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OIL AND GAS DEVELOPMENTS IN PENNSYLVANIA IN 1991

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Pennsylvania Geological Survey

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OIL AND GAS DEVELOPMENTS IN PENNSYLVANIA IN 1991

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ABSTRACT

Oil production in Pennsylvania dropped 7.1 percent in 1991 to 2,415,699 barrels, the lowest production level since 1864. Oil reserves decreased 6.2 percent, from 38,962,000 barrels in 1990 to 36,546,000 barrels in 1991. The leading counties for production of oil were the same as in 1990: Warren, Elk, McKean, and Venango. In 1991, oil production in the Bradford field steadily declined, accounting for only 14.9 percent of the state total.

Gas production decreased 20.3 percent, from 177,609 million cubic feet in 1990 to 141,514 million cubic feet in 1991. Gas reserves increased by 2.5 percent, from 1,935,253 million cubic feet in 1990 to 1,982,864 million cubic feet in 1991. Stored recoverable gas also increased slightly (1.4 percent), from 597,286 million cubic feet in 1990 to 605,713 million cubic feet in 1991.

The price for Penn Grade crude oil and oil products decreased to $19.55 per barrel in 1991. Most new-gas prices were subject to Natural Gas Policy Act (NGPA) price ceilings. The well-head price of 1,000 cubic feet of natural gas ranged from a low of $0.29 under old contracts to $6.37 for "tight" gas (NGPA Section 107, High-Cost Gas). The average price for gas was about $2.20.

The total number of wells reported drilled in 1991 was 1,316, a 12.2 percent increase from 1990; the total footage drilled increased accordingly by 19 percent, to 4,523,739 feet. Forty-two percent of the total number of wells reported in 1991 were actually completed in 1991. The total number of oil wells reported fell 35.5 percent to 243. The most active county for oil well drilling was again Warren, accounting for 56.8 percent of all oil wells drilled in the state. The number of gas wells reported in 1991 increased to 986, up 55.5 percent. The most active counties for gas well drilling in 1991 were Armstrong, Indiana, Mercer, McKean, Warren, and Westmoreland, accounting for 72 percent of all gas wells drilled in the state. There were 11 combination oil and gas wells reported in 1991, scattered over four counties.

Development drilling in 1991 increased 18.4 percent, to 1,233 wells. Exploratory drilling decreased 12.2 percent, from 49 wells reported in 1990 to 43 wells reported in 1991. The success rate for development drilling remained high at 98 percent, and the success rate for exploratory drilling increased to 77 percent over last year's 63 percent.

Exploratory activity reported during the year resulted in the discovery of 15 new fields and pools, including two pools in the Pennsylvanian Pittsburgh coal, one field and one pool in the Upper Devonian Bradford and Elk Groups, one pool each in the Middle Devonian Onondaga Limestone and Huntersville Chert, one field and four pools in the Lower Devonian Ridgeley Sandstone, one pool in the Middle Silurian Lockport Dolomite, and one field and two pools in the Lower Silurian Medina Group.

Seismic exploratory activity during 1991 was almost nonexistent, totaling only 4.0 crew-months. Seismic crews operated on a limited basis, primarily in north-central and southwestern Pennsylvania.

Project activity within the Subsurface Geology Section of the Bureau of Topographic and Geologic Survey in 1991 included (1) continued updating of the oil and gas base map series; (2) beginning of work on an oil and gas information system; and (3) continued work on projects dealing with reservoir heterogeneity in the Upper Cambrian rocks of northwestern Pennsylvania and with coalbed methane resources in southwestern Pennsylvania.

INTRODUCTION

This annual report of oil and gas drilling and production in Pennsylvania is based primarily on drillers' well records and location plats filed with the Pennsylvania Department of Environmental

Resources, Bureau of Oil and Gas Management. The statistics of oil and gas drilling are compiled only from the records received by the department during the calendar year. This includes records of wells drilled prior to, but reported in, 1991; it does not include wells for which records were submitted after December 31, 1991.

Readers familiar with past issues of *Oil and Gas Developments in Pennsylvania* will find some new features beginning in this issue. One feature is a brief overview of the industry in Pennsylvania in 1991, followed by a discussion of the industry as it was 100 years earlier. These emphasize the more significant aspects of the industry, both present and past, in Pennsylvania. Another feature is a summary table of the shallow wells reported in 1991 (Table 25). Prior to this issue, only records for deep drilling have been listed in the report.

ACKNOWLEDGEMENTS

Grateful acknowledgement is extended to the following industry and government organizations, without whose help this report would have been impossible: the American Gas Association; the Pennsylvania Department of Environmental Resources, Bureau of Oil and Gas Management, and Bureau of Forestry, Division of State Forest Management, Minerals Section; and the U.S. Department of Energy.

Mary Ann Gross, Equitrans, Inc., supplied statewide data on natural gas production and reserves.

Special thanks go to all of the operators, companies, and personnel of Pennsylvania's oil and gas industry who provided data on producing formations, intervals, drilling costs, oil and gas prices and production, and other miscellaneous information throughout the year.

The following staff members of the Bureau of Topographic and Geologic Survey, Subsurface Geology Section, are acknowledged: Christopher D. Laughrey, who assisted with the deep-well summary tables; and Lajos J. Balogh, who drafted the figures.

SUMMARY OF THE INDUSTRY IN 1991

The year 1991 was a bleak year for Pennsylvania's oil and gas industry. Although gas statistics remained rather static, some crucial oil statistics reflected modern lows. Penn Grade crude prices continued to fall, oil production declined, and the number of oil wells drilled and reported during the year decreased. In fact, the 243 oil wells reported in 1991 mark the lowest number reported since 1963. Worse yet, more than twice as many oil wells were reported plugged and abandoned than were reported drilled. Not even the war in the Persian Gulf at the beginning of the year could stimulate new drilling and production. The nation's political and economic climate affected corporate decisions such that, by the end of the year, the major oil companies sold most of their domestic holdings, packed up their exploratory departments, and departed for seemingly friendlier shores overseas. John H. Lichtblau, director of the Petroleum Industry Research Foundation, summed it up perfectly when he stated that instead of exporting Texas crude oil, the United States now exports Texas oilmen.

The natural gas industry fared only slightly better, primarily on paper. The relatively warm winter in early 1991, combined with the "glut" that occurred when the major oil companies dumped their domestic gas reserves on the market, resulted in a continuing surplus of marketable supplies. Thus, although reported drilling for natural gas increased during the year, the industry experienced a 20.3 percent decrease in production. An additional problem occurred when the Pennsylvania Commonwealth Court ruled that independent gas companies that sell their gas directly to industrial and institutional customers must pay the same 4.5 percent gross receipts tax that gas utility companies pay. This ruling left many operators convinced that they were looking at the end of the gas industry in Pennsylvania. However, the state legislature essentially reversed the court decision by including an exemption from the tax in the 1991-92 budget and tax package that was signed by Governor Robert P. Casey in August. It was a welcome respite, but the reversal could not hold back the continuing decline in business.

The industry also received bad publicity early in 1991 when gas from a well in South Park Township, Allegheny County, leaked into the basement of a nearby house, creating an explosion that destroyed the house and sent all four members of the family to the hospital. In addition, more than 25 families in the neighborhood had to leave their homes while the Pennsylvania Department of Environmental Resources explored the causes and assessed the potential for further problems. This incident was among the top news stories in western Pennsylvania for weeks, creating great concern among the populace. For some people, every pipe protruding from the ground became a leaking well. The event spurred a great deal of interest by concerned communities and individuals in the locations and ownerships of

wells in the area around Pittsburgh. As with all such sensational events, however, the furor subsided as other, more sensational news (e.g., the Persian Gulf War) captured the attention of the public. The well eventually was plugged, and the displaced families quietly moved back into their houses (or moved to other communities).

The only bright news for the gas industry came from the Federal Energy Regulatory Commission (FERC). In a *Notice of Proposed Rulemaking* issued in March 1991, FERC proposed to amend its regulations to restore tax credits for gas from newly drilled wells producing from "tight" (low-permeability) reservoirs. The industry indicated that it expected to file for at least four "tight" designations on the rocks of western Pennsylvania before the tax credit ruling expired at the end of 1992.

SUMMARY OF THE INDUSTRY IN 1891

In January 1891, Judge Stowe of Allegheny County Court ruled that the pumping of oil wells on Sunday was an absolute necessity, thereby dismissing a number of lawsuits filed by the Law and Order League against oil operators in the McDonald field[1] (Allegheny and Washington Counties). In June, Judge White of the Allegheny County Court of Common Pleas reversed that decision.

The enmity between coal miners and well drillers that was the impetus for Pennsylvania's first oil and gas law in 1956 did not begin in the 1950's; it had been around for decades. In mid-July 1891, coal mine operators at McDonald brought suit to keep oil well drillers from drilling through underground mines. Judge White handed down an opinion that was favorable to the oil industry and the surface owners, but that did not stop the coal mine owners from taking the law into their own hands. On October 11, miners cut the casing from wells being drilled on the Gladden farm southwest of McDonald, and injunctions were granted to prevent oil well operators from drilling through coal seams elsewhere.

Although it was actually discovered in 1890, the McDonald field began its sensational career in 1891. Before June 1, the McDonald field consisted of a few wells on some town lots within McDonald. By early August, however, owing to some spectacular wells, nearly every town lot, and quite a few of the farms around McDonald, had a well on it. The madcap drilling resulted in numerous incidents of wasteful practices, blowouts, spillages, and other disasters. For example, on August 21, a passing train ignited a well near the railroad tracks that was producing 100 boph (barrels of oil per hour). The derrick and four storage tanks were destroyed, and the burning oil geyser attracted numerous sightseers from Pittsburgh. The well continued to burn until August 27, when Glen T. Braden and Daniel Fisher, two would-be Red Adairs from Oil City, finally extinguished the flames. By October, production in the McDonald field was up to 42,000 bopd (barrels of oil per day), and thousands of barrels of oil were running on the ground and into the nearby creeks. Newspapers from the era reported that Robinson Run was literally on fire on October 5, but the fire was extinguished with little damage done to the town. Roads were in deplorable condition because of mud from frequent violent storms.

Overproduction, a serious recurring problem in Pennsylvania's petroleum history, began to take its toll on the McDonald field; by late November, both drilling and production began steep declines. Even the free use of nitroglycerine to stimulate some of the older wells into producing more was of only minor help. The McDonald field, which produced 83,000 bopd in early November, barely produced 38,000 bopd by the end of the year.

Two of Pennsylvania's most famous wells, the Guffey and Jennings #1 Mathews and the Greenlee and Forst #1 Mevey, were drilled in the McDonald field in 1891. At first, the Mathews well looked to be about average, starting as a 50 bopd pumper. The operators drilled deeper several times during the year, however, each time increasing the open flow, first to 40 boph, then to 60, 80, 150, and 250 boph. Following additional drilling in October, the Mathews well began producing at the unprecedented rate of 720 boph. By November 5, the well had produced more than 400,000 bbl (barrels) of oil. By the end of the year, production had declined to 40 boph. Today, the Mathews well is considered to have had the largest flow of oil of any well in the Appalachian basin.

The Mevey well came in at 150 boph. This apparently took the operators by surprise, because two days later the oil was flowing on the ground at a furious rate. Several thousand barrels flowed into the creek before the operators got the well under control. At that time, it was producing 500 boph. During its first 11 days in operation, the well supposedly produced 100,000 bbl of oil, and by early November, it had produced 300,000 bbl. Produc-

[1] In the early 1900's, drilling established a production link between the McDonald and nearby McCurdy fields. They have been reported as a single field, the McDonald-McCurdy field, since 1950.

tion began to fall off during late September and early October, and by late December, production had fallen to 35 boph.

In other news, the U.S. Treasury Department approved the action of the Collector of Customs in Buffalo, N. Y., imposing an *ad valorem* duty on natural gas imported from Canada. Later, on December 1, oil was found at Sherkstone, Ontario, Canada, in the Lower Silurian Medina Group. This was the first report of oil from the Medina in North America.

In 1891, Pennsylvania's oil industry produced 31,424,206 bbl of oil, having a value of $21,240,735. The market price for oil that year averaged $0.68/bbl; the high was $0.81/bbl, and the low was $0.50/bbl. When oil prices hit the low mark, a member of the Consolidated Stock and Petroleum Exchange in New York was reported to have committed suicide. Appalachian oil was not yet classified as Pennsylvania Grade crude, and each district had its own variety of oil and its own market prices. In Ohio, the oil was called Buckeye; in McKean County, it was called Bradford. Although natural gas was a valuable commodity in Pennsylvania, particularly around major manufacturing centers such as Pittsburgh, there are no statistics indicating produced amount, price, or value. These figures were not collected until the early 1900's.

PRODUCTION AND RESERVES

CRUDE OIL PRODUCTION

Crude oil production in Pennsylvania continued to decline; only 2,415,699 bbl of Penn Grade crude oil were produced in 1991, down 7.1 percent from 1990. This was the smallest quantity of crude oil produced in the Commonwealth since 1864. As in the past, most of this production was from Upper Devonian and Lower Silurian reservoirs, but there was some subsidiary production from Middle Devonian and Upper Silurian reservoirs, and probably some from Pennsylvanian and Mississippian reservoirs as well. Lower Silurian Medina Group sandstones in Erie, Crawford, and Mercer Counties produced 83,361 bbl of crude oil, 7.5 percent less than the previous year. See Table 1 for a summary of these statistics.

The amount of oil produced in 1991 and 1990 by county is reported in Table 2. Most oil production is gathered from common stock tanks without knowledge of the number of wells; therefore, the actual number of producing oil wells can only be estimated at 20,500. The majority of the Commonwealth's oil production came from Warren, Elk, McKean, and Venango Counties, in that order. These four counties were responsible for 82.5 percent of the total oil produced in Pennsylvania. Much has been said in previous years about the continued depletion of the Bradford field; however, oil production in Venango County is decreasing at an equally rapid rate. These two counties are largely responsible for the continuing drop in oil production.

Table 1. *Crude oil production in Pennsylvania, 1991 and 1990.*

(Quantities are in thousands of barrels unless otherwise indicated)

Penn Grade oil	*1991*	*1990*	*Percent change*	*Cumulative to 12/31/91*
Shallow oil[1]	2,332	2,511	−7.1	1,338,245
Deep oil[1]	83	90	−7.5	2,138
TOTAL OIL	2,416	2,601	−7.1	1,340,384

[1]See text for explanation.

Table 2. *Crude oil production in Pennsylvania in 1991 and 1990, by county.*

County	*Crude oil production (bbl) 1991*	*1990*
Allegheny	64,123	65,723
Armstrong	11,746	9,361
Beaver	7,831	9,357
Bradford	0	168
Butler	51,788	58,741
Clarion	19,253	22,380
Clearfield	779	694
Crawford	65,690	70,337
Elk	600,657	625,403
Erie	6,629	7,219
Fayette	38	193
Forest	72,758	96,231
Greene	23,959	25,117
Indiana	4,161	6,643
Jefferson	4,883	4,822
McKean	360,479	439,048
Mercer	11,042	12,605
Potter	8,991	10,288
Venango	255,317	265,543
Warren	776,050	797,298
Washington	56,607	56,481
Westmoreland	12,918	17,383
TOTAL	2,415,699	2,601,035

DEVELOPED CRUDE OIL RESERVES

Developed crude oil reserves in Pennsylvania totaled 36,546,000 bbl at the end of 1991. This represents a 6.2 percent decrease from the 1990 total of 38,962,000 bbl. The areas of the Commonwealth containing the highest reserves included the historic Bradford field in McKean County and the Kane oil field in Elk County. Economic recovery continued to be limited by the impact of poor markets and the need for increased environmental responsibility; therefore, reserve estimates should probably be lowered. Statistics of crude oil reserves by shallow and deep reservoirs are listed in Table 3.

Table 3. *Crude oil reserves in Pennsylvania, 1991 and 1990.*

(Quantities are in thousands of barrels unless otherwise indicated)

Reserves	*1991*	*1990*	*Percent change*
Shallow oil[1]	35,933	38,265	− 6.1
Deep oil[1]	614	697	−11.9
TOTAL OIL	36,546	38,962	− 6.2

[1]See text for explanation.

ENHANCED OIL RECOVERY

Pennsylvania's oil industry reported 38 new fluid-injection wells, of which 35 were in Elk County. This is a significant decrease from the total of 68 fluid-injection wells completed in 1990, all of which were in Elk County.

The Bradford field in McKean County is the first field in which large-scale, intentional waterflooding was attempted. Flooding probably began by accident sometime in the late 1800's, and intentional flooding began soon after. It was not until the early 1900's, however, that noticeable production enhancement became apparent. Since that time, most of the Bradford field has been under waterflood. Figure 1 shows the changes in oil production in Pennsylvania since Drake's well was drilled in 1859 and the continual decline of production in the Bradford field. It should be noted that in 1991 the Bradford field accounted for only 14.9 percent of the total state production.

Considering the current price of oil and the age of many of Pennsylvania's oil fields, the likelihood of increasing the recovery of crude oil resources in the Commonwealth is limited. However, significant increases in the price of oil and subsequent attempts to apply new recovery technologies could substantially increase oil reserves in both the existing fields and those parts of Pennsylvania not previously drilled.

NATURAL GAS PRODUCTION

Pennsylvania's natural gas production decreased drastically in 1991 by 20.3 percent, from the 1990 total of 177,609 Mmcf (million cubic feet) to 141,514 Mmcf. The number of producing gas wells increased 2.4 percent to an estimated 31,000. Gas production statistics for 1991 and 1990 are listed in Table 4 by shallow and deep reservoirs.

NATURAL GAS RESERVES

Proven recoverable reserves of natural gas in Pennsylvania increased 2.5 percent to 1,982,864 Mmcf in 1991. In Table 5, 1991 natural gas reserve figures for Pennsylvania are compared with those of 1990. Figure 2 graphically illustrates the differences among production, consumption, and reserves of natural gas since 1946.

Table 4. *Natural gas production in Pennsylvania, 1991 and 1990.*

(Quantities are in millions of cubic feet unless otherwise indicated)

	1991	*1990*	*Percent change*	*Cumulative to 12/31/91*
Shallow gas[1]	98,010	137,960	−29.0	—
Deep gas[2]	43,504	39,649	+ 9.7	—
TOTAL GAS	141,514	177,609	−20.3	11,071,374

[1]Shallow gas: from Late Devonian or younger rocks, generally less than 4,000 feet deep.
[2]Deep gas: from Middle Devonian or older rocks, generally more than 4,000 feet deep.

Table 5. *Natural gas reserves in Pennsylvania, 1991 and 1990.*

(Quantities are in millions of cubic feet unless otherwise indicated)

	1991	*1990*	*Percent change*
Total gas	1,982,864	1,935,253	+2.5
Stored recoverable gas	605,713	597,286	+1.4

NATURAL GAS STORAGE AREAS

Because Pennsylvania has traditionally consumed more natural gas than it has been able to produce, the natural gas industry stores large quantities of gas in the summer months to at least partially ensure an adequate supply during the winter. Storage reservoirs are typically old, depleted gas-producing reservoirs, or bodies of rock whose geological and engineering characteristics would have made them ideal reservoirs had natural gas been emplaced in them. In Pennsylvania, all the major gas-producing horizons have been used at one time or another as storage reservoirs, but the most common reservoirs are Upper Devonian Bradford and Venango Group sandstones and fractured reservoirs in the Ridgeley Sandstone. A good example of the latter type of reservoir is the North Summit Storage pool in the Summit field, Fayette County, the newest storage reservoir in the Commonwealth. The North Summit pool was discovered in 1938 and produced until the mid-1980's. CNG Transmission Corporation began injecting natural gas into the Middle Devonian Huntersville Chert and the Lower Devonian Ridgeley Sandstone on a limited basis in September 1991. Storage operations are being phased in gradually as storage well drilling and recompletion work progresses. During 1991, 12 well permits were issued; when completed in 1992, the field had a total of 27 storage and observation wells. Figure 3 shows the locations and names of all active gas storage areas in Pennsylvania in 1991. Recoverable gas in storage increased to 605,713 Mmcf in 1991 as compared with 597,286 Mmcf in 1990 (Table 5). This represents a 1.4 percent increase over last year.

OIL AND GAS PRICES

The average price for crude oil in Pennsylvania decreased to $19.55/bbl from last year's average price of $22.94/bbl (Table 6). Although crude oil prices have been lower over the last five years, the price at wellhead could not offset the decline in oil production, and the market value decreased by 20.8 percent.

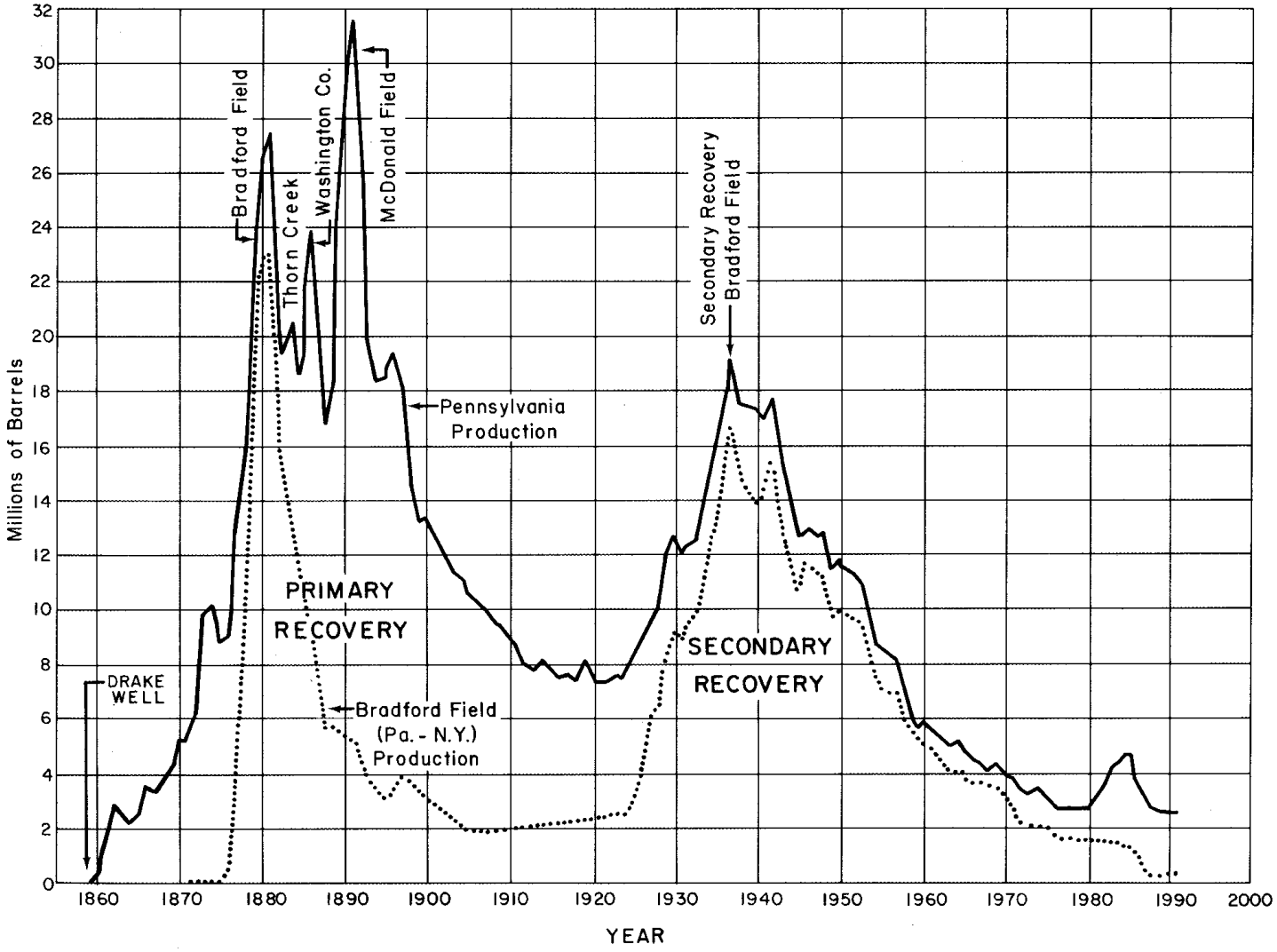


Figure 1. Annual production of crude oil in Pennsylvania, 1859–1991.

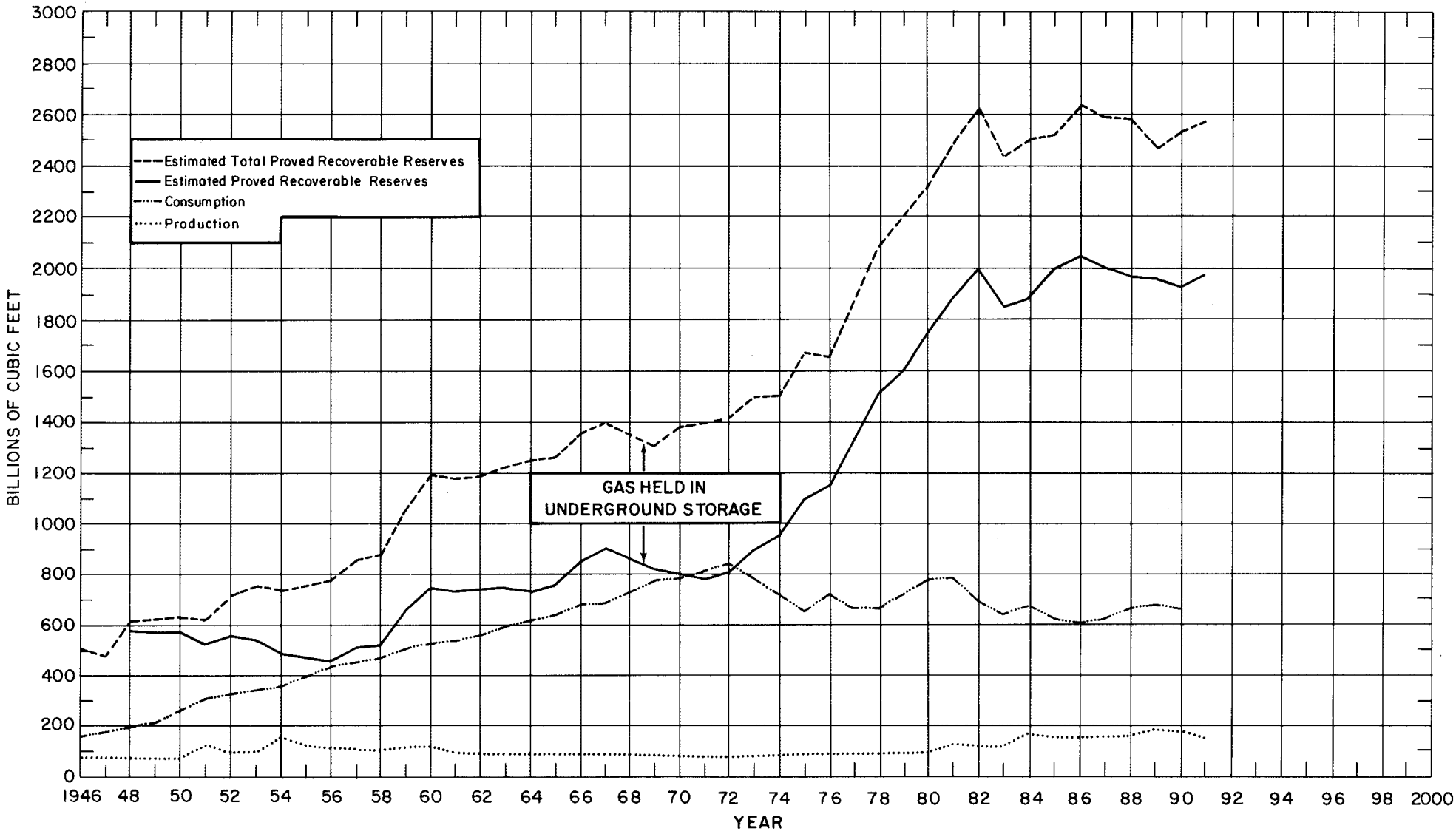


Figure 2. Production, consumption, and reserves of natural gas in Pennsylvania, 1946–91 (consumption data are reported one year in arrears).

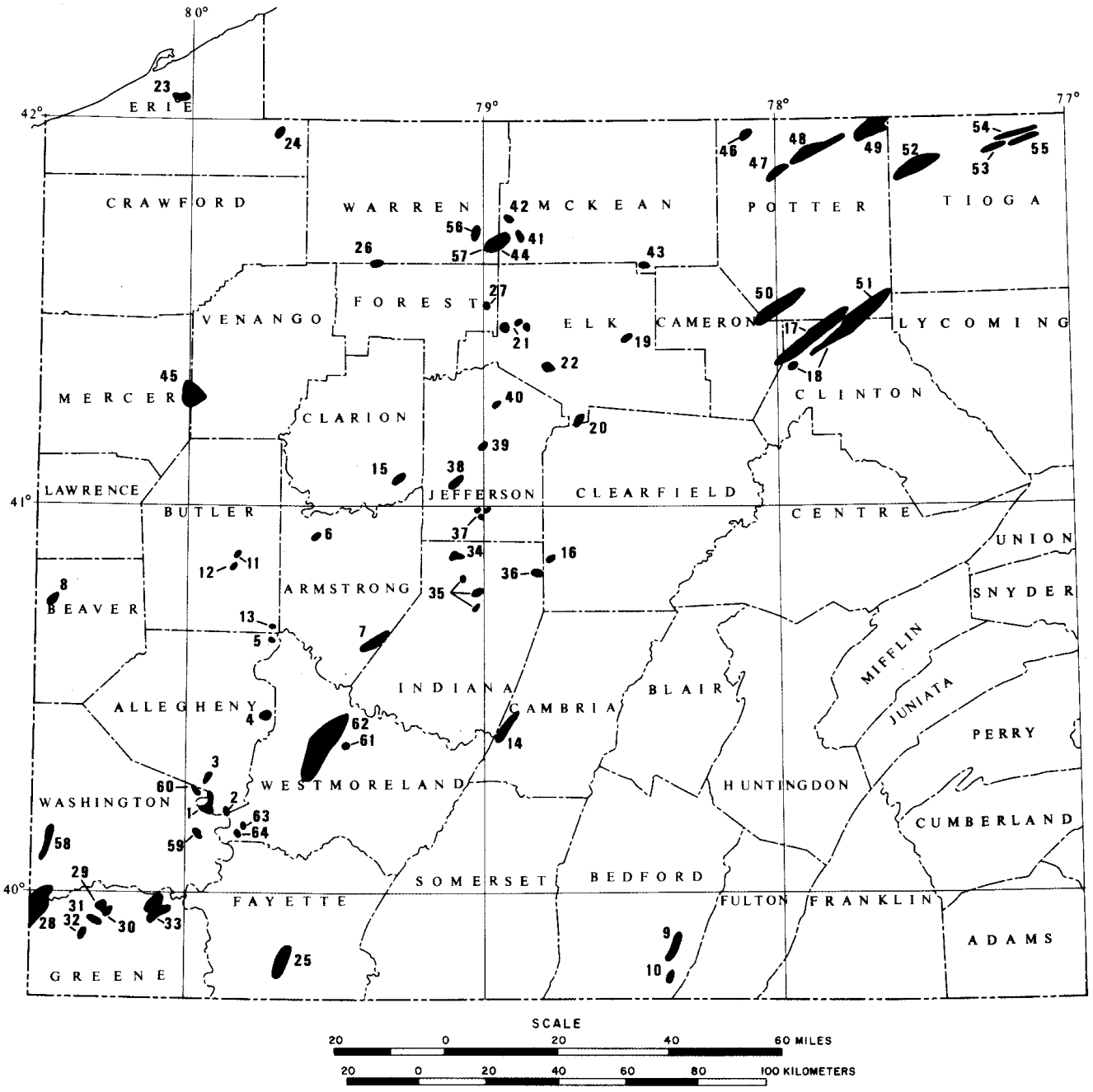


Figure 3. Active natural gas storage areas of Pennsylvania.

NAMES OF ACTIVE GAS STORAGE AREAS IN PENNSYLVANIA

ALLEGHENY COUNTY
1. Bunola
2. Gamble-Hayden
3. Tepe
4. Murrysville (Dice)
5. Smith-Parke

ARMSTRONG COUNTY
6. Fair and Helm
7. South Bend

BEAVER COUNTY
8. Black Hawk

BEDFORD COUNTY
9. Artemas A
10. Artemas B

BUTLER COUNTY
11. Vardy
12. Portman
13. Hughes

CAMBRIA COUNTY
14. Rager Mountain

CLARION COUNTY
15. Truittsburg

CLEARFIELD COUNTY
16. Gourley-Miller

CLINTON COUNTY
17. Leidy
18. Tamarack

ELK COUNTY
19. St. Marys
20. Boone Mountain
21. Owls Nest
22. Belmouth

ERIE COUNTY
23. Summit
24. Corry

FAYETTE COUNTY
25. North Summit

NAMES OF ACTIVE GAS STORAGE AREAS IN PENNSYLVANIA *(Continued)*

FOREST COUNTY
26. Queen
27. Duhring

GREENE COUNTY
28. Majorsville-Heard
29. Swarts West
30. Swarts
31. Hunters Cave
32. Holbrook
33. Pratt

INDIANA COUNTY
34. Alabran
35. Kinter
36. Clark

JEFFERSON COUNTY
37. Sprankle
38. Galbraith
39. Markle
40. Munderf

McKEAN COUNTY
41. Keelor
42. Swede Hill
43. Wellendorf
44. East Branch "B"

MERCER COUNTY
45. Henderson

POTTER COUNTY
46. Sharon
47. Hebron

POTTER COUNTY (Continued)
48. Ellisburg
49. Harrison
50. Wharton
51. Greenlick

TIOGA COUNTY
52. Sabinsville
53. Palmer
54. Tioga
55. Meeker

WARREN COUNTY
56. Deerlick
57. East Branch "A"

WASHINGTON COUNTY
58. Donegal
59. Colvin
60. Finleyville

WESTMORELAND COUNTY
61. Seanor
62. Oakford
63. Webster
64. Patton

Most natural gas prices in Pennsylvania have been subjected to controls under the federal Natural Gas Policy Act (NGPA) since 1978. The pricing structure of the NGPA raised natural gas prices gradually since then in order to provide operators with more realistic product prices. The lowest prices paid by utilities in Pennsylvania were for old gas, subject to old contracts, produced from pre-NGPA wells. Prices as low as $0.29/Mcf (thousand cubic feet) are common for gas bought under old contracts in some of the older producing areas of the Commonwealth. Some NGPA pricing categories have been deregulated since January 1, 1986. The highest price allowed for NGPA-regulated gas was $7.604/Mcf for Section 107 (High-Cost Gas, in this case the price allowed for gas from "tight formations" such as the Lower Silurian Medina Group and certain Upper Devonian sandstones). The highest price paid for gas in 1991 was $6.71/Mcf, and the average price for gas in 1991 was about $2.20/Mcf. NGPA price ceilings for natural gas during 1991 are listed in Table 7. The market value of Pennsylvania's gas at one time paralleled oil, but today the gap has widened so that the value of gas is now seven times greater than that of oil, making gas today a more profitable commodity in Pennsylvania (Table 6).

1991 DRILLING AND COMPLETIONS

TOTAL COMPLETIONS

Drilling activity as reported by Pennsylvania's oil and gas industry increased by 12.2 percent to 1,316 wells in 1991. The total includes 1,304 new wells and 12 old wells drilled deeper. Of these 1,316 wells reported in 1991, only 42 percent were actually completed in 1991. Pennsylvania's oil and gas industry submitted records on wells drilled and completed as far back as 1978, but 86 percent of the completions occurred in 1990 and 1991. The breakdown of wells reported in 1991 but completed in prior years is given in Table 8.

The total footage drilled in all reported wells increased by 19 percent, from 3,800,117 feet in 1990 to 4,523,739 feet in 1991. The average total depth in all wells drilled increased to 3,437 feet. This is attributed to the increase in gas wells reported, primarily in Armstrong County where the average depth of new wells is 3,438 feet. The six most active counties for drilling in 1991 were Warren, Armstrong, Indiana, McKean, Mercer, and Venango, accounting for 69 percent of all wells reported in the Commonwealth during the year (Table 9).

OIL COMPLETIONS

Oil well completions decreased 35.5 percent in Pennsylvania in 1991, paralleling the national trend. An increase in operating costs, state and federal regulations, and a decrease in the price per barrel of oil, made oil well drilling less than profitable. In 1991, the United States imported nearly 50 percent of the oil it used. Oil wells were reported drilled in only five counties, totaling 243 wells. Total reported footage drilled was 359,696 feet, down 32.8 percent from that of a year ago. The average total depth for all oil wells increased slightly to 1,480 feet. Most of the oil wells in Pennsylvania are classified as stripper wells, producing less than 10 bopd. The average initial flush production of oil in 1991 was 7.58 bopd (see Table 10).

Table 6. *Production, unit price, and total value of crude oil and natural gas produced in Pennsylvania, 1960–91.*

Year	CRUDE OIL			NATURAL GAS			Total oil and gas value (dollars)
	Production[1] (bbl)	Average yearly price (dollars/bbl)	Total value (dollars)	Production[2] (Mcf)	Average yearly price[3] (dollars/Mcf)	Total value (dollars)	
1960	5,942,000	4.57	27,154,940	119,671,000	0.26	31,114,460	58,269,400
1961	5,580,000	4.76	26,560,800	98,318,000	.26	25,562,680	52,123,480
1962	5,238,000	4.63	24,251,940	87,308,000	.26	22,700,080	46,952,020
1963	5,014,000	4.63	23,214,820	92,340,000	.26	24,008,400	47,223,220
1964	5,113,000	4.48	22,906,240	85,322,000	.26	22,183,720	45,089,960
1965	4,859,000	4.20	20,407,800	82,668,000	.26	21,493,680	41,901,480
1966	4,349,000	4.33	18,831,170	91,365,000	.26	23,754,900	42,586,070
1967	4,409,000	4.35	19,179,150	89,966,000	.26	23,391,160	42,570,310
1968	4,160,000	4.35	18,096,000	87,987,000	.28	24,636,360	42,732,360
1969	4,448,000	4.29	19,081,920	79,134,000	.26	20,574,840	39,656,760
1970	4,015,000	4.27	17,144,050	77,535,000	.27	20,934,450	38,078,500
1971	3,798,000	4.47	16,977,060	76,451,000	.30	22,935,300	39,912,360
1972	3,441,000	4.60	15,828,600	73,958,000	.45	33,281,100	49,109,700
1973	3,282,000	5.73	18,805,860	78,514,000	.45	35,331,300	54,137,160
1974	3,399,000	8.43	28,653,570	82,735,000	.50	41,367,500	70,021,070
1975	3,199,000	9.26	29,622,740	84,772,000	.80	67,817,600	97,440,340
1976	2,950,000	11.51	33,954,500	89,974,000	.85	76,477,900	110,432,400
1977	2,659,000	14.22	37,810,980	92,293,000	1.00	92,293,000	130,103,980
1978	2,820,000	14.77	41,651,400	97,763,000	1.25	122,203,750	163,855,150
1979	2,817,000	23.67	66,678,390	96,313,000	1.40	134,838,200	201,516,590
1980	2,940,000	37.42	110,014,800	97,439,000	1.50	146,158,500	256,173,300
1981	3,729,000	36.33	135,474,570	122,454,000	2.00	244,908,000	380,382,570
1982	4,282,000	31.42	134,540,440	121,111,000	2.80	339,110,800	473,651,240
1983	4,491,000	28.18	126,556,380	118,372,000	3.00	355,116,000	481,672,380
1984	4,825,000	27.64	133,363,000	166,342,000	3.25	540,611,500	673,974,500
1985	4,851,000	25.12	121,857,120	150,541,000	3.15	474,204,150	596,061,270
1986	3,783,000	15.66	59,241,780	159,889,000	2.50	399,722,500	458,965,642
1987	3,302,000	17.23	56,893,460	163,318,000	2.25	367,465,500	424,358,960
1988	2,807,000	15.22	42,722,540	167,089,000	2.25	375,950,250	418,672,790
1989	2,602,000	18.10	47,096,200	191,774,000	2.40	460,257,600	507,353,800
1990	2,601,000	22.94	59,666,940	177,609,000	2.35	417,381,150	477,048,090
1991	2,416,000	19.55	47,232,800	141,514,000	2.20	311,330,800	358,563,600

[1]Oil production figures courtesy of Pennsylvania's oil producers.
[2]Gas production figures courtesy of the American Gas Association.
[3]Gas prices estimated only.

GAS COMPLETIONS

The number of natural gas wells reported in 1991 increased to 986, including 10 old wells drilled deeper. This represents a 55.5 percent increase over the 1990 figure of 634 wells. Total footage drilled in all gas wells also increased 47 percent to 3,915,936 feet, but the average depth for all gas wells decreased to 3,972 feet. One of the reasons for the decline in average depth was an increase in reported drilling in McKean County (traditionally an oil-producing county), where 96 shallow gas wells averaging 1,447 feet were reported during the year. The most active counties for gas well drilling were Armstrong, Indiana, Mercer, McKean, Warren, and Westmoreland, accounting for 72.7 percent of all gas wells drilled in the state. Gas well completions reported in 1991 are summarized in Table 11.

COMBINATION OIL AND GAS WELL COMPLETIONS

(Not Reported Separately as Oil or Gas)

The Pennsylvania Geological Survey classifies a combination oil and gas well as any well that produces both oil and at least 50 Mcfgpd (thousand cubic feet of gas per day). Most oil wells drilled in Pennsylvania produce a little gas, and many produce enough gas to be sold to utilities or pipeline

Table 7. *Natural gas price ceilings under federal Natural Gas Policy Act in 1991.*

		Maximum lawful price for deliveries made in:											
		Jan. 1991	*Feb. 1991*	*Mar. 1991*	*Apr. 1991*	*May 1991*	*June 1991*	*July 1991*	*Aug. 1991*	*Sept. 1991*	*Oct. 1991*	*Nov. 1991*	*Dec. 1991*
NGPA Section	*Category of gas*	*cost per million British thermal units (dollars)*											
102	New, Natural Gas Certain OCS Gas	Deregulated January 1, 1985											
103(a)	New, Onshore Production Wells[1]	Deregulated January 1, 1985											
103(b)(1)	New, Onshore Production Wells[2]	3.673	3.682	3.691	3.700	3.717	3.734	3.751	3.764	3.777	3.790	3.796	3.802
107(c)	Gas Produced from Tight Formations[3]	7.346	7.364	7.382	7.400	7.434	7.468	7.502	7.528	7.554	7.580	7.592	7.604
108	Stripper Gas	6.449	6.485	6.522	6.559	6.610	6.661	6.713	6.757	6.801	6.845	6.878	6.911
109	Not Otherwise Covered	3.038	3.046	3.054	3.062	3.076	3.090	3.104	3.114	3.124	3.134	3.139	3.144

[1]Wells deeper than 5,000 feet.
[2]Prices only apply to Interstate. All previous 103 categories are now deregulated.
[3]Prices only apply to tight-sand formations. All other 107 categories are now deregulated.

Table 8. *Number of well records received in 1991 by completion date.*

Completion date	*No. of wells*
1978	2
1979	5
1980	4
1981	2
1982	8
1983	7
1984	30
1985	19
1986	22
1987	15
1988	9
1989	60
1990	581
1991	552
TOTAL	1,316

companies. However, if a well produces less than 50 Mcfgpd, regardless of whether or not the gas is sold, it is considered an oil well.

Pennsylvania's oil and gas operators reported 11 combination wells in 1991, a 75.5 percent decrease from the 45 wells reported in 1990. Total footage also decreased drastically, by 86.1 percent, to 33,367 feet. The average depth decreased significantly to 3,033 feet due to the fact that most of the reported wells were completed in the Upper Devonian rather than in the Lower Silurian Medina Group as in previous years. These data are summarized in Table 12.

DRY COMPLETIONS

The number of dry holes reported in 1991 remained about the same as 1990. There were 36 wells, including 1 deepened well, reported. The total footage for dry holes in Pennsylvania in 1991 was 123,325 feet, averaging 3,425 feet (Table 13).

MISCELLANEOUS WELLS

Miscellaneous wells include all wells that cannot specifically be considered oil- and gas-producing wells or dry holes. They include service wells, and junked and abandoned wells. Service wells comprise several types: stratigraphic core tests, drilled to collect subsurface information such as formation thickness or the effects of well completion on various rock types; water-supply wells for waterflood projects; fluid-injection wells for secondary and tertiary recovery of oil; liquid-waste disposal

Table 9. *Reported new well completions and old wells drilled deeper in Pennsylvania, 1991.*

REPORTED NEW WELL COMPLETIONS

County	*No. of wells*	*Average total depth (feet)*
Allegheny	7	4,245
Armstrong	217	3,438
Bradford	1	1,250
Butler	3	1,445
Cambria	4	6,255
Cameron	3	1,535
Centre	41	4,840
Clarion	6	2,074
Clearfield	38	3,787
Clinton	36	4,498
Crawford	47	4,517
Elk	71	2,448
Erie	14	2,851
Fayette	15	5,242
Forest	3	1,918
Greene	5	1,640
Indiana	131	3,694
Jefferson	22	3,249
Lawrence	1	727
McKean	130	1,584
Mercer	112	5,690
Potter	2	2,628
Somerset	2	9,155
Tioga	1	6,713
Venango	79	3,203
Warren	234	2,890
Washington	3	1,820
Westmoreland	76	3,915
TOTAL	1,304	3,457

REPORTED OLD WELLS DRILLED DEEPER

County	*No. of wells*	*Average amount deepened (feet)*
Armstrong	2	2,083
Clinton	1	1,782
Erie	1	1,150
Indiana	3	895
Jefferson	1	410
McKean	3	935
Westmoreland	1	2,458
TOTAL	12	1,288

Table 10. *Reported new oil well completions and old oil well drilled deeper in Pennsylvania, 1991.*

REPORTED NEW OIL WELL COMPLETIONS

County	No. of wells	Average initial production (bopd)	Average total depth (feet)
Butler	1	1.00	1,500
Elk	33	0	2,462
McKean	33	3.94	1,687
Venango	37	3.35	874
Warren	138	11.44	1,364
TOTAL	242	7.58	1,483

REPORTED OLD OIL WELL DRILLED DEEPER

County	No. of wells	Average initial production (bopd)	Average amount deepened (feet)
McKean	1	5.00	734

wells; and gas storage wells. Increases and decreases within this category do not accurately reflect oil and gas drilling trends because, for example, an oil field operator may drill all needed water-supply wells and fluid-injection wells several years after the oil-producing wells have been completed.

Miscellaneous wells decreased in 1991 by 51.8 percent. There were 40 wells reported during the year; 35 of them were drilled as water-intake wells in Elk County. In addition, three gas-injection wells were reported in Venango and Washington Counties, and two junked holes were reported in Crawford and Indiana Counties. The total footage drilled in these 40 miscellaneous wells was 91,415 feet, averaging 2,285 feet per well. A county breakdown of reported miscellaneous well completions in 1991 is given in Table 14.

DRILLING AND COMPLETION COSTS

The costs of drilling and completing a well, given on the next page, vary with the company, drilling depth, method of completion, and geographic area. Costs generally increase yearly due to inflation, but they may decline if the prices for fossil fuels (needed in manufacturing and transporting casing, cement, etc.) decline. Prices typically increase as total depth increases, especially for wells that penetrate deeper, undrilled or untested formations. Dry holes are generally less expensive than producing wells because not as much is done to the hole beyond drilling and, perhaps, logging. Extremely deep wells may be extraordinarily expensive, not just because of increased rig time and increased casing, cementing, and other needs, but because provisions must be made for potential unforeseen problems. Wells

Table 11. *Reported new gas well completions and old gas wells drilled deeper in Pennsylvania, 1991.*

REPORTED NEW GAS WELL COMPLETIONS

County	No. of wells	Average initial open flow (Mcfgpd)[1]	Average total depth (feet)
Allegheny	7	476	4,245
Armstrong	216	384	3,437
Cambria	4	250	6,255
Centre	38	537	4,824
Clarion	6	59	2,074
Clearfield	38	805	3,787
Clinton	33	1,331	4,473
Crawford	43	302	4,874
Elk	1	38	2,222
Erie	13	861	2,850
Fayette	13	1,205	4,702
Greene	5	50	1,640
Indiana	129	890	3,718
Jefferson	22	458	3,249
McKean	94	20	1,455
Mercer	107	644	5,688
Potter	2	40	2,628
Somerset	2	860	9,155
Tioga	1	15,000	6,713
Venango	38	223	5,698
Warren	93	603	5,183
Washington	1	3,000	504
Westmoreland	70	694	3,913
TOTAL	976	565	3,998

REPORTED OLD GAS WELLS DRILLED DEEPER

County	No. of wells	Average initial open flow (Mcfgpd)[1]	Average amount deepened (feet)
Armstrong	2	91	2,083
Clinton	1	0	1,782
Indiana	3	395	895
Jefferson	1	750	410
McKean	2	2	1,036
Westmoreland	1	1,110	2,458
TOTAL	10	323	1,357

[1]Mcfgpd, thousand cubic feet of gas per day.

Table 12. *Reported new combination oil and gas well completions in Pennsylvania, 1991.*

County	No. of wells	Average initial production (bopd)	Average initial open flow (Mcfgpd)	Average total depth (feet)
Forest	3	[1]	[1]	1,918
Mercer	4	[1]	1,205	5,736
Venango	3	13.00	20	1,157
Warren	1	[1]	[1]	1,200
TOTAL	11	3.55	444	3,033

[1]Production not reported.

Table 13. *Reported new dry hole completions and old well drilled deeper but completed dry in Pennsylvania, 1991.*

REPORTED NEW DRY HOLE COMPLETIONS

County	No. of dry holes	Average total depth (feet)
Armstrong	1	3,575
Bradford	1	1,250
Butler	2	1,418
Cameron	3	1,535
Centre	3	5,039
Clinton	3	4,765
Crawford	3	838
Elk	2	2,575
Erie	1	2,864
Fayette	2	8,753
Indiana	1	3,993
Lawrence	1	727
McKean	3	4,496
Mercer	1	5,668
Warren	2	2,458
Westmoreland	6	3,945
TOTAL	35	3,491

REPORTED OLD WELL DRILLED DEEPER BUT COMPLETED DRY

County	No. of dry holes	Average amount deepened (feet)
Erie	1	1,150

drilled in untested formations and/or unexplored areas may require special testing and completion techniques as well. In Pennsylvania, an average well would be drilled to the Upper Devonian, about 2,812 feet deep (the average total depth of all wells reported in 1991). Deep wells (Lower Devonian Ridgeley Sandstone or Lower Silurian Medina Group) averaged 5,484 feet deep in 1991, and ultra-deep wells (deeper than 10,000 feet) averaged 13,494 feet.

Table 14. *Reported new miscellaneous well completions in Pennsylvania, 1991.*[1]

County	No. of wells	Average total depth (feet)
Crawford	1	200
Elk	35	2,435
Indiana	1	290
Venango	1	730
Washington	2	2,478
TOTAL	40	2,285

[1]Includes gas-injection wells, water-intake wells, and junked holes.

Because drilling conditions and company policies vary widely, even within a small geographic area, the drilling costs listed are only estimates and should not be used as anything more than "ballpark" figures for the industry in 1991.

1. Venango-Warren County area, shallow oil well in the Venango Group sandstones, about 800 feet deep. Dry hole,* about $10,000. Completion, about $23,100.
2. Elk County area, shallow oil well in the Bradford Group sandstones, about 2,400 feet deep. Dry hole,* about $26,000. Completion, about $46,000.
3. Indiana-Cambria-Clearfield County area, shallow gas well in the Bradford Group sandstones, about 3,500 feet deep. Dry hole,* about $66,500. Completion, about $124,000.
4. Centre-Clinton County area, shallow gas well in the Lock Haven Formation, about 4,700 feet deep. Dry hole,* about $90,000. Completion, about $180,000.
5. Crawford-Venango County area, deep gas well in the Medina Group sandstones, about 5,500 feet deep. Dry hole,* about $110,000. Completion, about $190,000.
6. Westmoreland-Somerset County area, deep gas well in the Ridgeley Sandstone, about 8,500 feet deep. Dry hole,* about $315,000. Completion, about $485,000.

*No completion attempted.

DEEP AND SHALLOW ACTIVITY

The Subsurface Geology Section of the Bureau of Topographic and Geologic Survey classifies oil and gas wells as shallow or deep depending on the stratigraphic level penetrated rather than on actual depth. In general, wells that penetrate the top of the Tully Limestone or its equivalent (the presently accepted Upper-Middle Devonian boundary) are considered deep. Wells that do not penetrate the Tully horizon are generally considered shallow. The exceptions to this general rule involve formations of great significance, such as the rocks of the Mesozoic basins in southeastern Pennsylvania. Because the Appalachian basin is wedge shaped, absolute drilling depth is not instrumental in this classification. As such, a Lower Silurian Medina Group well along the shore of Lake Erie in Erie County may be only 2,500 feet deep, whereas an Upper Devonian Lock Haven Formation well in Centre County may be more than 5,000 feet deep. Yet, the Medina well is considered deep and the Lock Haven well is considered shallow on the basis of stratigraphic interval penetrated.

