'S. 37°57'30"	4800'W. 82°22'30"	WC	5958	Corniferous	Big Lime, Upper, Middle and Lower Devonian	0	531
WS-242	Wise	1082	ANR Production Co.	ANR-75	Coeburn	14950'S. 37°00'00"	467'W. 82°22'30"	WC	5660	Corniferous	Berea, Big Lime	0	1296
WS-247	Wise	1101	ANR Production Co.	10122	Norton	300'S. 36°57'30"	10700'W. 82°37'30"	D	5852	Corniferous	Upper, Middle and Lower Devonian, Weir	0	749
WS-251	Wise	1113	EREX, Inc.	P-347	Coeburn	11080'S. 36°57'30"	600'W. 82°25'00"	D	5257	Dev.	Berea, Big Lime	21	1550
WS-254	Wise	1118	ANR Production Co.	10129	Norton	7000'S. 36°57'30"	2900'W. 82°40'00"	D	5895	Corniferous	Big Lime, Upper, Middle and Lower Devonian	0	685
WS-255	Wise	1122	EREX, Inc.	P-345	Coeburn	8480'S. 36°57'30"	11500'W. 82°22'30"	D	5310	Dev.	Berea, Ravencliff	368	3190

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