Shallow wells account for the greatest number of wells drilled in Pennsylvania; they may produce oil, gas, or both. Deep wells are rarer than shallow wells because of increased cost and risk; they most commonly produce gas, but there are numerous deep wells in northwestern Pennsylvania that also produce oil. Few deep wells produce oil as their main, or sole, energy-mineral commodity. Figure 4 illus-

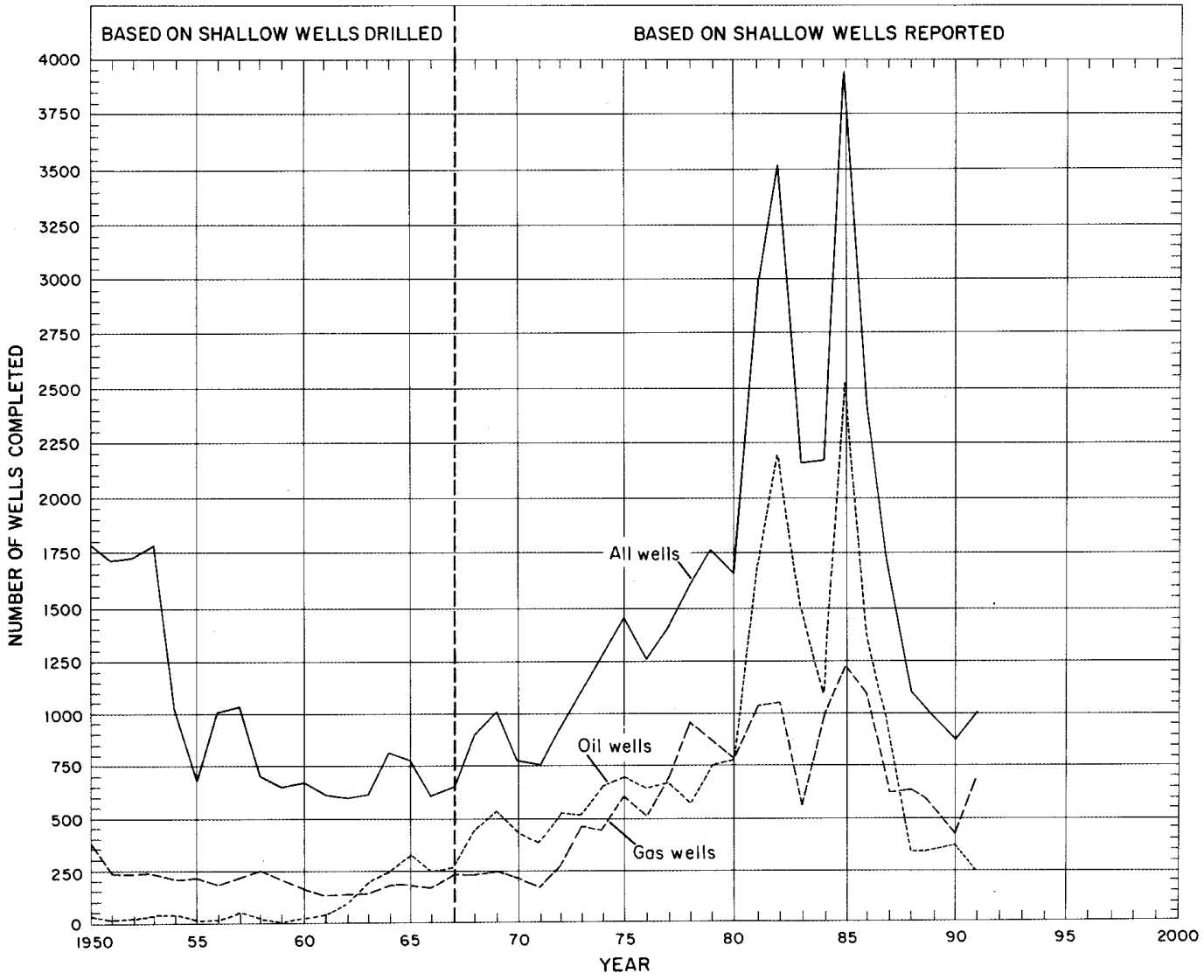


Figure 4. Shallow-well activity, 1950–91 (Late Devonian or younger producing horizons, generally less than 4,000 feet deep).

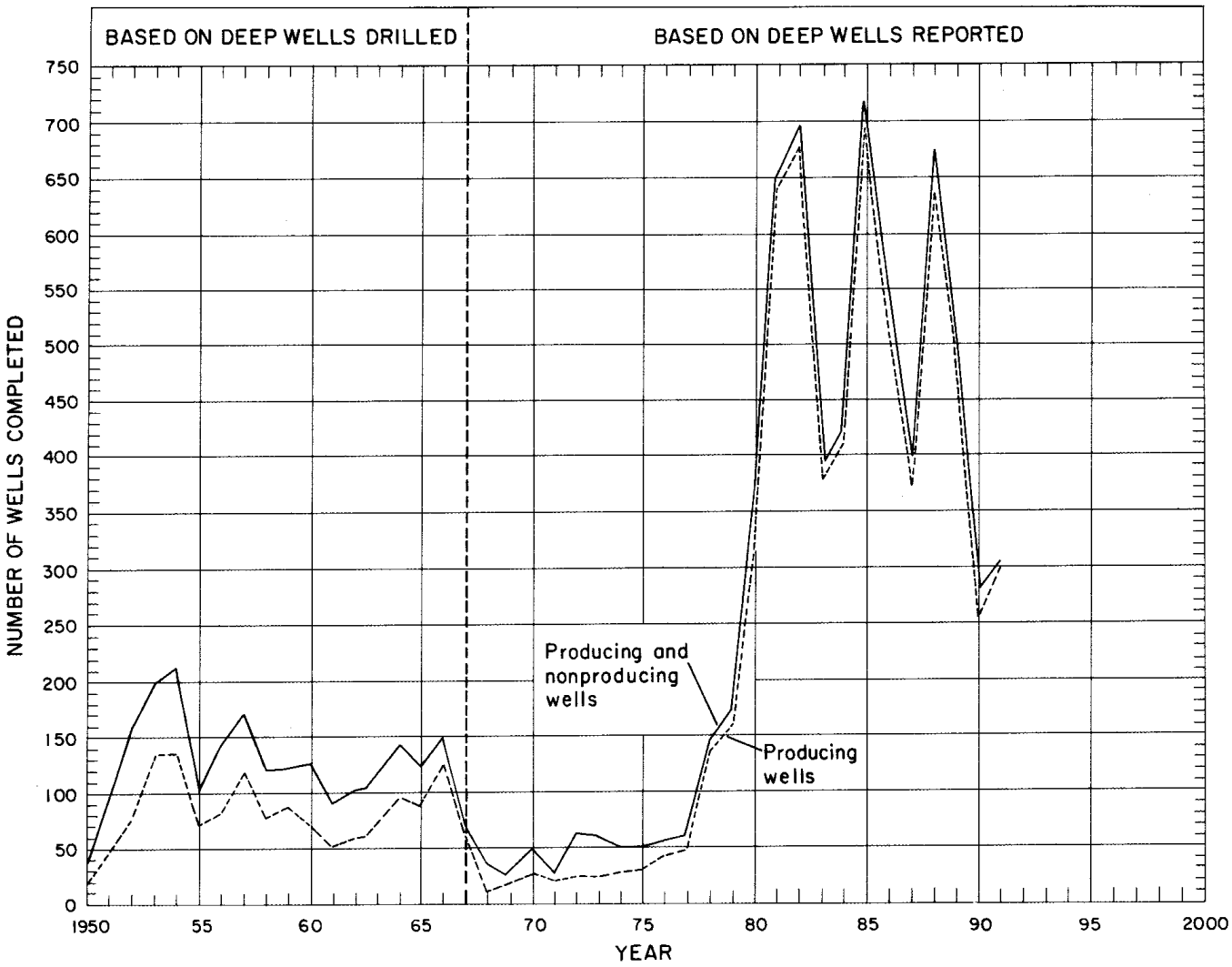


Figure 5. Annual rate of deep formation exploration and development, 1950–91 (Middle Devonian or older producing horizons, generally more than 4,000 feet deep).

trates shallow-well drilling activity since 1950, and Figure 5 shows the changes in deep-well drilling activity during the period of 1950–91.[1]

There were 1,008 shallow wells reported in Pennsylvania in 1991, an increase of 13 percent over the 892 wells reported in 1990. This 1991 total included 957 new oil, gas, combination, and dry wells, 11 old gas and oil wells deepened, and 40 miscellaneous wells. In general, both the shallow oil wells and the shallow gas wells were drilled to Upper Devonian Venango and Bradford Group reservoirs. Subsidiary drilling in other shallow horizons resulted in production from (1) Pennsylvanian coals; (2) Lower Mississippian "Murrysville" sand; and (3) Upper Devonian Elk Group, Lock Haven Formation, and Ohio Shale. Shallow-oil-well and/or shallow-gas-well drilling in Armstrong, Warren, Indiana, McKean, Westmoreland, and Elk Counties accounted for 76.4 percent of all shallow drilling reported in 1991.

Reported deep drilling in Pennsylvania increased 9.6 percent in 1991. During the year, 308 deep wells were reported, up 27 wells from 1991. The most active areas for deep drilling in Pennsylvania continued to be the northwestern counties of Mercer, Warren, Crawford, and Venango, accounting for 91.8 percent of all deep-well activity. Missing from this list of counties is Erie, where only 15 wells were reported. During the 1970's and 1980's exploration boom, Erie County had more Medina gas wells reported than any other county in Pennsylvania. Although many of these wells are still producing, few new wells are being added today. Deep formations drilled during 1991 for natural gas (and oil)

[1]The solid lines representing total wells in Figures 4 and 5 are different in some parts of the graphs than those shown in previous annual reports because of the addition of wells not previously included.

production include the (1) Middle Devonian Onondaga Limestone and Huntersville Chert; (2) Lower Devonian Ridgeley Sandstone; (3) Middle Silurian Lockport Dolomite; and (4) Lower Silurian Medina Group.

The statistical breakdown for both shallow and deep wells reported in Pennsylvania in 1991 is given in Table 15. Shallow- and deep-well drilling in terms of the final reported producing formations are listed in Table 16.

Shallow gas production accounts for over 75 percent of the gas produced in the state, and shallow oil production accounts for over 95 percent of the oil produced. Only a small percentage of oil and gas production is a result of deep drilling. Tables 1 and 4 show the total amount of oil and gas produced in 1991 by shallow and deep activity. Deep-gas production during the year is listed in Table 17 by field and pool, and the amount of gas produced from the various deep reservoirs is listed in Table 18. The cumulative totals in Table 18 have been adjusted to include production data from previous years that were reported in 1991.

Table 15. *Reported drilling and completion of wells, 1991 (according to geologic age of producing horizons).*

Shallow—Upper Devonian and younger	
NEW WELLS	
Gas	680
Oil	242
Oil and gas	7
Dry	28
Total new wells	957
DEEPENED WELLS	
Gas	10
Oil	1
Total deepened wells	11
MISCELLANEOUS WELLS	
Water injection	35
Gas injection	3
Junked holes	2
Total miscellaneous wells	40
Total shallow wells	1,008
Deep—Middle Devonian and older	
NEW WELLS	
Gas	296
Oil and gas	4
Dry	7
Total new wells	307
DEEPENED WELLS	
Dry	1
Total deep wells	308
TOTAL ALL WELLS DRILLED	1,316

PENNSYLVANIA DRILLING AND PRODUCTION RECORDS

The drilling depth record for Pennsylvania was set at 21,460 feet by the Amoco Production Company #1 Svetz well in Somerset County in 1974. The well penetrated Cambrian rocks. This is also the deepest well drilled in the Appalachian basin. The deepest producing depth in Pennsylvania is 13,253 feet, in the Felmont Oil Corporation #1 Pennsylvania State Tract 679 well in Clinton County, reported in 1990. Production in this well is from the Upper Ordovician Bald Eagle Formation. The record for largest initial production of gas for both Pennsylvania and the Appalachian basin is held by the New York State Natural Gas #1 Finnefrock well in the Leidy field, Clinton County. The well flowed 145,000 Mcfgpd without stimulation from the Lower Devonian Ridgeley Sandstone at 6,339 feet when drilled in 1951. The largest initial production for oil in Pennsylvania is, once again, an Appalachian basin record. The Guffey and Jennings #1 Mathews well in the McDonald-McCurdy field, Allegheny County, reportedly flowed between 12,000 and 21,000 bopd from the Upper Devonian Venango Group ("Fifth sand") in 1891.

OIL AND GAS EXPLORATORY AND DEVELOPMENT ACTIVITIES

The Pennsylvania Bureau of Topographic and Geologic Survey, Subsurface Geology Section, uses a classification scheme for exploratory and development drilling that is modified from the definitions used by the Committee on Statistics of Drilling of the American Association of Petroleum Geologists. All wells reported here are the same as those reported under drilling and completions in the previous section of this report. In Table 19, reported drilling activity in Pennsylvania in 1991 is summarized as exploratory, development, or miscellaneous.

EXPLORATORY WELLS

An exploratory well is one that is drilled to (1) find and produce oil or gas in unproven areas; (2) find a new reservoir in an area previously known

Table 16. *Reported oil and gas well completions in Pennsylvania by shallow and deep producing formations, 1991.*

	Producing formation	Oil wells	Gas wells	Combination oil and gas wells	Total wells
SHALLOW	Pennsylvanian	0	6	0	6
	Mississippian	0	3	0	3
	Venango	41	15	3	59
	Venango/Bradford	0	184	0	184
	Bradford	202	393	4	599
	Bradford/Elk	0	6	0	6
	Elk	0	5	0	5
	Catskill/Lock Haven	0	1	0	1
	Lock Haven	0	71	0	71
	Ohio Shale	0	[1]7	0	7
	Subtotal	243	691	7	941
DEEP	Onondaga	0	1	0	1
	Huntersville	0	1	0	1
	Huntersville/Ridgeley	0	2	0	2
	Ridgeley	0	6	0	6
	Lockport	0	1	0	1
	Medina	0	284	4	288
	Subtotal	0	295	4	299
	GRAND TOTAL	243	986	11	1,240

[1]Includes one deep well plugged back and producing shallow.

Table 17. *Gas production from rocks of Middle Devonian or older age in Pennsylvania, 1991 (classified as "deep" production).*

Field	Pool	County	Discovery date	Production 1991 (Mcf)	Cumulative production at end of 1991 (Mcf)	Reservoir[1]
Alder Run		Erie	8/24/74	56,547	552,476	M
Athens		Crawford	9/20/74	58,355	2,083,492	M
	Brimstone	do.	1/30/79	165,371	6,161,167	M
	Dutch Hill	do.	8/31/80	118,429	2,649,740	M
	Lincolnville	do.	8/16/80	16,337	562,695	M
	Potash Run	do.	3/18/79	16,115	521,605	M
	Rome	do.	6/ 9/79	256,758	5,390,695	M
Bakersville	Shafer Run	Somerset	5/ 1/85	7,396	295,669	R
Big Bend	Lackawannock	Mercer	3/ 4/90	962,923	1,024,386	M
Black Ash	Motter	Crawford	3/ 7/86	109,002	458,023	M
Blooming Valley		do.	2/11/82	8,940	134,052	M
Blue Hole		Somerset	2/ 6/89	44,700	136,203	HR
Boswell		do.	11/11/58	138,958	12,329,195	R
Bradford	Cyclone	McKean	2/18/74	373,323	2,615,539	N
Breedtown	Gresham	Crawford, Venango	10/ 5/85	954,914	4,755,292	M
Brier Knob		Somerset	7/22/80	218,632	413,308	R
Brokenstraw		Erie, Warren	7/27/78	32,812	226,263	M
	Stroup	do.	7/28/80	26,141	265,816	M
Cambridge Springs		Crawford, Erie	1/31/76	262,298	2,335,353	M
	Cambridge	Crawford	4/ 6/76	23,456	278,361	M

Table 17. *(Continued).*

Field	*Pool*	*County*	*Discovery date*	*Production 1991 (Mcf)*	*Cumulative production at end of 1991 (Mcf)*	*Reservoir*[1]
Carrolltown	Pindleton	Cambria	6/30/69	68,757	5,629,028	R
Carter Hill		Erie	5/14/79	74,226	1,203,455	M
	Macedonia	do.	4/20/84	44,076	661,580	BI
Cherry Hill	Crichton	Indiana	1/ 9/63	4,447	3,156,307	R
	Hadden	do.	7/11/63	0		
Church Run	Bates Hollow	Crawford	4/ 8/85	75,683	479,507	M
	Gilson Ridge	do.	11/25/87	10,968	61,937	M
	Hatchtown	Crawford, Warren	6/27/79	129,767	2,539,518	M
	Vrooman	do.	12/ 7/79	523,589	7,019,921	M
Cochranton		Crawford, Mercer, Venango	11/16/80	630,322	8,121,548	M
	Deckard	Crawford, Venango	11/ 4/80	104,794	1,365,346	M
	McDaniels	Crawford, Mercer	3/16/81	61,232	1,383,541	M
Colorado	McCarthy	Warren	11/20/90	138,056	138,056	N
	Seldom Seen	do.	1/11/84	312,945	1,710,732	M
Columbus	Dewey Corners	do.	2/10/81	589,237	7,188,788	M
	Hare Creek	Erie, Warren	6/26/81	26,319	192,112	M
	Horn Siding	Warren	3/21/89	121,851	146,551	M
	Whites Run	do.	10/30/75	1,174,260	3,551,271	M
Concord	Harbor Ridge	Erie	10/ 2/79	2,233	48,942	M
	Stewart Road	do.	3/10/80	11,519	114,067	M
Conneaut	Beaver Creek	Crawford	9/26/81	4,468	83,422	M
	Blood	do.	12/17/80	86,896	1,602,487	M
	Bushnell-Lexington	Crawford, Erie	12/31/58	361,681	21,303,896	M
	Carlson	Crawford	2/23/81	103,946	2,367,273	M
	Cranesville	Erie	6/17/81	94	2,724	L
	Forro	Crawford	1/ 4/58	89,185	145,416	M
	Indian Springs	do.	9/11/57	710,014	26,474,887	M
	Kastle	do.	7/14/62	120,804	3,937,905	M
	Lundys Lane	Crawford, Erie	11/ 9/61	220,435	7,660,112	M
	Marsh Run	Erie	5/20/82	2,864	14,798	H
	Mud Run	Crawford	11/ 5/81	6,983	123,328	M
	Pageville	Crawford, Erie	10/10/80	37,523	725,679	M
	Pennside	do.	9/ 9/59	26,888	428,315	M
	Pierce	Erie	12/31/58	3,418	928,375	M
	Rogers	Crawford, Erie	4/ 8/82	297	53,900	O
	Springboro	Crawford	11/ 7/79	22,850	517,613	M
	Stone Run	do.	10/21/79	50,018	1,076,512	M
Conneaut Lake		do.	8/ 9/82	9,939	163,934	M
Coolspring	Filer Corners	Mercer	8/ 8/83	17,576	74,698	M
Cooperstown	Beatty Run	Crawford, Venango	7/30/82	5,649,638	41,216,601	M
	Donation Hill	Venango	7/28/88	14,388	90,726	L
Corry		Erie	4/29/47	51,206	595,988	M
	Beaver Dam	do.	5/20/53	10,574	372,724	M
	Spencer Creek	do.	6/19/79	10,492	326,655	M
	Tarbell	do.	9/12/80	1,751	23,069	M
County Line		Crawford, Warren	1/31/81	398,484	2,052,312	M
Crabtree	Dry Ridge	Westmoreland	8/20/46	23,244	6,450,730	R
Cussewago		Crawford, Erie	6/17/81	46,457	705,557	M
Davy Hill	Pittsfield	Erie, Warren	9/17/85	33,194	42,251	M
	Ross Hill	Warren	9/26/84	4,412	9,071	BK
Dempseytown	Mt. Carmel	Venango	10/ 6/86	256,765	1,454,213	M
Devils Elbow		Centre	12/18/77	42,040	3,033,169	T
Dotyville	Porky Run	Crawford, Warren	11/ 5/86	253,881	1,684,327	M
Drumlin	Greenley	Erie	10/11/83	2,393	871,850	M
	Swails	do.	6/27/80	260,715	4,936,366	M
East Emporium		Cameron	11/17/71	185,954	5,398,738	R

Table 17. *(Continued).*

Field	*Pool*	*County*	*Discovery date*	*Production 1991 (Mcf)*	*Cumulative production at end of 1991 (Mcf)*	*Reservoir*[1]
Eaton Corners	Brown Hill	Crawford	11/15/81	33,407	541,206	M
Edinboro		Crawford, Erie	7/28/80	49,303	1,265,881	M
Edinboro North		do.	1/ 9/80	268,782	5,815,706	M
	Conneauttee	Erie	10/14/82	691	46,203	S
Enterprise	Kirvan	Venango, Warren	8/23/84	163,870	1,160,910	M
Erie	Bartosic	Erie	3/ 7/79	8,594	309,763	O
	Blass	do.	2/12/66	3,184	17,097	M
	Brandy Run	do.	5/28/79	6,650	12,625	M
	Charter Oaks	do.	5/19/77	101,805	905,757	M
	Dunn Valley	do.	1/19/80	77,953	258,686	M
	Fairview	do.	3/12/76	110	11,516	M
	Glenwood	do.	8/ 9/77	28,848	244,810	M
	Goddard	do.	8/31/78	57,972	736,974	M
	Lawrence Park	do.	8/30/77	21,227	55,433	M
	McKean	do.	1/19/73	1,812	138,491	M
	School	do.	5/21/84	158,805	591,430	O
	Talcott	do.	7/ 8/79	135,289	1,904,468	M
Fauncetown	Crawther	Crawford	9/16/86	90,005	579,333	M
Feik		Fayette	8/ 8/63	18,087	77,904	R
Forward	Monongahela	Allegheny	3/25/79	11,373	41,873	MS
Franklin Center		Erie	6/16/80	40,165	3,493,171	M
Franklin-Oak Forest	Galloway	Venango	11/12/73	299,557	1,334,568	M
Frenchtown		Crawford	8/17/80	9,343	114,454	M
	Mt. Hope	do.	10/31/80	49,512	54,469	M
Frostburg	Elk Run	Jefferson	6/20/65	177,005	50,102,884	R
Geneva	Greenwood	Crawford	10/31/73	36,709	582,917	M
	Rock Creek	do.	6/27/77	46,420	952,318	M
Gifford Run		Clearfield	1/13/83	340,544	3,488,993	R
Glessner		Somerset	6/ 5/88	499,480	2,474,823	R
Goheenville	Snyderville	Armstrong	10/23/70	6,168	340,790	R
Goodwill Hill-Grand Valley	Campbell Creek	Warren	11/14/81	1,733,366	8,805,069	M
Greenfield		Mercer	5/17/84	1,547,752	5,536,484	M
Greenville	Thiel	do.	10/28/81	16,953	127,221	M
Grugan		Clinton, Lycoming	12/13/82	395,027	7,003,476	BE
Hadley	Derber	Mercer	9/13/81	923	468,174	O
	Perry School	do.	8/30/81	7,040	118,178	M
Hamilton Corners	Tecza	Venango	7/ 4/86	1,454,020	5,648,117	M
Heckman Hollow		Somerset	8/16/77	13,894	2,252,424	R
Hicks Run		Cameron, Elk	6/ 7/56	9,263	4,447,567	R
Jacksonville	Jacksonville Deep	Indiana	11/17/56	71,283	30,891,512	R
Jacobs Creek	Bailey	Fayette, Westmoreland	12/26/61	14,173	2,466,424	R
Jamestown		Mercer	1/18/79	5,277	76,725	M
Johnstown	Baldwin	Westmoreland	10/ 6/60	303,283	13,908,739	R
	Beck	do.	5/16/57	152,512		
	Penrod	do.	11/20/87	394,806	3,095,140	HR
	Williams	Somerset	2/14/58	99,848	19,778,917	R
Kantz Corners		Crawford, Mercer	7/26/77	1,954,583	25,313,297	M
	Barco	Crawford	12/13/80	610	38,257	M
	East Fairfield	do.	7/31/80	65,646	1,530,867	M
	Mt. Pleasant Road	do.	8/30/80	5,717	214,935	M
	Round Knob	do.	11/12/80	53,109	1,164,353	M
	Shaws Corners	do.	7/15/80	232,358	2,431,226	M
Kimmel		Somerset	5/ 9/80	27,022	823,448	R
Lake Creek	Wilson Mills	Crawford, Venango	12/22/84	1,490,673	7,664,687	M
LeBoeuf	Waterford	Erie	3/21/77	165,882	6,509,992	M

Table 17. *(Continued).*

Field	*Pool*	*County*	*Discovery date*	*Production 1991 (Mcf)*	*Cumulative production at end of 1991 (Mcf)*	*Reservoir*[1]
Linn Run		Westmoreland	4/25/79	1,009	943,018	R
	Silver Mine	Somerset, Westmoreland	4/ 2/87	55,733	879,060	R
Living Waters	Uniontown	Indiana	2/21/80	80,522	2,263,287	R
Lone Pine	Glyde	Washington	10/31/61	3,750	159,586	R
Lycippus	St. Boniface Chapel	Westmoreland	9/13/56	27,510	6,147,969	R
Mayfield	Creek Falls	do.	11/15/90	10,384	10,384	HU
Maysville		Mercer	11/11/77	9,598	88,006	M
	West Salem	do.	2/17/81	36,191	243,723	M
McCune Run	Canal	Venango	5/25/82	1,007,774	7,883,717	M
Mill Run		Fayette	8/17/78	24,730	24,730	R
	Eberly	do.	10/17/85	51,307	411,270	HU
Mill Village		Erie	7/27/79	161,654	5,969,919	M
Mt. Davis		Somerset	7/20/88	7,375	379,984	HR
New Alexandria	Kahl	Westmoreland	10/23/62	155,494	12,598,165	R
New Hamburg	Goodhope	Mercer	2/ 2/79	26,241	227,574	M
New Ireland		Erie	5/14/78	26,150	1,474,066	M
	Pattison	do.	11/ 9/79	3,736	202,993	M
Nolo	Carney Run	Indiana	4/28/80	70,866	187,154	R
	Nolo Deep	do.	9/30/56	6,404	14,066,292	R
North East	Bailey Brook	Erie	1/11/80	124,303	3,022,618	M
	Bull Reservoir	do.	9/17/72	60,127	1,774,068	M
	Burgess	do.	10/17/60	14,437	3,667,292	M
	Delhill Corners	do.	6/23/79	361,734	1,921,948	N
	Harborcreek	do.	10/20/77	11,793	1,521,046	M
	Hornby	do.	6/10/78	18,222	2,174,961	M
	Kuhl	do.	8/14/78	2,633	90,851	M
	McGuire	do.	2/ 8/80	89,700	397,594	O
	Meabon	do.	5/15/86	14,757	354,268	NB
	Orchard Beach	do.	2/18/74	23,196	3,885,716	M
	Wattsburg	do.	4/19/80	54,383	344,955	M
Oakland	Splane	Venango	9/22/85	57,627	277,535	M
Octave	Drake Well	do.	10/20/88	38,885	38,885	M
Ohiopyle		Fayette, Somerset	12/28/59	10,518	4,674,008	R
	Harbaugh	Somerset	12/20/88	10,817	10,817	R
Oil City-Rouseville	Grandview	Venango	10/24/89	9,581	9,581	M
Paddytown		Somerset	5/24/85	319,356	1,575,593	R
Papenfuse		Crawford	11/16/80	13,169	321,909	M
Penfield	DuBois	Clearfield	1/ 6/60	71,375	929,957	R
	Sabula	Clearfield, Elk	9/18/58	22,197	2,861,528	R
Petroleum Center-Pioneer	Kaneville	Venango	12/ 7/89	17,482	25,345	M
	Oil Creek	do.	12/ 1/89	66,095	66,095	M
Phillipsville	Dennee	Erie	7/14/81	67,880	549,855	M
Picadilli	Turn Hill	Warren	11/18/88	67,688	86,642	M
Pleasantville	Neilltown	Venango, Warren	3/10/85	39,087	72,691	M
Pot Ridge		Cambria	7/ 1/81	5,587	46,764	R
Punxsutawney-Driftwood	Benezette	Cameron, Clearfield, Elk	1/ 5/53	83,135	252,358,915	R
	Driftwood	do.	9/15/51	75,048		
	Parker Dam	Clearfield	3/16/88	46,226	158,659	R
	Helvetia	do.	5/11/60	17,122	133,110,690	R
	Reed-Deemer[2]	Clearfield, Indiana, Jefferson	12/ 1/53	7,099		
	Rockton	Clearfield, Elk	2/25/55	115,628		
Queen Junction	Creel	Butler	9/28/87	310	2,593	TL

Table 17. *(Continued).*

Field	*Pool*	*County*	*Discovery date*	*Production 1991 (Mcf)*	*Cumulative production at end of 1991 (Mcf)*	*Reservoir*[1]
Queen Junction	Elora	Butler	7/27/86	7,424	11,224	R
Rager Mountain		Cambria	10/16/65	48,943	9,559,289	HR
Rattlesnake	Cornplanter	Venango	7/24/90	45,077	45,077	M
Reeds Corners		Erie	7/ 9/80	133,313	1,512,800	M
Richmond Township	Woodcock	Crawford	7/21/81	20,938	118,795	M
	Zirkle	do.	6/22/81	4,305	61,565	M
Roaring Run	Roaring Run Oriskany	Armstrong	12/14/70	83,049	[3]7,757,946	R
Rockdale		Crawford	11/30/79	487,587	4,113,976	M
Runville		Centre	2/28/80	26,847	880,565	T
Sandy Creek	Quebec Run	Fayette	6/ 3/69	1,721	50,782	H
Sandy Lake	New Lebanon	Mercer	1/27/83	26,443	26,443	M
Sanford	Trimm	Warren	2/19/81	782,437	3,265,645	M
Selkirk	Three Bridge	Crawford, Warren	2/28/81	508,808	3,268,598	M
Seven Springs	Blair Oriskany	Westmoreland	12/ 5/58	13,515	6,753,932	HR
	Tunnel	do.	3/10/65	8,044		
	Distillery	Somerset	9/20/87	118,509	599,783	HR
	Laurel Hill	do.	3/ 5/81	34,918	552,327	R
	Lookout	do.	1/14/87	147,144	1,031,670	HR
	Myersbrook	Westmoreland	7/16/82	48,294	712,468	HR
	Seven Springs	Somerset	8/ 3/66	7,130	873,598	R
	Weaver Road	do.	3/15/84	52,336	1,446,888	R
Shade Creek		do.	10/ 3/77	22,067	1,294,864	R
Shamburg	Jerusalem Corners	Crawford, Venango	7/ 1/85	16,199	171,067	M
Shamrock		Somerset	5/10/79	21,354	2,781,535	R
Shanksville		do.	9/22/73	58,229	5,993,233	R
	Wells Creek	do.	1/21/90	495,987	495,987	R
Sharon	Pymatuning	Mercer	4/ 4/91	232	232	L
	Sharon Deep	do.	2/26/78	900,450	6,110,689	M
Sheakleyville		do.	5/12/81	79,136	1,254,749	M
	Osborn	Crawford, Mercer	9/ 6/81	87,255	1,811,146	M
Somerset East		Somerset	10/ 7/79	45,169	1,111,407	R
	Listle	do.	9/20/90	259,952	259,952	R
Somerset West		do.	1/ 6/78	69,224	2,666,428	R
South Fork	Saltlick	Cambria	7/12/89	163,965	163,965	R
South Wellsboro		Tioga	2/ 2/82	6,742	6,742	R
Sparta	Eastman Hill	Crawford	10/30/75	99,343	409,863	M
Spook Hill	Laurel Ridge	Fayette	12/13/88	5,729	71,775	HR
Spring Creek	West Spring Creek	Warren	6/15/84	222,842	948,469	M
Spruell		Fayette	10/13/61	52,336	8,429,137	R
Stillwater		Warren	11/ 3/78	19,797	709,255	M
	Freehold	do.	2/ 5/79	30,178	547,246	M
	Savko	do.	1/ 7/80	13,956	539,063	M
Stoneboro	Lake	Mercer	3/ 2/83	33,415	187,055	M
Strongstown	Lizowitz	Indiana	6/19/54	10,789	13,244,935	R
	Pineton	Cambria, Indiana	12/20/69	14,622	14,026,022	R
Sugar Creek-Niles	Polk	Venango	7/ 3/91	17,498	17,498	M
	Takitezy	do.	7/26/82	186,472	1,190,813	M
Sugar Grove	Loucks	Warren	5/ 3/81	347	347	M
	Mikrut	do.	7/21/81	272	10,879	M
Summit	Rubles Run	Fayette	12/ 3/90	42,836	42,836	R
	Wympsgap	do.	4/18/88	15,097	134,762	R
Texas School	Gideon	Somerset	1/29/84	1,964,494	2,017,007	R
Tidioute	Cochene	Warren	2/ 1/86	2,165	18,706	M
Toonerville	Cherrytree Run	Venango	3/10/87	333,687	1,120,007	M
Troy	Diamond	Crawford, Venango	9/18/87	718,555	1,635,696	M
Turkey Track		Crawford	12/ 9/89	2,871	2,871	M

Table 17. *(Continued).*

Field	*Pool*	*County*	*Discovery date*	*Production 1991 (Mcf)*	*Cumulative production at end of 1991 (Mcf)*	*Reservoir*[1]
Ulysses		Potter	10/ 2/39	13,522	4,459,411	R
	Newfield	do.	4/ 2/62	22,878	342,687	R
Union City	Bentley Run	Erie	10/13/80	1,310	21,223	M
	Emmons	do.	12/30/80	31,306	202,424	M
Utica	French Creek	Mercer, Venango	7/26/81	58,137	442,485	M
Volant	Ligo	Mercer	2/26/82	54,659	196,734	M
	Pardoe	do.	7/24/81	1,810	12,914	M
West Decatur		Clearfield	3/30/73	72,727	3,584,179	R
	Eagle Eye	do.	12/ 6/81	432,855	1,400,808	R
Wheatland		Mercer	7/24/63	238,343	2,932,406	M
Whippoorwill		Cameron, Elk	7/10/61	25,414	16,618,467	R
Wolf Creek	Kilgore	Mercer	10/26/66	165,916	5,964,716	L
Youngsville	Pikes Rocks	Warren	2/19/81	26,650	188,915	M

[1]TL, Tully Limestone; MS, Marcellus Shale; N, Onondaga Limestone; NB, Onondaga Limestone/Bois Blanc Formation; HU, Huntersville Chert; HR, Huntersville Chert/Ridgeley Sandstone; O, Oriskany Sandstone; R, Ridgeley Sandstone; H, Helderberg Group; BI, Bass Islands Dolomite; S, Salina Group; L, Lockport Dolomite; M, Medina Group; T, Tuscarora Formation; BE, Bald Eagle Formation; BK, Beekmantown Formation.
[2]Reed-Deemer is a pool in the Big Run field; however, production is commingled with the Rockton and Helvetia pools.
[3]Corrected figure.

Table 18. *Deep gas production in Pennsylvania in 1991 by producing formation.*

Producing formation	*Production in 1991 (Mcf)*	*Cumulative production at end of 1991 (Mcf)*[1]
Tully Limestone	310	2,593
Marcellus Formation (deep black shale)	11,373	87,303
Onondaga Limestone	887,870	5,487,046
Oriskany Sandstone, Huntersville Chert, and Ridgeley Sandstone	8,742,261	1,331,351,393
Bass Islands Dolomite and Helderberg Group[2]	51,054	1,610,363
Salina Group	691	46,203
Lockport Dolomite	180,630	6,084,215
Medina Group	33,161,526	346,668,926
Tuscarora Sandstone	68,887	3,955,853
Bald Eagle Formation	395,027	7,003,476
Beekmantown Formation	4,412	9,071
Gatesburg Formation and Little Falls Dolomite	0	207,200
TOTAL	43,504,041	1,702,513,642

[1]Includes production from previous years reported in 1991.
[2]Most production comes from the "Bass Islands trend," which includes faulted Onondaga through Salina Formations.

to have oil and/or gas production in another reservoir; or (3) extend the known limit of a productive oil or gas reservoir. The exploratory categories are new field wildcats, new pool wildcats, deeper pool tests, shallower pool tests, and outpost/extension tests. If the well is drilled as an exploratory test and is not completed for production, it is classified as a dry exploratory hole.

Exploratory drilling in Pennsylvania accounted for 43 of the new well completions reported in Table 19. Of these, 33 were productive, yielding a success rate of 77 percent. It should be pointed out that

Table 19. *Reported exploratory and primary development and drilling footages, 1991 and 1990.*

Type of well	*1991 Wells*	*1991 Footage*	*1990 Wells*	*1990 Footage*	*Percent change in footage*
Exploratory					
Gas	33	188,692	25	150,097	
Oil and gas	0	0	6	34,126	
Dry	10	33,684	18	75,847	
Total (percent successful)	43 (77%)	222,376	49 (63%)	260,070	−14
Development					
Gas	953	3,727,244	609	2,513,220	
Oil	243	359,696	377	535,905	
Oil and gas	11	33,367	39	207,504	
Dry	26	89,641	16	42,529	
Total (percent successful)	1,233 (98%)	4,209,948	1,041 (98%)	3,299,158	+28
Miscellaneous					
Water intake	35	85,240	68	170,138	
Gas injection	3	5,685	0	0	
Gas storage	0	0	11	64,408	
Junked	2	490	4	6,343	
Total	40	91,415	83	240,889	−62
TOTAL ALL WELLS DRILLED	1,316 (97%)	4,523,739	1,173 (97%)	3,800,117	+19

"success" simply means that the well was completed for production without specific reference to long-term economic viability. Table 20 shows a breakdown of exploratory drilling by classification. All exploratory successes and the more important exploratory failures reported in 1991 are illustrated in Figure 6, and these wells are listed in Tables 21 and 22.

DEVELOPMENT WELLS

A development well is one that is drilled within a proven area of production to a known productive stratigraphic horizon. A producing well in such an area and reservoir is classified as an oil or gas development well. It is considered a dry development well if it is not completed for production.

Development drilling increased 18.4 percent to 1,233 wells reported in 1991. The success rate for all development drilling remained high at 98 percent.

HIGHLIGHTS OF 1991 EXPLORATION AND DEVELOPMENT

As in previous years, shallow-oil-well and shallow-gas-well drilling and production dominated oil- and gas-well activity in Pennsylvania in 1991.

Table 20. *Reported exploratory drilling in Pennsylvania by classification and type of well, 1991.*

Classification and type of well	*No. of wells*	*Footage*
NEW FIELD WILDCATS		
Gas	3	18,096
Dry	3	7,276
Subtotal	6	25,372
NEW POOL WILDCATS		
Gas	6	43,663
DEEPER POOL TESTS		
Gas	3	22,528
Dry	3	12,338
Subtotal	6	34,866
SHALLOWER POOL TESTS		
Gas	3	7,094
Dry	2	2,315
Subtotal	5	9,409
OUTPOST/EXTENSION TESTS		
Gas	18	97,311
Dry	2	11,755
Subtotal	20	109,066
GRAND TOTAL EXPLORATORY WELLS	43	222,376

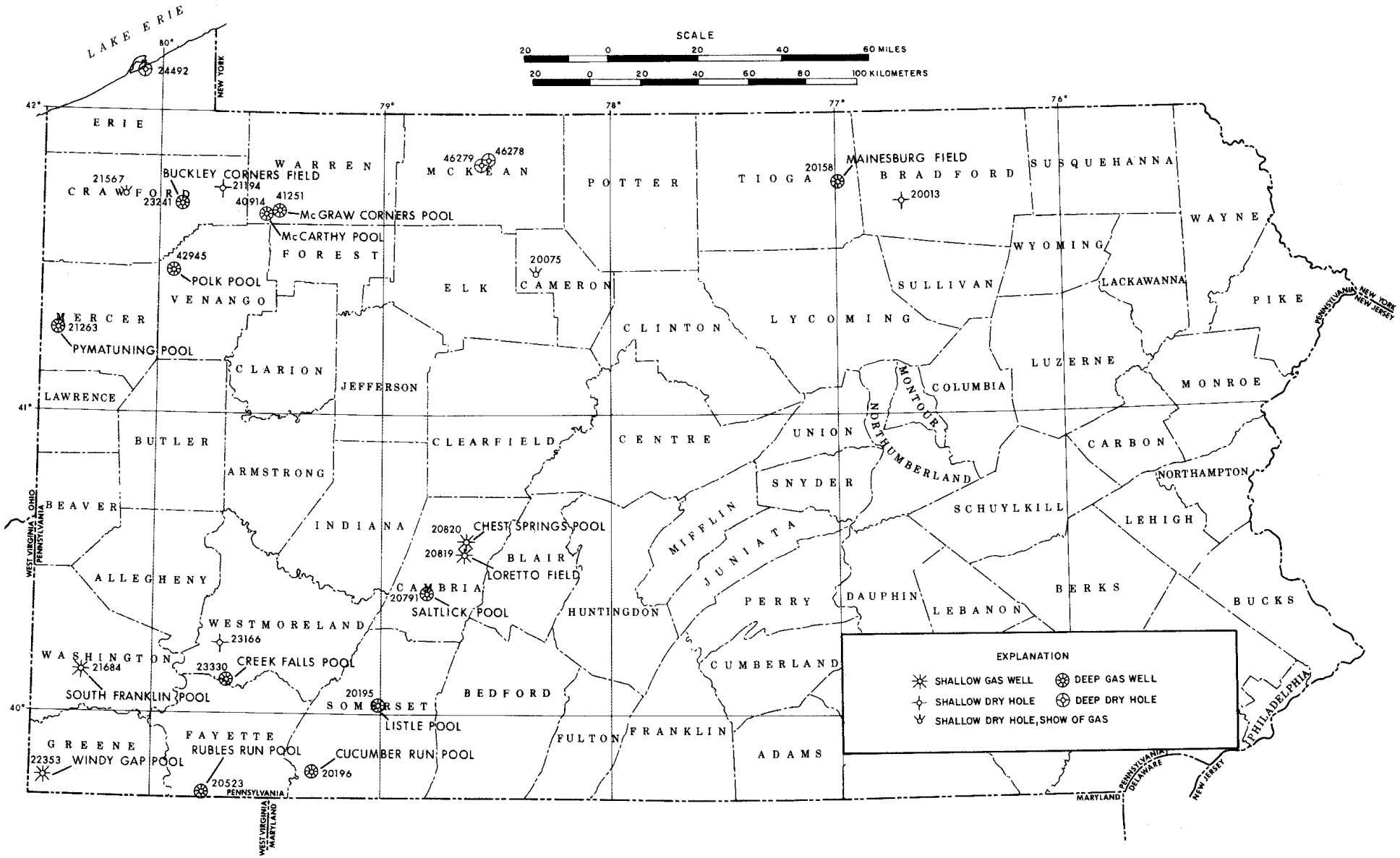


Figure 6. Exploratory wells in Pennsylvania reported in 1991.

Table 21. *Reported new field and new pool discoveries in Pennsylvania, 1991.*

County and permit no.	*Quadrangle*	*Operator Well no. and lease*	*Completion date*	*Total depth (feet)*	*Formation or group at T.D.*[2]	*Prod. depth (feet)*	*Producing formation or group*[2]	*Initial daily prod. (Mcf)*	*Field or pool (and field) name*	*Explor. class*[1] *and type of well*
Cambria	Nanty Glo	Petroleum Development Corp.	7/12/89	8,804	Ridgeley	8,804	Ridgeley	[3]	Saltlick pool	DPD
021-20791		Saltlick Tract B #1			(D)		(D)		(South Fork)	Gas
Cambria	Carrolltown	Phillips Production Co.	10/ 5/90	6,299	Elk	5,993	Elk	304	Loretto field	NFD
021-20819		Farabaugh, A. #1			(D)		(D)			Gas
Cambria	do.	Phillips Production Co.	10/24/90	6,461	Elk	5,748	Bradford/Elk	46	Chest Springs pool	NPD
021-20820		Hite, Leroy #1			(D)		(D)		(Loretto)	Gas
Crawford	Townville	Quaker State Corp.	1/19/91	5,084	Queenston	4,968	Medina	[3]	Buckley Corners field	NFD
039-23241		Hanna, Robert #1			(O)		(S)			Gas
Fayette	Lake Lynn	R. E. Fox and Assoc., Inc.	12/ 3/90	7,806	Helderberg	7,728	Ridgeley	1,700	Rubles Run pool	NPD
051-20523		Marietta Corp. #3			(D)		(D)		(Summit)	Gas
Greene	New Freeport	CNG Producing Co.	5/10/91	1,410	Pittsburgh	1,227	Dunkard/	50	Windy Gap pool	SPD
059-22353		Whipkey, R. D. #2			(PA)		Monongahela (PA)		(New Freeport)	Gas
Mercer	Sharpsville	Mark Resources Corp.	4/ 4/91	5,180	Queenston	4,548	Lockport	195	Pymatuning pool	SPD
085-21263		Gibson, H. #2			(O)		(S)		(Sharon)	Gas
Somerset	Somerset	CNG Producing Co.	9/20/90	9,409	Helderberg	9,230	Ridgeley	1,693	Listle pool	NPD
111-20195		Svonavec #1-4159			(D)		(D)		(Somerset East)	Gas
Somerset	Confluence	CNG Producing Co.	9/12/90	8,900	Helderberg	8,770	Ridgeley	27	Cucumber Run pool	NPD
111-20196		Frazee, E. #1-4144			(D)		(D)		(Paddytown)	Gas
Tioga	Roseville	Columbia Natural Resources	12/17/90	6,713	Helderberg	6,690	Ridgeley	15,000	Mainesburg field	NFD
117-20158		Bechtel, Robert #1			(D)		(D)			Gas
Venango	Utica	Cabot Oil and Gas Corp.	7/ 3/91	5,492	Queenston	5,345	Medina	375	Polk pool	NPD
121-42945		Guth, Robert #1			(O)		(S)		(Sugar Creek-Niles)	Gas
Warren	Grand Valley	Quaker State Corp.	11/20/90	5,595	Queenston	4,044	Onondaga	[3]	McCarthy pool	NPD
123-40914		PennBank #2			(O)		(D)		(Colorado)	Gas
Warren	Tidioute	Cabot Oil and Gas Corp.	4/ 8/91	5,850	Queenston	5,736	Medina	[3]	McGraw Corners pool	DPD
123-41251		Ziegler, Bruce #1-79			(O)		(S)		(Triumph)	Gas
Washington	Washington West	Jesmar Energy, Inc.	6/18/91	504	Pittsburgh	485	Pittsburgh	3,000	South Franklin pool	SPD
125-21684		Varner, Kenneth #1			(PA)		(PA)		(Lagonda)	Gas
Westmoreland	Dawson	CNG Producing Co.	11/15/90	7,874	Helderberg	7,701	Huntersville	4,300	Creek Falls pool	DPD
129-23330		Jacobs Creek #1-4162			(D)		(D)		(Mayfield)	Gas

[1]NFD, new field discovery; NPD, new pool discovery; DPD, deeper pool discovery; SPD, shallower pool discovery.
[2](PA), Pennsylvanian; (D), Devonian; (S), Silurian; (O), Ordovician.
[3]Production not reported.

Table 22. *Reported new field and new pool failures in Pennsylvania, 1991.*

County and permit no.	*Quadrangle*	*Operator Well no. and lease*	*Completion date*	*Total depth (feet)*	*Formation or group at T.D.*[1]	*Explor. class*[2]
Bradford 015-20013	Leroy	Goodwin Industries, Inc. Jones, Lloyd #1	9/28/89	1,250	Lock Haven (D)	NFW
Cameron 023-20075	West Creek	Empire Exploration, Inc. Camp Uber #1-6797	6/19/89	1,751	Bradford (D)	NFW
Crawford 039-21194	Titusville North	Peter Lukach Lukach, Peter #1	5/ 1/81	814	Venango (D)	SPT
Crawford 039-21567	Meadville	Herbert Orr Orr, Herbert #1	1/ 2/83	1,501	Chagrin (D)	SPT
Erie 049-24492	Erie North	Raymond K. Scheffer Scheffer, Raymond #1	1/31/91	1,200	Tully (D)	DPT
McKean 083-46278	Cyclone	Belden and Blake Corp. Wt. 2269 Lot 545 #1	12/ 1/90	5,625	Bass Islands (S)	DPT
McKean 083-46279	do.	Belden and Blake Corp. Wt. 2262 Lot 596 #1	12/ 7/90	5,563	Bass Islands (S)	DPT
Westmoreland 129-23166	Smithton	Questa Petroleum Co. Rupert, Bruce #1	11/21/88	4,275	Brallier (D)	NFW

[1](D), Devonian; (S), Silurian.
[2]NFW, new field wildcat; SPT, shallower pool test; DPT, deeper pool test.

More than 76 percent of all wells reported during the year (1,008 wells) fell into this category. Shallow targets in Pennsylvania include the numerous prolific Upper Devonian sandstone reservoirs of the Venango, Bradford, and Elk Groups in western Pennsylvania and the Lock Haven Formation in the north-central part of the state. Several shallower units, such as certain Pennsylvanian coals and Mississippian sandstones, act as subsidiary reservoirs in southwestern Pennsylvania. Some deeper Upper Devonian reservoirs, such as the Scherr Formation in south-central Pennsylvania, the Brallier Formation throughout the southwestern and south-central part of the state, and the Ohio Shale in Erie County, may also account for additional drilling and production during any given year. Figure 7 illustrates the stratigraphic positions and relationships of the more important Upper Devonian reservoirs in Pennsylvania.

Shallow-well activity reported in Pennsylvania in 1991 was dominated by development drilling, which included the completion of 941 productive wells (including 1 deep well plugged back and producing shallow), 28 dry holes, 38 secondary oil recovery wells, and 2 holes that were junked and abandoned before reaching total depth (Tables 15 and 16). In the normal course of a year, little exploratory activity occurs in the shallower horizons in Pennsylvania. Most of the shallow wells that qualify as exploratory are merely extensions of known production. Nine shallow wildcat (nonextension) wells were reported during the year, including four new field wildcats, one new pool wildcat, and four shallower pool tests.

The shallowest discovery reported in 1991 was a 504-foot-deep coalbed methane well in South Franklin Township, Washington County. Jesmar Energy, Inc., of Holbrook, Pa., completed the #1 Varner well without stimulation in the Pittsburgh coal (Pennsylvanian, Monongahela Group) at 485 feet with a reported natural open flow of 3,000 Mcfgpd. The company reported that the gas had a low British thermal unit value owing to high (10 percent) nitrogen content. The new shallower South Franklin pool is located in the Lagonda field. CNG Producing Company completed five coalbed methane wells in Springhill Township, Greene County. Each of the five wells had low after-treatment open flows, but that is not unusual for coalbed methane wells. Treated intervals varied with each well, but in general, CNG stimulated each of the major coalbeds between the Waynesburg A (Dunkard Group) and Kittanning (Allegheny Group) seams. The new Windy Gap pool in the New Freeport field was discovered by CNG Producing Company's #2 Whipkey well, which was stimulated in the Waynesburg A, Waynesburg, Sewickley, and Pittsburgh seams between 841 and 1,227 feet. This well had an estimated gas flow of 50 Mcfgpd.

The industry reported 243 successful wells in the Venango Group reservoirs in 1991; most of them had commingled production from the Bradford Group. All were considered to be development or

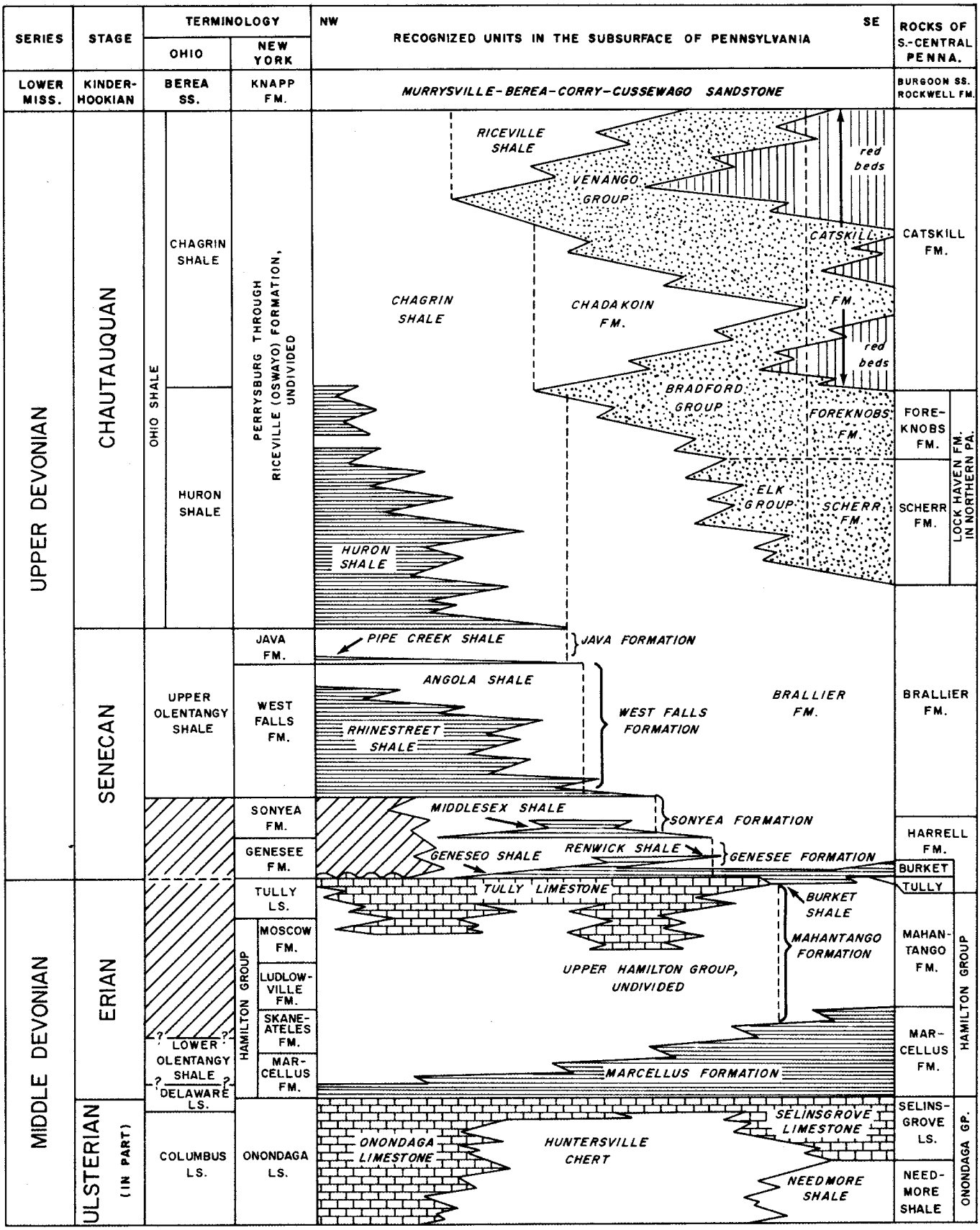


Figure 7. Schematic diagram of Upper and Middle Devonian stratigraphic units from the surface and subsurface of western Pennsylvania.

extension wells. The lone significant Venango exploratory well was an unsuccessful shallower pool test of the Athens field in Rome Township, Crawford County, which produces from the Lower Silurian Medina Group. Peter Lukach drilled the #1 Lukach well to 814 feet, probably as a test for oil, but never completed it beyond drilling. In a similar vein, 789 wells were completed in the Bradford Group, 190 of which had commingled production from the Venango or Elk Groups. Of these, only two were considered to be significant exploratory wells. Empire Exploration, Inc., reported completion of the #1-6797 Camp Uber in Shippen Township, Cameron County, as a dry hole. The well reached total depth at 1,751 feet and had an open flow of less than 1 Mcfgpd with 30 psi (pounds per square inch) of rock pressure. The well was plugged and abandoned as an unsuccessful new field wildcat. The second significant Bradford Group well, the Phillips Production Company #1 Hite well, is discussed below.

Because of its depth and the fact that it is composed mostly of thin-bedded siltstones and very fine grained sandstones interspersed with thick sequences of shales, the Elk Group is considered a viable target only in certain areas of western Pennsylvania; therefore the Phillips Production Company #1 Farabaugh well, which produces from the Elk Group outside these areas, is significant. The well is also significant in that it is the discovery well of the only successful shallow new field reported in 1991, the Loretto field in Allegheny Township, Cambria County. The Farabaugh well produced gas from the Elk Group between 4,910 and 5,993 feet with an after-treatment open flow of 304 Mcfgpd and a bottom-hole pressure of 1,690 psi. Phillips Production Company also completed the #1 Hite well in both the Bradford and Elk Groups between 3,000 and 5,748 feet for an open flow of 46 Mcfgpd and a rock pressure of 745 psi. This latter discovery is known as the Chest Springs pool in the Loretto field.

There were no other shallow discoveries reported in 1991, but several wildcat wells and some development drilling are worth discussing.

The Lock Haven Formation is the north-central Pennsylvania equivalent of the Bradford and Elk Groups and has been a significant target in that area since the discovery of the Council Run field in Centre County in 1982. Operators drilling Lock Haven wells in north-central Pennsylvania have reported some of the highest open flows in Pennsylvania in recent years, and 1991 was no exception. One well, the Eastern States Exploration Company #4 Conklin Hollow well in Grugan Township, Clinton County, had a reported natural open flow of 8,000 Mcfgpd from the Lock Haven. The company hydraulically fractured the well from 4,394 to 4,406 feet, with a resultant open flow of 10,000 Mcfgpd and a rock pressure of 1,760 psi. The well is located in the Hyner field. In all, there were 72 successful wells reported in the Lock Haven in 1991, mostly from Centre and Clinton Counties. The one significant exploratory well in the Lock Haven was a new field wildcat, the Goodwin Industries, Inc., #1 Jones well in Granville Township, Bradford County. This well, drilled to 1,250 feet, had no open flows.

Devonian shale formations have not been attractive targets in Pennsylvania since the early 1980's. However, one or more wells typically are reported during any particular year. One well was reported from the Brallier Formation in 1991. This well, the Questa Petroleum Company #1 Rupert well in Sewickley Township, Westmoreland County, was drilled to 4,275 feet without success. It was probably drilled to test the reservoir sandstones of the Bradford Group, but it had no open flows and was eventually plugged and abandoned as an unsuccessful new field wildcat. The Ohio Shale contains gas in amounts sufficient for low-volume use, especially in northern Erie County. Wells drilled in these rocks typically belong to homeowners, small businesses, or churches looking to offset the high cost of gas from local utilities. Nine wells were reported from the Ohio Shale in 1991, seven of which were producing. The two nonproducing wells were drilled in established fields. The Herbert Orr #1 Orr well, in the borough of Saegertown, north of Meadville, Crawford County, was a shallower pool test of the shales in the Conneaut field. The well reached total depth at 1,501 feet, but was not treated. The Raymond K. Scheffer #1 Scheffer well, drilled in the city of Erie, Erie County, was also unsuccessful. However, the Scheffer well is considered a deeper pool test because it reached total depth in the Middle Devonian Tully Limestone at 1,200 feet. It is probable that the original intent was to drill to the Middle Devonian Marcellus Formation.

Deep drilling in the Commonwealth always has been subsidiary to shallow drilling, even in the 1950's when the industry drilled thousands of wells in the Lower Devonian Ridgeley Sandstone throughout north-central Pennsylvania. This trend continued in 1991; only 308 deep wells, less than 24 per-

cent of the total number of wells, were reported during the year. Of this figure, 299 were producing wells (Table 16), and 8 were completed as dry holes (Table 15). Despite the relative lack of numbers, however, deep wells often lead to important discoveries and higher reserves, and commonly add more to our knowledge of subsurface geology than do shallow wells. The more commonly drilled deep horizons in Pennsylvania include the Middle Devonian Huntersville Chert and Lower Devonian Ridgeley Sandstone in the eastern Plateau area and the Lower Silurian Medina Group in the northwestern part of the state. In northwestern Pennsylvania, the carbonate and evaporite rock sequence between the shales of the Middle Devonian Marcellus Formation and the Lower Silurian Clinton Group includes the Middle Devonian Onondaga Limestone, Lower Devonian Bois Blanc Formation, Oriskany Sandstone, and Manlius Limestone, the Upper Silurian Bass Islands Dolomite and Salina Group, and the Middle Silurian Lockport Dolomite. All of these rocks, as well as the Upper Ordovician Bald Eagle Formation in north-central Pennsylvania and the Upper Cambrian Gatesburg Formation in the northwestern part of the state, are subsidiary targets for deep drilling. Figure 8 illustrates the relationships of the deep formations of western Pennsylvania.

The Middle Devonian Onondaga Limestone produces in only a few places in northwestern Pennsylvania, mainly in conjunction with the highly fractured rocks of the "Bass Islands trend" in central-eastern Erie County. However, a few wells produce in the Onondaga outside this trend, from the Lake Erie shore to the Bradford field in McKean County. Some of these discoveries were intentional, but most seem to have been surprises that occurred during drilling to the Lower Silurian Medina Group or some other formation. During 1991, one such surprise occurred in Warren County when Quaker State Corporation drilled the #2 PennBank well in Southwest Township, discovering the McCarthy pool in the Colorado field. Quaker State drilled the well to the Upper Ordovician Queenston Formation at 5,595 feet, presumably to find development production in the Medina Group sandstones. However, they treated the well in the Onondaga between 4,034 and 4,044 feet. The resultant rock pressure was 1,875 psi, but the open flow was not reported. Production information received for the year indicates that this well, and two others that were drilled in 1991 but that had not been reported to the Commonwealth by the end of the year, produced significant quantities of both oil and gas. Little information is available on these wells at this time; however, geophysical logs from nearby wells indicate that the lowest member of the Onondaga, the Edgecliff (or Clarence) Member, has good porosity and low water saturation (apparently as little as 10 to 15 percent) throughout most of its 50-foot section. In con-

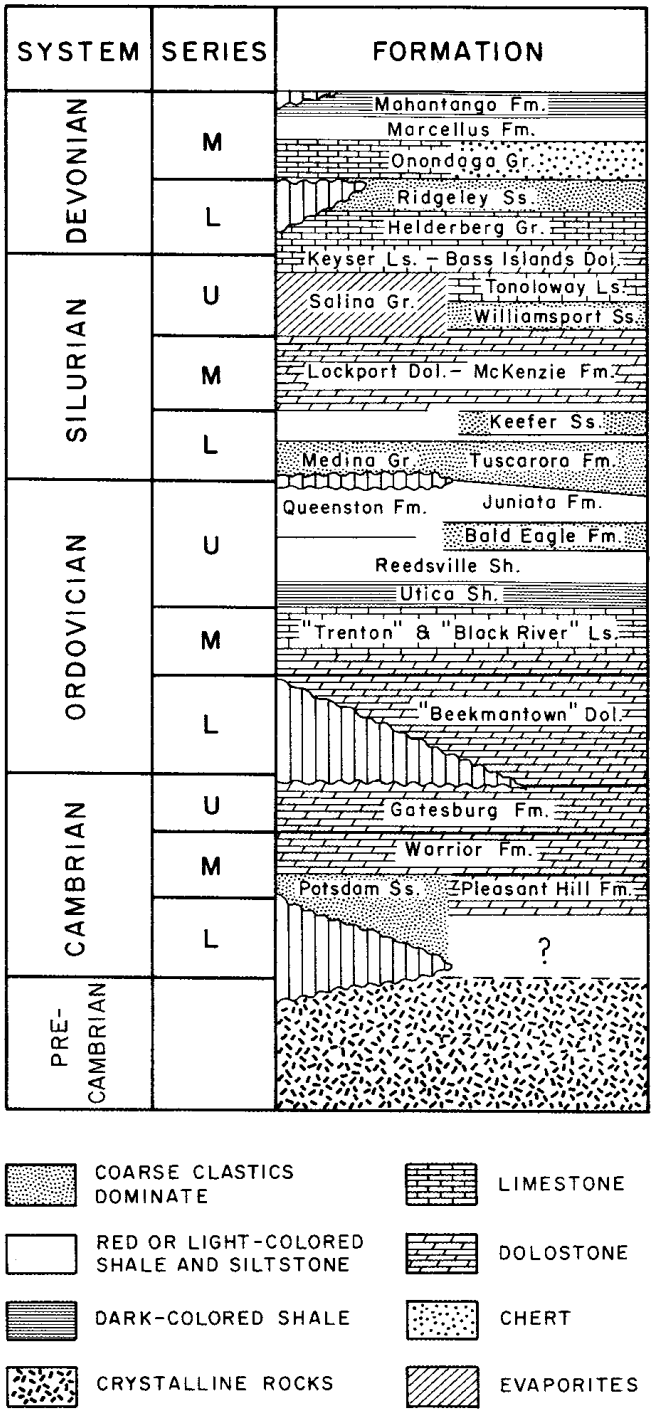


Figure 8. Generalized diagram of the major deep (Tully or deeper) formations occurring in the subsurface of western Pennsylvania.

trast, the underlying Oriskany Sandstone, which is well developed at 24 feet thick, has a very high water saturation (greater than 80 percent). It is probable that Quaker State will continue to drill for Onondaga reserves in this area. Three additional wells that can be classified as Onondaga wells were reported during 1991. All of these wells were drilled by Belden and Blake Corporation in the Bradford field, McKean County, as offsets of an Onondaga reef discovered in the mid-1970's. Two were completed as dry holes in the Upper Silurian Bass Islands Dolomite, whereas the third was completed as a successful Onondaga development well between 5,170 and 5,188 feet.

Drilling for natural gas in the Middle Devonian Huntersville Chert and Lower Devonian Ridgeley Sandstone ("Chert" and "Oriskany" of drillers) has been a time-honored tradition since the discovery of the Tioga field, Tioga County, in 1930. Such drilling once dominated deep activity in Pennsylvania, but since 1978 the Lower Silurian Medina Group has attracted more of the industry's attention than any other deep formation. Unlike wells in the Medina, Huntersville-Ridgeley wells tend to be high-risk ventures because production occurs mainly from structural traps at great depth, in some places exceeding 10,000 feet. The siting of these wells requires a good knowledge of structural geology and the precise application of seismic surveying techniques. Despite the greater expense and higher risk, however, many operators prefer drilling Huntersville-Ridgeley wells because success promises larger reserves and higher yields than those of the Upper Devonian or the Medina.

Reported drilling in the Huntersville and Ridgeley in Pennsylvania in 1991 resulted in nine new producing wells, three of which were in developed fields and pools. There were no unsuccessful Huntersville or Ridgeley exploratory wells of any significance reported in 1991. However, exploration for new reserves in these rocks resulted in one new field wildcat, three new pool wildcats, and two deeper pool tests. Columbia Natural Resources discovered the Mainesburg field in Sullivan Township, Tioga County, when they drilled the #1 Bechtel well to the Helderberg Group at 6,713 feet. The well had a natural open flow of 15,000 Mcfgpd and a rock pressure of 3,500 psi in the Ridgeley Sandstone at 6,690 feet. This is the first new Ridgeley discovery in Tioga County since the 1930's, when the Tioga field was discovered. The well is located on the southeastern flank of the Wellsboro anticline, about 40 miles northeast of the Leidy field in Clinton and Potter Counties. Numerous wells have been drilled to the Ridgeley along the Wellsboro anticline since the discovery of the Leidy field in 1950, but until the discovery of the Mainesburg field, all had been unsuccessful.

The three new pool discoveries included (1) the Listle pool in the Somerset East field, discovered by the CNG Producing Company #1-4159 Svonavec Unit well in Somerset Township, Somerset County; (2) the Rubles Run pool in the Summit field, discovered by the R. E. Fox and Associates, Inc., #3 Marietta Corporation well in Springhill Township, Fayette County; and (3) the Cucumber Run pool in the Paddytown field, discovered by the CNG Producing Company #1-4144 Frazee well in Addison Township, Somerset County. The Svonavec Unit well was completed between 9,200 and 9,230 feet with an after-treatment open flow of 1,693 Mcfgpd and a bottom-hole pressure of 3,600 psi; the Marietta Corporation well had an after-treatment open flow of 1,700 Mcfgpd and a rock pressure of 2,700 psi after hydraulic fracturing of the interval between 7,708 and 7,728 feet; and the Frazee well was perforated between 8,471 and 8,770 feet, but only a portion of the interval was treated with acid, and the result was an open flow of 27 Mcfgpd and a rock pressure of 1,775 psi. All three wells were completed in the Ridgeley Sandstone.

The two deeper pool tests resulted in the discovery of the Creek Falls pool in the Mayfield field, South Huntingdon Township, Westmoreland County, and the Saltlick pool in the South Fork field, Jackson Township, Cambria County. The Creek Falls pool, a Huntersville discovery in an Upper Devonian field, was found by the CNG Producing Company #1 Jacobs Creek Oil Company well. This well was treated with acid and potassium chloride between 7,555 and 7,701 feet with a resulting open flow of 4,300 Mcfgpd and a pressure of 3,500 psi. The discovery well for the Saltlick pool was the Petroleum Development Corporation #1 Saltlick Tract B well, a Ridgeley producer. The well was not treated, and no open flow was recorded, but a flow of gas at 8,804 feet was reported on the well record.

One new well was reported drilled to the Bass Islands Dolomite in 1991. ENGX, Inc., drilled the #1 Lochbaum well in Harborcreek Township, Erie County, to the Bass Islands at 1,925 feet, but completed it as an Ohio Shale producer within the interval 405 to 608 feet. This is the well noted in Table 16 as a deep well producing shallow.

Where it produces, the Lockport Dolomite is prolific. The largest Lockport pool in the state, the

Kilgore pool in Mercer County, has produced almost 6 billion cubic feet of gas from a few wells since its discovery in the 1960's. Only a few attempts at producing from the Lockport have been successful, apparently because of the difficulty in interpreting geophysical logs in carbonate sections. Sections that appear to be good Lockport intervals on the logs almost invariably have high water saturations. As such, only a few operators try to evaluate the Lockport; most just drill through to the Medina. Thus, whenever a Lockport well is completed for production, it is news. One new Lockport well, the Mark Resources Corporation #2 Gibson well in Hermitage Township, Mercer County, was reported in 1991. This well was drilled to the Upper Ordovician Queenston Formation at 5,180 feet, but was completed open hole and without stimulation in the Lockport at 4,548 feet. It was the discovery well for the Pymatuning pool in the Sharon field. The resulting natural open flow was gauged at 195 Mcfgpd with a rock pressure of 1,825 psi.

Drilling in the Lower Silurian Medina Group has dominated deep-well activities in Pennsylvania since 1978, when enactment of the Natural Gas Policy Act made the low-permeability sandstones of the Grimsby and Whirlpool Formations productive from an economic standpoint. Since then, more than 5,000 wells have been completed in the Medina in Erie, Crawford, Mercer, Venango, and Warren Counties. During 1991, the industry reported 288 producing Medina wells in Pennsylvania. Most of these were gas wells, but four of them also had some oil production. Three wells were completed as discovery wells, including one new field wildcat, one new pool wildcat, and one deeper pool test. These wells included (1) the Quaker State Corporation #1 Hanna well, completed from 4,833 to 4,968 feet with an after-treatment pressure of 1,060 psi and no reported open flow, the discovery well of the Buckley Corners field in Richmond Township, Crawford County; (2) the Cabot Oil and Gas Corporation #1 Guth, completed from 5,243 to 5,345 feet with an after-treatment open flow of 375 Mcfgpd and a rock pressure of 1,210 psi, the discovery well of the Polk pool in the Sugar Creek-Niles field, Canal Township, Venango County; and (3) the Cabot Oil and Gas Corporation #1-79 Ziegler well, completed in the Medina between 5,732 and 5,736 feet with a rock pressure of 1,180 psi and no reported open flow, the discovery well of the McGraw Corners pool in the shallow Triumph oil field, Triumph Township, Warren County.

GEOPHYSICAL ACTIVITY IN PENNSYLVANIA

The seismograph is the principal nondrilling exploratory tool used in Pennsylvania for the exploration of oil and gas. Although one or more companies may explore for oil and gas in any given year by using aeromagnetic and gravity sensing devices, these techniques are not considered particularly useful in Pennsylvania. The use of seismic tools is advantageous in that it can give fair to excellent indications of the attitude of rocks (whether they are folded, faulted, tilted, or flat lying) and the depths of potential hydrocarbon reservoirs by measuring the travel time for vibrations generated at the surface to reach the rock. Mechanically generated seismic pulses, especially Vibroseis, and explosive techniques, principally dynamite, are the most widely used in Pennsylvania. Seismic work is typically performed by contracted crews, and the intensity of activity is measured in crew-months.

Seismic activity in Pennsylvania was at an extremely low level during 1991, as it was nationwide. Nationally, by the end of December 1991, only 85 seismic crews and vessels were working in the United States. This marks the lowest count since the Society of Exploration Geophysicists began its survey in 1974. Likewise, Pennsylvania realized a 20 percent decline in seismic activity from 5.0 crew-months reported in 1990 to 4.0 crew-months in 1991. Reported activity included only dynamite-generated seismic readings that were run in northwestern, north-central, and southwestern Pennsylvania. The major geophysical companies were not predicting any geophysical activity for 1992.

ACTIVITIES ON STATE FOREST AND PARK LANDS

Total income received from oil and gas activities on Pennsylvania state forest and park lands during 1991 amounted to $4,641,700.63. This income was produced from rentals, including bonuses from lease sales, royalties, gas storage rentals, pipeline and compressor station rentals, and seismic surveys. Royalty payments for the year amounted to $2,187,643.71 for 6,683,457 Mcf of gas. Rentals from gas storage leases totaled $1,100,264.15, and rentals from all other gas and oil leases totaled $1,325,087.24. Other income from seismic surveys,

pipeline and compressor station rentals, and miscellaneous rentals totaled $28,705.53.

During the year, 88,687 acres of state forest and park lands were offered for bid for oil and gas exploration in 26 tracts. Of this total, 20 tracts comprising 70,554 acres were successfully bid and placed under lease.

At the end of 1991, a total of 473,878.3 acres of state forest and park lands were under lease for oil and gas exploration and development. In addition, the state had another 107,928.82 acres under lease for gas storage in 12 different gas storage fields.

During 1991, a total of 83 wells were drilled on state forest lands where the state owns the oil, gas, and gas storage rights. Of these, 63 were shallow gas wells, 16 were shallow dry holes, 1 was a deep gas well in the Ridgeley Sandstone, and 3 were deep gas storage wells in the same reservoir. Because of different reporting requirements within the Department of Environmental Resources, many of these wells were not reported to the Survey by December 31, 1991, and are not included in the statistics reported earlier in this book.

PROJECTS IN PROGRESS IN 1991, SUBSURFACE GEOLOGY SECTION

OIL AND GAS BASE MAPS

The Subsurface Geology Section continues to make available to the public a series of 7.5-minute oil and gas base maps. The series covers all of western Pennsylvania's oil and gas fields and the areas of central and eastern Pennsylvania where exploratory drilling has occurred. The series is accessible as ozalid ("blueline") reproductions of standard U.S. Geological Survey 7.5-minute topographic maps overprinted with well symbols and identifying numbers. The topographic portion of each map is subdued so that the well information stands out, but is still legible on a blueline reproduction. New well information is added periodically during updating of the map series.

Details for purchasing base maps can be obtained by contacting the Pennsylvania Bureau of Topographic and Geologic Survey, Subsurface Geology Section, 400 Waterfront Drive, Pittsburgh, PA 15222-4745, telephone 412-442-4235. When requesting copies of the maps, please provide the 7.5-minute topographic map name of each map desired. Figure 9 shows those parts of Pennsylvania for which base-map coverage is available.

WELL INFORMATION SYSTEM

In 1991, the Subsurface Geology Section began a multiyear project to compile an electronic information system based on all of the oil and gas data on file in hard-copy format at the Pittsburgh office. At the end of the year, this information system consisted of four linked data bases devoted to well-record information, geophysical logs, deep stratigraphic names, and production. It contains most of the essential data available on well records, logs, and production received since January 1986. A data base of shallow stratigraphic names will be added sometime in the near future. The well data base includes demographic data (company name, farm name and number, etc.), location information (quadrangle, latitude and longitude), field and pool names, basic geology (producing formation and formation at total depth), and open-flow data. The log data base contains data on log types and logged intervals for geophysical logs on file. The deep stratigraphic name data base is a list of acceptable formation names from the Middle Devonian Tully Limestone to the Precambrian basement. The production data base includes annual oil and gas production amounts and number of days in production. Data entry of historical records dating back to Drake's well began early in 1992. Data in the information system are available upon request as customized reports or on 5¼- or 3½-inch diskettes.

MEASURING AND PREDICTING RESERVOIR HETEROGENEITY IN COMPLEX DEPOSYSTEMS—CAMBRIAN AND ORDOVICIAN CARBONATE ROCKS OF WESTERN PENNSYLVANIA

by John A. Harper and Christopher D. Laughrey

In conjunction with the Appalachian Oil and Natural Gas Research Consortium, which also includes the Kentucky Geological Survey, the Ohio Division of Geological Survey, the West Virginia Geological and Economic Survey, and the West Virginia University, the Pennsylvania Geological Survey continued its two-year study of reservoir heterogeneity within the Late Cambrian "Rose Run

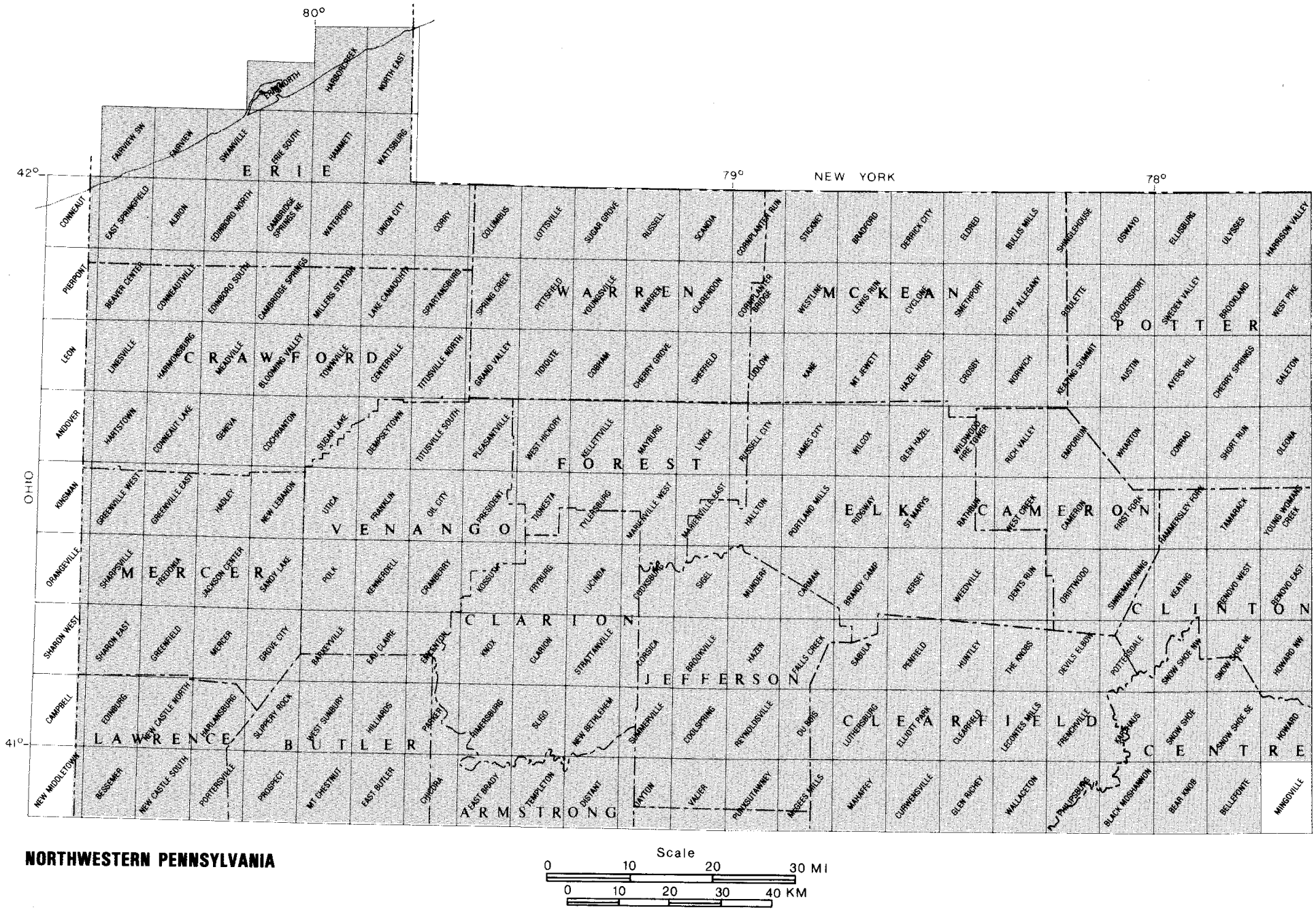
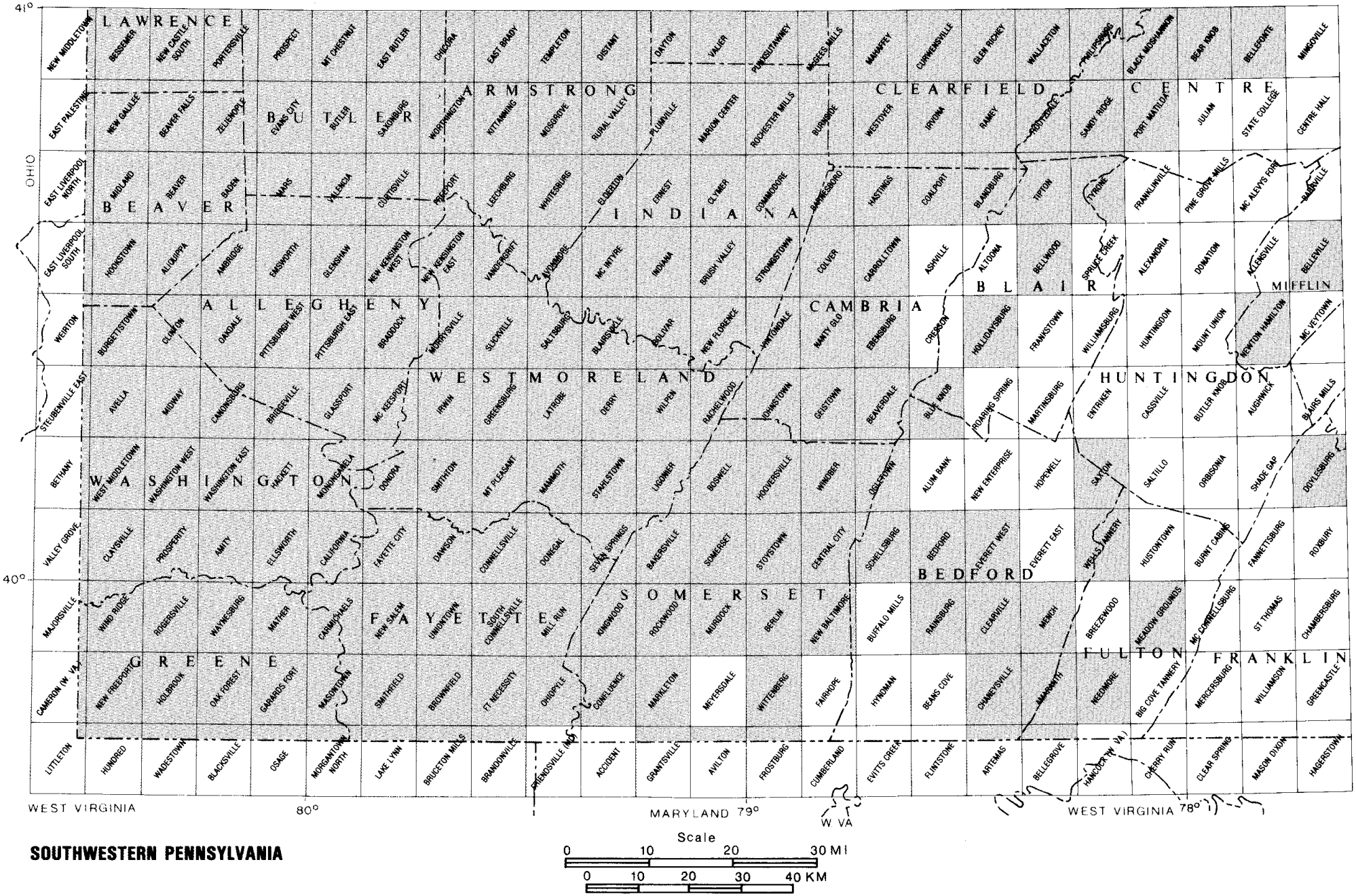
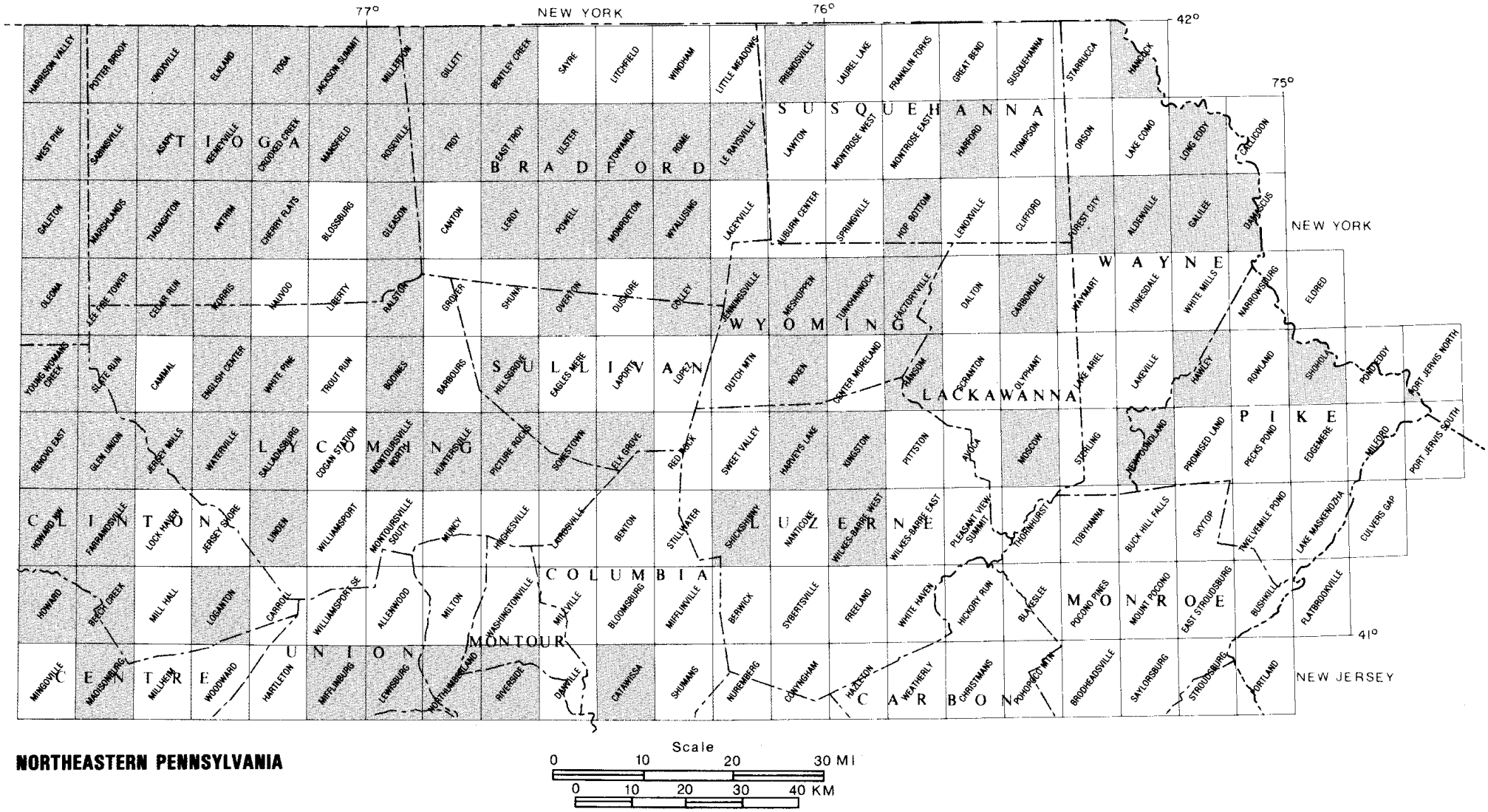


Figure 9. Index maps of available (shaded) 7.5-minute oil and gas base maps.



SOUTHWESTERN PENNSYLVANIA

Figure 9. *(Continued).*



NORTHEASTERN PENNSYLVANIA

Figure 9. *(Continued).*

SOUTHEASTERN PENNSYLVANIA

Figure 9. *(Continued).*

sand" (equivalent to the upper sandy member of the Gatesburg Formation; see Figure 8). Oil and gas production from this unit occurs at present in Ohio and occurred in the recent historic past in Pennsylvania. Production in Pennsylvania occurred where an Ordovician erosional surface known as the Knox unconformity intersects the folded and faulted, multilayered, sandy dolostones and dolomitic sandstones of the upper sandy member. The primary objective of this study, which began in October 1990, is to characterize the stratigraphy, petrology, and structural geology of the "Rose Run sand." Investigations during 1991 included detailed correlations of the section across western Pennsylvania, construction of isopach and structure maps, determination of the paleogeographic, paleoceanographic, and paleoclimatic factors governing deposition of the "Rose Run" in the eastern United States during the Late Cambrian and Early Ordovician, preliminary core and thin section description and analysis, and descriptions of outcrops in Bedford and Blair Counties in central Pennsylvania. The project was completed in September 1992.

ATLAS OF MAJOR GAS PLAYS IN THE APPALACHIAN BASIN

by John A. Harper

In October 1991, the Pennsylvania Geological Survey and the other members of the Appalachian Oil and Gas Research Consortium began a study of the natural gas plays in the Appalachian basin. This three-year, multistate project, which is being funded by the U.S. Department of Energy (DOE), will describe and illustrate the geology of the major gas plays in the basin and provide a data base of that information to DOE. The project will define and categorize each major gas play by lithology, depositional environment, trap type, and age. Each play description will include a map showing the locations of all gas fields and pools in the play, a table of reservoir data, discussion of the geological and engineering aspects, and representative available structure, isopach, and lithofacies maps, cross sections, seismic survey sections, block diagrams, graphs and charts, and other illustrative material that may be pertinent and enlightening. The final report will be a large-format, bound atlas, and the plays will be arranged in an order yet to be determined. It is hoped that this compendium will provide a basic framework for formulating exploration and development strategies within the basin. The atlas should appeal to oil and gas companies unfamiliar with the region, as well as operators having extensive exploration and production experience in the basin.

GEOLOGIC EVALUATION OF CRITICAL PRODUCTION PARAMETERS FOR COALBED METHANE IN PENNSYLVANIA

by Antonette K. Markowski

In 1990 and 1991, the Pennsylvania Geological Survey and the West Virginia Geological and Economic Survey conducted a joint preliminary investigation of coalbed methane resources in the Northern Appalachian coal basin. The project was funded by the Gas Research Institute (GRI) and coordinated by the Texas Bureau of Economic Geology (BEG). The study focused on an elliptical area in the deepest part of the basin, extending from northwestern Ritchie County, W. Va., to central Indiana County, Pa. (Figure 10). The objectives of this study were to (1) evaluate the utility of oil and gas drillers' logs and geophysical logs to identify, correlate, and map the distribution and thickness of coalbeds; (2) combine oil and gas data and coal data from both Surveys to produce a network of stratigraphic cross sections; (3) conduct detailed geologic investigations in areas having gas production from coalbeds; and (4) determine the geologic controls on coalbed gas accumulation and production. The final report, which was submitted to GRI and BEG in October 1991, contains discussions about the sedimentological controls on the occurrence of coalbed methane, the structures that may form conventional traps and enhance coalbed permeability, frac-

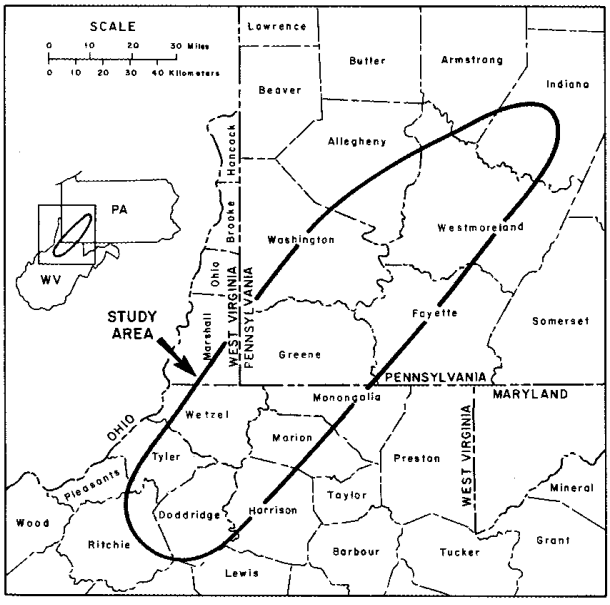


Figure 10. Location of the coalbed methane study area.

ture systems, known coalbed methane pools and production, and general resource estimates. When it is finally made available, the report will be useful to the oil and gas industry, coal mining industry, consultants, utilities, and the interested public. It is intended to encourage further exploration for commercial use of coalbed methane in the target area.

OPEN-FILE REPORTS AND OTHER DATA AVAILABLE

The following reports and other data are available on open file at the Bureau of Topographic and Geologic Survey, Subsurface Geology Section, 400 Waterfront Drive, Pittsburgh, PA 15222-4745.

Open-file report no.

1 *Surface to Middle Devonian (Onondagan) Stratigraphy, Part I (STOMDES),* 1972, by D. R. Kelley and W. R. Wagner, 15 p., 8 cross sections, vertical scale 1 inch = 100 feet.

2 *Deep Sand Exploration and Gas Developments in Pennsylvania,* 1989, by L. J. Balogh, 2 map sheets, scale 1:250,000.

3 *Salina or Equivalent and Deeper Penetrations of Pennsylvania,* 1973, by D. R. Kelley and L. J. Balogh, 1 map, scale 1:500,000 (last updated in 1979).

4 *Tully and Deeper Formations, Brine Analysis of Pennsylvania,* 1973, by D. R. Kelley and others, 1 chart and map, scale 1:500,000.

5 *Stratigraphic Framework of the Greater Pittsburgh Area, Parts I and II,* 1972, by W. R. Wagner and W. S. Lytle, 20 p., 9 sections in 13 sheets.

6 *Active Gas Storage Areas Map of Pennsylvania,* 1981, by L. J. Balogh, 1 map, scale 1:500,000 (updated as needed).

7 *Subsurface Rock Correlation Diagram, Allegheny Plateau, Pennsylvania,* 1979, by J. A. Harper, 1 sheet.

There are also over 115,000 drillers' records and logs, along with about 10,000 geophysical logs, on open file at the Pittsburgh office of the Pennsylvania Geological Survey. Approximately 44,000 of the 115,000 records on file consist of well-data cards compiled by the U.S. Geological Survey and the Pennsylvania Geological Survey between 1900 and 1970 as the bases for topographic-map quadrangle reports. In addition, the Survey has a sample library containing drill cuttings from about 1,200 wells and a core storage library containing cores from 48 wells, including the 5 wells cored under the Eastern Gas Shales Program of the U.S. Department of Energy. All cuttings and cores are available for inspection and study.

SUMMARIZED RECORDS OF REPORTED DEEP WELLS[1] IN 1991

by Christopher D. Laughrey and Cheryl L. Cozart

The information given in Table 24 was compiled mainly from drillers' logs, location plats, and geophysical logs received from the Bureau of Oil and Gas Management, as well as personal communication with oil and gas operators.

Most of the formation tops and total depths recorded in Table 24 were picked from geophysi-

[1]Wells that penetrate rocks of Middle Devonian or older age.

Table 23. *Types of geophysical logs and abbreviations.*

Caliper	CAL
Cement bond log	CBL
Compensated density log	CDL
Continuous directional	CDR
Compensated neutron log	CNL
Dual induction log	DIL
Dipmeter	DIP
Dual laterolog	DLL
Electromagnetic propagation	EPT
Fracture identification log	FIL
Guard	GD
Gamma ray	GR
Gamma-ray spectralog	GRSPECTAL
Induction log	IL
Computer interpretative	INT
Lithodensity log	LDT
Laterolog	LL
Merge	MERGE
Microspherically focused log	MSFL
Perforating collar log	PCL
Sibilation	S
Sidewall neutron porosity	SNP
Sonic	SON
Spontaneous Potential	SP
Temperature	T
3-D velocity	3-D VEL
Radioactive tracer	TRACER
Variable density log	VDL

cal logs of many varieties (see Table 23 on the preceding page for a list of these logs and their abbreviations). The logs received for a particular well are listed in Table 24 along with the logged interval. If geophysical logs are not listed, the logs were not received, and the formation picks were taken directly from the driller's log. For some wells, only a small portion of a geophysical log was submitted; in these cases, the logged interval was noted, and a combination of the driller's log and geophysical log was used. Records are listed in Table 24 alphabetically by county and numerically by permit number.

SUMMARIZED LIST OF REPORTED SHALLOW WELLS[1] IN 1991

Much time has been spent through the years providing detailed reports on deep drilling in Pennsylvania; beginning this year, a list of shallow wells is also provided. The list of shallow wells reported in 1991 (Table 25) is organized in the same manner as the well files in the Subsurface Geology Section—alphabetically by county and quadrangle and numerically by permit number.

[1]Wells that penetrate rocks of Late Devonian or younger age.

Table 24. *Summarized records of reported deep wells in 1991 that penetrated rocks of Middle Devonian or older age.*

COUNTY PERMIT NUMBER	Cambria 021-20791	Crawford 039-23155	Crawford 039-23159	Crawford 039-23180	Crawford 039-23189	Crawford 039-23194	Crawford 039-23195	Crawford 039-23197	Crawford 039-23199	Crawford 039-23201
NAME OF WELL	Saltlick Tract B #1	Brown, Clint #2	Muir, Ruth #3	Beck Unit #1	Noel, J. #1	Merry, Mildred #2	Fox, Dale #4	Whitman/Mailliard #1	Creveling, R. #1-A	Giovengo Unit #1
OPERATOR	Petroleum Development Corp.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Commodore Energy Co.	Mark Resources Corp.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Mark Resources Corp.	Cabot Oil & Gas Corp.	Mark Resources Corp.
TOWNSHIP	*Jackson*	Wayne	Troy	Venango	Troy	*Oil Creek*	*Steuben*	Wayne	*East Fairfield*	*Randolph*
QUADRANGLE	Nanty Glo	Sugar Lake	Centerville	Edinboro South	Dempseytown	Titusville North	Centerville	Sugar Lake	Cochranton	Sugar Lake
LATITUDE	5,200 ft. S 40°25'00"	3,010 ft. S 41°35'00"	12,400 ft. S 41°40'00"	6,375 ft. S 41°50'00"	5,400 ft. S 41°37'30"	5,590 ft. S 41°42'30"	12,460 ft. S 41°42'30"	4,510 ft. S 41°35'00"	10,420 ft. S 41°35'00"	13,750 ft. S 41°37'30"
LONGITUDE	2,690 ft. W 78°47'30"	7,710 ft. W 79°52'30"	8,410 ft. W 79°45'00"	4,725 ft. W 80°07'30"	620 ft. W 79°50'00"	4,900 ft. W 79°37'30"	8,170 ft. W 79°45'00"	6,780 ft. W 79°55'00"	500 ft. W 80°05'00"	2,170 ft. W 79°52'30"
DATE COMPLETED	7-12-89	7-17-90	8-24-90	10-19-90	9-26-90	6-28-90	8-10-90	10-10-90	12-14-90	3-21-91
ELEVATION	2218 GR	1622 GR	1588 GR	1330 GR	1471 GR	1575 GR	1340 GR	1370 GR	1323 GR	1360 GR
LOGS RECEIVED AND LOGGED INTERVALS	LDT/CNL: 0-8801 DLL/GR: 1798-8799 SON: 1798-8795			CDL/CNL: 2427-4179 DLL: 2427-4196 PCL/GR: 3990-4129						
TULLY LIMESTONE	7847-	3694-	3685-	2510-	3542-	3654-	3345-	3426-	3272-	3446-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	8705- 8722-	3912-	3926-	2712-	3772-	3971-	3581-	3616-	3471-	3668-
ORISKANY SANDSTONE RIDGELEY SANDSTONE	8794-	4062-	4080-		3922-	4057-	3736-	3774-	3647-	3817-
SILURIAN-DEVONIAN CARBONATES		4083-	4102-	2930-	3948-	4069-	3752-	3800-	3677-	3841-
SALINA GROUP LOCKPORT DOLOMITE		4379- 4880-	4393- 4852-	2996- 3594-	4078- 4718-	4351- 4795-	4026- 4462-	3938- 4606-	3958- 4335-	3973- 4664-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE		5162- 5226-	5134- 5198-	3868- 3922-	5009- 5076-	5107- 5181-	4740- 4804-	4896- 4950-	4705- 4763-	4945- 5005-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE		5281- 5414- 5450-	5253- 5381- 5418-	3960- 4038- 4126-	5184- 5262- 5296-	5203- 5333- 5364-	4860- 4972- 5021-	5044- 5146- 5178-	4815- 4956- 4996-	5120- 5198- 5232-
QUEENSTON FORMATION		5462-	5430-	4132-	5307-	5379-	5032-	5190-	5012-	
PRODUCING FORMATION	*Ridgeley*	*Medina*	*Medina*	*Medina*	*Medina*	*Medina*	*Medina*	*Medina*	*Medina*	*Medina*
DEEPEST PRODUCING DEPTH	8804	5378	5311	4129	5246	5278	4933	5140	4923	5181
TOTAL DEPTH	8804	5542	5562	4240	5377	5550	5149	5230	5086	5283
DEEPEST FORMATION REACHED	Ridgeley	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	IP not reported exploratory (DPW) Saltlick pool South Fork field	301 Mcf AF 1440 psi/48 hrs. development Wilson Mills pool Lake Creek field	236 Mcf AF 1240 psi/48 hrs. development Diamond pool Troy field	482 Mcf AF 1015 psi/48 hrs. development Cambridge Springs field	85 Mcf AF 1300 psi/72 hrs. development Diamond pool Troy field	317 Mcf AF 1115 psi/48 hrs. development *Vrooman* pool Church Run field	298 Mcf AF 1150 psi/48 hrs. development *Diamond* pool Troy field	241 Mcf AF 1400 psi/26 hrs. development *Wilson Mills* pool Lake Creek field	314 Mcf AF 1275 psi/48 hrs. development *Shaws Corners* pool Kantz Corners field	120 Mcf AF 1450 psi/42 hrs. development *Motter* pool Black Ash field

Table 24. *(Continued).*

COUNTY PERMIT NUMBER	Crawford 039-23203	Crawford 039-23204	Crawford 039-23205	Crawford 039-23206	Crawford 039-23207	Crawford 039-23208	Crawford 039-23209	Crawford 039-23210	Crawford 039-23214	Crawford 039-23215
NAME OF WELL	Pod-Ols-Hun Unit #1	Reese #2	Resinger Unit #1	Miller, Paul #1	Wagnercrest Farms #3	Kennedy, Carol #2	Manross, P. E. #2	Patterson, W. #1	Elliott Unit #1	Weaver Unit #1
OPERATOR	Mark Resources Corp.	Mark Resources Corp.	Mark Resources Corp.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Commodore Energy Co.	Cabot Oil & Gas Corp.	Mark Resources Corp.	Mark Resources Corp.
TOWNSHIP	Wayne	Randolph	Troy	Wayne	Fairfield	Fairfield	Woodcock	Wayne	Randolph	Randolph
QUADRANGLE	Sugar Lake	Sugar Lake	Dempseytown	Sugar Lake	Geneva	Cochranton	Blooming Valley	New Lebanon	Sugar Lake	Sugar Lake
LATITUDE	240 ft. S 41°35'00"	14,710 ft. S 41°37'30"	610 ft. S 41°37'30"	10,050 ft. S 41°32'30"	4,450 ft. S 41°32'30"	12,870 ft. S 41°32'30"	13,400 ft. S 41°45'00"	3,600 ft. S 41°30'00"	11,200 ft. S 41°37'30"	9,350 ft. S 41°37'30"
LONGITUDE	1,650 ft. W 79°52'30"	1,300 ft. W 79°57'30"	1,930 ft. W 79°50'00"	1,200 ft. W 79°57'30"	4,850 ft. W 80°07'30"	4,050 ft. W 80°02'30"	1,800 ft. W 80°02'30"	6,680 ft. W 80°00'00"	5,650 ft. W 79°52'30"	6,450 ft. W 79°52'30"
DATE COMPLETED	10-10-90	9-18-90	12-6-90	8-31-90	9-19-90	9-25-90	11-1-90	1-31-91	10-18-90	11-14-90
ELEVATION	1513 GR	1411 GR	1487 GR	1571 GR	1070 GR	1320 GR	1515 GR	1185 GR	1542 GR	1522 GR
LOGS RECEIVED AND LOGGED INTERVALS							SON: 2973-4912 GR/DLL: 2940-4810 CDL/CNL: 3000-4792 INT: 2940-4810	GR/CDL: 3350-5256		
TULLY LIMESTONE	3588-	3390-	3519-	3722-		3406-	3048-	3354-	3594-	3554-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	3806-	3612-	3748-	3950-	3212-	3614-	3252-	3568-	3810-	3768-
ORISKANY SANDSTONE RIDGELEY SANDSTONE	3952-	3780-	3905-	4090-	3392-	3776-		3716-	3964-	3924-
SILURIAN-DEVONIAN CARBONATES	3978-	3810-	3926-	4112-	3412-	3806-	3444-	3724-	3990-	3946-
SALINA GROUP LOCKPORT DOLOMITE	4114- 4800-	3944- 4602-	4049- 4700-	4439- 4981-	3706- 4222-	4119- 4560-	3530- 4180-	3844- 4544-	4116- 4796-	4074- 4746-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	5092- 5154-	4872- 4934-	4972- 5038-	5270- 5334-	4516- 4562-	4928- 4990-	4451- 4510-	4874- 4925-	5080- 5142-	5026- 5090-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5263- 5339- 5376-	5030- 5122-	5150- 5222- 5254-	5387- 5532- 5568-	4614- 4731- 4795-	5048- 5193- 5228-	4549- 4680- 4720-	4986- 5126- 5172-	5252- 5340- 5362-	5203- 5290- 5316-
QUEENSTON FORMATION	5390-		5268-	5579-	4812-	5238-	4736-	5176-	5376-	5328-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	5320	5114	5216	5487	4711	5168	4730	5089	5300	5258
TOTAL DEPTH	5475	5178	5380	5648	4901	5335	4827	5283	5404	5376
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	125 Mcf AF 725 psi/18 hrs. development Wilson Mills pool Lake Creek field	120 Mcf AF 1250 psi/120 hrs. development Mt. Hope pool Frenchtown field	130 Mcf AF 1300 psi/144 hrs. development Wilson Mills pool Lake Creek field	328 Mcf AF 1310 psi/48 hrs. development Deckard pool Cochranton field	390 Mcf AF 1250 psi/48 hrs. development Kantz Corners field	299 Mcf AF 1350 psi/48 hrs. development Cochranton field	420 Mcf AF 1010 psi/48 hrs. development Woodcock pool Richmond Township field	IP not reported 1430 psi/48 hrs. development Cochranton field	80 Mcf AF 1350 psi/240 hrs. development Motter pool Black Ash field	130 Mcf AF 1425 psi/504 hrs. development Motter pool Black Ash field

COUNTY PERMIT NUMBER	Crawford 039-23217	Crawford 039-23218	Crawford 039-23219	Crawford 039-23221	Crawford 039-23224	Crawford 039-23226	Crawford 039-23229	Crawford 039-23230	Crawford 039-23231	Crawford 039-23232
NAME OF WELL	Armstrong, Larry #1	Leech, Darrel #1	Klein #3	Wright Unit #1	Fox, Dale #5	Fox, Dale #6	Smith, Ila #2	Miller, Annelise #1	Shrock, M. P. #1	Kitchen, F. M. #1
OPERATOR	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Mark Resources Corp.	Mark Resources Corp.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	James Drilling Corp.	Mark Resources Corp.	James Drilling Corp.
TOWNSHIP	Randolph	Randolph	Wayne	Troy	Steuben	Steuben	Randolph	Beaver	Troy	Conneaut
QUADRANGLE	Sugar Lake	Sugar Lake	Sugar Lake	Centerville	Centerville	Centerville	Sugar Lake	Beaver Center	Centerville	Linesville
LATITUDE	8,740 ft. S 41°37'30"	8,300 ft. S 41°37'30"	370 ft. S 41°35'00"	12,790 ft. S 41°40'00"	11,220 ft. S 41°42'30"	12,220 ft. S 41°42'30"	11,530 ft. S 41°37'30"	3,580 ft. S 41°47'30"	15,040 ft. S 41°40'00"	800 ft. S 41°45'00"
LONGITUDE	2,890 ft. W 79°52'30"	10,170 ft. W 79°52'30"	7,060 ft. W 79°52'30"	6,920 ft. W 79°45'00"	9,670 ft. W 79°45'00"	6,150 ft. W 79°45'00"	9,160 ft. W 79°55'00"	2,400 ft. W 80°27'30"	4,900 ft. W 79°47'30"	550 ft. W 80°27'30"
DATE COMPLETED	10-24-90	10-19-90	2-14-91	11-8-90	10-26-90	11-2-90	12-19-90	12-6-90	11-20-90	11-25-90
ELEVATION	1430 GR	1515 GR	1651 GR	1616 GR	1290 GR	1302 GR	1518 GR	1084 GR	1537 GR	1120 GR
LOGS RECEIVED AND LOGGED INTERVALS								CDL/GR: 400-3786 GD: 3500-3782 T: 3530-3735		CDL/GR: 200-3913 GD: 3600-3903 T: 3600-3898
TULLY LIMESTONE	3498-	3523-	3719-	3720-	3266-	3307-	3508-		3611-	
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	3718-	3742-	3935-	3966-	3500-	3545-	3692-	2300-	3848-	2378-
ORISKANY SANDSTONE RIDGELEY SANDSTONE	3878-	3901-	4086-	4118-	3650-	3694-	3856-		3998-	
SILURIAN-DEVONIAN CARBONATES	3904-	3926-	4116-	4144-	3666-	3708-	3880-	2850-	4024-	2588-
SALINA GROUP LOCKPORT DOLOMITE	4192- 4614-	4208- 4608-	4246- 4918-	4260- 4907-	3942- 4306-	3999- 4347-	4175- 4606-	2622- 3212-	4150- 4810-	2674- 3300-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	4974- 5039-	4964- 5025-	5200- 5264-	5182- 5240-	4662- 4724-	4702- 4768-	4964- 5024-	3476- 3546-	5078- 5145-	3570- 3640-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5094- 5228- 5260-	5076- 5220- 5249-	5384- 5458- 5489-	5341- 5426- 5458-	4777- 4902- 4942-	4822- 4952- 4986-	5070- 5204- 5247-	3577- 3700- 3753-	5254- 5334- 5365-	3675- 3764- 3852-
QUEENSTON FORMATION	5272-	5263-	5500-	5470-	4955-	4997-	5261-	3760-	5378-	3856-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	5209	5168	5435	5390	4844	4887	5190	3663	5306	3752
TOTAL DEPTH	5370	5337	5607	5575	5035	5082	5385	3788	5474	3915
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	128 Mcf AF 1300 psi/48 hrs. development Motter pool Black Ash field	378 Mcf AF 1460 psi/48 hrs. exploratory (EXT) Motter pool Black Ash field	165 Mcf AF 1300 psi/120 hrs. development Wilson Mills pool Lake Creek field	150 Mcf AF 1400 psi/648 hrs. development Gresham pool Breedtown field	610 Mcf AF 1350 psi/48 hrs. development Diamond pool Troy field	307 Mcf AF 1320 psi/48 hrs. development Diamond pool Troy field	203 Mcf AF 1240 psi/48 hrs. development Mt. Hope pool Frenchtown field	426 Mcf AF 900 psi/72 hrs. development Indian Springs pool Conneaut field	300 Mcf AF 1410 psi/360 hrs. development Diamond pool Troy field	253 Mcf AF 1150 psi/72 hrs. development Indian Springs pool Conneaut field

Table 24. *(Continued).*

COUNTY PERMIT NUMBER	Crawford 039-23233	Crawford 039-23234	Crawford 039-23235	Crawford 039-23237	Crawford 039-23239	Crawford 039-23241	Crawford 039-23243	Crawford 039-23244	Crawford 039-23245	Crawford 039-23246
NAME OF WELL	Miller, E. T. #2	Lafferty, Gary #1-A	Loucks, L. R. #1	Kronz, Francis #1A	Pontius, Claude #1	Hanna, Robert #1	Kalagayan, H. #1	Fox, Dale R. #7	Fox, Dale R. #8	Fox, Dale #3A
OPERATOR	James Drilling Corp.	Cabot Oil & Gas Corp.	James Drilling Corp.	Cabot Oil & Gas Corp.	James Drilling Corp.	Quaker State Corporation	Quaker State Corporation	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.
TOWNSHIP	Beaver	East Fairfield	Beaver	East Fairfield	Beaver	Richmond	Bloomfield	Steuben	Troy	Troy
QUADRANGLE	Beaver Center	Cochranton	Beaver Center	Cochranton	Beaver Center	Townville	Lake Canadohta	Centerville	Centerville	Centerville
LATITUDE	9,500 ft. S 41°47'30"	12,000 ft. S 41°35'00"	5,720 ft. S 41°47'30"	9,980 ft. S 41°35'00"	5,920 ft. S 41°47'30"	2,800 ft. S 41°42'30"	7,150 ft. S 41°50'00"	13,000 ft. S 41°42'30"	14,000 ft. S 41°42'30"	590 ft. S 41°40'00"
LONGITUDE	10,330 ft. W 80°27'30"	11,030 ft. W 80°02'30"	9,210 ft. W 80°25'00"	10,170 ft. W 80°02'30"	3,600 ft. W 80°27'30"	7,650 ft. W 79°52'30"	5,450 ft. W 79°50'00"	9,900 ft. W 79°45'00"	6,360 ft. W 79°45'00"	6,025 ft. W 79°45'00"
DATE COMPLETED	12-13-90	1-15-91	11-12-90	11-16-90	11-30-90	1-19-91	1-15-91	1-27-91	2-20-91	3-12-91
ELEVATION	1096 GR	1312 GR	1103 GR	1360 GR	1190 GR	1522 GR	1565 GR	1340 GR	1483 GR	1510 GR
LOGS RECEIVED AND LOGGED INTERVALS	CDL/GR: 400-3792 GD: 3450-3788 T: 3520-3760	GR/CDL: 803-5181	CDL/GR: 200-3821 GD: 2300-3821 T: 3520-3812		CDL/GR: 50-3768 GD: 2250-3768 T: 3520-3753			GR/CDL: 0-5127		
TULLY LIMESTONE		3284-		3320-		3325-	3067-	3334-	3496-	3545-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	2304-	3486-	2334-	3520-	2325-	3549-	3297-	3570-	3734-	3786-
ORISKANY SANDSTONE RIDGELEY SANDSTONE		3660-		3695-		3717-	3477-		3884-	3931-
SILURIAN-DEVONIAN CARBONATES	2522-	3680-	2552-	3722-	2506-	3729-		3720-	3898-	3951-
SALINA GROUP LOCKPORT DOLOMITE	2610- 3210-	3767- 4439-	2630- 3222-	4015- 4384-	2618- 3224-	3838- 4367-	3569- 4093-	3804- 4426-	4182- 4542-	4232- 4604-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	3477- 3548-	4736- 4795-	3488- 3556-	4750- 4810-	3478- 3546-	4639- 4739-	4369- 4459-	4732- 4794-	4900- 4963-	4960- 5026-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	3580- 3667- 3755-	4848- 4986- 5026-	3590- 3724- 3770-	4861- 5004- 5044-	3580- 3670- 3726-	4786- 4919- 4952-	4505- 4627- 4663-	4846- 4970- 5012-	5016- 5146- 5180-	5080- 5212- 5243-
QUEENSTON FORMATION	3758-	5042-	3776-	5060-	3734-	4969-	4674-	5022-	5190-	5253-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	3664	4933	3716	4969	3665	4968	4673	4931	5082	5154
TOTAL DEPTH	3794	5188	3823	5152	3770	5084	4809	5035	5310	5355
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	339 Mcf AF 1125 psi/24 hrs. development Forro pool Conneaut field	530 Mcf AF 1370 psi/48 hrs. development Shaws Corners pool Kantz Corners field	460 Mcf AF 1050 psi/24 hrs. development Indian Springs pool Conneaut field	322 Mcf AF 1240 psi/48 hrs. development Shaws Corners pool Kantz Corners field	216 Mcf AF 1100 psi/72 hrs. development Forro pool Conneaut field	IP not reported 1060 psi/48 hrs. exploratory (NFW) Buckley Corners field	IP not reported 1220 psi/48 hrs. development Dutch Hill pool Athens field	500 Mcf AF 1200 psi/48 hrs. development Diamond pool Troy field	IP not reported 1430 psi/48 hrs. development Diamond pool Troy field	454 Mcf AF 1260 psi/48 hrs. development Diamond pool Troy field

COUNTY PERMIT NUMBER	Crawford 039-23255	Crawford 039-23256	Erie 049-22268	Erie 049-23550	Erie 049-23618	Erie 049-23619	Erie 049-23620	Erie 049-23621	Erie 049-24492	Erie 049-24555
NAME OF WELL	*Briggs Unit #1*	*Glover Unit #1*	*Wetmore #1*	*Ruddell-Pfeffer #1*	*Russell #1*	Scott, J. #3A	Robertson, C. #1C	Chase, Milton #1	Danrik Apts. #1	Picardo, A. #1
OPERATOR	Meridian Exploration Corp.	Meridian Exploration Corp.	Commodore Energy	Natural Resource Management	Natural Resource Management	Natural Resource Management	Natural Resource Management	Natural Resource Management	Scheffer, Raymond K.	Devonian Resources
TOWNSHIP	Rockdale	Bloomfield	Concord	Waterford	Waterford	Waterford	Waterford	Waterford	Erie	Millcreek
QUADRANGLE	Millers Station	Millers Station	Corry	Waterford	Waterford	Waterford	Waterford	Waterford	Erie North	Swanville
LATITUDE	11,320 ft. S 41°50'00"	5,110 ft. S 41°50'00"	4,900 ft. S 41°55'00"	9,300 ft. S 42°00'00"	3,940 ft. S 42°00'00"	1,050 ft. S 41°57'30"	6,500 ft. S 42°00'00"	600 ft. S 41°57'30"	12,600 ft. S 42°10'00"	1,100 ft. S 42°05'00"
LONGITUDE	9,650 ft. W 79°55'00"	3,050 ft. W 79°52'30"	4,750 ft. W 79°42'30"	3,930 ft. W 79°55'00"	10,840 ft. W 79°55'00"	4,520 ft. W 79°55'00"	1,290 ft. W 79°57'30"	10,510 ft. W 79°52'30"	9,800 ft. W 80°02'30"	11,300 ft. W 80°07'30"
DATE COMPLETED	5-15-91	4-22-91	10-11-82	4-26-84	3-29-84	5-8-84	4-3-84	5-1-84	1-31-91	5-1-86
ELEVATION	1351 GR	1678 GR	1360 GR	1492 GR	1345 GR	1473 GR	1329 GR	1409 GR	640 GR	750 GR
LOGS RECEIVED AND LOGGED INTERVALS	CDL/CNL: 442-4401 DLL: 2314-4419	CDL/CNL: 428-4834 DLL: 4076-4826	CDL/GR: 2700-4379	CDL/CD/T: 423-2350	GR/CDL: 2100-3786	CDL/T: 422-2350	CDL/T: 413-2100	CDL/T: 420-2350 GR: 3800-4090		CDL/CNL: 511-2850 CAL: 1600-2640 INT: 2635-2854
TULLY LIMESTONE	2738-	3128-	2744-	2376-	2162-	2407-	2156-	2378-	1179-	1320-
ONONDAGA LIMESTONE *HUNTERSVILLE CHERT*	2956-	3354-	2994-	2602-	2386-	2632-	2378-	2604-		1522-
ORISKANY SANDSTONE *RIDGELEY SANDSTONE*	3138-	3540-					2632-	2840-		
SILURIAN-DEVONIAN *CARBONATES*	3158-	3570-	3190-	2798-	2638-	2890-	2652-	2844-		1788-
SALINA GROUP LOCKPORT DOLOMITE	3206- 3823-	3596- 4192-	3250- 3794-	2922- 3469-	2742- 3262-	2972- 3502-	2736- 3258-	2938- 3478-		1898- 2294-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	4060- 4142-	4448- 4520-	4054- 4122-	3748- 3800-	3518- 3574-	3768- 3830-	3516- 3572-	3744- 3796-		2542- 2602-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	4182- 4300- 4350-	4562- 4675- 4722-	4164- 4280- 4320-	3833- 3946- 3994-	3610- 3718- 3769-	3852- 3990- 4030-	3592- 3704- 3768-	3828- 3946- 3984-		2632- 2743- 2788-
QUEENSTON FORMATION	4361-	4736-	4332-	4002-	3776-	4036-	3772-	3994-		2796-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina		
DEEPEST PRODUCING DEPTH	4290	4650	4276	3935	3700	3964	3698	3933		
TOTAL DEPTH	4480	4870	4395	4115	3786	4140	3911	4106	1200	2864
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Tully	Queenston
RESULTS	1404 Mcf AF 920 psi/24 hrs. development Rockdale field	919 Mcf AF 850 psi/96 hrs. development Rockdale field	250 Mcf AF 500 psi/72 hrs. exploratory (EXT) Beaver Dam pool Corry field	1073 Mcf AF 990 psi/72 hrs. development Talcott pool Erie field	1205 Mcf AF 1040 psi/72 hrs. development Talcott pool Erie field	2477 Mcf AF 1095 psi/72 hrs. development Waterford pool LeBoeuf field	2694 Mcf AF 1100 psi/72 hrs. development Talcott pool Erie field	353 Mcf AF 1110 psi/72 hrs. development Waterford pool LeBoeuf field	Drilled deeper dry hole exploratory (DPW) Erie Shallow pool Erie field	Plugged and abandoned development Charter Oaks pool Erie field

Table 24. *(Continued).*

COUNTY PERMIT NUMBER	Erie 049-24947	Erie 049-24964	Erie 049-24973	Fayette 051-20507	Fayette 051-20512	Fayette 051-20519	Fayette 051-20523	McKean 083-46237	McKean 083-46278	McKean 083-46279
NAME OF WELL	Stetson, Jack #1	Chapman, Richard #1	Lochbaum, K. #1	White/Canon #1	Ohler/Forsythe #1	White/Canon #2	Marietta Corp. #3	Lot 580 #1	Wt. 2269 Lot 545 #1	Wt. 2262 Lot 596 #1
OPERATOR	ENGX, Inc.	N.E.A. Cross Co.	ENGX, Inc.	Columbia Natural Resources	CNG Producing Company	Columbia Natural Resources	Fox, R. E. & Associates, Inc.	Belden & Blake Corp.	Belden & Blake Corp.	Belden & Blake Corp.
TOWNSHIP	North East	Greene	Harborcreek	Henry Clay	Bullskin	Henry Clay	Springhill	Keating	Keating	Keating
QUADRANGLE	North East	Hammett	Erie North	Ohiopyle	Connellsville	Ohiopyle	Lake Lynn	Cyclone	Cyclone	Cyclone
LATITUDE	10,100 ft. S 42°12'30"	14,720 ft. S 42°02'30"	15,000 ft. S 42°10'00"	3,400 ft. S 39°50'00"	6,300 ft. S 40°07'30"	3,000 ft. S 39°50'00"	4,316 ft. S 39°45'00"	1,000 ft. S 41°50'00"	14,200 ft. S 41°52'30"	2,300 ft. S 41°50'00"
LONGITUDE	6,200 ft. W 79°50'00"	8,050 ft. W 79°55'00"	650 ft. W 80°00'00"	3,125 ft. W 79°25'00"	800 ft. W 79°30'00"	1,400 ft. W 79°25'00"	5,016 ft. W 79°45'00"	11,000 ft. W 78°32'30"	950 ft. W 78°32'30"	8,625 ft. W 78°32'30"
DATE COMPLETED	10-12-91	8-10-90	9-4-91	10-25-89	12-20-90	6-23-90	12-3-90	7-3-90	12-1-90	12-7-90
ELEVATION	1000 GR	1420 GR	860 GR	2725 GR	1300 GR	2550 GR	2044 GR	2180 GR	2140 GR	2160 GR
LOGS RECEIVED AND LOGGED INTERVALS	CDL/DLL: 420-2988	CDL/DLL: 2175-3916					CDL/CNL: 1218-7803			
TULLY LIMESTONE	1510-	2212-	1450-		6873-	7400-	7048-	4773-	4853-	4819-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	1738-	2438-	1640-	8643- 8664-	7463- 7483-	8310- 8320-	7524- 7544-	5169-	5303-	5381-
ORISKANY SANDSTONE RIDGELEY SANDSTONE		2692-		8816-	7636-	8520-	7705-		5335-	5417-
SILURIAN-DEVONIAN CARBONATES	1986-	2708-	1880-	8872-	7705-	8545-	7760-	5279-	5348-	5430-
SALINA GROUP LOCKPORT DOLOMITE	2054- 2436-	2792- 3298-								
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	2697- 2750-	3574- 3627-								
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	2780- 2860- 2924-	3648- 3766- 3816-								
QUEENSTON FORMATION	2936-	3824-								
PRODUCING FORMATION	Medina	Medina	Ohio Shale		Huntersville Ridgeley		Ridgeley	Onondaga		
DEEPEST PRODUCING DEPTH	2932	3741	608		7641		7728	5188		
TOTAL DEPTH	3025	3953	1925	8905	7850	8600	7806	5420	5625	5563
DEEPEST FORMATION REACHED	Queenston	Queenston	Bass Islands	Helderberg	Helderberg	Helderberg	Helderberg	Bass Islands	Bass Islands	Bass Islands
RESULTS	1800 Mcf AF 790 psi/48 hrs. development Burgess pool North East field	1000 Mcf AF 1000 psi/48 hrs. development Talcott pool Erie field	167 Mcf AF 55 psi/12 hrs. development Erie Shallow pool Erie field	Plugged and abandoned development Ohiopyle field	3058 Mcf AF 3940 psi/240 hrs. exploratory (EXT) Bullskin field	Plugged and abandoned development Ohiopyle field	1700 Mcf AF 2700 psi/120 hrs. exploratory (NPW) Rubles Run pool Summit field	IP not reported 1440 psi/24 hrs. development Cyclone pool Bradford field	Plugged and abandoned exploratory (DPW) Bradford field	Plugged and abandoned exploratory (DPW) Bradford field

COUNTY PERMIT NUMBER	Mercer 085-20570	Mercer 085-21077	Mercer 085-21079	Mercer 085-21080	Mercer 085-21081	Mercer 085-21084	Mercer 085-21085	Mercer 085-21086	Mercer 085-21088	Mercer 085-21090
NAME OF WELL	Horvath #1	Bungar Unit, #2	Leveto, C. #1	Helmuth, A. #1	Antoun, A. #1	Hostetler #1	Van Meter, J. #2	Marsteller, C. #1	Bortner Unit #1	Worsk, Wilda #1
OPERATOR	Atlas Resources, Inc.	Atwood Energy, Inc.	Vista Resources, Inc.	Vista Resources, Inc.	Vista Resources, Inc.	Vista Resources, Inc.	Vista Resources, Inc.	Vista Resources, Inc.	Atwood Energy, Inc.	Cabot Oil & Gas Corp.
TOWNSHIP	Lackawannock	Shenango	French Creek	Millcreek	French Creek	French Creek	Deer Creek	Millcreek	South Pymatuning	Millcreek
QUADRANGLE	Greenfield	Sharon West	New Lebanon	New Lebanon	New Lebanon	New Lebanon	New Lebanon	New Lebanon	Sharpsville	New Lebanon
LATITUDE	10,400 ft. S 41°15'00"	9,300 ft. S 41°10'00"	2,280 ft. S 41°27'30"	400 ft. S 41°25'00"	14,590 ft. S 41°30'00"	14,150 ft. S 41°30'00"	5,970 ft. S 41°27'30"	14,170 ft. S 41°27'30"	1,400 ft. S 41°17'30"	10,950 ft. S 41°27'30"
LONGITUDE	10,000 ft. W 80°20'00"	4,250 ft. W 80°30'00"	3,780 ft. W 80°05'00"	280 ft. W 80°05'00"	4,590 ft. W 80°02'30"	10,950 ft. W 80°02'30"	9,390 ft. W 80°05'00"	2,310 ft. W 80°05'00"	4,700 ft. W 80°27'30"	6,300 ft. W 80°02'30"
DATE COMPLETED	11-20-84	12-12-90	10-10-90	11-1-90	10-26-90	10-17-90	11-10-90	9-28-90	1-23-90	9-11-90
ELEVATION	1221 GR	977 GR	1451 GR	1349 GR	1240 GR	1318 GR	1383 GR	1365 GR	1030 GR	1455 GR
LOGS RECEIVED AND *LOGGED INTERVALS*		GR/CDL: 300-5515							GR/CNL: 550-5073 PCL: 4750-5085	
TULLY LIMESTONE			3631-	3660-	3458-	3505-	3568-	3646-		3756-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT		3417-	3820-	3844-	3658-	3702-	3752-	3829-	3178-	3947-
ORISKANY SANDSTONE RIDGELEY SANDSTONE		3610-	3974-	3996-	3804-	3854-	3909-	3980-	3376-	4096-
SILURIAN-DEVONIAN CARBONATES		3626-	3990-	4010-	3824-	3873-	3930-	3996-	3396-	4128-
SALINA GROUP LOCKPORT DOLOMITE	4908-	3818- 4710-	4116- 4868-	4146- 4908-	3948- 4722-	3992- 4756-	4052- 4847-	4130- 4898-	3544- 4400-	4464- 5018-
ROCHESTER SHALE *IRONDEQUOIT DOLOMITE*	5224- 5353-	5034- 5098-	5176- 5232-	5185- 5270-	4946- 5070-	5040- 5100-	5108- 5173-	5198- 5262-	4700- 4750-	5308- 5372-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5403- 5529- 5582-	5180- 5328- 5380-	5292- 5410- 5474-	5334- 5454- 5520-	5130- 5250- 5304-	5168- 5279- 5342-	5234- 5350- 5414-	5326- 5450- 5508-	4822- 4936- 5012-	5436- 5579- 5612-
QUEENSTON FORMATION	5598-	5392-	5485-	5527-	5316-	5353-	5424-	5516-	5022-	5632-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	5507	5389	5489	5426	5238	5277	5346	5431	5021	5620
TOTAL DEPTH	5660	5872	5520	5622	5430	5461	5558	5624	5078	5755
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	400 Mcf AF 1675 psi/72 hrs. development Greenfield field	50 Mcf AF 1100 psi/168 hrs. development Wheatland field	290 Mcf AF 1400 psi/24 hrs. development Kantz Corners field	325 Mcf AF 1440 psi/456 hrs. development Kantz Corners field	400 Mcf AF 1360 psi/144 hrs. development Kantz Corners field	230 Mcf AF 1440 psi/528 hrs. development Kantz Corners field	370 Mcf AF 1310 psi/432 hrs. development Kantz Corners field	300 Mcf AF 1450 psi/168 hrs. development Kantz Corners field	10 Mcf AF 1400 psi/72 hrs. development Sharon Deep pool Sharon field	286 Mcf AF 1280 psi/48 hrs. development Kantz Corners field

Table 24. *(Continued).*

COUNTY PERMIT NUMBER	Mercer 085-21093	Mercer 085-21096	Mercer 085-21097	Mercer 085-21098	Mercer 085-21100	Mercer 085-21105	Mercer 085-21111	Mercer 085-21112	Mercer 085-21115	Mercer 085-21121
NAME OF WELL	Gray Unit #1	Moore and Straw #1	Downie, J. #1	Holtzman Unit #2	Mezzara #1	Castner Unit #1	Stull, J. & M. #3	Wallace, Baird #3	Gray Unit #2	Hostetler, M. #1
OPERATOR	Douglas Oil & Gas, Inc.	Cabot Oil & Gas Corp.	Douglas Oil & Gas, Inc.	Atwood Energy, Inc.	Atlas Resources, Inc.	Atwood Energy, Inc.	Atlas Resources, Inc.	Cabot Oil & Gas Corp.	Douglas Oil & Gas, Inc.	Capital Oil & Gas, Inc.
TOWNSHIP	French Creek	French Creek	French Creek	Shenango	Jefferson	Shenango	Delaware	French Creek	French Creek	Wilmington
QUADRANGLE	New Lebanon	New Lebanon	New Lebanon	Sharon West	Fredonia	Sharon West	Fredonia	New Lebanon	New Lebanon	Greenfield
LATITUDE	3,650 ft. S 41°27'30"	9,200 ft. S 41°30'00"	14,400 ft. S 41°30'00"	13,200 ft. S 41°10'00"	10,275 ft. S 41°17'30"	11,500 ft. S 41°10'00"	11,450 ft. S 41°20'00"	8,200 ft. S 41°30'00"	2,340 ft. S 41°27'30"	13,125 ft. S 41°10'00"
LONGITUDE	5,900 ft. W 80°02'30"	8,860 ft. W 80°00'00"	7,020 ft. W 80°02'30"	1,900 ft. W 80°30'00"	6,250 ft. W 80°15'00"	2,300 ft. W 80°30'00"	2,975 ft. W 80°17'30"	2,780 ft. W 80°02'30"	8,380 ft. W 80°02'30"	150 ft. W 80°17'30"
DATE COMPLETED	1-25-91	9-12-90	10-19-90	2-18-91	11-16-90	2-11-91	3-5-91	10-3-90	10-5-90	12-10-90
ELEVATION	1428 GR	1345 GR	1404 GR	970 GR	1305 GR	966 GR	1188 GR	1328 GR	1441 GR	1272 GR
LOGS RECEIVED AND LOGGED INTERVALS	CDL/DLL: 3600-5658 PCL: 3250-5626		CDL/DLL: 3584-5550	GR/CNL: 300-5454 T: 5150-5429	CDL/CNL: 0-5818 GR/DLL: 0-5818 INT: 0-5818	GR/CDL: 250-5416 GR/T: 5100-5417	GR/DLL: 624-5508 INT: 624-5508			CNL/GR: 50-6124 T: 4600-6124
TULLY LIMESTONE	3686-	3554-	3614-		3728-		3436-	3522-	3670-	
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	3884-	3760-	3810-	3448-	3874-	3418-	3584-	3730-	3867-	4151-
ORISKANY SANDSTONE RIDGELEY SANDSTONE	4032-	3908-	3956-	3636-	4028-	3604-		3879-	4014-	
SILURIAN-DEVONIAN CARBONATES	4050-	3938-	3990-	3650-	4052-	3620-	3810-	3913-	4043-	4394-
SALINA GROUP LOCKPORT DOLOMITE	4174- 4938-	4258- 4775-	4102- 4822-	3846- 4740-	4204- 5076-	3817- 4721-	3900- 4778-	4229- 4660-	4160- 4909-	4516- 5426-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	5220- 5292-	5066- 5126-	5150- 5214-	5060- 5120-	5372- 5434-	5034- 5095-	5080- 5140-	5034- 5104-	5211- 5286-	5774- 5842-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5356- 5491- 5542-	5184- 5334- 5369-	5272- 5417- 5456-	5204- 5330- 5404-	5511- 5672- 5706-	5177- 5302- 5378-	5213- 5334- 5404-	5166- 5309- 5345-	5341- 5452- 5516-	5890- 5996- 6080-
QUEENSTON FORMATION	5550-	5380-	5466-	5416-	5718-	5386-	5414-	5354-	5527-	6090-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	5462	5292	5384	5413	5717	5386	5413	5264	5435	6090
TOTAL DEPTH	5668	5480	5572	5469	5828	5433	5525	5467	5619	6140
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	1500 Mcf AF 1475 psi/72 hrs. development Kantz Corners field	286 Mcf AF 1250 psi/48 hrs. development Kantz Corners field	500 Mcf AF 1420 psi/72 hrs. development Kantz Corners field	10 Mcf AF 1400 psi/96 hrs. development Wheatland field	1330 Mcf AF 1400 psi/48 hrs. development Lackawannock pool Big Bend field	10 Mcf AF 1200 psi/144 hrs. development Wheatland field	980 Mcf AF 1320 psi/48 hrs. development Lackawannock pool Big Bend field	397 Mcf AF 840 psi/48 hrs. development Kantz Corners field	750 Mcf AF 1425 psi/72 hrs. development Kantz Corners field	100 Mcf AF 1740 psi/72 hrs. exploratory (EXT) Ligo pool Volant field

COUNTY PERMIT NUMBER	Mercer 085-21122	Mercer 085-21123	Mercer 085-21124	Mercer 085-21125	Mercer 085-21126	Mercer 085-21128	Mercer 085-21130	Mercer 085-21131	Mercer 085-21132	Mercer 085-21133
NAME OF WELL	Gudenburr, W. #1	Angermeier Unit #2	Cousins, W. & C. #1	Pyle, D. #1	Stambaugh, M. #2	Frkonja, G. & E. #3	Dyda Unit #2-187	O'Brien, Francis #2	King, Norman #1	Stambaugh, M. #4
OPERATOR	Cabot Oil & Gas Corp.	Atlas Resources, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Atwood Energy, Inc.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Atlas Resources, Inc.
TOWNSHIP	French Creek	Jefferson	Jefferson	Jefferson	Jefferson	Delaware	Shenango	French Creek	French Creek	Jefferson
QUADRANGLE	New Lebanon	Fredonia	Fredonia	Fredonia	Fredonia	Fredonia	Sharon West	New Lebanon	New Lebanon	Fredonia
LATITUDE	10,200 ft. S 41°27'30"	9,550 ft. S 41°17'30"	2,150 ft. S 41°17'30"	5,450 ft. S 41°17'30"	5,550 ft. S 41°17'30"	11,175 ft. S 41°20'00"	1,050 ft. S 41°10'00"	10,340 ft. S 41°30'00"	2,820 ft. S 41°27'30"	9,075 ft. S 41°17'30"
LONGITUDE	1,850 ft. W 80°05'00"	11,200 ft. W 80°17'30"	4,275 ft. W 80°15'00"	9,500 ft. W 80°15'00"	9,250 ft. W 80°17'30"	7,950 ft. W 80°15'00"	4,050 ft. W 80°30'00"	1,980 ft. W 80°00'00"	10,330 ft. W 80°00'00"	9,100 ft. W 80°17'30"
DATE COMPLETED	10-16-90	1-24-91	11-14-90	12-11-90	2-21-91	11-27-90	12-28-90	10-30-90	11-14-90	2-15-91
ELEVATION	1421 GR	1142 GR	1279 GR	1226 GR	1093 GR	1291 GR	1065 GR	1135 GR	1184 GR	1170 GR
LOGS RECEIVED AND LOGGED INTERVALS		CDL/CNL: 581-5532 GR/DLL: 581-5550 INT: 581-5550	CDL/CNL: 0-5677 GR/DLL: 0-5677 INT: 0-5677	CDL/CNL: 0-5662 DLL: 0-5662 INT: 0-5677	CDL/CNL: 539-5493 GR/DLL: 725-5511	CDL/CNL: 707-5604 DLL: 728-5622 INT: 707-5622	GR/CNL: 400-5455 T: 5150-5461			CDL/CNL: 621-5554 GR/DLL: 621-5572
TULLY LIMESTONE	3680-	3440-	3608-	3572-	3382-	3578-		3368-	3434-	3470-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	3866-	3580-	3755-	3718-	3524-	3728-	3466-	3582-	3640-	3600-
ORISKANY SANDSTONE RIDGELEY SANDSTONE	4016-	3746-	3910-	3876-	3690-	3888-	3646-	3726-	3783-	3778-
SILURIAN-DEVONIAN CARBONATES	4057-	3770-	3936-	3904-	3715-	3916-	3658-	3764-	3815-	3804-
SALINA GROUP LOCKPORT DOLOMITE	4380- 4853-	3918- 4790-	4082- 4944-	4059- 4934-	3862- 4729-	4060- 4898-	3856- 4728-	4080- 4612-	4146- 4622-	3952- 4824-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	5208- 5290-	5092- 5154-	5263- 5327-	5226- 5288-	5032- 5092-	5218- 5278-	5050- 5110-	4910- 4978-	4991- 5057-	5128- 5187-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5354- 5470- 5533-	5228- 5348- 5420-	5402- 5548- 5594-	5365- 5519- 5556-	5167- 5308- 5358-	5354- 5474- 5544-	5190- 5362- 5386-	5036- 5185- 5216-	5118- 5261- 5299-	5262- 5380- 5454-
QUEENSTON FORMATION	5543-	5430-	5605-	5570-	5365-	5558-	5400-	5225-	5312-	5464-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	5444	5428	5604	5569	5363	5558	5398	5176	5230	5462
TOTAL DEPTH	5665	5570	5687	5683	5528	5660	5462	5297	5443	5589
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	326 Mcf AF 1150 psi/48 hrs. development Kantz Corners field	1140 Mcf AF 1500 psi/48 hrs. development Greenfield field	1090 Mcf AF 1510 psi/48 hrs. development Lackawannock pool Big Bend field	1080 Mcf AF 1425 psi/48 hrs. development Lackawannock pool Big Bend field	1080 Mcf AF 1250 psi/48 hrs. development Lackawannock pool Big Bend field	65 Mcf AF 1230 psi/48 hrs. development Lackawannock pool Big Bend field	10 Mcf AF 1000 psi/96 hrs. development Wheatland field	301 Mcf AF 1920 psi/48 hrs. development Cochranton field	320 Mcf AF 1365 psi/48 hrs. development French Creek pool Utica field	1210 Mcf AF 1525 psi/48 hrs. development Greenfield field

Table 24. *(Continued).*

COUNTY PERMIT NUMBER	Mercer 085-21134	Mercer 085-21139	Mercer 085-21141	Mercer 085-21143	Mercer 085-21144	Mercer 085-21150	Mercer 085-21151	Mercer 085-21152	Mercer 085-21154	Mercer 085-21155
NAME OF WELL	King, D. & N. #1	Tralich, T. & C. #1	Guiler, C. & H. #1	Runkle, Lucille #1	Hollabaugh, Hugh #2	Pearsol, Abe #1	Hogan, P. #3	O'Mara, J. #1	Babnis Unit #1	McWilliams, J. #3
OPERATOR	Atlas Resources, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Atlas Resources, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.
TOWNSHIP	Jefferson	Jefferson	Jefferson	French Creek	French Creek	French Creek	Coolspring	Jefferson	Jefferson	Jefferson
QUADRANGLE	Fredonia	Fredonia	Fredonia	New Lebanon	New Lebanon	New Lebanon	Fredonia	Fredonia	Fredonia	Fredonia
LATITUDE	4,400 ft. S 41°17'30"	10,725 ft. S 41°17'30"	7,525 ft. S 41°17'30"	820 ft. S 41°27'30"	6,650 ft. S 41°30'00"	800 ft. S 41°27'30"	2,550 ft. S 41°17'30"	7,475 ft. S 41°17'30"	13,350 ft. S 41°17'30"	14,325 ft. S 41°17'30"
LONGITUDE	8,100 ft. W 80°15'00"	5,750 ft. W 80°17'30"	4,650 ft. W 80°15'00"	3,730 ft. W 80°05'00"	6,000 ft. W 80°00'00"	11,200 ft. W 80°02'30"	2,500 ft. W 80°15'00"	10,750 ft. W 80°15'00"	8,950 ft. W 80°17'30"	5,750 ft. W 80°17'30"
DATE COMPLETED	3-9-91	1-15-91	12-14-90	11-28-90	11-21-90	2-26-91	12-6-90	2-2-91	1-21-91	3-9-91
ELEVATION	1302 GR	1251 GR	1320 GR	1447 GR	1130 GR	1370 GR	1255 GR	1207 GR	1219 GR	1294 GR
LOGS RECEIVED AND LOGGED INTERVALS	CDL/CNL: 0-5718 GR/DLL: 0-5718	CDL/CNL: 649-5693 DLL: 619-5711	CDL/CNL: 758-5768 DLL: 758-5786 INT: 5460-5786			GR/CDL: 3550-5489	CDL/CNL: 0-5671 GR/DLL: 0-5671	CDL/CNL: 671-5632 GR/DLL: 809-5650	CDL/CNL: 668-5645 GR/DLL: 668-5663 INT: 668-5663	CDL/CNL: 0-5724 GR/DLL: 0-5724
TULLY LIMESTONE	3642-	3584-	3728-	3621-	3315-	3560-	3604-	3566-	3562-	3670-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	3788-	3726-	3874-	3810-	3530-	3758-	3752-	3710-	3702-	3808-
ORISKANY SANDSTONE RIDGELEY SANDSTONE	3942-	3884-	4028-	3963-	3678-	3908-	3904-	3872-	3866-	3967-
SILURIAN-DEVONIAN CARBONATES	3970-	3908-	4055-	3996-	3708-	3928-	3927-	3901-	3885-	3994-
SALINA GROUP LOCKPORT DOLOMITE	4120- 5006-	4061- 4936-	4206- 5106-	4322- 4785-	4026- 4471-	4052- 4812-	4076- 4956-	4050- 4924-	4040- 4924-	4148- 5024-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	5297- 5364-	5246- 5302-	5370- 5434-	5173- 5219-	4838- 4902-	5102- 5170-	5252- 5326-	5222- 5282-	5226- 5285-	5324- 5385-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5441- 5578- 5634-	5380- 5530- 5570-	5508- 5672- 5404-	5276- 5420- 5461-	4961- 5106- 5142-	5224- 5342- 5406-	5392- 5512- 5584-	5360- 5512- 5550-	5362- 5476- 5552-	5462- 5580- 5652-
QUEENSTON FORMATION	5644-	5582-	5718-	5471-	5153-	5416-	5596-	5562-	5567-	5666-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	5640	5580	5714	5384	5059	5413	5590	5560	5562	5653
TOTAL DEPTH	5728	5728	5825	5563	5234	5514	5681	5667	5680	5739
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	1030 Mcf AF 1310 psi/48 hrs. development Lackawannock pool Big Bend field	1320 Mcf AF 1525 psi/48 hrs. development Greenfield field	1140 Mcf AF 1475 psi/48 hrs. development Lackawannock pool Big Bend field	299 Mcf AF 1280 psi/48 hrs. development Kantz Corners field	243 Mcf AF 1100 psi/48 hrs. development Cochranton field	IP not reported 1130 psi/48 hrs. development Kantz Corners field	1030 Mcf AF 1420 psi/48 hrs. development Lackawannock pool Big Bend field	1080 Mcf AF 1525 psi/48 hrs. development Lackawannock pool Big Bend field	1210 Mcf AF 1500 psi/48 hrs. development Lackawannock pool Big Bend field	1200 Mcf AF 1425 psi/48 hrs. development Greenfield field

COUNTY PERMIT NUMBER	Mercer 085-21156	Mercer 085-21157	Mercer 085-21160	Mercer 085-21161	Mercer 085-21163	Mercer 085-21165	Mercer 085-21166	Mercer 085-21168	Mercer 085-21172	Mercer 085-21174
NAME OF WELL	Hedglin Unit #1	Bindas, Lloyd #1	Brown, J. #1	Algeo, K. & E. #1	Ealy, H. & S. #1	Janoski Unit #2-025	Ritter, Donald #4A	Kish, L. & M. #1	Koontz Unit #1	Pesek, J. & C. #1
OPERATOR	Atlas Resources, Inc.	Cabot Oil & Gas Corp.	Atlas Resources, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Atwood Energy, Inc.	Cabot Oil & Gas Corp.	Atlas Resources, Inc.	Mark Resources Corp.	Atlas Resources, Inc.
TOWNSHIP	Jefferson	Mill Creek	Jefferson	Coolspring	Jefferson	Shenango	French Creek	Jefferson	Fairview	Coolspring
QUADRANGLE	Fredonia	New Lebanon	Fredonia	Jackson Center	Fredonia	Sharon East	New Lebanon	Fredonia	Jackson Center	Fredonia
LATITUDE	13,525 ft. S 41°17'30"	3,260 ft. S 41°25'00"	9,350 ft. S 41°17'30"	14,225 ft. S 41°20'00"	6,000 ft. S 41°17'30"	13,500 ft. S 41°10'00"	9,600 ft. S 41°30'00"	6,750 ft. S 41°17'50"	11,150 ft. S 41°22'30"	3,675 ft. S 41°17'30"
LONGITUDE	1,850 ft. W 80°17'30"	2,700 ft. W 80°05'00"	4,050 ft. W 80°15'00'	10,600 ft. W 80°12'30"	2,475 ft. W 80°20'00"	3,400 ft. W 80°27'30"	7,200 ft. W 80°00'00"	6,300 ft. W 80°15'00"	5,940 ft. W 80°10'00"	1,200 ft. W 80°15'00"
DATE COMPLETED	2-14-91	4-11-91	11-16-90	11-29-90	3-26-91	5-15-91	2-8-91	1-16-91	4-5-91	12-6-90
ELEVATION	1019 GR	1344 GR	1315 GR	1308 GR	1061 GR	1018 GR	1310 GR	1336 GR	1299 GR	1213 GR
LOGS RECEIVED AND LOGGED INTERVALS	CDL/CNL: 504-5472 GR/DLL: 504-5490 INT: 504-5490		CDL/CNL: 800-5797 DLL: 800-5815 INT: 5515-5815	CDL/CNL: 0-5737 DLL: 0-5737 INT: 0-5737	CDL/CNL: 522-5404 GR/DLL: 697-5422 INT: 697-5422	GR/CNL: 450-5578 T: 5250-5570	GR/CDL: 0-5471	CDL/CNL: 0-5814 GR/DLL: 0-5814		CDL/CNL: 669-5657 DLL: 782-5676
TULLY LIMESTONE	3410-	3653-	3746-	3646-	3338-		3534-	3724-	3670-	3596-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	3550-	3744-	3891-	3796-	3478-	3554-	3744-	3870-	3827-	3744-
ORISKANY SANDSTONE RIDGELEY SANDSTONE	3710-	3994-	4046-	3948-	3646-	3742-	3891-	4028-	3976-	3896-
SILURIAN-DEVONIAN CARBONATES	3734-	4025-	4072-	3970-	3670-	3762-	3906-	4056-	4002-	3922-
SALINA GROUP LOCKPORT DOLOMITE	3890- 4776-	4369- 4826-	4224- 5086-	4116- 5004-	3820- 4684-	3952- 4854-	4022- 4768-	4208- 5084-	4198- 4962-	4070- 4964-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	5072- 5132-	5181- 5266-	5374- 5444-	5294- 5372-	4988- 5046-	5176- 5238-	5050- 5114-	5380- 5448-	5258- 5354-	5233- 5338-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5209- 5354- 5402-	5324- 5480- 5510-	5520- 5645- 5716-	5432- 5594- 5634-	5120- 5264- 5312-	5323- 5450- 5522-	5172- 5326- 5359-	5514- 5683- 5714-	5484- 5526- 5558-	5532- 5566-
QUEENSTON FORMATION	5415-	5521-	5730-	5643-	5322-	5534-	5368-	5728-	5572-	5580-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina		Medina
DEEPEST PRODUCING DEPTH	5411	5415	5726	5639	5321	5533	5278	5726		5569
TOTAL DEPTH	5507	5665	5832	5737	5439	5596	5474	5824	5668	5692
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	1360 Mcf AF 1520 psi/48 hrs. development Greenfield field	537 Mcf AF 1250 psi/48 hrs. development Kantz Corners field	1110 Mcf AF 1425 psi/48 hrs. development Lackawannock pool Big Bend field	1020 Mcf AF 1380 psi/48 hrs. development Lackawannock pool Big Bend field	1200 Mcf AF 1425 psi/48 hrs. development Sharon Deep pool Sharon field	10 Mcf AF 1200 psi/72 hrs. development Wheatland field	488 Mcf AF 1280 psi/48 hrs. development Kantz Corners field	1190 Mcf AF 1500 psi/48 hrs. development Lackawannock pool Big Bend field	IP not reported exploratory (EXT) Lake pool Stoneboro field	1380 Mcf AF 1450 psi/48 hrs. development Lackawannock pool Big Bend field

Table 24. *(Continued).*

COUNTY PERMIT NUMBER	Mercer 085-21176	Mercer 085-21177	Mercer 085-21178	Mercer 085-21180	Mercer 085-21181	Mercer 085-21183	Mercer 085-21184	Mercer 085-21185	Mercer 085-21186	Mercer 085-21189
NAME OF WELL	Seidle, D. #2	Blank, D. #1	Hines Unit #1	Seidle Unit #3	Foulk, H. & H. #1	Foulk, H. & H. #2	Young, S. & M. #2	Dunham, C. #1	Allen Unit #2-238	McQuiston, C. #1
OPERATOR	Atlas Resources, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Atwood Energy, Inc.	Douglas Oil & Gas, Inc.
TOWNSHIP	Jefferson	Jefferson	Jefferson	Jefferson	Jefferson	Jefferson	Jefferson	Jefferson	Shenango	Deer Creek
QUADRANGLE	Fredonia	Fredonia	Fredonia	Fredonia	Fredonia	Fredonia	Fredonia	Fredonia	Sharon East	Hadley
LATITUDE	6,850 ft. S 41°17'30"	8,000 ft. S 41°17'30"	9,175 ft. S 41°17'30"	7,950 ft. S 41°17'30"	11,450 ft. S 41°17'30"	13,150 ft. S 41°17'30"	8,400 ft. S 41°17'30"	8,650 ft. S 41°17'30"	7,650 ft. S 41°10'00"	6,120 ft. S 41°27'30"
LONGITUDE	4,100 ft. W 80°17'30"	2,400 ft. W 80°17'30"	9,325 ft. W 80°15'00"	5,625 ft. W 80°17'30"	7,850 ft. W 80°15'00"	7,725 ft. W 80°15'00"	6,500 ft. W 80°15'00"	3,950 ft. W 80°17'30"	1,750 ft. W 80°27'30"	3,050 ft. W 80°07'30"
DATE COMPLETED	12-28-91	2-12-91	2-5-91	2-2-91	3-5-91	12-19-90	1-29-91	2-12-91	2-27-91	1-17-91
ELEVATION	990 GR	1063 GR	1226 GR	1010 GR	1275 GR	1255 GR	1314 GR	950 GR	1061 GR	1379 GR
LOGS RECEIVED AND LOGGED INTERVALS	CDL/CNL: 534-5353 DLL: 534-5371	CDL/CNL: 529-5469 GR/DLL: 675-5487 INT: 529-5487	CDL/CNL: 693-5649 GR/DLL: 693-5667 INT: 693-5667	CDL/CNL: 0-5402 GR/DLL: 0-5402	CDL/CNL: 0-5765 GR/DLL: 0-5765 INT: 0-5765	CDL/CNL: 746-5730 DLL: 746-5448 INT: 746-5748	CDL/CNL: 756-5781 GR/DLL: 756-5799	CDL/CNL: 0-5376 GR/DLL: 0-5376	GR/CNL: 450-5610 T: 5250-5598	CDL/DLL: 3400-5489 PCL: 3250-5478
TULLY LIMESTONE	3290-	3403-	3604-	3330-	3694-	3692-	3722-	3281-		3528-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	3430-	3546-	3750-	3472-	3840-	3835-	3868-	3422-	3610-	3704-
ORISKANY SANDSTONE RIDGELEY SANDSTONE	3590-	3708-	3906-	3633-	3992-	3984-	4024-	3582-	3788-	3816-
SILURIAN-DEVONIAN CARBONATES	3618-	3738-	3930-	3658-	4014-	4007-	4050-	3610-	3804-	3890-
SALINA GROUP LOCKPORT DOLOMITE	3770- 4652-	3884- 4766-	4082- 4966-	3812- 4694-	4170- 5060-	4164- 5035-	4202- 5070-	3760- 4638-	3990- 4884-	4004- 4782-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	4948- 5016-	5065- 5124-	5261- 5324-	4972- 5056-	5338- 5399-	5342- 5396-	5370- 5428-	4950- 5006-	5200- 5266-	5078- 5138-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5092- 5202- 5282-	5199- 5320- 5390-	5402- 5522- 5596-	5133- 5248- 5322-	5482- 5634- 5672-	5482- 5606- 5671-	5505- 5626- 5698-	5083- 5204- 5276-	5353- 5474- 5548-	5202- 5352- 5388-
QUEENSTON FORMATION	5292-	5401-	5604-	5334-	5687-	5684-	5712-	5286-	5558-	5398-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	5291	5395	5600	5332	5687	5682	5708	5283	5557	5301
TOTAL DEPTH	5388	5504	5702	5444	5775	5770	5816	5386	5626	5504
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	71 Mcf AF 1380 psi/48 hrs. development Lackawannock pool Big Bend field	1310 Mcf AF 1500 psi/48 hrs. development Lackawannock pool Big Bend field	20 Mcf AF 1475 psi/48 hrs. development Lackawannock pool Big Bend field	980 Mcf AF 1425 psi/48 hrs. development Lackawannock pool Big Bend field	1280 Mcf AF 1400 psi/48 hrs. development Lackawannock pool Big Bend field	1180 Mcf AF 1450 psi/48 hrs. development Lackawannock pool Big Bend field	1220 Mcf AF 1425 psi/48 hrs. development Lackawannock pool Big Bend field	1480 Mcf AF 1525 psi/48 hrs. development Lackawannock pool Big Bend field	10 Mcf AF 1400 psi/72 hrs. development Wheatland field	750 Mcf AF 1275 psi/72 hrs. development Kantz Corners field

COUNTY *PERMIT NUMBER*	Mercer *085-21191*	Mercer *085-21192*	Mercer *085-21195*	Mercer *085-21197*	Mercer *085-21198*	Mercer *085-21199*	Mercer *085-21202*	Mercer *085-21203*	Mercer *085-21204*	Mercer *085-21205*
NAME OF WELL	Bruck, Helen #1	Murcko, J. #2	Ealy, H. & S. #4	Springfield Club #1	Murcko Unit #1	Titus, O. & P. #1	Ifft, J. #1	Heck, T. #2	Gray, L. Unit #3	Burdick #1
OPERATOR	Capital Oil & Gas, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Capital Oil & Gas, Inc.	Everflow Eastern, Inc.	Atlas Resources, Inc.	Capital Oil & Gas, Inc.	Capital Oil & Gas, Inc.	Douglas Oil & Gas, Inc.	Capital Oil & Gas, Inc.
TOWNSHIP	Springfield	Jefferson	Jefferson	Springfield	Jefferson	Jefferson	Springfield	Wilmington	French Creek	Springfield
QUADRANGLE	Mercer	Fredonia	Fredonia	Mercer	Greenfield	Fredonia	Mercer	Greenfield	New Lebanon	Mercer
LATITUDE	2,050 ft. S 41°10'00"	9,275 ft. S 41°17'30"	6,300 ft. S 41°17'30"	3,900 ft. S 41°10'00"	5,120 ft. S 41°15'00"	10,650 ft. S 41°17'30"	10,250 ft. S 41°10'00"	11,300 ft. S 41°00'00"	2,220 ft. S 41°27'30"	13,900 ft. S 41°12'30"
LONGITUDE	800 ft. W 80°12'30"	6,800 ft. W 80°17'30"	750 ft. W 80°20'00"	9,750 ft. W 80°12'30"	8,250 ft. W 80°20'00"	8,025 ft. W 80°17'30"	10,275 ft. W 80°12'30"	2,300 ft. W 78°30'00"	6,620 ft. W 80°02'30"	2,125 ft. W 80°12'30"
DATE COMPLETED	1-14-91	3-5-91	1-31-91	1-24-91	3-6-91	1-25-91	1-11-91	5-24-91	2-1-91	5-28-91
ELEVATION	1285 GR	1168 GR	1184 GR	1182 GR	1257 GR	1235 GR	1150 GR	1297 GR	1432 GR	1252 GR
LOGS RECEIVED AND LOGGED INTERVALS	GR/CNL: 50-6154 T: 4150-6154 PCL: 5850-6182	CDL/CNL: 0-5569 GR/DLL: 0-5569 INT: 0-5569	CDL/CNL: 0-5570 GR/DLL: 0-5570 INT: 0-5570	CDL/CNL: 50-6034 GR/GD: 4100-6034 PCL: 5750-6061	CDL/GR: 500-5744 GD: 3700-5728 PCL: 5300-5678	CDL/CNL: 669-5641 GR/DLL: 751-5659	GR/CNL: 50-6025 T: 50-6025	GR/CNL: 50-6170 GR/T: 4200-6170 PCL: 5900-6170	CDL/DLL: 0-5620 PCL: 3650-5605	GR/CNL: 50-6100 GR/T: 4100-6100 PCL: 5800-6070
TULLY LIMESTONE	4058-	3498-	3462-	3966-		3554-	3948-	4088-	3674-	3998-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	4212-	3638-	3604-	4118-	3750-	3694-	4098-	4238-	3872-	4152-
ORISKANY SANDSTONE RIDGELEY SANDSTONE		3804-	3770-		3914-	3858-			4020-	4370-
SILURIAN-DEVONIAN CARBONATES	4440-	3824-	3796-	4348-	3932-	3880-	4304-	4436-	4040-	4380-
SALINA GROUP LOCKPORT DOLOMITE	4556- 5448-	3975- 4862-	3944- 4815-	4464- 5296-	4094- 4974-	4030- 4910-	4434- 5280-	4580- 5494-	4166- 4884-	4484- 5378-
ROCHESTER SHALE *IRONDEQUOIT DOLOMITE*	5720- 5855-	5165- 5224-	5116- 5176-	5656- 5776-	5276- 5390-	5215- 5274-	5638- 5760-	5780- 5906-	5212- 5286-	5673- 5745-
GRIMSBY FORMATION CABOT HEAD SHALE *WHIRLPOOL SANDSTONE*	5898- 6021- 6090-	5298- 5418- 5490-	5250- 5394- 5442-	5818- 5946- 6012-	5414- 5540- 5608-	5350- 5467- 5542-	5804- 5964- 5998-	5946- 6106- 6140-	5344- 5486- 5526-	5836- 5954- 6027-
QUEENSTON FORMATION	6104-	5498-	5452-	6025-	5622-	5552-	6009-	6154-	5536-	6040-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	6002	5497	5448	6024	5538	5550	6008	6148	5458	6036
TOTAL DEPTH	*6220*	5579	*5580*	*6080*	5751	5676	6136	6208	5630	6128
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	80 Mcf AF 1780 psi/120 hrs. exploratory (EXT) Ligo pool Volant *field*	1140 Mcf AF 1425 psi/48 hrs. development Greenfield field	1280 Mcf AF 1500 psi/48 hrs. development Sharon Deep pool Sharon *field*	85 Mcf AF 1800 psi/120 hrs. development Ligo pool Volant *field*	350 Mcf AF 1475 psi/48 hrs. development Greenfield field	1410 Mcf AF 1575 psi/48 hrs. development Greenfield field	70 Mcf AF 1640 psi/72 hrs. development Ligo pool Volant field	65 Mcf AF 1740 psi/96 hrs. development Ligo pool Volant field	750 Mcf AF 1380 psi/72 hrs. development Kantz Corners field	80 Mcf AF 1760 psi/96 hrs. development Ligo pool Volant field

Table 24. *(Continued).*

COUNTY PERMIT NUMBER	Mercer 085-21206	Mercer 085-21207	Mercer 085-21208	Mercer 085-21211	Mercer 085-21214	Mercer 085-21215	Mercer 085-21216	Mercer 085-21217	Mercer 085-21218	Mercer 085-21219
NAME OF WELL	Patterson #2	Piecuch, M. #2	Walters, W. #1	Seidle, D. #4	McFall Unit #4-028	Janoski Unit #3-026	Janoski Unit #4-026	Brooks Unit #1	Burke, K. #2	Moore, A. & S. #2
OPERATOR	Capital Oil & Gas, Inc.	Douglas Oil & Gas, Inc.	Vista Resources, Inc.	Atlas Resources, Inc.	Atwood Energy, Inc.	Atwood Energy, Inc.	Atwood Energy, Inc.	Atwood Energy, Inc.	Capital Oil & Gas, Inc.	Capital Oil & Gas, Inc.
TOWNSHIP	Springfield	Deer Creek	New Lebanon	Jefferson	Shenango	Shenango	Shenango	Shenango	Springfield	Springfield
QUADRANGLE	Greenfield	New Lebanon	New Lebanon	Fredonia	Sharon East	Sharon East	Sharon East	Sharon East	Mercer	Mercer
LATITUDE	13,475 ft. S 41°12'30"	3,730 ft. S 41°27'30"	14,000 ft. S 41°27'30"	15,100 ft. S 41°17'30"	14,100 ft. S 41°10'00"	12,500 ft. S 41°10'00"	11,400 ft. S 41°10'00"	11,250 ft. S 41°10'00"	6,550 ft. S 41°10'00"	15,150 ft. S 41°12'30"
LONGITUDE	175 ft. W 80°15'00"	5,650 ft. W 80°05'30"	11,180 ft. W 80°02'30"	1,000 ft. W 80°17'30"	150 ft. W 80°27'30"	1,900 ft. W 80°27'30"	1,150 ft. W 80°27'30"	6,650 ft. W 80°27'30"	10,200 ft. W 80°12'30"	10,925 ft. W 80°12'30"
DATE COMPLETED	2-21-91	2-13-91	2-26-91	1-28-91	5-13-91	4-8-91	4-16-91	5-21-91	5-22-91	2-6-91
ELEVATION	1285 GR	1469 GR	1385 GR	1081 GR	1105 GR	1008 GR	960 GR	1005 GR	1171 GR	1268 GR
LOGS RECEIVED AND LOGGED INTERVALS	CNL: 50-6110 GR/T: 4100-6110 PCL: 5750-6094	CDL/DLL: 3600-5615 PCL: 3600-5614		CDL/CNL: 638-5576 GR/DLL: 693-5594	GR/CNL: 550-5700 T: 5350-5709	GR/CNL: 400-5567 PCL: 5250-5577	GR/CNL: 400-5499 T: 5150-5496	GR/CNL: 350-5535 GR/T: 5220-5528	GR/CNL: 50-6024 GR/T: 4000-6024	GR/CNL: 50-6105 GR/GD: 4100-6105
TULLY LIMESTONE	3990-	3662-	3654-	3495-					3950-	3990-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	4138-	3848-	3840-	3624-	3672-	3548-	3488-	3528-	4102-	4140-
ORISKANY SANDSTONE RIDGELEY SANDSTONE	4366-	4002-	3992-	3795-	3858-	3735-	3682-	3722-		
SILURIAN-DEVONIAN CARBONATES	4390-	4024-	4010-	3820-	3880-	3758-	3698-	3736-	4328-	4348-
SALINA GROUP LOCKPORT DOLOMITE	4480- 5366-	4140- 4874-	4144- 4886-	3974- 4856-	4068- 4964-	3820- 4816-	3888- 4772-	3926- 4816-	4444- 5340-	4484- 5380-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	5672- 5744-	5201- 5264-	5204- 5280-	5152- 5216-	5290- 5354-	5170- 5230-	5106- 5168-	5136- 5200-	5636- 5712-	5678- 5750-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5834- 5982- 6026-	5328- 5450- 5508-	5330- 5454- 5564-	5296- 5415- 5484-	5444- 5596- 5638-	5318- 5440- 5512-	5254- 5374- 5448-	5286- 5409- 5480-	5804- 5962- 6000-	5840- 5992- 6030-
QUEENSTON FORMATION	6046-	5516-	5572-	5496-	5650-	5526-	5462-	5494-	6010-	6046-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	6040	5396	5442	5494	5649	5525	5461	5489	6007	6044
TOTAL DEPTH	6163	5625	5626	5617	5718	5585	5525	5555	6068	6130
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	200 Mcf AF 1860 psi/96 hrs. development Ligo pool Volant field	500 Mcf AF 1360 psi/72 hrs. development Kantz Corners field	300 Mcf AF 1375 psi/192 hrs. development Kantz Corners field	1370 Mcf AF 1550 psi/48 hrs. development Greenfield field	10 Mcf AF 1250 psi/96 hrs. development Wheatland field	10 Mcf AF 1250 psi/96 hrs. development Wheatland field	10 Mcf AF 1250 psi/48 hrs. development Wheatland field	10 Mcf AF 1300 psi/72 hrs. development Wheatland field	120 Mcf AF 1700 psi/96 hrs. development Ligo pool Volant field	110 Mcf AF 1840 psi/96 hrs. development Ligo pool Volant field

COUNTY PERMIT NUMBER	Mercer 085-21222	Mercer 085-21223	Mercer 085-21224	Mercer 085-21226	Mercer 085-21227	Mercer 085-21228	Mercer 085-21229	Mercer 085-21235	Mercer 085-21237	Mercer 085-21239
NAME OF WELL	Theofolis Unit #1	McFall Unit #3-030	Byler, Andrew #1	Horne, W. #1	Brown, J. #2	Crawford, W. #1	Bain, R. #1	Cooper, B. & Z. #1	McFall Unit #2-029	Moore, B. & L. #1
OPERATOR	Everflow Eastern, Inc.	Atwood Energy, Inc.	Capital Oil & Gas, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Capital Oil & Gas, Inc.	Atwood Energy, Inc.	Capital Oil & Gas, Inc.
TOWNSHIP	Jefferson	Shenango	Wilmington	Jefferson	Jefferson	Coolspring	Jefferson	Springfield	Shenango	Springfield
QUADRANGLE	Fredonia	Sharon East	Greenfield	Fredonia	Fredonia	Fredonia	Sharon East	Greenfield	Sharon East	Mercer
LATITUDE	13,325 ft. S 41°17'30"	14,650 ft. S 41°10'00"	7,000 ft. S 41°10'00"	14,100 ft. S 41°17'30"	11,275 ft. S 41°17'30"	10,400 ft. S 41°17'30"	3,200 ft. S 41°15'00"	4,050 ft. S 41°10'00"	13,300 ft. S 41°10'00"	15,000 ft. S 41°12'30"
LONGITUDE	8,900 ft. W 80°20'00"	9,400 ft. W 80°25'00"	2,300 ft. W 80°15'00"	6,250 ft. W 80°15'00"	4,850 ft. W 80°15'00"	1,375 ft. W 80°15'00"	2,250 ft. W 80°22'30"	850 ft. W 80°15'00"	10,250 ft. W 80°25'00"	8,675 ft. W 80°12'30"
DATE COMPLETED	3-2-91	4-23-91	2-13-91	3-7-91	2-16-91	3-19-91	2-26-91	5-24-91	5-30-91	5-13-91
ELEVATION	1152 GR	1062 GR	1172 GR	1275 GR	1295 GR	1333 GR	1195 GR	1179 GR	1073 GR	1212 GR
LOGS RECEIVED AND LOGGED INTERVALS	CDL/GR: 50-5600 GD/GR: 3500-5584 PCL: 5200-5563	GR/CNL: 450-5673 GR/T: 5350-5655	GR/CNL: 50-6053 GR/T: 4050-6053	CDL/CNL: 0-5810 GR/DLL: 0-5810 INT: 0-5810	CDL/CNL: 944-5786 GR/DLL: 759-5793 INT: 950-5785	CDL/CNL: 0-5820 GR/DLL: 800-5820	CDL/CNL: 1269-5557 GR/DLL: 1277-5576 INT: 1269-5557	GR/CNL: 50-6011 GR/GD: 4000-6011	GR/CNL: 400-5673 GR/GD: 5350-5646	GR/CNL: 50-6041 GR/T: 4050-6041
TULLY LIMESTONE			3928-	3738-	3742-	3796-	3496-	3925-		3956-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	3578-	3646-	4076-	3880-	3886-	3940-	3626-		3646-	4108-
ORISKANY SANDSTONE RIDGELEY SANDSTONE	3744-	3832-	4254-	4030-	4038-	4084-	3796-		3832-	4316-
SILURIAN-DEVONIAN CARBONATES	3758-	3858-	4272-	4048-	4062-	4108-	3822-	4310-	3857-	4340-
SALINA GROUP LOCKPORT DOLOMITE	3922- 4782-	4042- 4936-	4424- 5326-	4208- 5080-	4214- 5104-	4264- 5130-	3982- 4858-	4426- 5317-	4042- 4942-	4448- 5334-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	5115- 5174-	5262- 5325-	5622- 5692-	5368- 5434-	5376- 5440-	5416- 5490-	5136- 5224-	5610- 5680-	5262- 5326-	5638- 5702-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5248- 5381- 5448-	5414- 5578- 5609-	5790- 5914- 5986-	5522- 5678- 5709-	5517- 5678- 5712-	5566- 5690- 5755-	5300- 5460- 5494-	5774- 5930- 5967-	5414- 5538- 5608-	5794- 5950- 5984-
QUEENSTON FORMATION	5458-	5622-	5994-	5722-	5724-	5770-	5508-	5982-	5620-	5996-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	5366	5621	5993	5715	5721	5766	5504	5977	5619	5995
TOTAL DEPTH	5602	5689	6100	5820	5821	5850	5592	6020	5700	6074
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	350 Mcf AF 1500 psi/48 hrs. development Sharon Deep pool Sharon field	10 Mcf AF 1400 psi/72 hrs. development Wheatland field	110 Mcf AF 1840 psi/72 hrs. development Ligo pool Volant field	1310 Mcf AF 1475 psi/48 hrs. development Lackawannock pool Big Bend field	1140 Mcf AF 1425 psi/48 hrs. development Lackawannock pool Big Bend field	1020 Mcf AF 1250 psi/48 hrs. development Lackawannock pool Big Bend field	750 Mcf AF 1275 psi/48 hrs. development Sharon Deep pool Sharon field	130 Mcf AF 1840 psi/120 hrs. development Ligo pool Volant field	10 Mcf AF 1200 psi/120 hrs. development Wheatland field	110 Mcf AF 1820 psi/72 hrs. development Ligo pool Volant field

Table 24. *(Continued).*

COUNTY PERMIT NUMBER	Mercer 085-21244	Mercer 085-21245	Mercer 085-21246	Mercer 085-21250	Mercer 085-21251	Mercer 085-21252	Mercer 085-21253	Mercer 085-21254	Mercer 085-21256	Mercer 085-21257
NAME OF WELL	Kobosky Unit #2	Helmuth-Hillman #1	Shankel Unit #1	Crawford Unit #3	Armbruster, J. #1	McWilliams, J. #4	Kirila, M. #5	Jewell Unit #7	Steingrabe Unit #2	Philson Unit #1
OPERATOR	Vista Resources, Inc.	Vista Resources, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.
TOWNSHIP	Deer Creek	New Lebanon	Jefferson	Coolspring	Coolspring	Jefferson	Coolspring	Jefferson	Jefferson	Jefferson
QUADRANGLE	New Lebanon	New Lebanon	Fredonia	Fredonia	Fredonia	Greenfield	Fredonia	Fredonia	Greenfield	Fredonia
LATITUDE	13,550 ft. S 41°30'00"	1,180 ft. S 41°25'00"	4,000 ft. S 41°17'30"	13,100 ft. S 41°17'30"	5,000 ft. S 41°17'30"	1,150 ft. S 41°15'00"	8,975 ft. S 41°17'30"	13,200 ft. S 41°17'30"	550 ft. S 41°15'00"	11,300 ft. S 41°17'30"
LONGITUDE	5,900 ft. W 80°05'00"	10,090 ft. W 80°02'30"	3,875 ft. W 80°15'00"	2,525 ft. W 80°15'00"	2,475 ft. W 80°15'00"	5,600 ft. W 80°17'30"	2,350 ft. W 80°15'00'	9,800 ft. W 80°15'00"	2,575 ft. W 80°17'30"	9,625 ft. W 80°15'00"
DATE COMPLETED	5-17-91	2-28-91	2-28-91	3-20-91	3-13-91	3-21-91	3-12-91	3-14-91	3-5-91	3-19-91
ELEVATION	1440 GR	1391 GR	1252 GR	1266 GR	1250 GR	1260 GR	1318 GR	1197 GR	1004 GR	1231 GR
LOGS RECEIVED AND LOGGED INTERVALS			CDL/CNL: 0-5712 GR/DLL: 0-5712 INT: 0-5712	CDL/CNL: 0-5822 GR/DLL: 0-5822	CDL/CNL: 682-5704 GR/DLL: 682-5704 INT: 5338-5704	CDL/CNL: 762-5738 GR/DLL: 770-5755	CDL/CNL: 0-5840 GR/DLL: 0-5840	CDL/CNL: 650-5708 GR/DLL: 724-5726 INT: 650-5726	CDL/CNL: 0-5485 GR/DLL: 508-5485 INT: 5250-5485	CDL/CNL: 710-5738 GR/DLL: 710-5755
TULLY LIMESTONE	3586-	3722-	3624-	3752-	3642-	3662-	3760-	3614-	3406-	3646-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	3773-	3906-	3772-	3894-	3790-	3800-	3906-	3754-	3546-	3790-
ORISKANY SANDSTONE RIDGELEY SANDSTONE	3934-	4054-	3925-	4042-	3936-	3956-	4055-	3916-	3704-	3944-
SILURIAN-DEVONIAN CARBONATES	3954-	4074-	3950-	4058-	3960-	3982-	4082-	3936-	3730-	3970-
SALINA GROUP LOCKPORT DOLOMITE	4070- 4840-	4206- 4960-	4101- 4979-	4220- 5082-	4112- 4990-	4140- 5012-	4236- 5096-	4088- 4970-	3886- 4772-	4124- 5010-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	5132- 5190-	5266- 5327-	5272- 5378-	5376- 5449-	5277- 5352-	5290- 5374-	5392- 5456-	5260- 5322-	5058- 5124-	5308- 5360-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5254- 5372- 5436-	5400- 5504- 5578-	5412- 5565- 5604-	5518- 5676- 5712-	5422- 5544- 5614-	5452- 5576- 5644-	5530- 5652- 5720-	5402- 5526- 5590-	5206- 5324- 5394-	5440- 5558- 5630-
QUEENSTON FORMATION	5448-	5586-	5617-	5722-	5627-	5656-	5740-	5606-	5408-	5648-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	5371	5487	5616	5720	5625	5655	5735	5604	5404	5644
TOTAL DEPTH	5540	5700	5722	5841	5719	5773	5845	5743	5500	5773
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	275 Mcf AF 1225 psi/67 hrs. development Kantz Corners field	350 Mcf AF 1425 psi/288 hrs. development Kantz Corners field	1200 Mcf AF 1450 psi/48 hrs. development Lackawannock pool Big Bend field	1140 Mcf AF 1325 psi/48 hrs. development Lackawannock pool Big Bend field	1410 Mcf AF 1450 psi/48 hrs. development Lackawannock pool Big Bend field	1280 Mcf AF 1450 psi/48 hrs. development Greenfield field	1320 Mcf AF 1425 psi/48 hrs. development Lackawannock pool Big Bend field	1200 Mcf AF 1450 psi/48 hrs. development Greenfield field	1070 Mcf AF 1400 psi/48 hrs. development Greenfield field	1310 Mcf AF 1425 psi/48 hrs. development Lackawannock pool Big Bend field

COUNTY PERMIT NUMBER	Mercer 085-21258	Mercer 085-21260	Mercer 085-21263	Mercer 085-21265	Mercer 085-21266	Mercer 085-21269	Mercer 085-21270	Mercer 085-21271	Mercer 085-21274	Mercer 085-21275
NAME OF WELL	Shipton, D. & L. #1	McAnallen, R. #1	Gibson, H. #2	Jewell, P. & B. #8	Lisk, W. & J. #1	Sealand, C. & B. #1	Macri, P. & B. #1	Mowry Unit #1	Murko, A. #1	Springfield Club #2
OPERATOR	Atlas Resources, Inc.	Atlas Resources, Inc.	Mark Resources Corp.	Atlas Resources, Inc.	Capital Oil & Gas, Inc.	Atlas Resources, Inc.	Atlas Resources, Inc.	Douglas Oil & Gas, Inc.	Atlas Resources, Inc.	Capital Oil & Gas, Inc.
TOWNSHIP	Delaware	Coolspring	Hermitage	Jefferson	Springfield	Coolspring	East Lackawannock	Millcreek	Lackawannock	Springfield
QUADRANGLE	Fredonia	Fredonia	Sharpsville	Greenfield	Mercer	Jackson Center	Greenfield	New Lebanon	Greenfield	Mercer
LATITUDE	1,350 ft. S 41°20'00"	2,380 ft. S 41°17'30"	9,530 ft. S 41°17'30"	1,850 ft. S 41°15'00"	5,550 ft. S 41°10'00"	12,750 ft. S 41°17'30"	4,875 ft. S 41°15'00"	1,020 ft. S 41°25'00"	5,075 ft. S 41°15'00"	4,350 ft. S 41°10'00"
LONGITUDE	7,000 ft. W 80°15'00"	50 ft. W 80°15'00"	8,260 ft. W 80°25'00"	8,200 ft. W 80°15'00"	6,850 ft. W 80°12'30"	10,650 ft. W 80°12'30"	5,425 ft. W 80°05'00"	1,990 ft. W 80°05'00"	1,250 ft. W 80°20'00"	8,000 ft. W 80°12'30"
DATE COMPLETED	3-7-91	3-28-91	4-4-91	4-2-91	5-20-91	4-16-91	4-11-91	3-21-91	3-15-91	5-13-91
ELEVATION	1188 GR	1302 GR	1008 GR	1306 GR	1098 GR	1303 GR	1260 GR	1350 GR	1278 GR	1190 GR
LOGS RECEIVED AND LOGGED INTERVALS	CDL/CNL: 618-5420 GR/DLL: 618-5438 INT: 618-5420	CDL/CNL: 698-5749 GR/DLL: 827-5767 INT: 699-5767		CDL/CNL: 801-5831 GR/DLL: 801-5849	GR/CNL: 50-5987 GR/GD: 5987-6005 PCL: 4860-5980	CDL/CNL: 800-5823 GR/DLL: 890-5841 INT: 800-5841	CDL/CNL: 796-5828 GR/DLL: 824-5846 INT: 796-5846	CDL/DLL: 3600-5639	CDL/CNL: 760-5726 GR/DLL: 764-5744 INT: 760-5744	CNL: 50-6079 T: 4100-6079 PCL: 5050-6080
TULLY LIMESTONE	3436-			3776-	3866-	3820-	3786-	3662-	3662-	3966-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	3590-	3824-	3246-	3914-	4020-	3962-	3924-	3844-	3800-	4118-
ORISKANY SANDSTONE RIDGELEY SANDSTONE	3752-	3974-	3430-	4068-		4110-	4078-	3996-	3964-	
SILURIAN-DEVONIAN CARBONATES	3778-	3996-	3444-	4096-	4190-	4134-	4102-	4026-	3992-	4316-
SALINA GROUP LOCKPORT DOLOMITE	3922- 4736-	4144- 5032-	3663- 4457-	4254- 5126-	4362- 5262-	4290- 5146-	4262- 5118-	4150- 4872-	4146- 5018-	4460- 5358-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	5028- 5090-	5320- 5388-	4778- 4834-	5416- 5480-	5558- 5634-	5434- 5500-	5410- 5474-	5196- 5285-	5310- 5372-	5660- 5726-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5160- 5256- 5346-	5464- 5582- 5650-	4984- 5022- 5096-	5560- 5682- 5750-	5726- 5882- 5922-	5580- 5700- 5770-	5556- 5678- 5744-	5336- 5484- 5514-	5454- 5574- 5644-	5822- 5978- 6014-
QUEENSTON FORMATION	5360-	5666-	5109-	5766-	5932-	5784-	5758-	5524-	5658-	6028-
PRODUCING FORMATION	Medina	Medina	Lockport	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	5357	5664	4548	5762	5926	5778	5755	5521	5654	6026
TOTAL DEPTH	5455	5787	5180	5866	6002	5858	5863	5649	5761	6105
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	55 Mcf AF 1025 psi/48 hrs. exploratory (EXT) Lackawannock pool Big Bend field	1200 Mcf AF 1450 psi/48 hrs. development Lackawannock pool Big Bend field	195 Mcf AF 1825 psi/168 hrs. exploratory (SPW) Pymatuning pool Sharon field	1200 Mcf AF 1450 psi/48 hrs. development Greenfield field	130 Mcf AF 1820 psi/96 hrs. development Ligo pool Volant field	980 Mcf AF 1325 psi/48 hrs. development Lackawannock pool Big Bend field	1220 Mcf AF 1485 psi/48 hrs. development Greenfield field	1200 Mcf AF 1425 psi/72 hrs. development Kantz Corners field	1120 Mcf AF 1375 psi/48 hrs. development Greenfield field	130 Mcf AF 1840 psi/96 hrs. exploratory (EXT) Filer Corners pool Coolspring field

Table 24. *(Continued).*

COUNTY PERMIT NUMBER	Mercer 085-21277	Mercer 085-21279	Somerset 111-20195	Somerset 111-20196	Tioga 117-20158	Venango 121-42824	Venango 121-42852	Venango 121-42861	Venango 121-42868	Venango 121-42876
NAME OF WELL	Crawford #2	Fridley, J. & S. #1	Svonavec #1-4159	Frazee, E. #4144-1	Bechtel, Robert #1	Zelinski Unit #1	Shaw, Harold #1	Boggs Unit #1	Graham Unit #1	Patterson Unit #3
OPERATOR	Atlas Resources, Inc.	Atlas Resources, Inc.	CNG Producing Company	CNG Producing Company	Columbia Natural Resources	Mark Resources Corp.	Cabot Oil & Gas Corp.	Mark Resources Corp.	Mark Resources Corp.	Mark Resources Corp.
TOWNSHIP	Coolspring	Jefferson	Somerset	Addison	Sullivan	Plum	Oakland	Plum	Plum	Plum
QUADRANGLE	Fredonia	Greenfield	Somerset	Confluence	Roseville	Dempseytown	Franklin	Dempseytown	Dempseytown	Dempseytown
LATITUDE	12,175 ft. S 41°17'30"	4,300 ft. S 41°15'00"	3,400 ft. S 40°02'30"	9,375 ft. S 39°50'00"	11,400 ft. S 41°47'30"	7,500 ft. S 41°35'00"	7,740 ft. S 41°30'30"	2,530 ft. S 41°32'30"	10,160 ft. S 41°37'30"	9,750 ft. S 41°37'30"
LONGITUDE	1,025 ft. W 80°15'00"	11,200 ft. W 80°17'30"	4,000 ft. W 79°00'00"	11,250 ft. W 79°15'00"	9,100 ft. W 76°57'30"	7,350 ft. W 79°45'00"	4,340 ft. W 79°47'30"	6,550 ft. W 79°47'30"	4,170 ft. W 79°50'00"	2,800 ft. W 79°47'30"
DATE COMPLETED	3-26-91	4-5-91	9-20-90	9-12-90	12-17-90	12-3-90	6-29-90	1-31-91	1-31-91	10-18-90
ELEVATION	1320 GR	1249 GR	2218 GR	1629 GR	1715 GR	1262 GR	1481 GR	1315 GR	1441 GR	1430 GR
LOGS RECEIVED AND LOGGED INTERVALS	CDL/CNL: 820-5820 GR/DLL: 820-5838 INT: 820-5838	CDL/CNL: 712-5696 GR/DLL: 712-5714 INT: 712-5714								
TULLY LIMESTONE	3814-	3642-			5448-	3554-	3961-	3617-	3539-	3618-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	3956-	3778-	9030- 9050-	8328- 8342-	6629-	3808-	4206-	3862-	3770-	3862-
ORISKANY SANDSTONE RIDGELEY SANDSTONE	4100-	3942-	9130-	8588-	6688-	3936-	4324-	3990-	3914-	4004-
SILURIAN-DEVONIAN CARBONATES	4124-	3972-	9230-		6702-	3970-	4349-	4022-	3944-	4022-
SALINA GROUP LOCKPORT DOLOMITE	4282- 5150-	4124- 4996-				4112- 4768-	4697- 5238-	4173- 4866-	4072- 4744-	4164- 4786-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	5434- 5500-	5290- 5352-				5050- 5120-	5529- 5603-	5156- 5224-	5017- 5080-	5038- 5152-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5578- 5698- 5766-	5430- 5554- 5622-				5241- 5326- 5352-	5674- 5810- 5842-	5346- 5426- 5456-	5189- 5267- 5302-	5277- 5340- 5374-
QUEENSTON FORMATION	5782-	5634-				5364-	5854-	5467-	5314-	5386-
PRODUCING FORMATION	Medina	Medina	Ridgeley	Ridgeley	Ridgeley	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	5774	5625	9230	8770	6690	5358	5769	5402	5242	5324
TOTAL DEPTH	5881	5731	9409	8900	6713	5445	5916	5614	5432	5487
DEEPEST FORMATION REACHED	Queenston	Queenston	Helderberg	Helderberg	Helderberg	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	1380 Mcf AF 1425 psi/48 hrs. development Lackawannock pool Big Bend field	1180 Mcf AF 1400 psi/48 hrs. development Greenfield field	1693 Mcf AF 3600 psi/96 hrs. exploratory (NPW) Listle pool Somerset East field	27 Mcf AF 1775 psi/48 hrs. exploratory (NPW) Cucumber Run pool Paddytown field	15000 Mcf AF 3500 psi/72 hrs. exploratory (NFW) Mainesburg field	310 Mcf AF 950 psi/57 hrs. development Tecza pool Hamilton Corners field	270 Mcf AF 1270 psi/48 hrs. development Beatty Run pool Cooperstown field	110 Mcf AF 1300 psi/144 hrs. development Beatty Run pool Cooperstown field	150 Mcf AF 1375 psi/144 hrs. development Diamond pool Troy field	100 Mcf AF 1435 psi/144 hrs. development Beatty Run pool Cooperstown field

COUNTY PERMIT NUMBER	Venango 121-42877	Venango 121-42879	Venango 121-42881	Venango 121-42882	Venango 121-42883	Venango 121-42898	Venango 121-42901	Venango 121-42906	Venango 121-42910	Venango 121-42912
NAME OF WELL	Bogardus, #1	Gallagher/Legge #1	Agnew, William #1	Agnew, William #2	Plowman Unit #1	Dempsey Unit #1	Schwab, James #1A	C.P. Unit #13	Mihleder, M. #1	Anderson Unit #2
OPERATOR	Mark Resources Corp.	Mark Resources Corp.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Mark Resources Corp.	Mark Resources Corp.	Cabot Oil & Gas Corp.	Mark Resources Corp.	Cabot Oil & Gas Corp.	Mark Resources Corp.
TOWNSHIP	Jackson	Jackson	Plum	Plum	Oakland	Plum	Cherrytree	Cornplanter	Jackson	Cherrytree
QUADRANGLE	Sugar Lake	Sugar Lake	Sugar Lake	Sugar Lake	Franklin	Dempseytown	Titusville South	Pleasantville	Dempseytown	Titusville South
LATITUDE	8,100 ft. S 41°35'00"	11,240 ft. S 41°35'00"	7,010 ft. S 41°35'00"	8,820 ft. S 41°35'00"	5,580 ft. S 41°30'00"	950 ft. S 41°35'00"	5,430 ft. S 41°35'00"	7,900 ft. S 41°32'30"	1,860 ft. S 41°32'30"	4,650 ft. S 41°35'00"
LONGITUDE	5,350 ft. W 79°52'30"	2,210 ft. W 79°52'30"	1,140 ft. W 79°52'30"	1,820 ft. W 79°52'30"	820 ft. W 79°47'30"	7,900 ft. W 79°47'30"	9,670 ft. W 79°42'30"	9,950 ft. W 79°35'00"	5,890 ft. W 79°50'00"	3,700 ft. W 79°40'00"
DATE COMPLETED	1-16-91	12-6-90	2-14-91	11-20-90	1-24-91	1-24-91	2-2-91	10-31-90	11-7-90	10-31-90
ELEVATION	1481 GR	1555 GR	1530 GR	1560 GR	1512 GR	1530 GR	1411 GR	1589 GR	1338 GR	1585 GR
LOGS RECEIVED AND LOGGED INTERVALS			GR/CDL: 0-5576				GR/DLL: 0-5638 CDL/CNL: 0-5638			
TULLY LIMESTONE	3630-	3742-	3700-	3741-	4002-	3741-	3720-	4180-	3596-	3968-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	3852-	3966-	3924-	3967-	4250-	3980-	3976-	4444-	3825-	4239-
ORISKANY SANDSTONE RIDGELEY SANDSTONE	3994-	4108-	4065-	4110-	4369-	4116-	4100-	4528-	3957-	4356-
SILURIAN-DEVONIAN CARBONATES	4022-	4136-	4080-	4140-	4401-	4136-	4116-	4576-	3988-	4382-
SALINA GROUP LOCKPORT DOLOMITE	4166- 4840-	4282- 4956-	4182- 4924-	4446- 4954-	4577- 5272-	4288- 4932-	4222- 4952-	4740- 5472-	4294- 4752-	4532- 5236-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	5122- 5186-	5210- 5307-	5198- 5262-	5241- 5304-	5572- 5644-	5216- 5286-	5244- 5313-	5766- 5836-	5108- 5175-	5516- 5586-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5300- 5380- 5410-	5424- 5494- 5532-	5318- 5454- 5485-	5360- 5498- 5530-	5768- 5847- 5872-	5396- 5468- 5510-	5374- 5510- 5542-	5944- 6054- 6072-	5237- 5369- 5406-	5706- 5798- 5816-
QUEENSTON FORMATION	5424-	5546-	5498-	5544-	5900-	5521-	5552-	6089-	5415-	5830-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	5358	5482	5396	5446	5892	5449	5452	6009	5328	5772
TOTAL DEPTH	5510	5650	5598	5589	6002	5626	5635	6175	5480	5897
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	118 Mcf AF 1250 psi/192 hrs. development Wilson Mills pool Lake Creek field	135 Mcf AF 1350 psi/144 hrs. development Wilson Mills pool Lake Creek field	520 Mcf AF 1200 psi/48 hrs. development Wilson Mills pool Lake Creek field	476 Mcf AF 1400 psi/48 hrs. development Wilson Mills pool Lake Creek field	165 Mcf AF 1425 psi/288 hrs. development Beatty Run pool Cooperstown field	300 Mcf AF 1275 psi/288 hrs. development Beatty Run pool Cooperstown field	561 Mcf AF 1000 psi/48 hrs. development Tecza pool Hamilton Corners field	165 Mcf AF 1400 psi/120 hrs. development Cornplanter pool Rattlesnake field	452 Mcf AF 1080 psi/48 hrs. development Beatty Run pool Cooperstown field	105 Mcf AF 1300 psi/96 hrs. development Cherrytree Run pool Toonerville field

Table 24. *(Continued).*

COUNTY PERMIT NUMBER	Venango 121-42915	Venango 121-42919	Venango 121-42922	Venango 121-42923	Venango 121-42925	Venango 121-42928	Venango 121-42929	Venango 121-42930	Venango 121-42935	Venango 121-42939
NAME OF WELL	Pioneer, Kinley #1	Masson-Sinclair #1	Williams, Eugene #2	Tipton, Ray #1	Olson Unit #2	Bell, Darwin #4A	Hutchison, D. V. #6	Thomas, Lynn #1	Proper, Carl #4	Elwinger, D. #1
OPERATOR	Quaker State Corporation	Quaker State Corporation	Cabot Oil & Gas Corp.	Quaker State Corporation	Mark Resources Corp.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.
TOWNSHIP	Cherrytree	Cherrytree	Oakland	Cherrytree	Oakland	Canal	Allegheny	Canal	Plum	Canal
QUADRANGLE	Titusville South	Titusville South	Dempseytown	Titusville South	Dempseytown	Utica	Pleasantville	Utica	Dempseytown	Utica
LATITUDE	14,400 ft. S 41°35'00"	12,300 ft. S 41°35'00"	14,150 ft. S 41°32'30"	13,250 ft. S 41°35'00"	2,910 ft. S 41°32'30"	14,550 ft. S 41°30'00"	1,610 ft. S 41°37'30"	10,870 ft. S 41°30'00"	11,670 ft. S 41°37'30"	4,500 ft. S 41°30'00"
LONGITUDE	9,510 ft. W 79°37'30"	5,700 ft. W 79°40'00"	2,420 ft. W 79°47'30"	9,700 ft. W 79°40'00"	1,490 ft. W 79°45'00"	8,680 ft. W 79°55'00"	5,200 ft. W 79°32'30"	8,490 ft. W 79°55'00"	4,100 ft. W 79°50'00"	9,800 ft. W 79°55'00"
DATE COMPLETED	4-18-91	1-4-91	1-25-91	12-27-90	11-14-90	1-16-91	12-13-90	1-26-91	2-27-91	3-1-91
ELEVATION	1475 GR	1565 GR	1397 GR	1510 GR	1475 GR	1300 GR	1504 GR	1460 GR	1427 GR	1380 GR
LOGS RECEIVED AND LOGGED INTERVALS			CDL/CNL: 0-5763			CDL: 3600-5557		GR/CDL: 1028-5680	GR/CDL: 200-5399	
TULLY LIMESTONE	3940-	3971-	3810-	3902-	3850-	3618-	3896-	3760-	3542-	3626-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	4210-	4237-	4056-	4168-	4108-	3852-	4170-	3992-	3770-	3856-
ORISKANY SANDSTONE RIDGELEY SANDSTONE	4313-	4349-	4176-	4281-	4230-	3985-	4283-	4130-	3912-	3988-
SILURIAN-DEVONIAN CARBONATES	4336-	4372-	4204-	4306-	4250-	4014-	4297-	4148-	3930-	4019-
SALINA GROUP LOCKPORT DOLOMITE	4505- 5180-	4554- 5212-	4322- 5074-	4465- 5142-	4419- 5110-	4126- 4874-	4632- 5029-	4272- 5022-	4022- 4716-	4130- 4809-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	5449- 5578-	5482- 5606-	5360- 5432-	5410- 5534-	5406- 5480-	5106- 5232-	5397- 5503-	5325- 5388-	5016- 5080-	5172- 5243-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5682- 5780- 5808-	5660- 5786- 5837-	5498- 5632- 5668-	5585- 5732- 5765-	5602- 5684- 5709-	5278- 5450- 5488-	5523- 5667- 5700-	5458- 5576- 5624-	5138- 5256- 5302-	5304- 5443- 5479-
QUEENSTON FORMATION	5820-	5850-	5676-	5775-	5722-	5494-	5709-	5636-	5313-	5489-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	5812	5843	5564	5773	5662	5411	5708	5542	5229	5394
TOTAL DEPTH	5877	5958	5793	5870	5780	5625	5814	5696	5432	5597
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	IP not reported 1275 psi/48 hrs. exploratory (EXT) Oil Creek pool Petroleum Center- Pioneer field	IP not reported 1520 psi/48 hrs. development Cherrytree Run pool Toonerville field	372 Mcf AF 1260 psi/48 hrs. development Beatty Run pool Cooperstown field	IP not reported 1300 psi/48 hrs. development Cherrytree Run pool Toonerville field	150 Mcf AF 1460 psi/336 hrs. development Mt. Carmel pool Dempseytown field	530 Mcf AF 1350 psi/48 hrs. development Takitezy pool Sugar Creek-Niles field	414 Mcf AF 1200 psi/48 hrs. exploratory (EXT) Jerusalem Corners pool Shamburg field	407 Mcf AF 1170 psi/48 hrs. development Canal pool McCune Run field	416 Mcf AF 1280 psi/48 hrs. development Diamond pool Troy field	206 Mcf AF 1375 psi/48 hrs. development Canal pool McCune Run field

COUNTY PERMIT NUMBER	Venango 121-42940	Venango 121-42943	Venango 121-42945	Venango 121-42947	Venango 121-42962	Venango 121-42969	Venango 121-42979	Venango 121-42980	Venango 121-42985	Venango 121-42987
NAME OF WELL	Harry #1	Windy Hills #4	Guth, Robert #1	Motter, P. #3	Henderson, D. #1	Kinley Cherrytree #8	Kline Unit #1	Dempsey Unit #2	Hefferman #2	Coyne-Slagle Unit #3
OPERATOR	Mark Resources Corp.	Quaker State Corporation	Cabot Oil & Gas Corp.	Mark Resources Corp.	Mark Resources Corp.	Quaker State Corporation	Mark Resources Corp.	Mark Resources Corp.	Mark Resources Corp.	Mark Resources Corp.
TOWNSHIP	Plum	Cherrytree	Canal	Plum	Cherrytree	Cherrytree	Plum	Plum	Plum	Oakland
QUADRANGLE	Dempseytown	Titusville South	Utica	Dempseytown	Dempseytown	Titusville South	Dempseytown	Dempseytown	Dempseytown	Dempseytown
LATITUDE	6,990 ft. S 41°35'00"	2,800 ft. S 41°35'00"	12,000 ft. S 41°30'00"	12,100 ft. S 41°37'30"	2,920 ft. S 41°37'30"	7,800 ft. S 41°35'00"	13,850 ft. S 41°37'30"	2,700 ft. S 41°35'00"	12,720 ft. S 41°35'00"	6,590 ft. S 41°32'30"
LONGITUDE	10,860 ft. W 79°50'00"	6,000 ft. W 79°40'00"	4,850 ft. W 79°55'00"	10,800 ft. W 79°45'00"	4,150 ft. W 79°45'00"	3,420 ft. W 79°42'30"	6,110 ft. W 79°47'30"	7,310 ft. W 79°47'30"	11,200 ft. W 79°50'00"	10,750 ft. W 79°45'00"
DATE COMPLETED	2-14-91	3-13-91	7-3-91	2-27-91	6-11-91	5-17-91	7-23-91	8-2-91	8-2-91	7-8-91
ELEVATION	1450 GR	1560 GR	1180 GR	1489 GR	1588 GR	1550 GR	1536 GR	1509 GR	1429 GR	1402 GR
LOGS RECEIVED AND LOGGED INTERVALS										
TULLY LIMESTONE	3608-	3922-	3511-	3712-	3750-	3904-	3728-	3734-	3632-	3768-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	3833-	4190-	3739-	3962-	4001-	4166-	3966-	3972-	3862-	4016-
ORISKANY SANDSTONE RIDGELEY SANDSTONE	3974-	4310-	3876-	4102-	4146-	4268-	4104-	4112-	4002-	4138-
SILURIAN-DEVONIAN CARBONATES	4000-	4336-	3906-	4130-	4170-	4318-	4130-	4144-	4034-	4160-
SALINA GROUP LOCKPORT DOLOMITE	4148- 4836-	4480- 5136-	4240- 4698-	4268- 4902-	4302- 4990-	4468- 5124-	4274- 4926-	4282- 4924-	4179- 4900-	4330- 5032-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	5121- 5176-	5408- 5527-	5061- 5129-	5178- 5246-	5220- 5287-	5424- 5516-	5203- 5272-	5210- 5278-	5144- 5228-	5326- 5396-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5290- 5372- 5399-	5588- 5728- 5758-	5193- 5333- 5370-	5360- 5442- 5466-	5404- 5446- 5500-	5578- 5714- 5746-	5388- 5461- 5488-	5421- 5476- 5501-	5334- 5412- 5444-	5510- 5582- 5626-
QUEENSTON FORMATION	5416-	5768-	5380-	5482-	5520-	5757-	5504-	5515-	5458-	5637-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	5346	5765	5345	5422	5460	5758	5424	5416	5376	5572
TOTAL DEPTH	5473	5880	5492	5577	5621	5878	5556	5600	5530	5721
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	130 Mcf AF 1300 psi/120 hrs. development Wilson Mills pool Lake Creek field	IP not reported 1525 psi/48 hrs. development Kantz Corners field	375 Mcf AF 1210 psi/48 hrs. exploratory (NPW) Polk pool Sugar Creek-Niles field	135 Mcf AF 1425 psi/360 hrs. development Beatty Run pool Cooperstown field	115 Mcf AF 1475 psi/336 hrs. development Gresham pool Breedtown field	IP not reported 1175 psi/48 hrs. development Tecza pool Hamilton Corners field	87 Mcf AF 1425 psi/72 hrs. development Beatty Run pool Cooperstown field	215 Mcf AF 1340 psi/72 hrs. development Beatty Run pool Cooperstown field	185 Mcf AF 1200 psi/72 hrs. development Beatty Run pool Cooperstown field	96 Mcf AF 1121 psi/21 hrs. development Beatty Run pool Cooperstown field

Table 24. *(Continued).*

COUNTY PERMIT NUMBER	Venango 121-42992	Venango 121-42995	Venango 121-42997	Warren 123-27429	Warren 123-27430	Warren 123-27691	Warren 123-28444	Warren 123-30127	Warren 123-31338	Warren 123-32322
NAME OF WELL	Plowman Unit #2	Motter, E. #4	C. P. Unit 15 #1	Brunecz, Carl #2	Hamilton, E. #1	Brunecz, Carl #1	Yoder, E. #2	Midwest Campers #3	Cornish #C-5	Lauger, George #2
OPERATOR	Mark Resources Corp.	Mark Resources Corp.	Mark Resources Corp.	Arrowhead Gas Producers, Inc.	Arrowhead Gas Producers, Inc.	Arrowhead Gas Producers, Inc.	Arrowhead Gas Producers, Inc.	Universal Resources Holdings	Universal Resources Holdings	U. S. Energy Exploration Corp.
TOWNSHIP	Oakland	Plum	Cornplanter	Sugar Grove	Sugar Grove	Sugar Grove	Freehold	Sugar Grove	Freehold	Columbus
QUADRANGLE	Franklin	Dempseytown	Pleasantville	Lottsville	Sugar Grove	Sugar Grove	Lottsville	Sugar Grove	Lottsville	Columbus
LATITUDE	5,170 ft. S 41°30'00"	10,620 ft. S 41°37'30"	9,800 ft. S 41°32'30"	3,400 ft. S 42°00'00"	2,900 ft. S 42°00'00"	5,500 ft. S 42°00'00"	2,200 ft. S 41°57'30"	3,200 ft. S 41°57'30"	8,700 ft. S 42°00'00"	8,000 ft. S 42°00'00"
LONGITUDE	2,750 ft. W 79°47'30"	11,350 ft. W 79°45'00"	9,950 ft. W 79°35'00"	800 ft. W 79°22'30"	10,500 ft. W 79°20'00"	11,300 ft. W 79°20'00"	12,900 ft. W 79°22'30"	6,900 ft. W 79°20'00"	4,200 ft. W 79°27'30"	8,000 ft. W 79°30'00"
DATE COMPLETED	7-9-91	7-23-91	7-31-91	11-19-79	10-29-79	2-18-80	11-3-80	1-15-82	6-11-82	5-12-83
ELEVATION	1540 GR	1423 GR	1596 GR	1640 GR	1680 GR	1550 GR	1710 GR	1768 GR	1450 GR	1513 GR
LOGS RECEIVED AND LOGGED INTERVALS				GR/CNL: 10-4724 PCL: 4400-4712	GR/CNL: 400-4760	GR/CNL: 400-4640		CDL/CNL: 700-5016 IL/GR: 700-1200 GR: 4700-5014	CDL/CNL: 461-4490	CDL/CNL: 2448-4450 GR/LL: 2357-4443
TULLY LIMESTONE	4014-	3626-	4188-	3093-	3044-	2914-				2744-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	4262-	3872-	4468-	3283-	3334-	3206-		3588-	3046-	3024-
ORISKANY SANDSTONE RIDGELEY SANDSTONE	4382-	4016-	4568-			3370-				
SILURIAN-DEVONIAN CARBONATES	4414-	4044-	4588-	3454-		3378-		3732-	3222-	3200-
SALINA GROUP LOCKPORT DOLOMITE	4587- 5280-	4180- 4796-	4764- 5522-	3508- 4086-	4130-	3424- 4007-		3795- 4396-	3278- 3867-	3258- 3832-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	5582- 5654-	5095- 5163-	5786- 5865-	4357- 4426-	4392- 4472-	4266- 4346-		4650- 4738-	4112- 4190-	4100- 4158-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5776- 5860- 5892-	5350- 5386-	5985- 6070- 6090-	4465- 4592- 4627-	4511- 4628- 4670-	4388- 4512- 4550-		4781- 4916- 4942-	4224- 4350- 4392-	4192- 4330- 4362-
QUEENSTON FORMATION	5906-	5400-	6110-	4644-	4688-	4566-		4958-	4405-	4373-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina		Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	5852	5333	6108	4642	4690	4560		4955	4401	4370
TOTAL DEPTH	5998	5500	6188	4713	4766	4636	4900	5038	4490	4476
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	175 Mcf AF 1275 psi/22 hrs. development Beatty Run pool Cooperstown field	350 Mcf AF 1380 psi/312 hrs. development Gresham pool Breedtown field	170 Mcf AF 1225 psi/168 hrs. development Cornplanter pool Rattlesnake field	3010 Mcf AF 1210 psi/72 hrs. development Freehold pool Stillwater field	1000 Mcf AF 1780 psi/? hrs. development Freehold pool Stillwater field	300 Mcf AF 1180 psi/36 hrs. development Freehold pool Stillwater field	IP not reported development Savko pool Lottsville field	1374 Mcf AF 1250 psi/48 hrs. development Pikes Rocks pool Youngsville field	1379 Mcf AF 1130 psi/48 hrs. development Dewey Corners pool Columbus field	7931 Mcf AF 1260 psi/48 hrs. development Dewey Corners pool Columbus field

COUNTY PERMIT NUMBER	Warren 123-39984	Warren 123-40688	Warren 123-40748	Warren 123-40767	Warren 123-40800	Warren 123-40807	Warren 123-40809	Warren 123-40810	Warren 123-40811	Warren 123-40814
NAME OF WELL	Huffman-Troyer #1	Brown Unit #3	Stec, Tony #2	Sterenka, D. #1	Huff, Herbert #2	Upton, R. & G. #3	Moravek, J. #2	Nielson, Lawrence #1	Lawson, Mark #1	Stec, Tony #4
OPERATOR	Douglas Oil & Gas, Inc.	Douglas Oil & Gas, Inc.	Cabot Oil & Gas Corp.	Douglas Oil & Gas, Inc.	Douglas Oil & Gas, Inc.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Douglas Oil & Gas, Inc.	Douglas Oil & Gas, Inc.	Cabot Oil & Gas Corp.
TOWNSHIP	Eldred	Spring Creek	Spring Creek	Columbus	Columbus	Pittsfield	Spring Creek	Columbus	Columbus	Spring Creek
QUADRANGLE	Grand Valley	Lottsville	Spring Creek	Columbus	Columbus	Pittsfield	Spring Creek	Columbus	Columbus	Spring Creek
LATITUDE	3,550 ft. S 41°45'00"	5,170 ft. S 41°55'00"	8,190 ft. S 41°50'00"	1,450 ft. S 41°55'00"	4,200 ft. S 41°55'00"	12,720 ft. S 41°50'00"	460 ft. S 41°50'00"	7,575 ft. S 41°55'00"	4,550 ft. S 41°55'00"	14,470 ft. S 41°52'30"
LONGITUDE	5,050 ft. W 79°35'00"	3,300 ft. W 79°27'30"	6,460 ft. W 79°30'00"	1,450 ft. W 79°30'00"	1,300 ft. W 79°32'30"	8,900 ft. W 79°27'30"	9,940 ft. W 79°30'00"	2,825 ft. W 79°30'00"	4,150 ft. W 79°30'00"	490 ft. W 79°30'00"
DATE COMPLETED	2-7-87	8-2-90	10-10-90	9-14-90	8-22-90	8-21-90	10-17-90	10-15-90	6-7-90	11-14-90
ELEVATION	1659 GR	1930 GR	1709 GR	1615 GR	1610 GR	1836 GR	1719 GR	1800 GR	1800 GR	1735 GR
LOGS RECEIVED AND LOGGED INTERVALS	CDL/CNL: 3600-5386 PCL: 4300-5359	CDL/DLL: 3450-5273 PCL: 3250-5226		CDL/LL: 3050-4866 PCL: 2750-4706	CDL/DLL: 3000-4846 PCL: 2600-4821			CDL/DLL: 3050-5091 PCL: 2800-5080	CDL/LL: 3250-5062 PCL: 3000-5039	
TULLY LIMESTONE	3644-	3512-	3503-	3096-	3084-	3699-	3434-	3310-	3284-	3484-
ONONDAGA LIMESTONE *HUNTERSVILLE CHERT*	3910-	3790-	3774-	3380-	3366-	3980-	3699-	3600-	3570-	3763-
ORISKANY SANDSTONE RIDGELEY SANDSTONE	4044-				3526-	4110-				
SILURIAN-DEVONIAN CARBONATES	4052-	3944-	3912-	3536-	3530-	4119-	3840-	3760-	3728-	3907-
SALINA GROUP LOCKPORT DOLOMITE	4112- 4772-	4012- 4594-	4236- 4528-	3602- 4190-	3598- 4178-	4460- 4831-	4180- 4428-	3824- 4428-	3792- 4390-	4244- 4514-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	5054- 5120-	4846- 4932-	4880- 4978-	4476- 4526-	4447- 4508-	5125- 5201-	4796- 4872-	4682- 4764-	4682- 4730-	4862- 4960-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5168- 5297- 5332-	4968- 5096- 5146-	4997- 5140- 5165-	4562- 4696- 4733-	4544- 4668- 4717-	5224- 5364- 5388-	4892- 5019- 5054-	4802- 4926- 4970-	4771- 4908- 4942-	4974- 5108- 5146-
QUEENSTON FORMATION	5339-	5156-	5176-	4744-	4730-	5400-	5066-	4986-	4951-	5154-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	5246	5061	5169	4669	4720	5307	5063	4921	4886	5073
TOTAL DEPTH	5386	5290	5293	4876	4895	5511	5190	5120	5072	5265
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	5000 Mcf AF 1200 psi/48 hrs. development Three Bridge pool Selkirk field	797 Mcf AF 1290 psi/72 hrs. development Whites Run pool Columbus field	307 Mcf AF 1200 psi/48 hrs. development Trimm pool Sanford field	362 Mcf AF 1200 psi/72 hrs. development Whites Run pool Columbus field	797 Mcf AF 1220 psi/72 hrs. development Whites Run pool Columbus field	283 Mcf AF 1340 psi/48 hrs. development Trimm pool Sanford field	362 Mcf AF 1340 psi/48 hrs. development Trimm pool Sanford field	360 Mcf AF 1320 psi/72 hrs. development Whites Run pool Columbus field	650 Mcf AF 1310 psi/72 hrs. development Whites Run pool Columbus field	449 Mcf AF 1075 psi/48 hrs. development Horn Siding pool Columbus field

Table 24. *(Continued).*

COUNTY PERMIT NUMBER	Warren 123-40828	Warren 123-40829	Warren 123-40830	Warren 123-40840	Warren 123-40861	Warren 123-40863	Warren 123-40866	Warren 123-40869	Warren 123-40873	Warren 123-40893
NAME OF WELL	Messinger, D. #2	Taylor, D. #2	Czech Unit #4	Jaquith #3	Collins Pine #1-264	Riedel Unit #1	Lyons, William #1	Lyons, William #4	Eddy Unit #1	Olson-Pierce #2
OPERATOR	Douglas Oil & Gas, Inc.	Douglas Oil & Gas, Inc.	Douglas Oil & Gas, Inc.	Douglas Oil & Gas, Inc.	Belden & Blake Corp.	Cabot Oil & Gas Corp.	Douglas Oil & Gas, Inc.	Douglas Oil & Gas, Inc.	Douglas Oil & Gas, Inc.	Douglas Oil & Gas, Inc.
TOWNSHIP	Freehold	Freehold	Columbus	Spring Creek	Deerfield	Spring Creek	Spring Creek	Spring Creek	Spring Creek	Pittsfield
QUADRANGLE	Lottsville	Lottsville	Columbus	Columbus	Tidioute	Columbus	Lottsville	Lottsville	Spring Creek	Lottsville
LATITUDE	2,350 ft. S 41°55'00"	1,575 ft. S 41°55'00"	14,600 ft. S 41°57'30"	9,650 ft. S 41°55'00"	1,700 ft. S 41°45'00"	8,600 ft. S 41°55'00"	8,950 ft. S 41°55'00"	10,750 ft. S 41°55'00"	2,400 ft. S 41°52'30"	7,700 ft. S 41°55'00"
LONGITUDE	7,225 ft. W 79°27'30"	8,550 ft. W 79°27'30"	4,025 ft. W 79°30'00"	1,060 ft. W 79°30'00"	1,875 ft. W 79°27'30"	9,220 ft. W 79°30'00"	8,850 ft. W 79°27'30"	8,050 ft. W 79°27'30"	3,750 ft. W 79°30'00"	3,300 ft. W 79°27'30"
DATE COMPLETED	9-25-90	9-14-90	9-11-90	6-21-90	6-27-90	10-3-90	9-21-90	9-21-90	8-29-90	8-8-90
ELEVATION	1825 GR	1725 GR	1580 GR	1800 GR	1760 GR	1510 GR	1650 GR	1650 GR	1630 GR	1715 GR
LOGS RECEIVED AND LOGGED INTERVALS	CDL/DLL: 517-3350 PCL: 3200-5091	CDL/DLL: 517-3200 PCL: 2800-4964	CDL/DLL: 3000-4794 PCL: 2850-4771	CDL/DLL: 50-5149 PCL: 3150-5115	CDL/CNL: 850-5633 GR/DLL: 950-5650		CDL/DLL: 0-5018 PCL: 3150-4916	CDL/LL: 3100-5003 PCL: 3100-4963	CDL/DLL: 523-3200 PCL: 4650-4995	CDL/DLL: 3250-5062 PCL: 3000-5029
TULLY LIMESTONE	3372-	3248-	3036-	3354-	3883-	3003-	3226-	3248-	3226-	3296-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	3650-	3528-	3320-	3644-	4170-	3288-	3508-	3528-	3514-	3575-
ORISKANY SANDSTONE RIDGELEY SANDSTONE					4276-					
SILURIAN-DEVONIAN CARBONATES	3802-	3684-	3478-	3804-	4284-	3452-	3664-	3684-	3674-	3728-
SALINA GROUP LOCKPORT DOLOMITE	3866- 4454-	3750- 4328-	3551- 4130-	3878- 4472-	4340- 4996-	3818- 4044-	3730- 4340-	3750- 4362-	3746- 4342-	3790- 4384-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	4744- 4792-	4560- 4666-	4383- 4464-	4721- 4809-	5286- 5356-	4404- 4455-	4592- 4680-	4610- 4698-	4628- 4697-	4670- 4723-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	4830- 4952- 5003-	4702- 4826- 4876-	4498- 4616- 4676-	4848- 4968- 5016-	5408- 5537- 5570-	4494- 4627- 4663-	4718- 4855- 4890-	4734- 4860- 4908-	4736- 4860- 4908-	4762- 4906- 4936-
QUEENSTON FORMATION	5012-	4882-	4686-	5034-	5579-	4680-	4904-	4922-	4922-	4952-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	5007	4796	4587	5032	5581	4582	4820	4833	4914	4898
TOTAL DEPTH	5135	5018	4815	5159	5663	4785	5032	5013	5033	5072
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	870 Mcf AF 1320 psi/72 hrs. development Whites Run pool Columbus field	IP not reported 1100 psi/72 hrs. development Whites Run pool Columbus field	1000 Mcf AF 1100 psi/72 hrs. development Whites Run pool Columbus field	1100 Mcf AF 1220 psi/72 hrs. development Whites Run pool Columbus field	IP not reported 1375 psi/24 hrs. development Trimm pool Sanford field	219 Mcf AF 1250 psi/48 hrs. development Whites Run pool Columbus field	652 Mcf AF 1080 psi/72 hrs. development Whites Run pool Columbus field	1100 Mcf AF 1320 psi/72 hrs. development Whites Run pool Columbus field	IP not reported 1250 psi/72 hrs. development Horn Siding pool Columbus field	650 Mcf AF 1280 psi/72 hrs. development Whites Run pool Columbus field

COUNTY PERMIT NUMBER	Warren 123-40896	Warren 123-40908	Warren 123-40912	Warren 123-40914	Warren 123-40920	Warren 123-40922	Warren 123-40929	Warren 123-40933	Warren 123-40935	Warren 123-40936
NAME OF WELL	Sekerak, M. #2	Petko, Andrew #1	Gray, Melvin #3	PennBank #2	Pennwest #1	Stec, Phillip #1	Seigworth, W. #4	Leofsky, J. #3-R	Rensma Cobb #4	Austin, Herbert #1
OPERATOR	Douglas Oil & Gas, Inc.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Quaker State Corporation	Quaker State Corporation	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.
TOWNSHIP	Columbus	Spring Creek	Southwest	Southwest	Southwest	Pittsfield	Southwest	Pittsfield	Spring Creek	Columbus
QUADRANGLE	Columbus	Spring Creek	Grand Valley	Grand Valley	Tidioute	Pittsfield	Grand Valley	Pittsfield	Spring Creek	Columbus
LATITUDE	6,600 ft. S 41°55'00"	6,700 ft. S 41°50'00"	5,800 ft. S 41°42'30"	5,350 ft. S 41°40'00"	13,650 ft. S 41°42'30"	8,500 ft. S 41°50'00"	3,870 ft. S 41°40'00"	11,480 ft. S 41°50'00"	10,320 ft. S 41°50'00"	2,635 ft. S 41°55'00"
LONGITUDE	1,400 ft. W 79°30'00"	7,960 ft. W 79°30'00"	1,880 ft. W 79°35'00"	8,700 ft. W 79°30'00"	11,200 ft. W 79°27'30"	7,270 ft. W 79°27'30"	2,340 ft. W 79°35'00"	5,375 ft. W 79°27'30"	6,160 ft. W 79°32'30"	4,190 ft. W 79°30'00"
DATE COMPLETED	6-14-90	9-12-90	8-8-90	11-20-90	11-9-90	8-15-90	11-6-90	8-31-90	7-10-90	7-25-90
ELEVATION	1655 GR	1682 GR	1610 GR	1355 GR	1630 GR	1480 GR	1627 GR	1685 GR	1640 GR	1762 GR
LOGS RECEIVED AND LOGGED INTERVALS	CDL/LL: 3100-4967 PCL: 2800-4922									
TULLY LIMESTONE	3178-	3475-	3762-	3700-	3963-	3298-	3870-	3553-	3457-	3237-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	3464-	3743-	4040-	3982-	4259-	3578-	4145-	3834-	3699-	3525-
ORISKANY SANDSTONE RIDGELEY SANDSTONE			4155-	4090-	4360-	3712-	4260-	3965-	3839-	3683-
SILURIAN-DEVONIAN CARBONATES	3626-	3892-	4177-	4113-	4384-	3713-	4280-	3969-	3845-	3685-
SALINA GROUP LOCKPORT DOLOMITE	3688- 4284-	4208- 4571-	4458- 4918-	4252- 4849-	4519- 5110-	4035- 4412-	4577- 4960-	4290- 4671-	4112- 4545-	4043- 4267-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	4575- 4622-	4821- 4939-	5220- 5308-	5131- 5242-	5375- 5484-	4697- 4780-	5325- 5434-	4969- 5045-	4831- 4888-	4642- 4675-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	4660- 4798- 4832-	4958- 5098- 5127-	5322- 5473- 5491-	5340- 5417- 5465-	5569- 5667- 5707-	4800- 4943- 4971-	5450- 5588- 5626-	5063- 5214- 5233-	4933- 5070- 5100-	4715- 4853- 4880-
QUEENSTON FORMATION	4850-	5136-	5503-	5477-	5721-	4981-	5636-	5244-	5110-	4895-
PRODUCING FORMATION	Medina	Medina	Medina	Onondaga	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	4842	5133	5516	4044	5715	4879	3634	5164	5000	4782
TOTAL DEPTH	4978	5210	5544	5595	5854	5103	5735	5321	5200	5004
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	2000 Mcf AF 1280 psi/72 hrs. development Whites Run pool Columbus field	IP not reported 1250 psi/48 hrs. development Trimm pool Sanford field	IP not reported 800 psi/48 hrs. development Campbell Creek pool Goodwill Hill- Grand Valley field	IP not reported 1875 psi/48 hrs. exploratory (NPW) McCarthy pool Colorado field	IP not reported 920 psi/? hrs. development Seldom Seen pool Colorado field	235 Mcf AF 1245 psi/48 hrs. development Trimm pool Sanford field	216 Mcf AF 1380 psi/48 hrs. development Campbell Creek pool Goodwill Hill- Grand Valley field	307 Mcf AF 1320 psi/48 hrs. development Trimm pool Sanford field	IP not reported 1260 psi/48 hrs. development County Line field	IP not reported 1240 psi/48 hrs. development Whites Run pool Columbus field

Table 24. *(Continued).*

COUNTY PERMIT NUMBER	Warren 123-40943	Warren 123-40945	Warren 123-40946	Warren 123-40954	Warren 123-40992	Warren 123-40993	Warren 123-40995	Warren 123-41002	Warren 123-41013	Warren 123-41014
NAME OF WELL	Balsar, Cochran #2	Czech Unit #5	Rensma Cobb #5	Carr, Mina #1	Upton, R. & G. #4	Leofsky, James #4	Ongley #1	Campbell, J. #2	Lyons #5	Lyons, William #6
OPERATOR	Quaker State Corporation	Douglas Oil & Gas, Inc.	Cabot Oil & Gas Corp.	Quaker State Corporation	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Douglas Oil & Gas, Inc.	Quaker State Corporation	Douglas Oil & Gas, Inc.	Douglas Oil & Gas, Inc.
TOWNSHIP	Southwest	Columbus	Spring Creek	Triumph	Pittsfield	Pittsfield	Spring Creek	Southwest	Spring Creek	Pittsfield
QUADRANGLE	Grand Valley	Columbus	Spring Creek	Tidioute	Pittsfield	Pittsfield	Spring Creek	Grand Valley	Lottsville	Lottsville
LATITUDE	6,050 ft. S 41°40'00"	650 ft. S 41°55'00"	8,900 ft. S 41°50'00"	750 ft. S 41°40'00"	14,050 ft. S 41°50'00"	8,100 ft. S 41°50'00"	13,790 ft. S 41°52'30"	5,350 ft. S 41°42'30"	8,600 ft. S 41°55'00"	10,150 ft. S 41°55'00"
LONGITUDE	5,250 ft. W 79°35'00"	3,050 ft. W 79°30'00"	6,860 ft. W 79°32'30"	9,650 ft. W 79°27'30"	7,480 ft. W 79°27'30"	5,320 ft. W 79°27'30"	2,000 ft. W 79°32'30"	2,225 ft. W 79°32'30"	5,225 ft. W 79°27'30"	4,025 ft. W 79°27'30"
DATE COMPLETED	3-1-91	11-13-90	10-24-90	2-15-91	8-28-90	9-5-90	9-11-90	2-23-91	10-26-90	10-29-90
ELEVATION	1540 GR	1590 GR	1642 GR	1495 GR	1850 GR	1530 GR	1730 GR	1595 GR	1785 GR	1870 GR
LOGS RECEIVED AND LOGGED INTERVALS		CDL/DLL: 3000-4806 PCL: 2900-4768					CDL/DLL: 520-3400 PCL: 3200-5077		CDL/DLL: 3310-5132 PCL: 2800-5098	CDL/DLL: 3400-5200 PCL: 4800-5155
TULLY LIMESTONE		3050-	3421-	3855-	3730-	3407-	3422-	3785-	3366-	3464-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT		3336-	3683-	4138-	4012-	3687-	3686-	4067-	3642-	3738-
ORISKANY SANDSTONE RIDGELEY SANDSTONE				4238-				4180-		
SILURIAN-DEVONIAN CARBONATES		3492-	3830-	4261-	4141-	3828-	3830-	4205-	3798-	3894-
SALINA GROUP LOCKPORT DOLOMITE	4952-	3560- 4148-	4147- 4458-	4406- 5003-	4471- 4792-	4143- 4430-	3900- 4488-	4320- 4912-	3860- 4460-	3958- 4538-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	5254- 5331-	4438- 4484-	4812- 4896-	5270- 5379-	5152- 5214-	4792- 4853-	4754- 4818-	5177- 5282-	4750- 4796-	4840- 4892-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5379- 5516- 5551-	4524- 4666- 4690-	4914- 5056- 5083-	5429- 5574- 5603-	5257- 5402- 5430-	4895- 5030- 5064-	4864- 4986- 5026-	5326- 5464- 5502-	4834- 4980- 5006-	4930- 5074- 5100-
QUEENSTON FORMATION	5559-	4709-	5092-	5615-	5437-	5072-	5036-	5516-	5022-	5120-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	5558	4630	5090	5613	5393	4999	5032	5475	4922	5018
TOTAL DEPTH	5696	4845	5226	5739	5540	5200	5173	5651	5148	5225
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	IP not reported 1110 psi/48 hrs. development Kirvan pool Enterprise field	1000 Mcf AF 1220 psi/72 hrs. development Whites Run pool Columbus field	591 Mcf AF 950 psi/48 hrs. development County Line field	IP not reported 1060 psi/48 hrs. development Seldom Seen pool Colorado field	IP not reported 1200 psi/48 hrs. development Trimm pool Sanford field	IP not reported 1225 psi/48 hrs. development Trimm pool Sanford field	869 Mcf AF 1180 psi/72 hrs. development Trimm pool Sanford field	IP not reported 850 psi/24 hrs. development Campbell Creek pool Goodwill Hill- Grand Valley field	3000 Mcf AF 1260 psi/72 hrs. development Whites Run pool Columbus field	507 Mcf AF 1320 psi/72 hrs. development Whites Run pool Columbus field

COUNTY PERMIT NUMBER	Warren 123-41025	Warren 123-41027	Warren 123-41028	Warren 123-41029	Warren 123-41038	Warren 123-41039	Warren 123-41040	Warren 123-41043	Warren 123-41044	Warren 123-41045
NAME OF WELL	Roupe #1	Churn #1	Ott #1	Van Guilder, C. #2	Day #2	Adams #1	Tidioute Water #3	Sproveri, W. #1	Brown, Cleo #4	Cowles, D. #1
OPERATOR	Quaker State Corporation	Quaker State Corporation	Quaker State Corporation	Quaker State Corporation	Quaker State Corporation	Quaker State Corporation	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Douglas Oil & Gas, Inc.	Douglas Oil & Gas, Inc.
TOWNSHIP	Eldred	Eldred	Eldred	Southwest	Eldred	Eldred	Triumph	Pittsfield	Columbus	Freehold
QUADRANGLE	Grand Valley	Grand Valley	Grand Valley	Grand Valley	Grand Valley	Grand Valley	Tidioute	Pittsfield	Columbus	Lottsville
LATITUDE	15,037 ft. S 41°45'00"	800 ft. S 41°42'30"	14,050 ft. S 41°45'00"	3,638 ft. S 41°40'00"	13,500 ft. S 41°45'00"	10,925 ft. S 41°45'00"	9,940 ft. S 41°45'00"	4,950 ft. S 41°47'30"	6,300 ft. S 41°55'00"	14,700 ft. S 41°57'30"
LONGITUDE	9,546 ft. W 79°30'00"	6,450 ft. W 79°32'30"	6,125 ft. W 79°32'30"	4,839 ft. W 79°35'00"	650 ft. W 79°30'00"	5,450 ft. W 79°30'00"	6,850 ft. W 79°27'30"	350 ft. W 79°27'30"	4,150 ft. W 79°30'00"	430 ft. W 79°27'30"
DATE COMPLETED	11-21-90	2-18-91	4-19-91	5-14-91	7-10-91	1-25-91	11-29-90	11-7-90	2-4-91	11-21-90
ELEVATION	1570 GR	1600 GR	1645 GR	1310 GR	1680 GR	1630 GR	1562 GR	1450 GR	1760 GR	1766 GR
LOGS RECEIVED AND LOGGED INTERVALS									CDL/DLL: 3250-5077 PCL: 3200-5032	CDL/DLL: 0-5082 PCL: 4700-5050
TULLY LIMESTONE	3751-	3738-	3763-	3548-	3872-	3757-	3798-	3402-	3292-	3344-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	4036-	4015-	4042-	3825-	4162-	4052-	4084-	3690-	3578-	3622-
ORISKANY SANDSTONE RIDGELEY SANDSTONE				3946-			4190-			
SILURIAN-DEVONIAN CARBONATES	4154-	4145-	4174-	3970-	4283-	4170-	4202-	3810-	3740-	3778-
SALINA GROUP LOCKPORT DOLOMITE	4274- 4856-	4260- 4857-	4291- 4870-	4092- 4705-	4404- 4960-	4280- 4861-	4476- 4821-	4143- 4475-	3802- 4416-	3840- 4406-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	5118- 5223-	5118- 5223-	5144- 5252-	5010- 5082-	5244- 5346-	5127- 5228-	5180- 5274-	4840- 4939-	4678- 4744-	4700- 4744-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5269- 5425- 5444-	5268- 5401- 5444-	5296- 5432- 5472-	5178- 5267- 5300-	5372- 5532- 5566-	5273- 5416- 5447-	5298- 5440- 5468-	4954- 5076- 5120-	4778- 4904- 4956-	4784- 4924- 4950-
QUEENSTON FORMATION	5456-	5457-	5483-	5316-	5580-	5460-	5480-	5130-	4964-	4966-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	5451	5453	5480	5310	5574	5455	5476	5125	4959	4961
TOTAL DEPTH	5579	5640	5614	5450	5707	5585	5576	5285	5095	5092
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	IP not reported 940 psi/48 hrs. development Campbell Creek pool Goodwill Hill- Grand Valley field	IP not reported 1380 psi/48 hrs. development Campbell Creek pool Goodwill Hill- Grand Valley field	IP not reported 1025 psi/48 hrs. development Campbell Creek pool Goodwill Hill- Grand Valley field	IP not reported 1050 psi/48 hrs. development Campbell Creek pool Goodwill Hill- Grand Valley field	IP not reported 1025 psi/48 hrs. development Campbell Creek pool Goodwill Hill- Grand Valley field	IP not reported 1065 psi/48 hrs. development Campbell Creek pool Goodwill Hill- Grand Valley field	IP not reported 460 psi/48 hrs. development Trimm pool Sanford field	283 Mcf AF 1190 psi/48 hrs. development Trimm pool Sanford field	1000 Mcf AF 850 psi/72 hrs. development Whites Run pool Columbus field	365 Mcf AF 1200 psi/72 hrs. exploratory (EXT) Whites Run pool Columbus field

Table 24. *(Continued).*

COUNTY PERMIT NUMBER	Warren 123-41052	Warren 123-41053	Warren 123-41054	Warren 123-41055	Warren 123-41056	Warren 123-41057	Warren 123-41058	Warren 123-41059	Warren 123-41060	Warren 123-41066
NAME OF WELL	*Pennzoil Prod. #C-5*	*Burek, Jerry #2*	*Lawson Unit #2*	*Pennzoil Prod. #C-6*	*Pennzoil Prod. #C-7*	Stec, Tony #3	Miracle Mtn. #3	Savitz, Ardath #1	Savitz, Ardath #2	Lee Oil & Gas #21
OPERATOR	Cabot Oil & *Gas Corp.*	Douglas Oil & *Gas, Inc.*	Douglas Oil & *Gas, Inc.*	Cabot Oil & *Gas Corp.*	Cabot Oil & *Gas Corp.*	Cabot Oil & *Gas Corp.*	Douglas Oil & *Gas, Inc.*	Cabot Oil & *Gas Corp.*	Cabot Oil & *Gas Corp.*	Cabot Oil & *Gas Corp.*
TOWNSHIP	Southwest	Columbus	Columbus	Southwest	Southwest	Spring Creek	Spring Creek	Eldred	Eldred	Eldred
QUADRANGLE	Grand Valley	Columbus	Columbus	Grand Valley	Grand Valley	Spring Creek	Lottsville	Spring Creek	Spring Creek	Grand Valley
LATITUDE	3,620 ft. S 41°42'30"	7,500 ft. S 41°55'00"	5,400 ft. S 41°55'00"	2,130 ft. S 41°42'30"	1,680 ft. S 41°42'30"	7,100 ft. S 41°50'00"	12,1509 S 41°55'00"	14,860 ft. S 41°47'30"	14,860 ft. S 41°47'30"	5,120 ft. S 41°45'00"
LONGITUDE	4,070 ft. W 79°35'00"	1,600 ft. W 79°32'30"	5,800 ft. W 79°30'00"	3,650 ft. W 79°35'00"	5,720 ft. W 79°35'00"	5,070 ft. W 79°30'00"	10,200 ft. W 79°27'30"	2,420 ft. W 79°32'30"	4,200 ft. W 79°32'30"	3,670 ft. W 79°35'00"
DATE COMPLETED	2-6-91	2-16-91	2-15-91	2-20-91	2-26-91	10-31-90	1-21-91	1-31-91	11-20-90	1-8-91
ELEVATION	1608 GR	1390 GR	1745 GR	1660 GR	1568 GR	1650 GR	1840 GR	1622 GR	1620 GR	1630 GR
LOGS RECEIVED AND LOGGED INTERVALS	CDL: 3700-5532	CDL/DLL: 2850-4644 PCL: 2800-4620	CDL/DLL: 3200-5033 PCL: 3050-4993	CDL/GR: 3740-5608			CDL/DLL: 3400-5205 PCL: 3200-5175	GR/CDL: 3570-5370		GR/CDL: 0-5419
TULLY LIMESTONE	3716-	2878-	3241-	3760-	3668-	3436-	3420-	3570-	3609-	3636-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	3990-	3160-	3532-	4032-	3941-	3711-	3702-	3844-	3880-	3904-
ORISKANY SANDSTONE RIDGELEY SANDSTONE	4116-			4174-	4063-					
SILURIAN-DEVONIAN CARBONATES	4132-	3322-	3694-	4194-	4074-	3850-	3858-	3966-	4006-	4034-
SALINA GROUP LOCKPORT DOLOMITE	4196- 4868-	3396- 3984-	3760- 4356-	4244- 4910-	4348- 4736-	4168- 4540-	3924- 4534-	4030- 4692-	4287- 4660-	4102- 4756-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	5152- 5220-	4230- 4314-	4648- 4696-	5196- 5266-	5100- 5200-	4828- 4917-	4820- 4870-	4980- 5040-	5014- 5105-	5040- 5104-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5264- 5384- 5436-	4353- 4478- 4524-	4734- 4872- 4900-	5308- 5448- 5480-	5214- 5356- 5384-	4928- 5067- 5093-	4910- 5052- 5078-	5084- 5224- 5256-	5124- 5266- 5296-	5148- 5296- 5320-
QUEENSTON FORMATION	5446-	4536-	4916-	5492-	5396-	5103-	5098-	5267-	5307-	5330-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	5441	4528	4909	5486	5391	5100	5006	5264	5302	5324
TOTAL DEPTH	5565	4670	5044	5626	5502	5220	5215	5407	5400	5436
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	*IP not reported* 780 psi/48 hrs. development Campbell Creek pool Goodwill Hill- Grand Valley field	1400 Mcf AF 1350 psi/72 hrs. development Whites Run pool *Columbus* field	*IP not reported* 1300 psi/72 hrs. development Whites Run pool *Columbus* field	*IP not reported* 1100 psi/48 hrs. development Campbell Creek pool Goodwill Hill- Grand Valley field	*IP not reported* 875 psi/48 hrs. development Porky Run pool Dotyville field	*IP not reported* 1100 psi/48 hrs. development Trimm pool *Sanford* field	650 Mcf AF 1200 psi/72 hrs. development Whites Run pool *Columbus* field	281 Mcf AF 1150 psi/48 hrs. development Trimm pool *Sanford* field	362 Mcf AF 1160 psi/48 hrs. development Trimm pool *Sanford* field	395 Mcf AF 840 psi/48 hrs. development Three Bridge pool Selkirk field

COUNTY PERMIT NUMBER	Warren 123-41067	Warren 123-41068	Warren 123-41112	Warren 123-41113	Warren 123-41114	Warren 123-41115	Warren 123-41116	Warren 123-41119	Warren 123-41150	Warren 123-41152
NAME OF WELL	Lee Oil & Gas #11-A	Tidioute Water #7	McGraw, Rena #1	Fisher & Young #1	Fisher & Young #2	Kinley #2	Lyons, W. #8	Pennzoil #C-8	McChesney, W. #B-1	McChesney, W. #A-1
OPERATOR	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Douglas Oil & Gas, Inc.	Douglas Oil & Gas, Inc.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.
TOWNSHIP	Eldred	Pittsfield	Eldred	Pittsfield	Pittsfield	Columbus	Spring Creek	Spring Creek	Spring Creek	Spring Creek
QUADRANGLE	Grand Valley	Pittsfield	Spring Creek	Pittsfield	Pittsfield	Columbus	Lottsville	Spring Creek	Spring Creek	Spring Creek
LATITUDE	5,660 ft. S 41°45'00"	12,380 ft. S 41°47'30"	14,150 ft. S 41°47'30"	970 ft. S 41°47'30"	13,670 ft. S 41°50'00"	2,800 ft. S 41°55'00"	10,410 ft. S 41°55'00"	1,050 ft. S 41°50'00"	7,800 ft. S 41°52'30"	90 ft. S 41°52'30"
LONGITUDE	1,820 ft. W 79°35'00"	1,690 ft. W 79°25'00"	9,050 ft. W 79°32'30"	5,680 ft. W 79°27'30"	5,610 ft. W 79°27'30"	7,225 ft. W 79°32'30"	10,560 ft. W 79°27'30"	7,050 ft. W 79°30'00"	6,050 ft. W 79°30'00"	4,490 ft. W 79°35'00"
DATE COMPLETED	12-27-90	1-23-91	6-23-91	3-21-91	7-9-91	1-28-91	1-29-91	3-26-91	3-14-91	3-20-91
ELEVATION	1575 GR	1636 GR	1535 GR	1685 GR	1726 GR	1390 GR	1670 GR	1618 GR	1725 GR	1820 GR
LOGS RECEIVED AND LOGGED INTERVALS	GR/CDL: 3548-5358	CDL: 3700-5530				CDL/DLL: 2800-4582 PCL: 2500-4523	CDL/DLL: 3200-5010 PCL: 2850-4980			
TULLY LIMESTONE	3586-	3760-	3502-	3602-	3619-	2828-		3360-	3380-	3328-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	3854-	4056-	3771-	3688-	3900-	3108-	3514-	3633-	3662-	3596-
ORISKANY SANDSTONE RIDGELEY SANDSTONE				3886-				3776-		
SILURIAN-DEVONIAN CARBONATES	3996-	4160-	3900-	4010-	4028-	3270-	3668-		3825-	3761-
SALINA GROUP LOCKPORT DOLOMITE	4056- 4714-	4224- 4902-	4178- 4554-	4343- 4672-	4357- 4747-	3342- 3922-	3774- 4344-	4116- 4364-	4162- 4416-	4129- 4353-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	4983- 5048-	5170- 5236-	4910- 5001-	5032- 5120-	5031- 5127-	4190- 4252-	4632- 4684-	4722- 4803-	4773- 4858-	4708- 4782-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5094- 5230- 5262-	5286- 5429- 5450-	5020- 5158- 5188-	5139- 5282- 5312-	5137- 5285- 5308-	4294- 4420- 4460-	4724- 4864- 4890-	4822- 4959- 4986-	4874- 5004- 5048-	4807- 4934- 4962-
QUEENSTON FORMATION	5275-	5459-	5197-	5322-	5318-	4472-	4906-	4999-	5062-	4973-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	5270	5385	5195	5319	5232	4464	4814	4996	5056	4967
TOTAL DEPTH	5383	5561	5321	5452	5422	4593	5020	5110	5158	5096
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	90 Mcf AF 1145 psi/48 hrs. development Three Bridge pool Selkirk field	IP not reported 1400 psi/48 hrs. development Pittsfield pool Davy Hill field	1226 Mcf AF 1250 psi/48 hrs. development Three Bridge pool Selkirk field	638 Mcf AF 1240 psi/48 hrs. development Trimm pool Sanford field	380 Mcf AF 1304 psi/8 hrs. development Trimm pool Sanford field	IP not reported 1280 psi/72 hrs. development Whites Run pool Columbus field	825 Mcf AF 1200 psi/72 hrs. development Whites Run pool Columbus field	615 Mcf AF 1240 psi/48 hrs. development Trimm pool Sanford field	300 Mcf AF 1190 psi/48 hrs. development Trimm pool Sanford field	400 Mcf AF 1140 psi/48 hrs. development Turn Hill pool Picadilli field

Table 24. *(Continued).*

COUNTY PERMIT NUMBER	Warren 123-41174	Warren 123-41183	Warren 123-41223	Warren 123-41224	Warren 123-41225	Warren 123-41228	Warren 123-41229	Warren 123-41230	Warren 123-41241	Warren 123-41248
NAME OF WELL	Pierson, Richard #1	Simitoski, G. #2	McChesney, W. #1	Goodwill Hill #2	Goodwill Hill #1	Knapp #1	Black Unit #2	Byles #5	N. Philadelphia #2	White, C. V. #1
OPERATOR	Cabot Oil & Gas Corp.	Douglas Oil & Gas, Inc.	Cabot Oil & Gas Corp.	Quaker State Corporation	Quaker State Corporation	Quaker State Corporation	Douglas Oil & Gas, Inc.	Quaker State Corporation	Quaker State Corporation	Quaker State Corporation
TOWNSHIP	Eldred	Freehold	Spring Creek	Southwest	Southwest	Southwest	Columbus	Southwest	Southwest	Southwest
QUADRANGLE	Spring Creek	Lottsville	Spring Creek	Grand Valley	Grand Valley	Grand Valley	Columbus	Grand Valley	Grand Valley	Grand Valley
LATITUDE	1,820 ft. S 41°47'30"	3,700 ft. S 41°55'00'	3,400 ft. S 41°52'30"	12,425 ft. S 41°42'30"	10,750 ft. S 41°42'30"	13,150 ft. S 41°42'30"	4,450 ft. S 41°55'00"	4,965 ft. S 41°42'30"	3,900 ft. S 41°42'30"	14,100 ft. S 41°42'30"
LONGITUDE	8,050 ft. W 79°30'00"	6,375 ft. W 79°27'30"	2,560 ft. W 79°30'00"	11,350 ft. W 79°30'00"	10,400 ft. W 79°30'00"	1,925 ft. W 79°32'30"	4,200 ft. W 79°32'30"	11,690 ft. W 79°32'30"	275 ft. W 79°30'00"	3,400 ft. W 79°32'30"
DATE COMPLETED	1-30-91	2-28-91	4-3-91	4-26-91	5-17-91	3-9-91	2-22-91	7-9-91	6-11-91	5-24-91
ELEVATION	1727 GR	1880 GR	1705 GR	1635 GR	1565 GR	1660 GR	1400 GR	1500 GR	1700 GR	1670 GR
LOGS RECEIVED AND LOGGED INTERVALS	CDL: 3600-5262	CDL/DLL: 3400-5196 PCL: 4800-5170					CDL/DLL: 2800-4608 PCL: 2600-4528			
TULLY LIMESTONE	3614-	3442-	3326-	3894-	3811-	3902-	2850-	3638-	3863-	3922-
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	3890-	3722-	3613-	4181-	4098-	4183-	3128-	3920-	4151-	4204-
ORISKANY SANDSTONE RIDGELEY SANDSTONE				4291-	4202-	4290-			4248-	4312-
SILURIAN-DEVONIAN CARBONATES	4028-	3876-	3772-	4320-	4230-	4313-	3290-	4054-	4274-	4342-
SALINA GROUP LOCKPORT DOLOMITE	4094- 4732-	3944- 4534-	4149- 4376-	4438- 5043-	4354- 4946-	4445- 5043-	3364- 3948-	4174- 4762-	4401- 4948-	4467- 5078-
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	5014- 5076-	4818- 4872-	4726- 4818-	5304- 5414-	5239- 5332-	5318- 5429-	4226- 4276-	5060- 5154-	5250- 5356-	5342- 5449-
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	5120- 5253- 5292-	4908- 5050- 5078-	4824- 4975- 5006-	5510- 5604- 5638-	5379- 5520- 5555-	5478- 5621- 5656-	4316- 4450- 4480-	5250- 5322- 5372-	5457- 5544- 5580-	5548- 5644- 5672-
QUEENSTON FORMATION	5302-	5096-	5020-	5651-	5570-	5668-		5390-	5592-	5690-
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina	Medina
DEEPEST PRODUCING DEPTH	5297	5088	5013	5645	5530	5635	4489	5380	5589	5683
TOTAL DEPTH	5396	5210	5121	5774	5686	5779	4626	5506	5723	5814
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULTS	216 Mcf AF 1120 psi/48 hrs. development Trimm pool Sanford field	2500 Mcf AF 1280 psi/72 hrs. development Whites Run pool Columbus field	638 Mcf AF 1060 psi/48 hrs. development Horn Siding pool Columbus field	IP not reported 1140 psi/48 hrs. development Campbell Creek pool Goodwill Hill- Grand Valley field	IP not reported 1300 psi/48 hrs. development Campbell Creek pool Goodwill Hill- Grand Valley field	IP not reported 1210 psi/48 hrs. development Campbell Creek pool Goodwill Hill- Grand Valley field	290 Mcf AF 1320 psi/72 hrs. development Whites Run pool Columbus field	IP not reported 1040 psi/48 hrs. development Campbell Creek pool Goodwill Hill- Grand Valley field	IP not reported 1190 psi/48 hrs. development Campbell Creek pool Goodwill Hill- Grand Valley field	IP not reported 1075 psi/48 hrs. development Campbell Creek pool Goodwill Hill- Grand Valley field

COUNTY PERMIT NUMBER	Warren 123-41249	Warren 123-41251	Warren 123-41261	Warren 123-41275	Warren 123-41291	Westmoreland 129-23265	Westmoreland 129-23315	Westmoreland 129-23330		
NAME OF WELL	McChesney, W. #B-2	Ziegler, Bruce #1-79	Riedel, Ransom #4	Schwab & Fisher #5	Lee Oil & Gas #15	Hogsett Gas Unit #1	PA Game Lands #42 #1	Jacobs Creek #1-4162		
OPERATOR	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Cabot Oil & Gas Corp.	Quaker State Corporation	Cabot Oil & Gas Corp.	Huntley & Huntley, Inc.	CNG Producing Company	CNG Producing Company		
TOWNSHIP	Spring Creek	Triumph	Spring Creek	Southwest	Eldred	South Huntingdon	St. Clair	South Huntingdon		
QUADRANGLE	Spring Creek	Tidioute	Columbus	Grand Valley	Grand Valley	Dawson	Rachelwood	Dawson		
LATITUDE	8,725 ft. S 41°52'30"	14,330 ft. S 41°42'30"	9,240 ft. S 41°55'00"	3,450 ft. S 41°40'00"	7,290 ft. S 41°45'00"	1,300 ft. S 40°07'30"	9,600 ft. S 40°22'30"	5,050 ft. S 40°07'30"		
LONGITUDE	2,570 ft. W 79°30'00"	6,010 ft. W 79°27'30"	310 ft. W 79°32'30"	8,575 ft. W 79°30'00"	150 ft. W 79°35'00"	2,050 ft. W 79°40'00"	4,400 ft. W 79°00'00"	2,150 ft. W 79°40'00"		
DATE COMPLETED	3-24-91	4-8-91	4-14-91	5-31-91	7-17-91	2-8-90	10-8-90	11-15-90		
ELEVATION	1680 GR	1615 GR	1397 GR	1415 GR	1462 GR	1460 GR	2498 GR	1442 GR		
LOGS RECEIVED AND LOGGED INTERVALS						CNL/LDT: 1482-8142				
TULLY LIMESTONE	3364-	3965-	2894-	3746-	3500-	7169-	6454-	7049-		
ONONDAGA LIMESTONE HUNTERSVILLE CHERT	3647-	4251-	3176-	4035-	3772-	7638- 7658-	7169- 7186-	7520- 7559-		
ORISKANY SANDSTONE RIDGELEY SANDSTONE		4346-		4140-		7814-	7288-	7705-		
SILURIAN-DEVONIAN CARBONATES	3806-	4366-	3336-	4166-	3902-	7928-	7374-	7750-		
SALINA GROUP LOCKPORT DOLOMITE	4143- 4407-	4680- 5068-	3700- 3937-	4303- 4903-	4245- 4550-					
ROCHESTER SHALE IRONDEQUOIT DOLOMITE	4769- 4845-	5430- 5534-	4276- 4365-	5164- 5278-	4906- 5001-					
GRIMSBY FORMATION CABOT HEAD SHALE WHIRLPOOL SANDSTONE	4862- 5007- 5035-	5558- 5687- 5728-	4380- 4504- 4550-	5326- 5474- 5504-	5014- 5146- 5190-					
QUEENSTON FORMATION	5049-	5740-	4561-	5514-	5200-					
PRODUCING FORMATION	Medina	Medina	Medina	Medina	Medina	Ridgeley	Huntersville Ridgeley	Huntersville		
DEEPEST PRODUCING DEPTH	5042	5736	4555	5482	5197	7888	7296	7701		
TOTAL DEPTH	5193	5850	4715	5650	5327	8150	7470	7874		
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Helderberg	Helderberg	Helderberg		
RESULTS	378 Mcf AF 1240 psi/48 hrs. development Horn Siding pool Columbus field	IP not reported 1180 psi/48 hrs. exploratory (DPW) McGraw Corners pool Triumph field	IP not reported 840 psi/48 hrs. development Whites Run pool Columbus field	IP not reported 1150 psi/48 hrs. development Seldom Seen pool Colorado field	4100 Mcf AF 1190 psi/48 hrs. development Three Bridge pool Selkirk field	2400 Mcf AF 3450 psi/72 hrs. exploratory (EXT) Creek Falls pool Mayfield field	2300 Mcf AF 1850 psi/120 hrs. exploratory (EXT) Baldwin pool Johnstown field	4300 Mcf AF 3500 psi/48 hrs. exploratory (DPW) Creek Falls pool Mayfield field		

Table 25. *Summarized list of reported shallow wells in 1991 that penetrated rocks of Late Devonian or younger age.*

County	*Quadrangle*	*Permit number*	*Operator*	*Name of well*	*Type of well*	*Total depth (feet)*	*Latitude (feet)*	*Longitude (feet)*
Allegheny	Murrysville	003-21242	Penneco Oil Co., Inc.	Westinghouse Elec. 2	Gas	4,527	13,120 S 40°27'30"	9,520 W 79°42'30"
do.	do.	003-21251	do.	Clements #2	Gas	4,520	1,790 S 40°30'00"	11,390 W 79°40'00"
do.	New Kensington East	003-21226	do.	Logans Ferry Sportsman's Club #1	Gas	4,230	5,800 S 40°32'30"	4,500 W 79°42'30"
do.	do.	003-21239	do.	Hankey, George #3	Gas	4,290	11,060 S 40°32'30"	810 W 79°42'30"
do.	do.	003-21249	do.	Panaro #1	Gas	4,016	3,510 S 40°32'30"	8,400 W 79°42'30"
do.	do.	003-21250	do.	Jordan #1	Gas	4,024	8,470 S 40°32'30"	8,260 W 79°42'30"
do.	do.	003-21254	do.	Stonis, Frank #1	Gas	4,110	2,100 S 40°32'30"	4,300 W 79°42'30"
Armstrong	Avonmore	005-24000	Angerman Assoc., Inc.	Keystone Scout #2	Gas	3,811	9,150 S 40°35'00"	1,550 W 79°27'30"
do.	do.	005-24201	do.	Herrell, Ross #1	Gas	3,471	11,350 S 40°35'00"	11,000 W 79°27'30"
do.	do.	005-24273	Richards Drilling Co.	Ross #2	Gas	3,615	5,500 S 40°35'00"	5,750 W 79°27'30"
do.	do.	005-24438	Kriebel Gas, Inc.	Newingham, Rex #001	Gas	3,611	8,325 S 40°37'30"	6,350 W 79°27'30"
do.	do.	005-24524	Victory Energy Co.	Schrecengost, E. #1	Gas	3,806	14,650 S 40°35'00"	4,275 W 79°27'30"
do.	do.	005-24527	Angerman Assoc., Inc.	Filippini, John #1	Gas	3,848	8,150 S 40°35'00"	1,675 W 79°27'30"
do.	do.	005-24634	do.	Kimmel, J. W. #1	Gas	3,478	8,000 S 40°37'30"	10,700 W 79°25'00"
do.	do.	005-24681	Victory Energy Co.	Prusack-Apollo #001	Gas	4,000	2,175 S 40°32'30"	10,200 W 79°27'30"
do.	Dayton	005-24518	do.	Snyder, H. James #2	Gas	3,400	5,725 S 41°00'00"	9,325 W 79°12'30"
do.	do.	005-24641	Michael P. Duggan Co.	Snyder, Dora #2	Gas	3,468	3,500 S 40°57'30"	7,825 W 79°12'30"
do.	Distant	005-24144	Snyder Brothers, Inc.	Kavouras #1-14	Gas	3,154	8,050 S 40°57'30"	11,350 W 79°17'30"
do.	do.	005-24154	do.	Houser #2-150	Gas	2,807	6,925 S 40°57'30"	150 W 79°20'00"
do.	do.	005-24155	do.	Houser #1-150	Gas	3,032	6,500 S 40°57'30"	10,500 W 79°17'30"
do.	do.	005-24173	Angerman Assoc., Inc.	Beals, R. #2	Gas	3,224	14,400 S 40°57'30"	1,450 W 79°17'30"
do.	do.	005-24268	Castle Exploration Co., Inc.	Kammerdiener, H. #5	Gas	3,639	13,110 S 40°57'30"	10,120 W 79°20'00"
do.	do.	005-24290	D. L. Resources, Inc.	Gruver Unit #1	Gas	3,100	5,350 S 40°57'30"	6,600 W 79°15'00"
do.	do.	005-24308	Castle Exploration Co., Inc.	Smith, R. #2	Gas	3,710	15,300 S 41°00'00"	9,930 W 79°15'00"
do.	do.	005-24309	do.	Smith, R. #3	Gas	3,105	13,200 S 41°00'00"	9,885 W 79°15'00"
do.	do.	005-24310	Victory Energy Co.	MacLeod/Norris #1	Gas	3,516	1,625 S 40°57'30"	2,570 W 79°17'30"
do.	do.	005-24313	Castle Exploration Co., Inc.	Yankel, Tony #1	Gas	3,316	775 S 40°57'30"	11,450 W 79°17'30"
do.	do.	005-24335	Snyder Brothers, Inc.	Livengood, D. #1-24	Gas	3,605	11,600 S 40°57'30"	7,800 W 79°20'00"
do.	do.	005-24349	Victory Energy Co.	Hattman, H. H. #1	Gas	4,019	4,375 S 40°55'00"	11,575 W 79°15'00"
do.	do.	005-24355	D. L. Resources, Inc.	Hoffman, Laura #1	Gas	3,256	2,610 S 40°57'30"	9,090 W 79°15'00"
do.	do.	005-24375	Snyder Brothers, Inc.	Wise, Jeffrey #1-160	Gas	3,166	8,800 S 40°57'30"	8,750 W 79°15'00"
do.	do.	005-24380	do.	Shaffer, Jacob #1-49	Gas	3,208	14,900 S 41°00'00"	11,450 W 79°17'30"
do.	do.	005-24401	D. L. Resources, Inc.	Ringgold Mines #1-1	Gas	3,160	4,020 S 40°57'30"	11,380 W 79°17'30"
do.	do.	005-24402	do.	Ringgold Mines #1-2	Gas	3,176	3,700 S 40°57'30"	10,420 W 79°17'30"
do.	do.	005-24404	do.	Ringgold Mines #1-4	Gas	3,000	3,810 S 40°57'30"	1,050 W 79°20'00"
do.	do.	005-24409	Castle Exploration Co., Inc.	Kuhns Heirs #1	Gas	3,450	1,980 S 40°55'00"	11,200 W 79°20'00"
do.	do.	005-24410	do.	Kuhns Heirs #2	Gas	3,608	2,050 S 40°55'00"	10,150 W 79°20'00"

do.	do.	005-24422	Snyder Brothers, Inc.	Houser, Oscar #2-86	Gas	3,421	13,050	S	40°57'30"	475	W	79°20'00"
do.	do.	005-24423	do.	Reesman, Ivan #1-92	Gas	3,476	11,825	S	40°57'30"	8,975	W	79°17'30"
do.	do.	005-24424	D. L. Resources, Inc.	Ringgold Mines #1	Gas	2,820	4,950	S	40°57'30"	450	W	79°20'00"
do.	do.	005-24430	do.	Schreckengost Unit 1	Gas	3,150	1,890	S	40°57'30"	8,920	W	79°17'30"
do.	do.	005-24452	Snyder Brothers, Inc.	Houser, Oscar #3	Gas	3,025	12,900	S	40°57'30"	1,925	W	79°20'00"
do.	do.	005-24477	Angerman Assoc., Inc.	Beals, Randall #3	Gas	3,167	14,300	S	40°57'30"	350	W	79°17'30"
do.	do.	005-24491	D. L. Resources, Inc.	Veronesi, Aldo #1	Gas	3,150	2,300	S	40°57'30"	1,190	W	79°20'00"
do.	do.	005-24496	Snyder Brothers, Inc.	Armclar Gas #1-102	Gas	2,906	12,200	S	40°57'30"	11,325	W	79°17'30"
do.	do.	005-24504	D. L. Resources, Inc.	Shumaker, Myrtle #1	Gas	3,200	420	S	40°57'30"	860	W	79°20'00"
do.	do.	005-24510	do.	Hoffman, Laura #2	Gas	3,200	3,600	S	40°57'30"	10,820	W	79°15'00"
do.	do.	005-24511	do.	Hoffman, Laura #3	Gas	3,225	2,850	S	40°57'30"	10,120	W	79°15'00"
do.	do.	005-24533	do.	Shumaker, Myrtle #2	Gas	3,432	1,350	S	40°57'30"	1,500	W	79°20'00"
do.	do.	005-24542	Castle Exploration Co., Inc.	Kuhns Heirs #3	Gas	3,450	2,940	S	40°55'00"	10,660	W	79°20'00"
do.	do.	005-24565	Castle Gas Co., Inc.	Shankle, Jack #3	Gas	3,530	710	S	41°00'00"	2,700	W	79°17'30"
do.	do.	005-24587	D. L. Resources, Inc.	Mills, James #2	Gas	3,451	14,280	S	41°00'00"	880	W	79°20'00"
do.	do.	005-24588	do.	Mills, James #3	Gas	3,451	14,300	S	41°00'00"	1,905	W	79°20'00"
do.	do.	005-24589	do.	Mills, James #4	Gas	3,427	13,280	S	41°00'00"	2,150	W	79°20'00"
do.	do.	005-24600	Victory Energy Co.	Anthony/Kyle #1	Gas	3,814	12,690	S	40°55'00"	8,250	W	79°20'00"
do.	do.	005-24603	D. L. Resources, Inc.	Hoffman, Laura #4	Gas	3,309	1,890	S	40°57'30"	9,700	W	79°15'00"
do.	do.	005-24614	Michael P. Duggan Co.	Halderman #2	Gas	3,404	13,825	S	40°55'00"	1,875	W	79°20'00"
do.	do.	005-24619	Phillips Production Co.	Rugh, Glenn #3	Gas	3,585	7,690	S	40°57'30"	4,800	W	79°15'00"
do.	do.	005-24673	D. L. Resources, Inc.	Hoffman, W. #1	Gas	3,335	1,060	S	40°57'30"	9,270	W	79°15'00"
do.	do.	005-24694	Fairman Drilling Co.	Scherf, Thomas W. #2	Gas	3,404	575	S	40°55'00"	4,025	W	79°17'30"
do.	Elderton	005-24186	U.S. Energy Exploration	Ramer, John #2	Gas	3,547	8,640	S	40°42'30"	4,260	W	79°17'30"
do.	do.	005-24252	do.	Ramer, John #3	Gas	3,665	7,490	S	40°42'30"	5,050	W	79°17'30"
do.	do.	005-24543	M. A. T. Oil and Gas Exploration	Heiser, David #1	Gas	3,621	1,900	S	40°45'00"	7,900	W	79°20'00"
do.	do.	005-24577	do.	Wofford #1	Gas	3,856	3,300	S	40°45'00"	10,775	W	79°20'00"
do.	do.	005-24585	do.	Kimmel, J. V. #1	Gas	3,663	750	S	40°42'30"	475	W	79°17'30"
do.	do.	005-24611	Snyder Brothers, Inc.	Graff, Catherine #1	Gas	3,700	7,500	S	40°45'00"	500	W	79°20'00"
do.	Freeport	005-24317	Mid-Penn Energy Corp.	Sypulski, Eugene #1	Gas	2,975	4,910	S	40°45'00"	8,220	W	79°37'30"
do.	do.	005-24318	do.	Sypulski, Eugene #2	Gas	2,950	6,040	S	40°45'00"	9,300	W	79°37'30"
do.	do.	005-24319	do.	Brown, John #1	Gas	3,000	7,470	S	40°45'00"	9,580	W	79°37'30"
do.	do.	005-24326	do.	Edwards, T. C. #1	Gas	3,050	3,500	S	40°45'00"	8,065	W	79°37'30"
do.	do.	005-24338	do.	Baker, Shirley #1	Gas	2,975	4,850	S	40°45'00"	9,340	W	79°37'30"
do.	Kittanning	005-24339	Snyder Brothers, Inc.	Ambrose, G. #2-112	Gas	3,452	4,500	S	40°52'30"	10,400	W	79°30'00"
do.	do.	005-24366	do.	Lemmon, E. #1-90	Gas	3,348	4,980	S	40°52'30"	5,620	W	79°30'00"
do.	do.	005-24590	Mid-Penn Energy Corp.	Hribik, L. and R. #1	Gas	3,700	13,750	S	40°47'30"	5,090	W	79°30'00"
do.	Leechburg	005-24249	A. J. Martha and Assoc., Inc.	Clark, Homer #2	Gas	3,360	11,580	S	40°40'00"	11,290	W	79°30'00"
do.	do.	005-24304	Star Energy, Inc.	Iseman, Marie #2	Gas	3,701	50	S	40°45'00"	2,200	W	79°32'30"
do.	do.	005-24321	Kriebel Gas, Inc.	Townsend #001	Gas	3,720	5,650	S	40°40'00"	1,775	W	79°30'00"
do.	do.	005-24344	M. A. T. Oil and Gas Exploration	Weigant #1	Gas	3,969	13,325	S	40°42'30"	6,125	W	79°30'00"
do.	do.	005-24350	A. J. Martha and Assoc., Inc.	Bosworth, Todd #1	Gas	3,230	1,610	S	40°40'00"	8,890	W	79°30'00"
do.	do.	005-24351	M. A. T. Oil and Gas Exploration	Wofford, Gerald #2	Gas	3,964	11,825	S	40°42'30"	5,325	W	79°32'30"

Table 25. *(Continued).*

County	*Quadrangle*	*Permit number*	*Operator*	*Name of well*	*Type of well*	*Total depth (feet)*	*Latitude (feet)*	*Longitude (feet)*
Armstrong	Leechburg	005-24361	Kriebel Gas, Inc.	Pierce, Edith #002	Gas	3,269	7,950 S 40°40'00"	11,275 W 79°30'00"
do.	do.	005-24363	M. A. T. Oil and Gas Exploration	Polka, Joseph #4	Gas	3,971	11,650 S 40°42'30"	8,950 W 79°30'00"
do.	do.	005-24365	A. J. Martha and Assoc., Inc.	Bosworth, Todd #2	Gas	3,106	2,700 S 40°40'00"	8,880 W 79°30'00"
do.	do.	005-24369	M. A. T. Oil and Gas Exploration	Polka, Joseph #3	Gas	3,946	11,050 S 40°42'30"	8,050 W 79°30'00"
do.	do.	005-24371	A. J. Martha and Assoc., Inc.	Wilds, Joseph #1	Gas	3,144	4,130 S 40°40'00"	2,860 W 79°32'30"
do.	do.	005-24377	M. A. T. Oil and Gas Exploration	Myers, Ralph #1	Gas	3,915	11,850 S 40°42'30"	9,650 W 79°32'30"
do.	do.	005-24382	do.	Hawk, George #1	Gas	3,826	7,750 S 40°42'30"	8,500 W 79°30'00"
do.	do.	005-24385	Kriebel Gas, Inc.	Byers #1	Gas	3,250	4,850 S 40°40'00"	7,650 W 79°30'00"
do.	do.	005-24386	M. A. T. Oil and Gas Exploration	Polka, Joseph #5	Gas	3,925	10,500 S 40°42'30"	8,900 W 79°30'00"
do.	do.	005-24387	A. J. Martha and Assoc., Inc.	Thompson, D. #1	Gas	3,010	3,550 S 40°40'00"	9,550 W 79°30'00"
do.	do.	005-24406	do.	Klingensmith Unit #1	Gas	2,906	11,360 S 40°40'00"	10,325 W 79°32'30"
do.	do.	005-24418	Kriebel Gas, Inc.	Byers, Samuel #001	Gas	3,140	4,800 S 40°40'00"	8,725 W 79°30'00"
do.	do.	005-24440	A. J. Martha and Assoc., Inc.	Waltenbaugh, D. #1	Gas	3,152	875 S 40°40'00"	7,775 W 79°30'00"
do.	do.	005-24461	Angerman Assoc., Inc.	Anderson Unit #1	Gas	3,763	3,600 S 40°40'00"	8,050 W 79°30'00"
do.	do.	005-24468	A. J. Martha and Assoc., Inc.	Kostelansky Unit #1	Gas	3,090	1,950 S 40°40'00"	7,290 W 79°30'00"
do.	do.	005-24471	Mid-Penn Energy Corp.	Renshaw, William #2	Gas	2,900	13,460 S 40°45'00"	8,780 W 79°35'00"
do.	do.	005-24479	Kriebel Gas, Inc.	Wareham, Thomas #001	Gas	3,333	13,000 S 40°42'30"	8,825 W 79°30'00"
do.	do.	005-24506	do.	Tira, Lester #001	Gas	3,497	10,700 S 40°42'30"	4,950 W 79°32'30"
do.	do.	005-24520	A. J. Martha and Assoc., Inc.	Clark Unit #1	Gas	3,033	14,400 S 40°42'30"	6,920 W 79°30'00"
do.	do.	005-24566	do.	Catchpole, R. #1	Gas	3,096	12,025 S 40°42'30"	1,840 W 79°30'00"
do.	do.	005-24580	do.	Catchpole/Skomo Unit #1	Gas	3,213	12,560 S 40°42'30"	2,695 W 79°30'00"
do.	do.	005-24631	Shawmut Development Co.	Hileman Heirs #2	Gas	3,007	810 S 40°45'00"	7,420 W 79°30'00"
do.	do.	005-24657	Angerman Assoc., Inc.	Metsger #1	Gas	3,955	3,950 S 40°40'00"	6,300 W 79°30'00"
do.	do.	005-24660	Shawmut Development Co.	Wray, Robert #1	Gas	2,918	2,465 S 40°45'00"	9,365 W 79°30'00"
do.	Mosgrove	005-24225	Angerman Assoc., Inc.	Schrecengost Unit #1	Gas	3,508	11,800 S 40°50'00"	7,050 W 79°25'00"
do.	do.	005-24228	do.	Rosenberger Unit #1	Gas	3,664	12,550 S 40°50'00"	10,100 W 79°25'00"
do.	do.	005-24233	Snyder Brothers, Inc.	White Estate #6-200	Gas	3,722	4,700 S 40°50'00"	1,125 W 79°27'30"
do.	do.	005-24234	do.	White Estate #4-200	Gas	3,664	3,850 S 40°50'00"	1,850 W 79°27'30"
do.	do.	005-24243	do.	White Estate #3-200	Gas	3,752	2,825 S 40°50'00"	0 W 79°27'30"
do.	do.	005-24253	do.	Slagle, Leroy #1-31	Gas	3,507	6,800 S 40°52'30"	7,500 W 79°25'00"
do.	do.	005-24270	Kriebel Gas, Inc.	Adams #005	Gas	3,690	9,500 S 40°52'30"	7,600 W 79°25'00"
do.	do.	005-24278	PC Exploration, Inc.	R and P Coal #9	Gas	3,707	7,200 S 40°47'30"	700 W 79°22'30"
do.	do.	005-24306	Snyder Brothers, Inc.	Schaeffer #1-100	Gas	3,743	8,725 S 40°52'30"	9,000 W 79°25'00"
do.	do.	005-24307	do.	Schaeffer #2-100	Gas	3,586	7,575 S 40°52'30"	8,975 W 79°25'00"

do.	do.	005-24316	Mid-Penn Energy Corp.	Palermo, Frank #4	Gas	2,650	12,060	S	40°52'30"	3,610	W	79°22'30"
do.	do.	005-24330	do.	Palermo, Frank #3	Gas	2,858	13,875	S	40°52'30"	3,050	W	79°22'30"
do.	do.	005-24331	do.	Palermo, Frank #5	Gas	2,850	12,800	S	40°52'30"	2,935	W	79°22'30"
do.	do.	005-24340	Snyder Brothers, Inc.	Edwards, R. #2-113	Gas	3,662	9,075	S	40°47'30"	8,875	W	79°27'30"
do.	do.	005-24342	do.	Smith Estate #1-192	Gas	3,760	10,000	S	40°52'30"	6,700	W	79°25'00"
do.	do.	005-24345	Mid-Penn Energy Corp.	Perry and Hornberger 1	Gas	2,750	8,670	S	40°52'30"	1,095	W	79°22'30"
do.	do.	005-24354	Kriebel Gas, Inc.	Bowser, Goldie #001	Gas	3,553	12,525	S	40°50'00"	8,800	W	79°25'00"
do.	do.	005-24364	Snyder Brothers, Inc.	Pifer, Sarah #2	Gas	2,380	14,625	S	40°52'30"	11,475	W	79°25'00"
do.	do.	005-24372	do.	Smith Estate #2-192	Gas	3,541	9,025	S	40°52'30"	6,450	W	79°25'00"
do.	do.	005-24392	Mid-Penn Energy Corp.	Gaddis, Wilbur #1	Gas	3,120	11,070	S	40°50'00"	7,395	W	79°22'30"
do.	do.	005-24405	Turm Oil, Inc.	Rhine, John #2-T	Gas	2,562	3,050	S	40°50'00"	5,425	W	79°22'30"
do.	do.	005-24412	Mid-Penn Energy Corp.	Perry and Hornberger 5	Gas	2,430	7,040	S	40°52'30"	900	W	79°22'30"
do.	do.	005-24419	Snyder Brothers, Inc.	Pifer, Sarah #1	Gas	1,786	13,925	S	40°52'30"	10,275	W	79°25'00"
do.	do.	005-24427	Kriebel Gas, Inc.	Martin, J. #001	Gas	3,491	7,200	S	40°52'30"	5,240	W	79°25'00"
do.	do.	005-24428	do.	Martin, J. #002	Gas	3,464	6,760	S	40°52'30"	3,750	W	79°25'00"
do.	do.	005-24435	Snyder Brothers, Inc.	Smith, Ernest #1-112	Gas	3,507	1,950	S	40°47'30"	5,825	W	79°22'30"
do.	do.	005-24442	M. A. T. Oil and Gas Exploration	Stull, Kenneth #1	Gas	3,615	12,550	S	40°47'30"	7,750	W	79°25'00"
do.	do.	005-24443	do.	Stull, Kenneth #2	Gas	3,652	12,050	S	40°47'30"	8,850	W	79°25'00"
do.	do.	005-24445	do.	Peck, Vernon #1	Gas	3,811	11,925	S	40°47'30"	1,200	W	79°25'00"
do.	do.	005-24450	Mid-Penn Energy Corp.	Palermo-McKinley #1	Gas	2,600	12,100	S	40°52'30"	2,170	W	79°22'30"
do.	do.	005-24459	Angerman Assoc., Inc.	Snyder Unit #1	Gas	3,380	12,750	S	40°50'00"	7,750	W	79°25'00"
do.	do.	005-24462	M. A. T. Oil and Gas Exploration	Heilman, Fred #1	Gas	3,815	13,425	S	40°47'30"	1,500	W	79°27'30"
do.	do.	005-24467	Angerman Assoc., Inc.	Cunningham Unit #1	Gas	3,332	11,675	S	40°50'00"	8,750	W	79°25'00"
do.	do.	005-24480	M. A. T. Oil and Gas Exploration	Ferraro, Joseph #1	Gas	3,705	5,175	S	40°47'30"	1,825	W	79°27'30"
do.	do.	005-24482	Kriebel Gas, Inc.	Smeltzer #001	Gas	3,720	14,200	S	40°50'00"	1,800	W	79°27'30"
do.	do.	005-24488	Mid-Penn Energy Corp.	Calhoun, Donald #1	Gas	2,430	10,550	S	40°52'30"	2,070	W	79°22'30"
do.	do.	005-24497	do.	McIlwain, Edgar #5	Gas	2,775	2,350	S	40°50'00"	1,800	W	79°25'00"
do.	do.	005-24501	M. A. T. Oil and Gas Exploration	Graham, Lynwood #1	Gas	3,621	8,950	S	40°47'30"	4,050	W	79°25'00"
do.	do.	005-24508	Mid-Penn Energy Corp.	Schrecengost, O. #2	Gas	3,453	11,500	S	40°50'00"	11,670	W	79°25'00"
do.	do.	005-24512	M. A. T. Oil and Gas Exploration	Rupp, James #2	Gas	3,745	3,575	S	40°47'30"	8,475	W	79°22'30"
do.	do.	005-24513	Kriebel Gas, Inc.	Brown, I. #001	Gas	3,708	13,650	S	40°50'00"	9,780	W	79°25'00"
do.	do.	005-24515	Mid-Penn Energy Corp.	Lasher, J. and E. #1	Gas	3,650	11,200	S	40°50'00"	3,610	W	79°25'00"
do.	do.	005-24517	Kriebel Gas, Inc.	Smeltzer #002	Gas	3,627	75	S	40°47'30"	2,840	W	79°27'30"
do.	do.	005-24519	Mid-Penn Energy Corp.	Heasley, Larry #2	Gas	3,655	5,800	S	40°50'00"	4,450	W	79°25'00"
do.	do.	005-24523	do.	Eckman-Heasley #1	Gas	2,460	6,870	S	40°50'00"	5,490	W	79°25'00"
do.	do.	005-24532	do.	Rearic, Dallas #1	Gas	2,530	9,875	S	40°52'30"	1,160	W	79°22'30"
do.	do.	005-24537	Kriebel Gas, Inc.	Martin, J. #003	Gas	3,530	5,725	S	40°52'30"	3,310	W	79°25'00"
do.	do.	005-24540	do.	Smeltzer #001A	Gas	3,688	13,830	S	40°50'00"	2,790	W	79°27'30"
do.	do.	005-24544	Mid-Penn Energy Corp.	Palermo-McKinley #3	Gas	2,750	13,625	S	40°52'30"	1,950	W	79°22'30"
do.	do.	005-24564	M. A. T. Oil and Gas Exploration	Blose, W. S. #6	Gas	3,568	14,125	S	40°47'30"	11,000	W	79°22'30"

Table 25. *(Continued).*

County	*Quadrangle*	*Permit number*	*Operator*	*Name of well*	*Type of well*	*Total depth (feet)*	*Latitude (feet)*	*Longitude (feet)*
Armstrong	Mosgrove	005-24575	Kriebel Gas, Inc.	George, Roger #1	Gas	3,688	14,400 S 40°50'00"	10 W 79°27'30"
do.	do.	005-24582	Mid-Penn Energy Corp.	McKinley, D. and B. #1	Gas	2,750	6,700 S 40°50'00"	7,800 W 79°22'30"
do.	do.	005-24584	do.	Richman, Raymond #1	Gas	2,850	8,150 S 40°50'00"	7,860 W 79°22'30"
do.	do.	005-24591	do.	Davis, James #1	Gas	2,750	14,650 S 40°52'30"	11,810 W 79°22'30"
do.	do.	005-24595	Snyder Brothers, Inc.	Megnin, V. #2	Gas	3,565	1,850 S 40°47'30"	4,075 W 79°27'30"
do.	do.	005-24596	do.	Megnin, V. #3-99	Gas	3,701	1,000 S 40°47'30"	3,450 W 79°27'30"
do.	do.	005-24602	do.	Snyder Armclar Gas Co. #1	Gas	3,481	7,775 S 40°52'30"	7,250 W 79°25'00"
do.	do.	005-24606	Shawmut Development Co.	Manor Develop. #3	Gas	2,921	7,450 S 40°47'30"	8,690 W 79°27'30"
do.	do.	005-24692	D. L. Resources, Inc.	Leinweber-Reed #1	Gas	3,644	12,325 S 40°52'30"	1,575 W 79°27'30"
do.	do.	005-24698	Angerman Assoc., Inc.	Bosco, Richard #1	Gas	3,626	0 S 40°47'30"	4,900 W 79°27'30"
do.	Plumville	005-24362	J. C. Enterprises	Wall, Harvey #2	Gas	3,658	9,025 S 40°52'30"	3,675 W 79°12'30"
do.	do.	005-24464	Angerman Assoc., Inc.	Sloan, L. S. #2	Gas	3,381	11,950 S 40°50'00"	6,150 W 79°12'30"
do.	do.	005-24613	Phillips Production Co.	Heilman, Madalyn #3	Gas	3,802	1,600 S 40°50'00"	8,200 W 79°12'30"
do.	do.	005-24653	Angerman Assoc., Inc.	Thompson, W. R. #3	Gas	3,686	8,150 S 40°50'00"	7,800 W 79°12'30"
do.	Rural Valley	005-23990	B and B Oil and Gas Production Co.	Grabowski, #1	Gas	3,626	7,625 S 40°47'30"	10,450 W 79°15'00"
do.	do.	005-24062	Snyder Brothers, Inc.	Lum, Frank W. #2	Dry	3,575	14,300 S 40°52'30"	7,500 W 79°17'30"
do.	do.	005-24280	PC Exploration, Inc.	R and P Coal #8	Gas	3,774	5,500 S 40°47'30"	9,375 W 79°20'00"
do.	do.	005-24329	Pemco Gas, Inc.	Bittinger #1	Gas	3,726	4,600 S 40°50'00"	2,940 W 79°20'00"
do.	do.	005-24347	Mid-Penn Energy Corp.	Perry and Hornberger 3	Gas	2,750	7,100 S 40°52'30"	10,725 W 79°20'00"
do.	do.	005-24348	do.	Perry and Hornberger 4	Gas	2,950	8,650 S 40°52'30"	10,825 W 79°20'00"
do.	do.	005-24400	PC Exploration, Inc.	Smith, Ernest #2	Gas	3,874	2,990 S 40°50'00"	5,560 W 79°17'30"
do.	do.	005-24415	Phillips Production Co.	Mattilio, Fred #4	Gas	3,720	7,500 S 40°47'30"	1,400 W 79°15'00"
do.	do.	005-24416	do.	Mattilio, Fred #3	Gas	3,781	6,200 S 40°47'30"	2,400 W 79°15'00"
do.	do.	005-24498	M. A. T. Oil and Gas Exploration	Lorenzetti, R. #1	Gas	3,563	12,875 S 40°52'30"	12,375 W 79°17'30"
do.	do.	005-24539	do.	Lorenzetti, R. #2	Gas	3,562	13,600 S 40°52'30"	11,650 W 79°17'30"
do.	Summerville	005-24336	D. L. Resources, Inc.	Minich, John #1	Gas	2,730	9,100 S 41°02'30"	1,380 W 79°12'30"
do.	Templeton	005-24163	Snyder Brothers, Inc.	Houser, Robert #1-51	Gas	2,717	3,550 S 40°55'00"	1,300 W 79°22'30"
do.	do.	005-24203	do.	Mateer, S. C. #1-25	Gas	3,645	10,550 S 40°55'00"	9,375 W 79°22'30"
do.	do.	005-24250	Castle Exploration Co., Inc.	Smith, R. and S.	Gas	3,511	3,870 S 40°57'30"	8,706 W 79°22'30"
do.	do.	005-24276	do.	Houser, Robert #4	Gas	3,702	5,522 S 40°55'00"	2,005 W 79°22'30"
do.	do.	005-24277	do.	Houser, Robert #5	Gas	3,647	4,310 S 40°55'00"	3,410 W 79°22'30"
do.	do.	005-24282	do.	Houser, Robert #6	Gas	3,706	5,325 S 40°55'00"	3,050 W 79°22'30"
do.	do.	005-24291	Kriebel Gas, Inc.	Schultz #001	Gas	3,412	14,850 S 40°55'00"	11,400 W 79°22'30"
do.	do.	005-24292	do.	Owen #001	Gas	3,690	6,650 S 40°55'00"	5,220 W 79°22'30"
do.	do.	005-24299	do.	Martin #004	Gas	3,719	5,120 S 40°55'00"	7,600 W 79°22'30"

do.	do.	005-24303	Castle Exploration Co., Inc.	Smith, R. #2	Gas	3,101	4,210	S	40°57'30"	7,510	W	79°22'30"
do.	do.	005-24305	Kriebel Gas, Inc.	Mitchell #001	Gas	3,780	3,380	S	40°55'00"	775	W	79°25'00"
do.	do.	005-24312	Snyder Brothers, Inc.	Ringgold Mines #2-90	Gas	3,689	7,050	S	40°55'00"	4,125	W	79°22'30"
do.	do.	005-24315	Kriebel Gas, Inc.	Heister #002	Gas	3,655	8,340	S	40°55'00"	11,180	W	79°22'30"
do.	do.	005-24322	Snyder Brothers, Inc.	Ringgold Mines #3-90	Gas	3,697	7,625	S	40°55'00"	2,900	W	79°22'30"
do.	do.	005-24341	Kriebel Gas, Inc.	Flickinger #003	Gas	3,499	13,725	S	40°55'00"	11,425	W	79°22'30"
do.	do.	005-24358	do.	Johns, Richard #001	Gas	3,687	6,475	S	40°55'00"	10,500	W	79°22'30"
do.	do.	005-24368	do.	Mateer #003A	Gas	3,681	11,490	S	40°55'00"	8,640	W	79°22'30"
do.	do.	005-24373	do.	Flickinger #001	Gas	3,529	11,120	S	40°55'00"	10,480	W	79°22'30"
do.	do.	005-24379	Snyder Brothers, Inc.	Shoffner, M. #2-70	Gas	3,586	525	S	40°55'00"	1,675	W	79°22'30"
do.	do.	005-24420	do.	Shawmut Dev. #4-119	Gas	3,662	9,550	S	40°55'00"	9,550	W	79°22'30"
do.	do.	005-24421	do.	Shawmut Dev. #3-119	Gas	3,641	8,475	S	40°55'00"	9,400	W	79°22'30"
do.	do.	005-24425	do.	Shawmut Dev. #1-119	Gas	3,697	7,800	S	40°55'00"	8,500	W	79°22'30"
do.	do.	005-24499	do.	Rupp, Charles #1-46	Gas	3,753	5,975	S	40°55'00"	1,175	W	79°22'30"
do.	do.	005-24500	do.	Rupp, Charles #2-46	Gas	3,729	4,825	S	40°55'00"	1,300	W	79°22'30"
do.	do.	005-24557	do.	Slagle-Kube-Reedy #1	Gas	3,508	6,800	S	40°55'00"	7,650	W	79°22'30"
do.	Vandergrift	005-24069	Richards Drilling Co.	Kramer #1	Gas	1,823	1,150	S	40°35'00"	1,100	W	79°30'00"
do.	do.	005-24332	Kriebel Gas, Inc.	Leechburg Mining Co. #001	Gas	3,519	13,350	S	40°35'00"	2,250	W	79°30'00"
do.	do.	005-24334	do.	Leechburg Mining Co. #002	Gas	3,645	13,000	S	40°35'00"	3,375	W	79°30'00"
do.	do.	005-24393	do.	Rock Furnace #003	Gas	3,645	11,050	S	40°35'00"	8,450	W	79°30'00"
do.	do.	005-24457	do.	Papaila, John #001	Gas	3,637	9,050	S	40°35'00"	10,275	W	79°30'00"
do.	do.	005-24551	M. A. T. Oil and Gas Exploration	Orr, W. E. #4	Gas	3,872	6,975	S	40°37'30"	2,700	W	79°30'00"
do.	do.	005-24552	do.	Orr, W. E. #3	Gas	3,815	6,100	S	40°37'30"	3,180	W	79°30'00"
do.	do.	005-24553	do.	Cravener, C. G. #2	Gas	3,806	4,250	S	40°37'30"	5,250	W	79°30'00"
do.	do.	005-24563	do.	Cravener, C. G. #1	Gas	3,812	3,675	S	40°37'30"	4,300	W	79°30'00"
do.	do.	005-24576	do.	Orr, W. E. #2	Gas	3,876	5,125	S	40°37'30"	2,475	W	79°30'00"
do.	do.	005-24578	do.	Johnson, J. M. #2	Gas	3,871	3,550	S	40°37'30"	1,080	W	79°30'00"
do.	do.	005-24579	do.	Orr, W. E. #1	Gas	3,871	4,980	S	40°37'30"	3,500	W	79°30'00"
do.	Whitesburg	005-24463	do.	Gillespie #1	Gas	3,590	2,850	S	40°42'30"	5,700	W	79°22'30"
do.	do.	005-24475	do.	Gillespie #2	Gas	3,754	2,150	S	40°42'30"	3,850	W	79°22'30"
do.	do.	005-24535	do.	Blaney Heirs #1	Gas	3,667	1,050	S	40°45'00"	10,500	W	79°22'30"
do.	do.	005-24536	do.	Blaney Heirs #2	Gas	3,750	550	S	40°45'00"	9,400	W	79°22'30"
do.	do.	005-24547	do.	Wright, Arthur #1	Gas	3,812	5,500	S	40'45'00"	1,050	W	79°25'00"
do.	do.	005-24548	do.	Wright, Arthur #2	Gas	3,808	5,100	S	40°45'00"	11,450	W	79°22'30"
do.	do.	005-24549	do.	McElwain, C. #1	Gas	3,778	2,150	S	40°45'00"	3,200	W	79°22'30"
do.	do.	005-24550	do.	Wofford, D. #2	Gas	3,813	3,200	S	40°45'00"	975	W	79°22'30"
do.	do.	005-24647	Angerman Assoc., Inc.	Blose, E. #2	Gas	3,576	8,750	S	40°45'00"	4,750	W	79°22'30"
Bradford	Leroy	015-20013	Goodwin Industries, Inc.	Jones, Lloyd #1	Dry	1,250	1,925	S	41°42'30"	10,550	W	76°40'00"
Butler	Hilliards	019-20881	Oak Con Enterprises, Inc.	Henry, W. #1	Dry	1,420	5,800	S	41°02'30"	3,300	W	79°50'00"
do.	do.	019-20902	Shakley, Abner C.	Brewer, Harper #1	Oil	1,500	2,600	S	41°02'30"	3,000	W	79°45'00"
do.	do.	019-21326	King Brothers Oil Co.	Krammer, James #9	Dry	1,415	9,950	S	41°05'00"	11,200	W	79°47'30"
Cambria	Barnesboro	021-20794	Victory Energy Co.	Trinkley, Raymond #3	Gas	3,456	14,275	S	40°42'30"	2,700	W	78°47'30"

Table 25. *(Continued).*

County	*Quadrangle*	*Permit number*	*Operator*	*Name of well*	*Type of well*	*Total depth (feet)*	*Latitude (feet)*	*Longitude (feet)*
Cambria	Carrolltown	021-20819	Phillips Production Co.	Farabaugh, A. #1	Gas	6,299	3,600 S 40°32'30"	1,400 W 78°37'30"
do.	do.	021-20820	do.	Hite, Leroy #1	Gas	6,461	725 S 40°35'00"	1,000 W 78°37'30"
Cameron	Rich Valley	023-20078	Empire Exploration, Inc.	Howard, R. W. #3	Dry	1,425	9,700 S 41°35'00"	8,250 W 78°20'00"
do.	West Creek	023-20075	do.	Camp Uber #1-6797	Dry	1,751	13,380 S 41°30'00"	9,450 W 78°17'30"
do.	Wildwood Fire Tower	023-20079	do.	Howard, R. W. #4	Dry	1,430	9,550 S 41°35'00"	2,500 W 78°22'30"
Centre	Black Moshannon	027-20556	Eastern States Exploration	C. L. O. G. #2	Dry	6,087	6,705 S 41°00'00"	5,095 W 78°02'30"
do.	Howard	027-20427	do.	Tract 768 #3	Gas	4,377	11,600 S 41°07'30"	4,130 W 77°42'30"
do.	do.	027-20455	do.	Litke, W. #71	Gas	4,925	10,550 S 41°07'30"	10,550 W 77°42'30"
do.	Howard NW	027-20433	do.	Litke, W. #69	Gas	4,878	9,200 S 41°07'30"	10,750 W 77°42'30"
do.	Snow Shoe	027-20424	Meridian Exploration Corp.	C and K Coal #12-1189	Gas	4,913	6,495 S 41°05'00"	2,100 W 77°52'30"
do.	do.	027-20444	Eastern States Exploration	COP Tract 257 #16	Gas	4,953	6,120 S 41°07'30"	9,140 W 77°52'30"
do.	do.	027-20445	do.	COP Tract 257 #31	Gas	4,699	3,100 S 41°07'30"	5,700 W 77°52'30"
do.	do.	027-20448	do.	COP Tract 706 #7	Gas	4,742	6,050 S 41°07'30"	10,000 W 77°55'00"
do.	do.	027-20463	do.	COP Tract 256 #34	Gas	4,770	12,770 S 41°07'30"	750 W 77°52'30"
do.	do.	027-20464	do.	COP Tract 256 #37	Gas	5,020	13,900 S 41°07'30"	1,700 W 77°52'30"
do.	do.	027-20465	do.	COP Tract 256 #38	Gas	5,074	14,100 S 41°07'30"	350 W 77°52'30"
do.	do.	027-20466	do.	COP Tract 706 #3	Gas	4,750	2,500 S 41°07'30"	4,120 W 77°57'30"
do.	do.	027-20467	do.	COP Tract 706 #4	Gas	4,790	6,850 S 41°07'30"	10,580 W 77°57'30"
do.	do.	027-20468	do.	COP Tract 706 #5	Gas	4,710	1,100 S 41°07'30"	9,610 W 77°55'00"
do.	do.	027-20476	do.	COP Tract 256 #33	Gas	5,045	15,050 S 41°07'30"	1,075 W 77°52'30"
do.	Snow Shoe NE	027-20439	do.	COP Tract 254 #8	Gas	4,703	13,350 S 41°10'00"	6,300 W 77°50'00"
do.	do.	027-20440	do.	COP Tract 254 #9	Gas	4,949	8,700 S 41°10'00"	6,650 W 77°47'30"
do.	do.	027-20442	do.	COP Tract 254 #10	Gas	4,828	12,700 S 41°10'00"	9,926 W 77°50'00"
do.	do.	027-20484	do.	COP Tract 224 #6	Gas	4,840	700 S 41°10'00"	3,825 W 77°50'00"
do.	Snow Shoe NW	027-20482	do.	COP Tract 259 #5	Gas	4,939	14,400 S 41°10'00"	3,000 W 77°52'30"
do.	do.	027-20505	do.	COP Tract 259 #7	Gas	4,806	13,100 S 41°10'00"	3,650 W 77°52'30"
do.	Snow Shoe SE	027-20415	do.	Litke, W. #64	Gas	5,030	6,400 S 41°07'30"	675 W 77°47'30"
do.	do.	027-20417	do.	COP Tract 255 #42	Gas	4,852	2,600 S 41°07'30"	700 W 77°50'00"
do.	do.	027-20430	do.	Litke, W. #52	Gas	5,026	5,475 S 41°07'30"	10,400 W 77°45'00"
do.	do.	027-20432	do.	COP Tract 256 #36	Gas	4,785	4,400 S 41°05'00"	7,125 W 77°50'00"
do.	do.	027-20438	do.	Litke, W. #76	Gas	5,041	5,300 S 41°07'30"	1,850 W 77°47'30"
do.	do.	027-20441	do.	COP Tract 231 #46	Gas	4,734	4,950 S 41°05'00"	11,150 W 77°45'00"
do.	do.	027-20449	do.	COP Tract 255 #43	Gas	4,852	2,380 S 41°07'30"	4,380 W 77°50'00"
do.	do.	027-20451	do.	COP Tract 231 #47	Dry	4,516	14,500 S 41°05'00"	9,000 W 77°47'30"
do.	do.	027-20453	do.	COP Tract 256 #42	Gas	4,860	3,150 S 41°05'00"	7,690 W 77°50'00"
do.	do.	027-20454	do.	Litke, W. #70	Gas	4,908	8,850 S 41°07'30"	525 W 77°45'00"
do.	do.	027-20457	do.	COP Tract 231 #48	Gas	4,706	10,100 S 41°05'00"	3,100 W 77°47'30"
do.	do.	027-20459	do.	COP Tract 256 #40	Gas	4,851	13,600 S 41°07'30"	8,025 W 77°50'00"

do.	do.	027-20460	do.	COP Tract 255 #44	Gas	4,885	1,275	S	41°07'30"	2,950	W	77°50'00"
do.	do.	027-20478	do.	Texasgulf #22	Gas	4,426	4,200	S	41°02'30"	10,400	W	77°47'30"
do.	do.	027-20480	do.	Guenot-Heary #1	Gas	4,703	4,725	S	41°05'00"	4,000	W	77°45'00"
do.	do.	027-20494	do.	Texasgulf #35	Gas	4,475	6,150	S	41°02'30"	1,900	W	77°50'00"
do.	do.	027-20496	do.	Litke, W. #39	Gas	4,675	9,120	S	41°07'30"	3,900	W	77°47'30"
do.	do.	027-20502	Angerman Assoc., Inc.	Myers, J. L. #1	Dry	4,515	3,300	S	41°02'30"	8,050	W	77°45'00"
do.	do.	027-20512	Eastern States Exploration	COP Tract 255 #46	Gas	4,849	450	S	41°07'30"	1,875	W	77°50'00"
do.	do.	027-20518	do.	COP Tract 256 #56	Gas	4,938	14,150	S	41°07'30"	10,600	W	77°50'00"
Clarion	Clarion	031-20673	Deitz, Donald W.	Bough, E. #3	Gas	2,229	3,100	S	41°12'30"	11,300	W	79°22'30"
do.	Kossuth	031-22646	John H. Weaver Co.	Weaver #JHW-1	Gas	2,018	10,045	S	41°17'30"	11,320	W	79°35'00"
do.	Lucinda	031-22649	Maxwell Brothers	Maxwell Brothers #14	Gas	828	7,800	S	41°17'30"	5,600	W	79°17'30"
do.	New Bethlehem	031-22651	D. K. Gas, Inc.	Dougherty, V. #1	Gas	3,000	5,800	S	41°02'30"	8,150	W	79°15'00"
do.	Sligo	031-22626	Eric N. Cicciarelli Co.	Cicciarelli #1	Gas	1,500	950	S	41°02'30"	9,910	W	79°27'30"
do.	Summerville	031-22650	D. K. Gas, Inc.	Croyle, Mary #3	Gas	2,870	10,125	S	41°05'00"	3,650	W	79°12'30"
Clearfield	Barnesboro	033-21951	PC Exploration, Inc.	Russell, James #4	Gas	3,823	3,650	S	40°45'00"	5,600	W	78°45'00"
do.	Curwensville	033-23266	Shawmut Development Co.	Watts, E. M. #2	Gas	4,461	6,800	S	40°55'00"	6,710	W	78°35'00"
do.	do.	033-23304	do.	Spencer, Robert #1	Gas	4,431	6,910	S	40°55'00"	9,580	W	78°35'00"
do.	do.	033-23305	do.	Rodgers, William #1	Gas	3,436	5,320	S	40°55'00"	3,900	W	78°35'00"
do.	DuBois	033-23342	Fairman Drilling Co.	Lanzoni Unit #1	Gas	3,565	1,250	S	41°05'00"	4,775	W	78°45'00"
do.	do.	033-23343	do.	Eidson Unit #1	Gas	3,720	2,350	S	41°05'00"	7,575	W	78°45'00"
do.	do.	033-23345	do.	Old Town Beagle #3	Gas	3,530	3,225	S	41°05'00"	8,500	W	78°45'00"
do.	Irvona	033-23163	Devonian Resources	Reed Family #2	Gas	3,807	3,950	S	40°50'00"	5,900	W	78°35'00"
do.	do.	033-23344	Fairman Drilling Co.	Holencik, Juanita #4	Gas	3,593	1,900	S	40°52'30"	9,275	W	78°30'00"
do.	Luthersburg	033-23316	Keystone Energy Oil and Gas, Inc.	Long, Richard #1	Gas	3,247	15,820	S	41°05'00"	5,900	W	78°42'30"
do.	Mahaffey	033-23212	Victory Energy Co.	Patterson, J. #1	Gas	3,230	3,900	S	40°55'00"	575	W	78°40'00"
do.	do.	033-23234	Cabot Oil and Gas Corp.	Douty, Donald #1	Gas	4,516	9,780	S	40°55'00"	8,850	W	78°37'30"
do.	do.	033-23268	Angerman Assoc., Inc.	Irvin (M-589) #178	Gas	3,588	11,125	S	40°57'30"	8,575	W	78°42'30"
do.	do.	033-23270	J. C. Enterprises	Prisk Dairy Farms #1	Gas	4,599	9,050	S	40°55'00"	5,025	W	78°37'30"
do.	do.	033-23276	Angerman Assoc., Inc.	Irvin, H. M. #161	Gas	3,552	12,650	S	40°57'30"	7,050	W	78°42'30"
do.	do.	033-23280	do.	Cardom Estate #167	Gas	3,240	14,950	S	40°57'30"	7,350	W	78°42'30"
do.	do.	033-23293	Victory Energy Co.	Thomson, G. #7	Gas	4,813	12,900	S	40°55'00"	10,900	W	78°37'30"
do.	do.	033-23294	do.	Thomson, G. #9	Gas	4,754	13,625	S	40°55'00"	12,000	W	78°37'30"
do.	do.	033-23295	do.	Thomson, G. #10	Gas	4,906	14,200	S	40°55'00"	10,800	W	78°37'30"
do.	do.	033-23296	do.	Thomson, G. #6	Gas	4,561	11,775	S	40°55'00"	9,800	W	78°37'30"
do.	do.	033-23297	do.	Thomson, G. #5	Gas	4,749	12,750	S	40°55'00"	9,450	W	78°37'30"
do.	do.	033-23319	Angerman Assoc., Inc.	Cardon Estate #179	Gas	3,275	700	S	40°55'00"	6,650	W	78°42'30"
do.	do.	033-23325	do.	Graham Estate #172	Gas	3,274	5,650	S	40°57'30"	10,700	W	78°40'00"
do.	do.	033-23335	Victory Energy Co.	Thomson Family #23	Gas	4,852	10,800	S	40°55'00"	11,600	W	78°37'30"
do.	do.	033-23347	Angerman Assoc., Inc.	Graham Estate #185	Gas	3,386	6,300	S	40°57'30"	9,550	W	78°40'00"
do.	do.	033-23351	do.	Graham (M-674) #191	Gas	4,745	10,200	S	40°57'30"	4,000	W	78°40'00"
do.	do.	033-23352	do.	Mitchell (M-604) 196	Gas	3,382	7,950	S	40°57'30"	275	W	78°42'30"
do.	do.	033-23355	do.	Irvin (M-589) #194	Gas	3,569	8,850	S	40°57'30"	8,300	W	78°42'30"
do.	do.	033-23359	do.	Cardon Estate #199	Gas	3,502	15,100	S	40°57'30"	5,150	W	78°42'30"
do.	do.	033-23360	do.	Cardon Estate #202	Gas	3,508	14,550	S	40°57'30"	6,025	W	78°42'30"
do.	do.	033-23361	do.	Graham Estate #204	Gas	3,223	5,050	S	40°57'30"	9,550	W	78°40'00"

Table 25. *(Continued).*

County	*Quadrangle*	*Permit number*	*Operator*	*Name of well*	*Type of well*	*Total depth (feet)*	*Latitude (feet)*	*Longitude (feet)*
Clearfield	McGees Mills	033-23278	Angerman Assoc., Inc.	Clark, H. E. #146	Gas	3,318	5,800 S 40°57'30"	1,950 W 78°45'00"
do.	do.	033-23283	do.	Slimmer Fee #166	Gas	3,334	8,800 S 41°00'00"	11,100 W 78°45'00"
do.	do.	033-23285	do.	Yohe Fee M-599 #128	Gas	3,492	13,000 S 41°00'00"	3,050 W 78°47'30"
do.	do.	033-23287	J. C. Enterprises	Mott, Homer #1	Gas	3,268	6,375 S 40°55'00"	2,375 W 78°45'00"
do.	do.	033-23318	Angerman Assoc., Inc.	Hopkins, W. P. #177	Gas	3,409	7,950 S 41°00'00"	10,300 W 78°45'00"
do.	do.	033-23327	do.	Yohe #184	Gas	3,440	1,275 S 40°57'30"	1,800 W 78°47'30"
do.	Westover	033-22875	Fairman Drilling Co.	Lamkie, W. #1	Gas	2,810	1,140 S 40°52'30"	11,210 W 78°40'00"
Clinton	Howard NW	035-20520	J and J Enterprises, Inc.	Horne, Claude #6	Dry	4,710	4,920 S 41°10'00"	6,020 W 77°37'30"
do.	do.	035-20612	Eastern States Exploration	COP Tract 709 #4	Gas	4,575	2,175 S 41°15'00"	2,125 W 77°40'00"
do.	do.	035-20614	do.	Conklin Hollow #7	Gas	4,705	850 S 41°15'00"	275 W 77°40'00"
do.	do.	035-20622	do.	Texasgulf B #22	Gas	4,775	2,375 S 41°10'00"	11,250 W 77°42'30"
do.	do.	035-20648	do.	COP Tract 344 #14	Gas	4,645	5,750 S 41°15'00"	2,325 W 77°40'00"
do.	do.	035-20649	do.	COP Tract 344 #19	Gas	4,826	6,950 S 41°15'00"	1,950 W 77°40'00"
do.	do.	035-20659	do.	COP Tract 653 #15	Gas	4,802	3,475 S 41°12'30"	6,220 W 77°40'00"
do.	do.	035-20660	do.	COP Tract 344 #9	Gas	4,636	8,125 S 41°15'00"	2,675 W 77°40'00"
do.	do.	035-20664	do.	COP Tract 653 #3A	Gas	4,695	2,015 S 41°12'30"	1,110 W 77°40'00"
do.	do.	035-20667	do.	COP Tract 653 #16	Gas	4,750	1,090 S 41°12'30"	2,300 W 77°40'00"
do.	do.	035-20673	do.	COP Tract 709 #5	Gas	4,547	1,620 S 41°15'00"	3,510 W 77°40'00"
do.	do.	035-20674	do.	COP Tract 709 #8	Gas	4,552	3,000 S 41°15'00"	3,850 W 77°40'00"
do.	do.	035-20681	do.	COP Tract 653 #18	Gas	4,717	5,680 S 41°12'30"	2,200 W 77°40'00"
do.	Keating	035-20215	Jay-Bee Oil and Gas Co.	State Forest Tract 302	Gas	1,782	15,100 S 41°17'30"	350 W 77°55'00"
do.	Renovo East	035-20331	Eastern States Exploration	COP Tract 271 #1	Gas	4,170	3,000 S 41°17'30"	5,350 W 77°40'00"
do.	do.	035-20507	do.	COP Tract 346 #9	Dry	4,812	12,700 S 41°17'30"	3,500 W 77°37'30"
do.	do.	035-20568	Cabot Oil and Gas Corp.	Turner Unit #1	Gas	4,713	260 S 41°22'30"	1,210 W 77°40'00"
do.	do.	035-20572	do.	COP Tract 746 #3	Gas	4,708	3,720 S 41°22'30"	12,540 W 77°37'30"
do.	do.	035-20606	Eastern States Exploration	Conklin Hollow #9	Gas	4,580	14,800 S 41°17'30"	9,280 W 77°37'30"
do.	do.	035-20619	Cabot Oil and Gas Corp.	Kauffman, Robert #1	Gas	3,896	3,690 S 41°22'30"	3,900 W 77°40'00"
do.	do.	035-20631	do.	Shirey Unit #1	Gas	3,671	6,500 S 41°22'30"	3,430 W 77°40'00"
do.	do.	035-20635	Eastern States Exploration	Conklin Hollow #8	Gas	4,584	14,610 S 41°17'30"	325 W 77°40'00"
do.	do.	035-20636	Cabot Oil and Gas Corp.	COP Tract 746 #8	Gas	4,128	8,120 S 41°20'30"	1,900 W 77°40'00"
do.	do.	035-20637	do.	COP Tract 746 #5	Gas	4,101	6,310 S 41°22'30"	1,200 W 77°40'00"
do.	do.	035-20643	Eastern States Exploration	Conklin Hollow #4	Gas	4,502	13,350 S 41°17'30"	11,400 W 77°37'30"
do.	do.	035-20644	do.	Conklin Hollow #5	Gas	4,650	12,500 S 41°17'30"	10,350 W 77°37'30"
do.	do.	035-20655	Cabot Oil and Gas Corp.	Herritt, Waldo #2	Gas	4,050	480 S 41°22'30"	10,300 W 77°37'30"
do.	do.	035-20661	Eastern States Exploration	COP Tract 346 #18	Gas	4,605	13,200 S 41°17'30"	5,300 W 77°37'30"
do.	do.	035-20680	do.	COP Tract 271 #9	Gas	3,766	2,880 S 41°17'30"	8,360 W 77°40'00"
do.	Snow Shoe NE	035-20624	do.	Texasgulf B #24	Gas	4,775	1,800 S 41°10'00"	2,625 W 77°45'00"
do.	do.	035-20627	do.	Texasgulf B #25	Gas	4,612	4,500 S 41°10'00"	4,390 W 77°45'00"
do.	do.	035-20628	do.	Texasgulf B #26	Gas	4,690	890 S 41°10'00"	1,680 W 77°45'00"

do.	do.	035-20653	do.	Texasgulf B #30	Gas	4,588	3,950	S	41°10'00"	3,300	W	77°45'00"
do.	Snow Shoe SE	035-20620	do.	Texasgulf B #27	Dry	4,774	0	S	41°10'00"	575	W	77°45'00"
do.	Young Womans Creek	035-20601	Cabot Oil and Gas Corp.	Herritt, Waldo #1	Gas	4,728	12,090	S	41°25'00"	7,890	W	77°37'30"
do.	do.	035-20618	do.	Morgart Unit #1	Gas	3,773	13,090	S	41°25'00"	2,850	W	77°40'00"
do.	do.	035-20656	do.	COP Tract 746 #1A	Gas	4,100	13,690	S	41°25'00"	100	W	77°40'00"
Crawford	Edinboro South	039-21960	Hall, Boyd L.	Hall, Boyd #2	Gas	1,427	11,600	S	41°52'30"	6,050	W	80°07'30"
do.	Geneva	039-20553	Fairman Drilling Co.	Pardee, C.	Dry	200	9,400	S	41°37'30"	9,300	W	80°12'30"
do.	Linesville	039-20448	James Drilling Corp.	Starcheski, J. #1	Junked	200	1,100	S	41°45'00"	9,800	W	80°25'00"
do.	Meadville	039-21567	Herbert Orr	Orr #1	Dry	1,501	9,450	S	41°45'00"	6,300	W	80°07'30"
do.	Millers Station	039-22257	Wesley Morris	Morris, W. and K. #120	Gas	1,100	2,950	S	41°50'00"	9,950	W	79°52'30"
do.	Titusville North	039-21194	Peter Lukach	Lukach #1	Dry	814	2,900	S	41°45'00"	7,050	W	79°42'30"
Elk	Hallton	047-22852	Pennzoil Products Co.	Pecora #100	Oil	2,612	14,580	S	41°27'30"	7,200	W	78°52'30"
do.	do.	047-22862	do.	Pecora #102	Oil	2,750	1,850	S	41°25'00"	10,120	W	78°52'30"
do.	James City	047-22832	do.	Warrant 1778 #05	Service	2,330	450	S	41°32'30"	3,790	W	78°50'00"
do.	do.	047-22833	do.	Weaver #99	Oil	2,360	14,350	S	41°35'00"	4,410	W	78°50'00"
do.	do.	047-22839	do.	Gillis #91	Oil	2,550	5,400	S	41°32'30"	10,950	W	78°50'00"
do.	do.	047-22841	do.	Gillis #036	Service	2,550	5,750	S	41°32'30"	11,250	W	78°50'00"
do.	do.	047-22847	do.	Weaver #053	Service	2,345	14,230	S	41°35'00"	5,040	W	78°50'00"
do.	do.	047-22854	do.	Wt. 1778 #06	Service	2,330	960	S	41°32'30"	3,520	W	78°50'00"
do.	do.	047-22855	do.	Wt. 1778 #07	Service	2,325	1,500	S	41°32'30"	3,350	W	78°50'00"
do.	do.	047-22856	do.	Wt. 1778 #08	Service	2,325	1,900	S	41°32'30"	3,240	W	78°50'00"
do.	do.	047-22871	do.	Gillis #054	Service	2,435	2,800	S	41°32'30"	9,250	W	78°50'00"
do.	do.	047-22879	do.	Gillis #068	Service	2,400	4,590	S	41°32'30"	8,000	W	78°50'00"
do.	do.	047-22893	do.	Gillis #088	Service	2,400	3,730	S	41°32'30"	6,450	W	78°50'00"
do.	do.	047-22894	do.	Gillis #086	Service	2,375	2,700	S	41°32'30"	6,620	W	78°50'00"
do.	do.	047-22895	do.	Gillis #087	Service	2,370	3,230	S	41°32'30"	6,550	W	78°50'00"
do.	do.	047-22897	do.	Gillis #098	Service	2,460	3,570	S	41°32'30"	5,600	W	78°50'00"
do.	do.	047-22900	do.	Gillis #152	Oil	2,425	4,070	S	41°32'30"	6,730	W	78°50'00"
do.	do.	047-22901	do.	Gillis #151	Oil	2,350	3,550	S	41°32'30"	6,850	W	78°50'00"
do.	do.	047-22904	do.	Gillis #162	Oil	2,470	3,890	S	41°32'30"	5,900	W	78°50'00"
do.	do.	047-22905	do.	ANF Wt. 1776 #04	Service	2,490	2,880	S	41°32'30"	4,900	W	78°50'00"
do.	do.	047-22906	do.	Wt. 1776 #05	Service	2,500	3,400	S	41°32'30"	4,790	W	78°50'00"
do.	do.	047-22907	do.	Wt. 1776 #12	Oil	2,460	3,200	S	41°32'30"	5,190	W	78°50'00"
do.	do.	047-22910	do.	Gillis #150	Oil	2,355	3,000	S	41°32'30"	6,970	W	78°50'00"
do.	do.	047-22911	do.	Gillis #077	Service	2,350	3,930	S	41°32'30"	7,250	W	78°50'00"
do.	do.	047-22912	do.	Gillis #131	Oil	2,450	3,920	S	41°32'30"	8,620	W	78°50'00"
do.	do.	047-22917	do.	Gillis #079	Service	2,390	4,900	S	41°32'30"	7,050	W	78°50'00"
do.	do.	047-22919	do.	Gillis #134	Oil	2,435	5,460	S	41°32'30"	8,200	W	78°50'00"
do.	do.	047-22921	do.	Wt. 1776 #010	Service	2,480	2,680	S	41°32'30"	4,080	W	78°50'00"
do.	do.	047-22922	do.	ANF Wt. 1776 #011	Service	2,470	3,230	S	41°32'30"	3,950	W	78°50'00"
do.	do.	047-22924	do.	Gillis #078	Service	2,370	4,400	S	41°32'30"	7,150	W	78°50'00"
do.	do.	047-22927	do.	Gillis #076	Service	2,335	3,360	S	41°32'30"	7,280	W	78°50'00"
do.	do.	047-22932	do.	Wt. 1776 #06	Service	2,520	3,900	S	41°32'30"	4,700	W	78°50'00"
do.	do.	047-22933	do.	Wt. 1776 #02	Service	2,515	4,570	S	41°32'30"	5,390	W	78°50'00"
do.	do.	047-22938	do.	Gillis #136	Oil	2,415	6,450	S	41°32'30"	8,000	W	78°50'00"

Table 25. *(Continued).*

County	*Quadrangle*	*Permit number*	*Operator*	*Name of well*	*Type of well*	*Total depth (feet)*	*Latitude (feet)*	*Longitude (feet)*
Elk	James City	047-22939	Pennzoil Products Co.	Gillis #137	Oil	2,435	6,980 S 41°32'30"	7,900 W 78°50'00"
do.	do.	047-22940	do.	Gillis #127	Oil	2,518	7,150 S 41°32'30"	8,750 W 78°50'00"
do.	do.	047-22942	do.	Gillis #070	Service	2,385	5,600 S 41°32'30"	7,800 W 78°50'00"
do.	do.	047-22943	do.	Gillis #061	Service	2,450	6,300 S 41°32'30"	8,500 W 78°50'00"
do.	do.	047-22944	do.	Gillis #069	Service	2,425	5,090 S 41°32'30"	7,900 W 78°50'00"
do.	do.	047-22945	do.	Gillis #062	Service	2,475	6,800 S 41°32'30"	8,400 W 78°50'00"
do.	do.	047-22946	do.	Gillis #071	Service	2,385	6,100 S 41°32'30"	7,680 W 78°50'00"
do.	do.	047-22947	do.	Gillis #072	Service	2,380	6,600 S 41°32'30"	7,540 W 78°50'00"
do.	do.	047-22949	do.	Gillis #126	Oil	2,510	6,650 S 41°32'30"	8,870 W 78°50'00"
do.	do.	047-22950	do.	Gillis #164	Oil	2,515	4,910 S 41°32'30"	5,700 W 78°50'00"
do.	do.	047-22951	do.	Gillis #163	Oil	2,510	4,400 S 41°32'30"	5,800 W 78°50'00"
do.	do.	047-22952	do.	Gillis #154	Oil	2,450	5,100 S 41°32'30"	6,530 W 78°50'00"
do.	do.	047-22953	do.	Gillis #153	Oil	2,435	4,570 S 41°32'30"	6,620 W 78°50'00"
do.	do.	047-22954	do.	Gillis #147	Oil	2,400	6,800 S 41°32'30"	7,050 W 78°50'00"
do.	do.	047-22955	do.	Gillis #144	Oil	2,370	5,270 S 41°32'30"	7,400 W 78°50'00"
do.	do.	047-22959	do.	Gillis #146	Oil	2,370	6,270 S 41°32'30"	7,150 W 78°50'00"
do.	do.	047-22960	do.	Gillis #145	Oil	2,370	5,680 S 41°32'30"	7,280 W 78°50'00"
do.	do.	047-22980	do.	Wt. 1776 Well #22	Oil	2,410	2,800 S 41°32'30"	3,640 W 78°50'00"
do.	do.	047-22992	do.	Roy and Archer #01	Service	2,460	6,900 S 41°37'30"	9,230 W 78°50'00"
do.	do.	047-23015	Empire Exploration, Inc.	Clawson, Frank #2	Gas	2,222	6,875 S 41°37'30"	4,025 W 78°45'00"
do.	do.	047-23017	Pennzoil Products Co.	Kennedy #01	Service	2,500	1,630 S 41°37'30"	9,820 W 78°50'00"
do.	do.	047-23020	do.	Wt. 3775, Lot 10 #01	Service	2,450	1,100 S 41°37'30"	7,320 W 78°50'00"
do.	Kersey	047-22987	Empire Exploration, Inc.	Pontzer, Lloyd #1	Dry	2,980	480 S 41°22'30"	1,750 W 78°35'00"
do.	Russell City	047-22835	Pennzoil Products Co.	Gillis #108	Oil	2,550	6,100 S 41°32'30"	200 W 78°52'30"
do.	do.	047-22838	do.	Gillis #109	Oil	2,540	6,620 S 41°32'30"	100 W 78°52'30"
do.	do.	047-22993	do.	Palmer-Mitchell #52	Oil	2,480	5,810 S 41°37'30"	1,990 W 78°52'30"
do.	do.	047-22994	do.	Palmer, J. K. #10	Oil	2,400	8,720 S 41°37'30"	3,010 W 78°52'30"
do.	do.	047-22995	do.	Woodward #51	Oil	2,300	12,040 S 41°37'30"	1,030 W 78°52'30"
do.	do.	047-22996	do.	Wt. 2032 #012	Service	2,570	11,300 S 41°32'30"	2,060 W 78°55'00"
do.	do.	047-22997	do.	Wt. 2032 #013	Service	2,555	11,150 S 41°32'30"	1,230 W 78°55'00"
do.	do.	047-22999	do.	Wt. 2032 #11	Service	2,540	10,950 S 41°32'30"	2,960 W 78°55'00"
do.	do.	047-23006	do.	Wt. 2032 #66	Oil	2,580	11,390 S 41°32'30"	1,550 W 78°55'00"
do.	do.	047-23007	do.	Wt. 2032 #65	Oil	2,500	11,300 S 41°32'30"	3,200 W 78°55'00"
do.	do.	047-23009	do.	Wt. 2032 #016	Service	2,600	10,670 S 41°32'30"	10,130 W 78°52'30"
do.	do.	047-23018	do.	Ernest, William #72	Oil	2,525	5,330 S 41°35'00"	7,220 W 78°52'30"
do.	do.	047-23019	do.	Ernest, William #71	Oil	2,430	1,870 S 41°35'00"	4,500 W 78°52'30"
do.	Saint Marys	047-23013	Empire Exploration, Inc.	Straub Brewery #4	Dry	2,169	3,825 S 41°30'00"	7,250 W 78°30'00"
Erie	Erie South	049-22627	David C. Schmidt Co.	Schmidt #1	Gas	900	4,800 S 42°07'30"	5,400 W 80°02'30"
do.	do.	049-23708	Belden and Blake Corp.	Brown #1	Gas	1,000	2,800 S 42°05'00"	300 W 80°05'00"

do.	Harborcreek	049-22444	Allied Industries	Walker-Allied #1	Gas	1,000	4,800	S	42°10′00″	11,200	W	79°57′30″
do.	Swanville	049-22498	Donald W. Clark Co.	Clark #1	Gas	790	8,600	S	42°05′00″	6,100	W	80°07′30″
Fayette	Dawson	051-20522	Phillips Production Co.	Joseph, George #1	Gas	4,403	7,795	S	40°02′30″	3,525	W	79°40′00″
do.	do.	051-20525	Dorso Energy Co.	Clark #1	Gas	3,621	7,350	S	40°02′30″	1,550	W	79°40′00″
do.	do.	051-20526	do.	Joshowitz, I. #002	Gas	3,774	5,550	S	40°02′30″	1,000	W	79°40′00″
do.	do.	051-20531	Phillips Production Co.	Rosa, Silvio #1	Gas	4,100	12,450	S	40°05′30″	10,900	W	79°40′00″
do.	do.	051-20532	do.	Joseph, George #2	Gas	4,404	7,820	S	40°02′30″	2,250	W	79°40′00″
do.	do.	051-20533	do.	Joseph, George #4	Gas	4,283	7,000	S	40°02′30″	2,820	W	79°40′00″
do.	do.	051-20534	do.	Joseph, George #5	Gas	4,488	8,615	S	40°02′30″	2,950	W	79°40′00″
do.	do.	051-20556	do.	Harper, Darrell #1	Gas	4,168	4,150	S	40°02′30″	9,890	W	79°40′00″
do.	do.	051-20558	do.	Haas, Ronald #1	Gas	4,178	2,350	S	40°02′30″	4,850	W	79°40′00″
do.	do.	051-20564	do.	Rupp, David #1	Gas	4,232	10,680	S	40°02′30″	3,020	W	79°40′00″
do.	Fayette City	051-20380	Questa Petroleum	Elliott #2	Gas	3,822	8,660	S	40°05′00″	8,590	W	79°50′00″
Forest	Lynch	053-26393	Lomak Petroleum (OHIO), Inc.	Hettenbaugh #H-3	Oil-Gas	1,950	4,800	S	41°37′30″	9,800	W	79°05′00″
do.	do.	053-26394	do.	Hettenbaugh #H-4	Oil-Gas	1,916	4,800	S	41°37′30″	9,325	W	79°05′00″
do.	do.	053-26395	do.	Hettenbaugh #H-5	Oil-Gas	1,887	4,790	S	41°37′30″	8,850	W	79°05′00″
Greene	New Freeport	059-22293	CNG Producing Co.	Budavich #3	Gas	2,130	175	S	39°47′30″	8,525	W	80°25′00″
do.	do.	059-22294	do.	Grim, J. #4	Gas	1,330	2,780	S	39°47′30″	325	W	80°27′30″
do.	do.	059-22295	do.	Budavich #4	Gas	1,980	2,725	S	39°47′30″	7,825	W	80°25′00″
do.	do.	059-22331	do.	Budavich #2	Gas	1,348	1,230	S	39°47′30″	9,250	W	80°25′00″
do.	do.	059-22353	do.	Whipkey, R. D. #2	Gas	1,410	975	S	39°47′30″	11,300	W	80°25′00″
Indiana	Barnesboro	063-29937	Victory Energy Co.	Repine, I. #1	Gas	3,558	12,300	S	40°42′30″	7,950	W	78°50′00″
do.	do.	063-29988	do.	PA Mines (Lantzy) #4	Gas	3,467	9,425	S	40°42′30″	12,450	W	78°47′30″
do.	do.	063-30031	do.	McDannell, V. #2	Gas	3,676	11,275	S	40°42′30″	10,275	W	78°50′00″
do.	Blairsville	063-28028	PC Exploration, Inc.	McCreery, W. #2	Gas	3,729	6,950	S	40°30′00″	8,500	W	79°20′00″
do.	do.	063-28137	do.	Mack and Barbor #4	Gas	3,821	6,850	S	40°30′00″	6,700	W	79°20′00″
do.	do.	063-28145	do.	Kinnan, W. #3	Gas	3,919	4,050	S	40°30′00″	8,900	W	79°20′00″
do.	Bolivar	063-29969	Kriebel Gas, Inc.	R and P Coal #006	Gas	3,583	11,675	S	40°30′00″	6,125	W	79°10′00″
do.	do.	063-29982	do.	R and P Coal #005	Gas	3,680	11,475	S	40°30′00″	7,150	W	79°10′00″
do.	do.	063-30012	do.	Dechman #1	Gas	3,425	11,650	S	40°30′00″	2,900	W	79°10′00″
do.	do.	063-30079	do.	Kovalchick #001A	Gas	3,490	9,400	S	40°30′00″	5,025	W	79°10′00″
do.	do.	063-30183	Castle Gas Co., Inc.	Vargo, Irene #1	Gas	4,166	6,540	S	40°30′00″	4,900	W	79°12′30″
do.	do.	063-30192	Kriebel Gas, Inc.	Gromley, W. #001	Gas	3,640	9,400	S	40°30′00″	8,175	W	79°10′00″
do.	do.	063-30205	PC Exploration, Inc.	Lyda Estate #1	Gas	3,606	11,375	S	40°30′00″	1,600	W	79°10′00″
do.	Brush Valley	063-24882	Boyd L. Hall	Delta Drilling Co.#1	Gas	3,701	300	S	40°37′30″	7,000	W	79°05′00″
do.	do.	063-29998	East Resources, Inc.	North American Coal #10A	Gas	3,451	1,780	S	40°35′00″	850	W	79°05′00″
do.	do.	063-30139	do.	Campbell, James #9	Gas	3,270	11,250	S	40°37′30″	8,750	W	79°02′30″
do.	do.	063-30172	do.	North American Coal #13A	Gas	3,454	13,180	S	40°37′30″	800	W	79°05′00″
do.	do.	063-30174	do.	Campbell, James #11	Gas	3,393	8,150	S	40°37′30″	6,200	W	79°02′30″
do.	do.	063-30182	do.	Campbell, James #12	Gas	3,360	9,700	S	40°37′30″	7,350	W	79°02′30″
do.	do.	063-30187	do.	Campbell, James #13	Gas	3,455	10,300	S	40°37′30″	6,250	W	79°02′30″
do.	do.	063-30194	do.	Bricillo, Eugene #1	Gas	3,431	9,680	S	40°37′30″	4,800	W	79°02′30″

Table 25. *(Continued).*

County	*Quadrangle*	*Permit number*	*Operator*	*Name of well*	*Type of well*	*Total depth (feet)*	*Latitude (feet)*	*Longitude (feet)*
Indiana	Clymer	063-28072	PC Exploration, Inc.	Glasser, C. #1	Gas	3,360	3,800 S 40°45'00"	1,100 W 79°02'30"
do.	do.	063-29345	Kriebel Gas, Inc.	Lowman, H. #1	Gas	3,472	5,800 S 40°45'00"	8,840 W 79°00'00"
do.	do.	063-29898	The Jack Co.	Foundation of IUP #1	Dry	3,993	8,050 S 40°42'30"	2,000 W 79°05'00"
do.	do.	063-30004	Shawmut Development Co.	Parnell, N. #1	Gas	3,265	13,600 S 40°40'00"	4,000 W 79°00'00"
do.	do.	063-30127	Phillips Production Co.	Lightcap, Karl #2	Gas	3,584	1,400 S 40°45'00"	4,175 W 79°02'30"
do.	do.	063-30128	do.	Lightcap, Karl #3	Gas	3,637	375 S 40°45'00"	4,200 W 79°02'30"
do.	do.	063-30130	do.	Lightcap, Karl #5	Gas	3,621	1,075 S 40°45'00"	5,200 W 79°02'30"
do.	do.	063-30269	PC Exploration, Inc.	Griffith, J. #4	Gas	3,845	1,400 S 40°45'00"	8,790 W 79°05'00"
do.	Commodore	063-27820	CNG Producing Co.	Schatko, F. #1	Gas	3,746	4,900 S 40°42'30"	11,550 W 78°57'30"
do.	do.	063-29351	Castle Gas Co., Inc.	Schroth, W. #2	Gas	3,697	2,650 S 40°40'00"	6,540 W 78°52'30"
do.	do.	063-29352	do.	Schroth, W. #3	Gas	3,728	1,560 S 40°40'00"	5,800 W 78°52'30"
do.	do.	063-30246	Petrobank Operating Co.	Burns, W. N. #1R	Gas	3,450	1,450 S 40°45'00"	820 W 78°55'00"
do.	Dayton	063-27976	B and B Oil and Gas Production	Elkin, F. #2	Gas	218	8,700 S 40°55'00"	5,900 W 79°07'30"
do.	do.	063-28358	do.	Mill Run Contract #2	Gas	3,674	8,150 S 40°55'00"	400 W 79°12'30"
do.	do.	063-28375	do.	Mill Run Contract #1	Gas	3,654	8,200 S 40°55'00"	1,550 W 79°12'30"
do.	do.	063-30085	J. C. Enterprises	Reitz, David #1	Gas	3,400	3,425 S 40°55'00"	2,450 W 79°07'30"
do.	do.	063-30141	B and B Oil and Gas Production	Gahagan #1	Gas	3,639	4,610 S 40°55'00"	11,080 W 79°07'30"
do.	do.	063-30214	D. L. Resources, Inc.	Miller, John #1	Gas	3,575	7,200 S 40°55'00"	2,400 W 79°07'30"
do.	do.	063-30215	do.	Miller, John #2	Gas	3,743	8,110 S 40°55'00"	2,750 W 79°07'30"
do.	do.	063-30242	do.	Miller, John #3	Gas	3,578	7,500 S 40°55'00"	4,450 W 79°07'30"
do.	do.	063-30244	J. C. Enterprises	McClelland, R. #1	Gas	3,409	4,400 S 40°55'00"	3,750 W 79°07'30"
do.	Elderton	063-30072	Castle Gas Co., Inc.	Walker, Elizabeth #1	Gas	3,825	4,050 S 40°40'00"	3,790 W 79°15'00"
do.	do.	063-30209	U.S. Energy Exploration	Rinn, J. Cloid #2	Gas	4,100	4,800 S 40°42'30"	7,625 W 79°15'00"
do.	do.	063-30255	do.	Rinn, J. Cloid #4	Gas	3,990	5,950 S 40°42'30"	7,530 W 79°15'00"
do.	do.	063-30288	do.	Rinn, J. Cloid #3	Gas	3,964	3,900 S 40°42'30"	8,150 W 79°15'00"
do.	Ernest	063-29292	East Resources, Inc.	Myers #2	Junked	290	6,600 S 40°45'00"	5,600 W 79°12'30"
do.	do.	063-29680	do.	Myers, Norma #2	Gas	3,753	6,625 S 40°45'00"	5,575 W 79°12'30"
do.	do.	063-30125	Castle Gas Co., Inc.	Fleming, James #4	Gas	3,957	13,300 S 40°40'00"	1,150 W 79°12'30"
do.	Indiana	063-23643	Rod-Lo Drilling	Sand Surveys #1	Gas	2,164	200 S 40°35'00"	3,600 W 79°12'30"
do.	do.	063-30167	Castle Gas Co., Inc.	Rura, Samuel #1	Gas	3,749	13,910 S 40°32'30"	3,550 W 79°10'00"
do.	do.	063-30208	Boyd and Shriver, Inc.	Yoschak, John #1	Gas	3,810	13,500 S 40°32'30"	5,175 W 79°10'00"
do.	do.	063-30280	PC Exploration, Inc.	Gibson, Margaret #2	Gas	3,867	4,950 S 40°32'30"	9,190 W 79°12'30"
do.	do.	063-30281	do.	Gibson, Margaret #3	Gas	3,958	3,900 S 40°32'30"	9,350 W 79°12'30"
do.	do.	063-30294	do.	Daskivich, Joseph #3	Gas	3,918	1,890 S 40°32'30"	9,200 W 79°12'30"
do.	do.	063-30295	do.	Daskivich, Joseph #4	Gas	4,037	2,900 S 40°32'30"	8,900 W 79°12'30"
do.	do.	063-30296	do.	Daskivich, Joseph #2	Gas	3,966	1,850 S 40°32'30"	10,200 W 79°12'30"
do.	do.	063-30297	do.	Daskivich, Joseph #5	Gas	3,855	2,910 S 40°32'30"	10,000 W 79°12'30"

do.	Marion Center	063-20207	Boyd and Shriver, Inc.	Barletta #3	Gas	304	1,925	S	40°52'30"	5,750	W	79°00'00"
do.	do.	063-20210	do.	Barletta #4	Gas	3,417	1,000	S	40°52'30"	5,000	W	79°00'00"
do.	do.	063-28157	Kriebel Gas, Inc.	Arcadia Co. #1	Gas	3,673	500	S	40°50'00"	1,600	W	79°00'00"
do.	do.	063-30023	do.	Heirs, Laughlin #004	Gas	3,555	10,120	S	40°50'00"	5,920	W	79°00'00"
do.	do.	063-30069	Target Energy, Inc.	Williams Heirs #1	Gas	3,864	3,300	S	40°50'00"	9,150	W	79°02'30"
do.	do.	063-30091	PC Exploration, Inc.	Avey-Gromley #1	Gas	3,594	6,550	S	40°47'30"	1,600	W	79°02'30"
do.	do.	063-30126	M. A. T. Oil and Gas Exploration	Kohlhepp, Dale #5	Gas	3,795	1,275	S	40°50'00"	3,550	W	79°00'00"
do.	do.	063-30129	Phillips Production Co.	Lightcap, Karl #4	Gas	3,558	14,975	S	40°47'30"	5,175	W	79°02'30"
do.	do.	063-30133	do.	Weaver, Donald #2-4	Gas	3,684	5,275	S	40°50'00"	5,775	W	79°05'00"
do.	do.	063-30134	do.	Weaver, Donald #3-1	Gas	3,775	6,225	S	40°50'00"	4,950	W	79°05'00"
do.	do.	063-30135	do.	Weaver, Donald #1-1	Gas	3,714	4,325	S	40°50'00"	5,150	W	79°05'00"
do.	do.	063-30224	D. L. Resources, Inc.	Stephenson, Mark #1	Gas	3,741	13,300	S	40°52'30"	6,325	W	79°05'00"
do.	do.	063-30231	do.	Stephenson, Mark #4	Gas	3,514	13,460	S	40°52'30"	10,560	W	79°05'00"
do.	do.	063-30234	do.	Steele, Donald #1	Gas	3,765	3,850	S	40°50'00"	5,550	W	79°02'30"
do.	do.	063-30245	do.	Steele, Donald #2	Gas	3,771	5,910	S	40°50'00"	5,700	W	79°02'30"
do.	do.	063-30252	do.	Stephenson, M. #2	Gas	3,576	15,375	S	40°52'30"	9,650	W	79°05'00"
do.	do.	063-30264	PC Exploration, Inc.	Martin, G. et ux #3	Gas	3,689	700	S	40°52'30"	20	W	79°05'00"
do.	do.	063-30276	do.	Lightcap, Karl #7	Gas	3,596	7,575	S	40°47'30"	7,300	W	79°00'00"
do.	do.	063-30282	do.	McConaughey, C. #2	Gas	3,657	7,210	S	40°52'30"	400	W	79°05'00"
do.	do.	063-30283	do.	McConaughey, C. #6	Gas	3,869	3,965	S	40°52'30"	650	W	79°05'00"
do.	do.	063-30284	do.	McConaughey, C. #3	Gas	3,631	6,000	S	40°52'30"	420	W	79°05'00"
do.	do.	063-30285	do.	McConaughey, C. #5	Gas	3,648	5,000	S	40°52'30"	615	W	79°05'00"
do.	do.	063-30298	do.	Lightcap, Karl #8	Gas	3,599	8,550	S	40°47'30"	7,525	W	79°00'00"
do.	McIntyre	063-28193	do.	R and P Coal #6	Gas	3,803	6,250	S	40°35'00"	1,950	W	79°15'00"
do.	do.	063-29235	Castle Gas Co., Inc.	R and P Coal Tract 909 #1	Gas	3,929	8,710	S	40°37'30"	7,040	W	79°17'30"
do.	do.	063-29258	do.	R and P Coal Tract 680 #2	Gas	3,955	12,500	S	40°37'30"	890	W	79°17'30"
do.	do.	063-29312	do.	R and P Coal Tract 680 #1	Gas	3,952	12,890	S	40°37'30"	1,900	W	79°17'30"
do.	do.	063-30011	PC Exploration, Inc.	Peterman, J. #3	Gas	3,876	9,015	S	40°37'30"	4,180	W	79°15'00"
do.	do.	063-30022	do.	Gerber, W. #4	Gas	4,036	13,900	S	40°37'30"	9,210	W	79°15'00"
do.	do.	063-30029	do.	PC Exp. (251A) #6	Gas	3,910	950	S	40°35'00"	11,520	W	79°15'00"
do.	do.	063-30030	do.	PC Exp. (251A) #7	Gas	3,937	1,490	S	40°35'00"	860	W	79°17'30"
do.	do.	063-30037	do.	McIntire, Hazel #6	Gas	3,870	2,590	S	40°32'30"	6,720	W	79°15'00"
do.	do.	063-30078	do.	Watson, Glenn #3	Gas	3,876	10,050	S	40°37'30"	4,050	W	79°15'00"
do.	do.	063-30088	do.	R and P Coal #3-572A	Gas	3,717	9,100	S	40°35'00"	3,840	W	79°15'00"
do.	do.	063-30089	do.	R and P Coal #4-572A	Gas	3,713	8,240	S	40°35'00"	3,350	W	79°15'00"
do.	do.	063-30090	do.	R and P Coal #5-572A	Gas	3,677	9,075	S	40°35'00"	2,690	W	79°15'00"
do.	do.	063-30104	do.	R and P Coal #7	Gas	3,901	11,610	S	40°35'00"	2,180	W	79°15'00"
do.	do.	063-30105	do.	R and P Coal #8	Gas	3,961	12,400	S	40°35'00"	1,450	W	79°15'00"
do.	do.	063-30106	do.	R and P Coal #6	Gas	3,809	10,600	S	40°35'00"	2,360	W	79°15'00"
do.	do.	063-30107	do.	R and P Coal #9	Gas	3,869	12,800	S	40°35'00"	2,470	W	79°15'00"
do.	do.	063-30111	Castle Gas Co., Inc.	Dixon #3	Gas	3,948	5,400	S	40°37'30"	800	W	79°20'00"
do.	do.	063-30115	PC Exploration, Inc.	R and P Coal #11	Gas	3,925	15,000	S	40°35'00"	4,110	W	79°15'00"

Table 25. *(Continued).*

County	Quadrangle	Permit number	Operator	Name of well	Type of well	Total depth (feet)	Latitude (feet)	Longitude (feet)
Indiana	McIntyre	063-30116	PC Exploration, Inc.	R and P Coal #12	Gas	3,798	630 S 40°32'30"	4,860 W 79°15'00"
do.	do.	063-30117	do.	R and P Coal #13	Gas	3,896	14,825 S 40°35'00"	5,175 W 79°15'00"
do.	do.	063-30119	do.	R and P Coal #14	Gas	3,955	1,900 S 40°32'30"	5,300 W 79°15'00"
do.	do.	063-30120	do.	R and P Coal #10	Gas	3,756	12,940 S 40°35'00"	4,100 W 79°15'00"
do.	do.	063-30123	Castle Gas Co., Inc.	Coleman, Harold #2	Gas	4,211	3,050 S 40°35'00"	9,550 W 79°20'00"
do.	do.	063-30150	Phillips Production Co.	Pencola, John #2	Gas	4,055	13,325 S 40°37'30"	400 W 79°20'00"
do.	do.	063-30153	do.	Smith, John #2	Gas	4,160	13,950 S 40°37'30"	9,260 W 79°17'30"
do.	do.	063-30164	Keystone Energy Oil and Gas	Paukovich, Mary #3	Gas	3,715	5,850 S 40°32'30"	8,675 W 79°20'00"
do.	do.	063-30185	Phillips Production Co.	Smith, John #3	Gas	4,126	12,400 S 40°37'30"	10,525 W 79°17'30"
do.	do.	063-30291	PC Exploration, Inc.	Bieda, Douglas #11	Gas	3,870	12,650 S 40°32'30"	230 W 79°20'00"
do.	do.	063-30311	do.	Baroni, Harry #2	Gas	3,911	5,890 S 40°35'00"	60 W 79°15'00"
do.	do.	063-30313	do.	McIntire/Johnston #6	Gas	3,924	1,400 S 40°32'30"	2,920 W 79°15'00"
do.	Plumville	063-29573	Kriebel Gas, Inc.	Behune, John #002	Gas	3,642	12,350 S 40°50'00"	10,810 W 79°07'30"
do.	do.	063-30092	J. C. Enterprises	Wall, Roger #3	Gas	3,617	8,975 S 40°52'30"	1,800 W 79°12'30"
do.	do.	063-30108	CNG Producing Co.	Reefer #2	Gas	3,831	12,525 S 40°52'30"	9,500 W 79°10'00"
do.	do.	063-30177	Keystone Energy Oil and Gas	Simpson, David #1	Gas	3,627	2,875 S 40°47'30"	7,450 W 79°07'30"
do.	do.	063-30221	D. L. Resources, Inc.	Lockhart, Donald #1	Gas	3,480	875 S 40°50'00"	725 W 79°07'30"
do.	do.	063-30227	J. C. Enterprises	Baker, William #3-1	Gas	3,657	12,275 S 40°52'30"	7,900 W 79°10'00"
do.	do.	063-30232	do.	Miller, Alberta #3-1	Gas	3,707	100 S 40°50'00"	7,450 W 79°10'00"
do.	do.	063-30256	D. L. Resources, Inc.	Rinn #1	Gas	3,497	1,575 S 40°50'00"	2,800 W 79°07'30"
do.	do.	063-30263	PC Exploration, Inc.	Schlabach, E. Jr. #2	Gas	3,687	2,700 S 40°52'30"	10,875 W 79°07'30"
do.	Punxsutawney	063-28209	CNG Producing Co.	Bonner, H. #3	Gas	3,495	7,950 S 40°55'00"	525 W 78°52'30"
do.	do.	063-29217	do.	Lindsey Coal #3	Gas	3,629	5,650 S 40°55'00"	2,500 W 78°55'00"
do.	Rochester Mills	063-27985	PC Exploration, Inc.	Oberlin, D.	Gas	3,665	10,300 S 40°52'30"	1,100 W 78°57'30"
do.	do.	063-28069	do.	Hurd, E.	Gas	3,266	4,300 S 40°50'00"	1,500 W 78°57'30"
do.	do.	063-30112	Eastern American Energy Corp.	P and N Coal #1	Gas	3,318	8,350 S 40°50'00"	11,775 W 78°52'30"
do.	do.	063-30113	do.	P and N Coal #2	Gas	3,552	11,000 S 40°50'00"	4,325 W 78°55'00"
do.	do.	063-30136	Keystone Energy Oil and Gas	Creighton, E. #1	Gas	3,510	15,675 S 40°50'00"	9,500 W 78°55'00"
do.	do.	063-30201	Boyd and Shriver, Inc.	Hamilton, Blaine #3	Gas	3,650	600 S 40°50'00"	10,000 W 78°57'30"
do.	do.	063-30249	Phillips Production Co.	Berringer, June #1	Gas	3,811	4,410 S 40°47'30"	120 W 78°52'30"
do.	Strongstown	063-28116	Energy Production Co.	Smith #5	Gas	3,969	11,820 S 40°32'30"	11,020 W 79°55'00"
do.	Valier	063-29893	CNG Producing Co.	Shrock, Floyd #3770	Gas	3,662	3,150 S 40°55'00"	8,650 W 79°00'00"
do.	do.	063-29931	PC Exploration, Inc.	Alabran, Kenneth #3	Gas	3,745	8,830 S 40°55'00"	9,920 W 79°02'30"
do.	do.	063-30057	do.	Byler, Ervin #3	Gas	3,817	13,400 S 40°55'00"	700 W 79°05'00"
Jefferson	Coolspring	065-22564	Apollo Gas Co.	Shipe, E. #1	Gas	3,224	12,300 S 41°02'30"	4,200 W 79°05'00"
do.	do.	065-23500	I. R. S. Production, Inc.	Kopko, Peter #1	Gas	3,254	10,750 S 41°02'30"	4,650 W 79°05'00"
do.	do.	065-23507	do.	Smolak, John #1	Gas	3,303	11,620 S 41°02'30"	4,080 W 79°05'00"
do.	do.	065-23509	PC Exploration, Inc.	Hoch, Claren #3	Gas	3,465	12,600 S 41°02'30"	7,850 W 79°05'00"

do.	Dayton	065-20081	Jack A. Huber Co.	Elkin, L. #3	Gas	714	11,000	S	40°57'30"	6,400	W	79°10'00"
do.	do.	065-20082	J. C. Enterprises	Snyder #2	Gas	3,488	6,300	S	41°00'00"	3,600	W	79°07'30"
do.	do.	065-20110	I. R. S. Production, Inc.	Coleman #1	Gas	410	10,440	S	41°00'00"	3,680	W	79°07'30"
do.	do.	065-23494	J. C. Enterprises	Reed, Frank #5-1	Gas	3,462	3,675	S	41°00'00"	2,800	W	79°07'30"
do.	do.	065-23501	do.	Himes, Lennie #1	Gas	3,558	550	S	41°00'00"	875	W	79°10'00"
do.	do.	065-23502	do.	Lettie, H. D. #1-2	Gas	3,709	13,725	S	40°57'30"	6,950	W	79°07'30"
do.	McGees Mills	065-23496	Angerman Assoc., Inc.	Wainwright M-491 182	Gas	3,591	1,250	S	40°57'30"	10,350	W	78°47'30"
do.	Munderf	065-23491	Empire Exploration, Inc.	Galbraith #1	Gas	3,012	8,800	S	41°17'30"	4,475	W	78°52'30"
do.	Sigel	065-23489	Angerman Assoc., Inc.	Fee Deemer Cook #24	Gas	3,221	14,500	S	41°17'30"	10,800	W	79°00'00"
do.	Summerville	065-23486	D. L. Resources, Inc.	Minich, John #4	Gas	2,725	9,025	S	41°02'30"	190	W	79°12'30"
do.	do.	065-23492	I. R. S. Production, Inc.	Martz, Lee #1	Gas	3,250	9,850	S	41°02'30"	1,825	W	79°07'30"
do.	Valier	065-23474	Dannic Energy Corp.	Anthony #1	Gas	3,451	5,685	S	40°57'30"	10,270	W	79°00'00"
do.	do.	065-23477	do.	Klaka Farm #1	Gas	3,243	2,105	S	41°00'00"	6,670	W	79°02'30"
do.	do.	065-23478	do.	Klaka Farm #5	Gas	3,339	570	S	41°00'00"	4,990	W	79°02'30"
do.	do.	065-23493	PC Exploration, Inc.	P and N Coal #1	Gas	3,594	8,575	S	40°57'30"	8,500	W	79°05'00"
do.	do.	065-23504	D. L. Resources, Inc.	Horner, William #1	Gas	3,564	1,400	S	41°00'00"	9,250	W	79°00'00"
do.	do.	065-23508	J. C. Enterprises	Grove, Leonard #1	Gas	3,388	14,975	S	40°57'30"	2,600	W	79°02'30"
do.	do.	065-23516	D. L. Resources, Inc.	Horner, William #2	Gas	3,590	700	S	41°00'00"	10,025	W	79°00'00"
do.	do.	065-23517	do.	Horner, William #3	Gas	3,335	10	S	41°00'00"	9,275	W	79°00'00"
Lawrence	Portersville	073-20055	Columbia Natural Resources	Haney, John #2	Dry	727	6,600	S	41°00'00"	4,050	W	80°12'30"
McKean	Bradford	083-46037	Belden and Blake Corp.	BWA-27	Gas	1,511	4,300	S	42°00'00"	8,900	W	78°42'30"
do.	do.	083-46038	do.	BWA-25	Gas	1,545	3,400	S	42°00'00"	9,225	W	78°42'30"
do.	do.	083-46082	do.	BWA-52	Gas	1,186	5,900	S	42°00'00"	10,800	W	78°42'30"
do.	do.	083-46083	do.	BWA-49	Gas	1,330	4,250	S	42°00'00"	10,900	W	78°42'30"
do.	do.	083-46084	do.	BWA-48	Gas	1,297	5,200	S	42°00'00"	10,600	W	78°42'30"
do.	do.	083-46085	do.	BWA-42	Gas	1,283	5,700	S	42°00'00"	9,850	W	78°42'30"
do.	do.	083-46086	do.	BWA-41	Gas	1,425	4,700	S	42°00'00"	9,800	W	78°42'30"
do.	do.	083-46087	do.	BWA-39	Gas	1,463	5,200	S	42°00'00"	9,000	W	78°42'30"
do.	do.	083-46088	do.	BWA-38	Gas	1,365	6,100	S	42°00'00"	8,570	W	78°42'30"
do.	do.	083-46089	do.	BWA-32	Gas	1,453	5,450	S	42°00'00"	4,750	W	78°42'30"
do.	do.	083-46090	do.	BWA-34	Gas	1,206	5,950	S	42°00'00"	6,600	W	78°42'30"
do.	do.	083-46091	do.	BWA-33	Gas	1,347	5,650	S	42°00'00"	5,750	W	78°42'30"
do.	do.	083-46092	do.	BWA-31	Gas	1,257	5,050	S	42°00'00"	7,100	W	78°42'30"
do.	do.	083-46093	do.	BWA-29	Gas	1,361	5,200	S	42°00'00"	4,700	W	78°42'30"
do.	do.	083-46094	do.	BWA-28	Gas	1,180	4,900	S	42°00'00"	6,150	W	78°42'30"
do.	do.	083-46095	do.	BWA-23	Gas	1,215	4,200	S	42°00'00"	7,500	W	78°42'30"
do.	do.	083-46096	do.	BWA-21	Gas	1,314	4,050	S	42°00'00"	6,600	W	78°42'30"
do.	do.	083-46097	do.	BWA-15	Gas	1,513	4,500	S	42°00'00"	4,350	W	78°42'30"
do.	do.	083-46098	do.	BWA-35	Gas	1,080	6,500	S	42°00'00"	7,200	W	78°42'30"
do.	do.	083-46099	do.	BWA-22	Gas	1,335	3,300	S	42°00'00"	7,500	W	78°42'30"
do.	do.	083-46100	do.	BWA-16	Gas	1,274	3,800	S	42°00'00"	5,700	W	78°42'30"
do.	do.	083-46104	do.	BWA-19	Gas	1,383	3,700	S	42°00'00"	8,300	W	78°42'30"
do.	do.	083-46106	do.	BWA-39	Gas	1,316	4,850	S	42°00'00"	8,200	W	78°42'30"
do.	do.	083-46107	do.	BWA-36	Gas	1,247	5,550	S	42°00'00"	7,750	W	78°42'30"
do.	do.	083-46108	do.	BWA-37	Gas	1,220	7,100	S	42°00'00"	8,100	W	78°42'30"
do.	do.	083-46109	do.	BWA-40	Gas	1,459	3,850	S	42°00'00"	10,050	W	78°42'30"

Table 25. *(Continued).*

County	*Quadrangle*	*Permit number*	*Operator*	*Name of well*	*Type of well*	*Total depth (feet)*	*Latitude (feet)*	*Longitude (feet)*
McKean	Bradford	083-46110	Belden and Blake Corp.	BWA-43	Gas	1,146	6,500 S 42°00'00"	9,400 W 78°42'30"
do.	do.	083-46112	do.	Mallory-Interstate #I-23	Gas	1,220	1,900 S 42°00'00"	400 W 78°42'30"
do.	do.	083-46113	do.	Mallory-Interstate #I-20	Gas	1,520	2,250 S 42°00'00"	2,850 W 78°42'30"
do.	do.	083-46114	do.	Mallory-Interstate #I-21	Gas	1,446	2,300 S 42°00'00"	1,850 W 78°42'30"
do.	do.	083-46115	do.	Mallory-Interstate #I-22	Gas	1,467	2,500 S 42°00'00"	2,400 W 78°42'30"
do.	do.	083-46118	do.	BWA-47	Gas	1,147	6,100 S 42°00'00"	10,400 W 78°42'30"
do.	do.	083-46119	do.	BWA-44	Gas	1,100	7,550 S 42°00'00"	9,000 W 78°42'30"
do.	do.	083-46120	do.	BWA-45	Gas	1,276	8,100 S 42°00'00"	9,800 W 78°42'30"
do.	do.	083-46121	do.	BWA-46	Gas	1,166	7,200 S 42°00'00"	10,250 W 78°42'30"
do.	do.	083-46122	do.	BWA-54	Gas	1,418	7,700 S 42°00'00"	11,100 W 78°42'30"
do.	do.	083-46123	do.	BWA-55	Gas	1,556	8,600 S 42°00'00"	10,600 W 78°42'30"
do.	do.	083-46125	do.	BWA-57	Gas	1,493	8,100 S 42°00'00"	600 W 78°45'00"
do.	do.	083-46126	do.	BWA-58	Gas	1,491	7,350 S 42°00'00"	900 W 78°45'00"
do.	do.	083-46129	do.	BWA-61	Gas	1,421	4,550 S 42°00'00"	1,540 W 78°45'00"
do.	do.	083-46130	do.	BWA-50	Gas	1,648	4,000 S 42°00'00"	750 W 78°45'00"
do.	do.	083-46142	do.	BWA-72	Gas	1,611	6,400 S 42°00'00"	2,800 W 78°45'00"
do.	do.	083-46146	do.	BWA-70	Gas	1,447	8,400 S 42°00'00"	2,550 W 78°45'00"
do.	do.	083-46156	do.	BWA-82	Gas	1,531	1,850 S 42°00'00"	3,400 W 78°42'30"
do.	do.	083-46168	do.	BWA-94	Gas	1,436	9,900 S 42°00'00"	3,800 W 78°45'00"
do.	do.	083-46169	do.	BWA-89	Gas	1,072	7,500 S 42°00'00"	8,200 W 78°42'30"
do.	do.	083-46170	do.	BWA-93	Gas	1,411	10,600 S 42°00'00"	4,250 W 78°45'00"
do.	do.	083-46171	do.	BWA-90	Gas	1,089	6,900 S 42°00'00"	7,250 W 78°42'30"
do.	do.	083-46172	do.	BWA-91	Gas	1,226	6,400 S 42°00'00"	6,600 W 78°42'30"
do.	do.	083-46173	do.	BWA-92	Gas	1,407	6,300 S 42°00'00"	5,650 W 78°42'30"
do.	do.	083-46176	do.	BWA-85	Gas	1,433	9,550 S 42°00'00"	50 W 78°45'00"
do.	do.	083-46177	do.	BWA-86	Gas	1,497	9,100 S 42°00'00"	10,600 W 78°42'30"
do.	do.	083-46178	do.	BWA-87	Gas	1,327	8,500 S 42°00'00"	9,800 W 78°42'30"
do.	do.	083-46179	do.	BWA-88	Gas	1,222	7,950 S 42°00'00"	9,100 W 78°42'30"
do.	do.	083-46180	do.	BWA-95	Gas	1,297	10,500 S 42°00'00"	3,300 W 78°45'00"
do.	do.	083-46184	do.	Mallory Wt 4335 I-35	Gas	1,126	2,500 S 42°00'00"	11,250 W 78°40'00"
do.	do.	083-46185	do.	Mallory Wt 4335 I-36	Gas	1,192	2,300 S 42°00'00"	10,400 W 78°40'00"
do.	do.	083-46186	do.	Mallory Wt 4335 I-37	Gas	1,380	2,000 S 42°00'00"	9,700 W 78°40'00"
do.	do.	083-46192	do.	Mallory Wt 4335 I-34	Gas	1,171	3,100 S 42°00'00"	400 W 78°42'30"
do.	do.	083-46233	do.	BWA-115	Gas	1,219	6,950 S 42°00'00"	6,600 W 78°42'30"
do.	Bullis Mills	083-46276	Duke Energy, Inc.	Prouty #11	Oil	910	10,180 S 41°57'30"	7,257 W 78°20'00"
do.	do.	083-46277	do.	Prouty #1A	Oil	885	10,550 S 41°57'30"	8,315 W 78°20'00"
do.	do.	083-46287	do.	Prouty #12	Oil	974	9,980 S 41°57'30"	8,000 W 78°20'00"
do.	Eldred	083-45366	Belden and Blake Corp.	Brook, Tyler #3DD	Gas	1,100	9,550 S 41°55'00"	9,450 W 78°25'00"
do.	Lewis Run	083-44626	Minard Run Oil Co.	Moody, Moody #M18	Oil	2,101	1,900 S 41°50'00"	500 W 78°40'00"

do.	Ludlow	083-46283	SV/ABS Interests, Inc.	ANF, Lot 389 #16	Oil	1,860	2,600	S	41°40'00"	8,000	W	78°52'30"
do.	do.	083-46284	do.	ANF, Lot 389 #18	Oil	1,807	2,100	S	41°40'00"	8,050	W	78°52'30"
do.	do.	083-46285	do.	ANF, Lot 389 #14	Oil	1,837	2,600	S	41°40'00"	9,000	W	78°52'30"
do.	do.	083-46286	do.	ANF, Lot 389 #15	Oil	1,846	2,600	S	41°40'00"	8,500	W	78°52'30"
do.	Norwich	083-46238	Duke Energy, Inc.	Helmer #9	Gas	2,225	750	S	41°45'00"	9,350	W	78°17'30"
do.	Port Allegany	083-45467	do.	Smith #1A	Dry	2,299	15,100	S	41°50'00"	13,500	W	78°15'00"
do.	do.	083-46235	Belden and Blake Corp.	State Game Lands 61 #9	Gas	2,845	7,800	S	41°50'00"	9,150	W	78°17'30"
do.	Smethport	083-46239	do.	Irons Hollow #350-1	Gas	2,456	4,700	S	41°47'30"	3,900	W	78°27'30"
do.	Stickney	083-46124	do.	BWA-56	Gas	1,494	9,000	S	42°00'00"	150	W	78°45'00"
do.	do.	083-46127	do.	BWA-68	Gas	1,367	10,100	S	42°00'00"	1,750	W	78°45'00"
do.	do.	083-46131	do.	BWA-51	Gas	1,323	4,750	S	42°00'00"	450	W	78°45'00"
do.	do.	083-46132	do.	BWA-59	Gas	1,468	6,200	S	42°00'00"	900	W	78°45'00"
do.	do.	083-46133	do.	BWA-60	Gas	1,372	5,350	S	42°00'00"	1,200	W	78°45'00"
do.	do.	083-46134	do.	BWA-69	Gas	1,445	9,300	S	42°00'00"	2,200	W	78°45'00"
do.	do.	083-46135	do.	BWA-62	Gas	1,474	5,000	S	42°00'00"	2,300	W	78°45'00"
do.	do.	083-46136	do.	BWA-63	Gas	1,466	5,800	S	42°00'00"	2,000	W	78°45'00"
do.	do.	083-46137	do.	BWA-64	Gas	1,597	6,800	S	42°00'00"	1,650	W	78°45'00"
do.	do.	083-46138	do.	BWA-65	Gas	1,521	7,900	S	42°00'00"	1,750	W	78°45'00"
do.	do.	083-46139	do.	BWA-66	Gas	1,494	8,750	S	42°00'00"	1,400	W	78°45'00"
do.	do.	083-46140	do.	BWA-53	Gas	1,397	6,800	S	42°00'00"	11,300	W	78°42'30"
do.	do.	083-46141	do.	BWA-71	Gas	1,596	7,250	S	42°00'00"	2,750	W	78°45'00"
do.	do.	083-46143	do.	BWA-73	Gas	1,822	5,500	S	42°00'00"	3,120	W	78°45'00"
do.	do.	083-46147	do.	BWA-75	Gas	1,572	6,900	S	42°00'00"	3,650	W	78°45'00"
do.	do.	083-46148	do.	BWA-76	Gas	1,513	7,850	S	42°00'00"	3,350	W	78°45'00"
do.	do.	083-46149	do.	BWA-77	Gas	1,397	8,900	S	42°00'00"	3,400	W	78°45'00"
do.	do.	083-46150	do.	BWA-78	Gas	1,308	9,800	S	42°00'00"	3,150	W	78°45'00"
do.	do.	083-46151	do.	BWA-79	Gas	1,497	9,400	S	42°00'00"	4,150	W	78°45'00"
do.	do.	083-46152	do.	BWA-80	Gas	1,509	8,350	S	42°00'00"	4,200	W	78°45'00"
do.	do.	083-46153	do.	BWA-74	Gas	1,594	6,000	S	42°00'00"	3,900	W	78°45'00"
do.	do.	083-46154	do.	BWA-81	Gas	1,577	7,350	S	42°00'00"	4,600	W	78°45'00"
do.	do.	083-46175	do.	BWA-84	Gas	1,297	10,150	S	42°00'00"	900	W	78°45'00"
do.	do.	083-46181	do.	BWA-96	Gas	1,332	10,400	S	42°00'00"	2,300	W	78°45'00"
do.	do.	083-46215	do.	Mallory Wt 4339 I-24	Gas	1,469	10,150	S	42°00'00"	4,350	W	78°45'00"
do.	do.	083-46217	do.	BWA-97	Gas	1,245	10,650	S	42°00'00"	1,700	W	78°45'00"
do.	do.	083-46218	do.	BWA-98	Gas	1,296	10,600	S	42°00'00"	900	W	78°45'00"
do.	do.	083-46219	do.	BWA-99	Gas	1,396	10,100	S	42°00'00"	100	W	78°45'00"
do.	do.	083-46221	do.	BWA-101	Gas	1,496	9,600	S	42°00'00"	10,600	W	78°42'30"
do.	do.	083-46224	do.	BWA-104	Gas	1,346	9,100	S	42°00'00"	9,750	W	78°42'30"
do.	Westline	083-40068	do.	Westline #26	Gas	971	8,400	S	41°47'30"	2,325	W	78°45'00"
do.	do.	083-44754	do.	Westline #509-3404	Oil	734	3,850	S	41°47'30"	2,600	W	78°45'00"
do.	do.	083-46075	M. S. L. Oil and Gas Corp.	Levin Project #13	Oil	1,673	13,600	S	41°52'30"	1,900	W	78°50'00"
do.	do.	083-46076	do.	Levin Project #14	Oil	1,551	13,600	S	41°52'30"	2,400	W	78°50'00"
do.	do.	083-46077	do.	Levin Project #15	Oil	1,611	13,600	S	41°52'30"	2,900	W	78°50'00"
do.	do.	083-46078	do.	Levin Project #16	Oil	1,581	13,000	S	41°52'30"	1,950	W	78°50'00"
do.	do.	083-46079	do.	Levin Project #17	Oil	1,611	13,100	S	41°52'30"	2,700	W	78°50'00"

Table 25. *(Continued).*

County	*Quadrangle*	*Permit number*	*Operator*	*Name of well*	*Type of well*	*Total depth (feet)*	*Latitude (feet)*	*Longitude (feet)*
McKean	Westline	083-46080	M. S. L. Oil and Gas Corp.	Levin Project #18	Oil	1,611	12,650 S 41°52'30"	2,500 W 78°50'00"
do.	do.	083-46081	do.	Levin Project #19	Oil	1,551	12,500 S 41°52'30"	2,000 W 78°50'00"
do.	do.	083-46157	do.	Fuller #09, Wt. 5556	Oil	1,800	1,850 S 41°50'00"	550 W 78°50'00"
do.	do.	083-46158	do.	Fuller #08, Wt. 5556	Oil	1,825	1,850 S 41°50'00"	1,200 W 78°50'00"
do.	do.	083-46159	do.	Fuller #04, Wt. 5556	Oil	1,860	1,500 S 41°50'00"	900 W 78°50'00"
do.	do.	083-46160	do.	Fuller #05, Wt. 5556	Oil	1,800	1,500 S 41°50'00"	250 W 78°50'00"
do.	do.	083-46270	do.	Fuller #02, Wt. 5556	Oil	1,875	1,500 S 41°50'00"	2,200 W 78°50'00"
do.	do.	083-46271	do.	Fuller #03, Wt. 5556	Oil	1,875	1,500 S 41°50'00"	1,550 W 78°50'00"
do.	do.	083-46272	do.	Fuller #07, Wt. 5556	Oil	1,885	1,825 S 41°50'00"	1,875 W 78°50'00"
do.	do.	083-46273	do.	Fuller #12, Wt. 5556	Oil	1,875	2,150 S 41°50'00"	1,550 W 78°50'00"
do.	do.	083-46274	do.	Fuller #13, Wt. 5556	Oil	1,840	2,150 S 41°50'00"	875 W 78°50'00"
do.	do.	083-46275	do.	Fuller #17, Wt. 5556	Oil	1,850	2,500 S 41°50'00"	700 W 78°50'00"
do.	do.	083-46280	do.	Kilo Wt. 3412 #1333	Oil	1,800	1,450 S 41°50'00"	6,500 W 78°45'00"
do.	do.	083-46281	do.	Kilo Wt. 3412 #1334	Oil	1,800	1,375 S 41°50'00"	5,925 W 78°45'00"
do.	do.	083-46288	do.	Fuller #26, Wt. 5556	Oil	1,820	2,950 S 41°50'00"	775 W 78°50'00"
do.	do.	083-46299	do.	Fuller #27, Wt. 5556	Oil	1,765	2,200 S 41°50'00"	325 W 78°50'00"
do.	do.	083-46300	do.	Fuller #28, Wt. 5556	Oil	1,705	1,700 S 41°50'00"	11,250 W 78°47'30"
do.	do.	083-46301	do.	Fuller #31, Wt. 5556	Oil	1,625	2,500 S 41°50'00"	50 W 78°50'00"
do.	do.	083-46302	do.	Fuller #32, Wt. 5556	Oil	1,625	2,100 S 41°50'00'	11,250 W 78°47'30"
do.	do.	083-46314	do.	Fuller #30, Wt. 5556	Oil	1,652	2,900 S 41°50'00"	300 W 78°50'00"
Potter	Coudersport	105-21045	Otis-Eastern Service, Inc.	Tullar-Cobb #15	Gas	2,300	3,500 S 41°52'30"	600 W 78°05'00"
do.	Oswayo	105-21046	do.	Tullar-Cobb #16	Gas	2,955	15,075 S 41°55'00"	10,800 W 78°02'30"
Venango	Cranberry	121-41045	Devonian Resources	Stromyer #19	Oil	1,073	2,650 S 41°22'30"	3,650 W 79°37'30"
do.	do.	121-42936	Carol A. Morrison Co.	Myers Tract #M-10	Oil	995	3,300 S 41°20'00"	925 W 79°37'30"
do.	Franklin	121-42448	USCAN Oil, Inc.	Preston #2	Oil	1,070	9,900 S 41°25'00"	550 W 79°47'30"
do.	do.	121-42553	do.	Preston #5	Oil	1,014	10,200 S 41°25'00"	450 W 79°47'30"
do.	Fryburg	121-42488	Homer Henry Co.	Kapp, Don #1	Oil	953	3,625 S 41°22'30"	7,700 W 79°27'30"
do.	Kennerdell	121-35556	Norwesco Development Corp.	Nettles #N-10	Oil	1,017	500 S 41°22'30"	8,650 W 79°45'00"
do.	Oil City	121-42485	A. B. Raymore, Inc.	Greene, Charles #8	Oil	750	12,900 S 41°27'30"	11,490 W 79°37'30"
do.	do.	121-42486	do.	Greene, Charles #9	Oil	740	12,600 S 41°27'30"	11,590 W 79°37'30"
do.	do.	121-42931	Pennsylvania General Energy	Smutek, Barbara #18P	Oil-Gas	1,041	7,175 S 41°25'00"	2,625 W 79°40'00"
do.	do.	121-42932	do.	Smutek, Barbara #24P	Oil-Gas	1,031	7,700 S 41°25'00"	3,375 W 79°40'00"
do.	do.	121-42934	do.	Kahle, B. M. #2P	Oil-Gas	1,398	7,156 S 41°25'00"	2,390 W 79°40'00"
do.	do.	121-43000	Thomas Havranek Co.	Eustice, E. #1-61-B	Oil	1,109	12,910 S 41°25'00"	2,250 W 79°37'30"
do.	do.	121-43001	do.	Ahrens, B. #9-61	Oil	1,086	12,910 S 41°25'00"	1,450 W 79°37'30"
do.	Pleasantville	121-26859	Olympia Oil Service, Inc.	Dunn #12BB	Oil	839	2,650 S 41°35'00"	4,250 W 79°30'00"
do.	do.	121-26860	do.	Dunn #13BB	Oil	814	2,650 S 41°35'00"	4,500 W 79°30'00"
do.	do.	121-26861	do.	Dunn #14BB	Oil	839	2,650 S 41°35'00"	4,850 W 79°30'00"
do.	do.	121-35997	Pennsylvania General Energy	Dunn #45	Oil	778	3,200 S 41°35'00"	4,150 W 79°30'00"

do.	do.	121-39788	James M. Bailey Co.	Williams #79W	Oil	920	8,200	S	41°35'00"	8,950	W	79°30'00"
do.	do.	121-39789	do.	Williams #80W	Oil	903	8,090	S	41°35'00"	9,050	W	79°30'00"
do.	do.	121-39790	do.	Williams #81W	Oil	883	8,090	S	41°35'00"	9,180	W	79°30'00"
do.	do.	121-39791	do.	Williams #82W	Oil	864	7,850	S	41°35'00"	9,225	W	79°30'00"
do.	do.	121-39792	do.	Williams #83W	Oil	841	7,600	S	41°35'00"	9,250	W	79°30'00"
do.	do.	121-39793	do.	Williams #84W	Oil	860	8,750	S	41°35'00"	9,000	W	79°30'00"
do.	do.	121-39794	do.	Williams #85W	Oil	711	7,900	S	41°35'00"	8,975	W	79°30'00"
do.	do.	121-39795	do.	Williams #86W	Oil	860	7,490	S	41°35'00"	8,650	W	79°30'00"
do.	do.	121-39796	do.	Williams #87W	Oil	866	7,350	S	41°35'00"	8,500	W	79°30'00"
do.	do.	121-39797	do.	Williams #88W	Oil	871	7,750	S	41°35'00"	8,975	W	79°30'00"
do.	do.	121-39798	do.	Williams #89W	Oil	878	7,890	S	41°35'00"	8,850	W	79°30'00"
do.	do.	121-41856	do.	Stewart #43ST	Service	730	7,580	S	41°35'00"	9,000	W	79°30'00"
do.	do.	121-41857	do.	Stewart #44ST	Oil	828	7,875	S	41°35'00"	9,050	W	79°30'00"
do.	do.	121-41858	do.	Stewart #45ST	Oil	860	8,230	S	41°35'00"	9,060	W	79°30'00"
do.	do.	121-41859	do.	Stewart #46ST	Oil	866	8,480	S	41°35'00"	9,050	W	79°30'00"
do.	do.	121-41860	do.	Stewart #47ST	Oil	870	8,775	S	41°35'00"	9,045	W	79°30'00"
do.	do.	121-41861	do.	Stewart #48ST	Oil	862	7,330	S	41°35'00"	8,950	W	79°30'00"
do.	do.	121-42822	Marley Industries Corp.	Stevenson Farm #201	Oil	722	6,150	S	41°32'30"	10,000	W	79°32'30"
do.	do.	121-42823	do.	Stevenson Farm #200	Oil	722	5,850	S	41°32'30"	10,140	W	79°32'30"
do.	do.	121-42863	do.	Roberts #301	Oil	755	5,280	S	41°32'30"	9,890	W	79°32'30"
do.	do.	121-42864	do.	Roberts #302	Oil	750	5,290	S	41°32'30"	10,170	W	79°32'30"
do.	do.	121-42944	Edgar G. Carson Co.	Carson, E. and F. #2A	Oil	775	2,510	S	41°37'30"	6,020	W	79°30'00"
do.	do.	121-42974	Olympia Oil Service, Inc.	Baker-Smith #9	Oil	889	6,800	S	41°35'00"	6,510	W	79°30'00"
do.	do.	121-42975	do.	Baker-Smith #10	Oil	915	6,785	S	41°35'00"	6,820	W	79°30'00"
Warren	Clarendon	123-37776	McLan Assoc., Inc.	Kemp #126	Oil	1,529	2,400	S	41°47'30"	8,250	W	79°05'00"
do.	do.	123-37779	do.	Kemp #129	Oil	1,478	2,630	S	41°47'30"	7,850	W	79°05'00"
do.	do.	123-37780	do.	Kemp #130	Oil	1,511	3,000	S	41°47'30"	7,850	W	79°05'00"
do.	do.	123-37781	do.	Kemp #131	Oil	1,516	3,350	S	41°47'30"	7,900	W	79°05'00"
do.	do.	123-37782	do.	Kemp #132	Oil	1,510	3,850	S	41°47'30"	7,850	W	79°05'00"
do.	do.	123-37783	do.	Kemp #135	Oil	1,529	3,150	S	41°47'30"	7,550	W	79°05'00"
do.	do.	123-37784	do.	Kemp #154	Oil	1,498	4,050	S	41°47'30"	7,850	W	79°05'00"
do.	do.	123-37785	do.	Kemp #136	Oil	1,530	3,550	S	41°47'30"	7,450	W	79°05'00"
do.	do.	123-37786	do.	Kemp #143	Oil	1,498	3,400	S	41°47'30"	7,150	W	79°05'00"
do.	do.	123-37787	do.	Kemp #144	Oil	1,468	3,800	S	41°47'30"	7,125	W	79°05'00"
do.	do.	123-37788	do.	Kemp #152	Oil	1,468	3,650	S	41°47'30"	6,900	W	79°05'00"
do.	do.	123-37834	do.	Kemp #137	Oil	1,469	4,000	S	41°47'30"	7,490	W	79°05'00"
do.	do.	123-37869	do.	Davis #1	Oil	1,254	8,750	S	41°47'30"	1,600	W	79°05'00"
do.	do.	123-37870	do.	Davis #2	Oil	1,310	8,550	S	41°47'30"	1,850	W	79°05'00"
do.	do.	123-37871	do.	Davis #3	Oil	1,251	8,200	S	41°47'30"	1,825	W	79°05'00"
do.	do.	123-37872	do.	Davis #4	Oil	1,358	8,375	S	41°47'30"	2,050	W	79°05'00"
do.	do.	123-37873	do.	Davis #5	Oil	1,447	8,700	S	41°47'30"	2,150	W	79°05'00"
do.	do.	123-39955	Pierce and Petersen Co.	Haasser #17	Oil	1,224	14,460	S	41°50'00"	9,275	W	79°05'00"
do.	do.	123-39956	do.	Haasser #18	Oil	1,271	14,550	S	41°50'00"	9,550	W	79°05'00"
do.	do.	123-40340	do.	Kinley #6	Oil	1,553	9,850	S	41°50'00"	1,200	W	79°02'30"
do.	do.	123-40460	I. L. Geer and Sons	O'Donnell Lot 463 #2	Oil	1,502	10,650	S	41°50'00"	6,400	W	79°05'00"
do.	do.	123-40461	do.	O'Donnell Lot 463 #1	Oil	1,502	10,650	S	41°50'00"	6,800	W	79°05'00"

Table 25. *(Continued).*

County	*Quadrangle*	*Permit number*	*Operator*	*Name of well*	*Type of well*	*Total depth (feet)*	*Latitude (feet)*	*Longitude (feet)*
Warren	Clarendon	123-40540	I. L. Geer and Sons	Druggan #1	Oil	1,347	9,860 S 41°50'00"	6,750 W 79°05'00"
do.	do.	123-40541	do.	Druggan #2	Oil	1,379	9,870 S 41°50'00"	6,300 W 79°05'00"
do.	do.	123-40542	do.	Druggan #3	Oil	1,376	9,850 S 41°50'00"	5,900 W 79°05'00"
do.	do.	123-40543	do.	Druggan #4	Oil	1,409	9,870 S 41°50'00"	5,420 W 79°05'00"
do.	do.	123-40544	do.	Druggan #5	Oil	1,440	9,880 S 41°50'00"	4,970 W 79°05'00"
do.	do.	123-40545	do.	Druggan #6	Oil	1,408	9,890 S 41°50'00"	6,750 W 79°05'00"
do.	do.	123-40549	do.	Druggan #7	Oil	1,377	9,900 S 41°50'00"	4,220 W 79°05'00"
do.	do.	123-40639	do.	Nuhfer #8	Oil	1,193	8,550 S 41°52'30"	9,800 W 79°05'00"
do.	do.	123-40640	do.	Nuhfer #7	Oil	1,191	8,130 S 41°52'30"	9,900 W 79°05'00"
do.	do.	123-40643	do.	Nuhfer #9	Oil	1,159	8,925 S 41°52'30"	9,850 W 79°05'00"
do.	do.	123-40761	Cook Energy, Inc.	Chapman, W. #9	Oil	1,320	4,950 S 41°52'30"	4,850 W 79°05'00"
do.	do.	123-40762	do.	Chapman, W. #8	Gas	1,345	4,550 S 41°52'30"	4,875 W 79°05'00"
do.	do.	123-40772	do.	Chapman, W. #11	Oil	1,295	5,500 S 41°52'30"	4,825 W 79°05'00"
do.	do.	123-40773	Pierce and Petersen Co.	Funk, John #66	Oil	1,197	7,980 S 41°50'00"	2,000 W 79°02'30"
do.	do.	123-40774	do.	Funk, John #56	Oil	1,229	8,100 S 41°50'00"	1,750 W 79°02'30"
do.	do.	123-40775	do.	Funk, John #55	Oil	1,261	8,550 S 41°50'00"	1,460 W 79°02'30"
do.	do.	123-40960	Synd Enterprises, Inc.	Morrison Run #W-1	Oil	1,852	5,700 S 41°50'00"	10,250 W 79°05'00"
do.	do.	123-40961	do.	Morrison Run #W-2	Oil	1,252	5,950 S 41°50'00"	10,550 W 79°05'00"
do.	do.	123-40962	do.	Morrison Run #W-3	Oil	1,136	6,300 S 41°50'00"	10,540 W 79°05'00"
do.	do.	123-40965	do.	Morrison Run #W-6	Oil	1,202	6,550 S 41°50'00"	10,950 W 79°05'00"
do.	do.	123-40966	do.	Morrison Run #W-7	Oil	1,226	6,160 S 41°50'00"	10,890 W 79°05'00"
do.	do.	123-40967	do.	Morrison Run #W-8	Oil	1,219	6,425 S 41°50'00"	11,300 W 79°05'00"
do.	do.	123-40968	do.	Morrison Run #W-9	Oil	1,170	6,820 S 41°50'00"	11,210 W 79°05'00"
do.	do.	123-40969	do.	Morrison Run #W-10	Oil	1,170	7,220 S 41°50'00"	11,200 W 79°05'00"
do.	do.	123-40970	do.	Morrison Run #W-11	Oil	1,170	7,660 S 41°50'00"	11,150 W 79°05'00"
do.	do.	123-41005	D and L Oil Co.	Lot 496 #6	Oil	1,320	1,895 S 41°47'30"	1,920 W 79°05'00"
do.	do.	123-41010	do.	Lot 496 #9	Oil	1,345	1,750 S 41°47'30"	2,890 W 79°05'00"
do.	do.	123-41016	Kylander Oil Co.	Armstrong #20	Oil	1,370	7,590 S 41°52'30"	8,380 W 79°05'00"
do.	do.	123-41017	do.	Armstrong #21	Oil	1,335	7,540 S 41°52'30"	8,710 W 79°05'00"
do.	do.	123-41018	do.	Armstrong #22	Oil	1,260	7,600 S 41°52'30"	9,000 W 79°05'00"
do.	do.	123-41046	Glenn Gas and Oil Co.	Young #4, Wt. 2837	Oil-Gas	1,200	5,800 S 41°50'00"	3,400 W 79°02'30"
do.	do.	123-41047	do.	Young #5, Wt. 2837	Oil	1,300	5,350 S 41°50'00"	3,200 W 79°02'30"
do.	do.	123-41085	Synd Enterprises, Inc.	Morrison Run #W-28	Oil	1,338	5,300 S 41°50'00"	11,000 W 79°05'00"
do.	do.	123-41086	do.	Morrison Run #W-27	Oil	1,365	5,150 S 41°50'00"	10,700 W 79°05'00"
do.	do.	123-41087	do.	Morrison Run #W-26	Oil	1,380	4,920 S 41°50'00"	10,350 W 79°05'00"
do.	do.	123-41088	do.	Morrison Run #W-25	Oil	1,275	5,340 S 41°50'00"	10,310 W 79°05'00"
do.	do.	123-41089	do.	Morrison Run #W-24	Oil	1,257	5,580 S 41°50'00"	10,650 W 79°05'00"
do.	do.	123-41090	do.	Morrison Run #W-23	Oil	1,252	5,800 S 41°50'00"	10,930 W 79°05'00"
do.	do.	123-41122	do.	Morrison Run #W-29	Oil	1,258	5,600 S 41°50'00"	0 W 79°07'30"
do.	do.	123-41123	do.	Morrison Run #W-22	Oil	1,147	6,100 S 41°50'00"	0 W 79°07'30"

do.	Cornplanter Bridge	123-40178	CarSan Energy Corp.	Fogel #25	Oil	1,585	4,000	S	41°52'30"	1,550	W	78°55'00"
do.	Ludlow	123-41292	Barnes Resources	Lot 290 #6-10	Gas	1,742	2,450	S	41°42'30"	9,600	W	78°57'30"
do.	Russell	123-40919	William Southwell Co.	Warren State Hospital #5BN	Oil	715	11,810	S	41°55'00"	6,330	W	79°07'30"
do.	do.	123-40923	do.	Warren State Hospital #1AA	Oil	717	10,400	S	41°55'00"	5,950	W	79°07'30"
do.	Sheffield	123-40765	Pennsylvania General Energy	Lot 587 #3	Oil	1,570	7,575	S	41°45'00"	1,950	W	79°05'00"
do.	do.	123-40766	Cook Energy, Inc.	Lot 587 #4	Oil	1,495	7,350	S	41°45'00"	2,400	W	79°05'00"
do.	do.	123-40817	do.	Lot 406 #122	Oil	2,000	4,400	S	41°40'00"	900	W	79°02'30"
do.	do.	123-40818	do.	Lot 406 #123	Oil	2,000	4,150	S	41°40'00"	1,275	W	79°02'30"
do.	do.	123-40819	do.	Lot 406 #124	Oil	2,000	3,650	S	41°40'00"	1,225	W	79°02'30"
do.	do.	123-40977	do.	Lot 587 #2	Oil	1,576	7,900	S	41°45'00"	2,250	W	79°05'00"
do.	Spring Creek	123-40560	McCormick Resources, Inc.	McChesney, W. #1	Junked	15	1,250	S	41°52'30"	11,085	W	79°32'30"
do.	Sugar Grove	123-33197	Howard Curtis and Son Co.	Sanden #65	Oil	770	8,000	S	42°00'00"	6,350	W	79°17'30"
do.	do.	123-33198	do.	Sanden #66	Oil	725	7,600	S	42°00'00"	6,450	W	79°17'30"
do.	do.	123-40905	Charles W. Young	Hammermill/Hull #1	Oil	1,476	12,000	S	41°55'00"	1,900	W	79°17'30"
do.	do.	123-40906	do.	Hammermill/Hull #3	Oil	1,427	11,800	S	41°55'00"	950	W	79°17'30"
do.	do.	123-41108	do.	Hammermill/Hull #4	Oil	1,241	12,000	S	41°55'00"	1,630	W	79°17'30"
do.	Warren	123-34291	William Southwell Co.	Hoffman, R. #H-08	Oil	1,216	6,750	S	41°52'30"	900	W	79°10'00"
do.	do.	123-34292	do.	Hoffman, R. #H-09	Oil	1,141	6,500	S	41°52'30"	900	W	79°10'00"
do.	do.	123-34293	do.	Hoffman, R. #H-10	Oil	1,138	6,650	S	41°52'30"	500	W	79°10'00"
do.	do.	123-40493	RDM Grace Co.	Lot 520 #14	Oil	1,535	7,800	S	41°47'30"	2,350	W	79°10'00"
do.	do.	123-40734	Pierce and Petersen Co.	Refiner's Gas #1-502	Oil	1,555	2,500	S	41°47'30"	6,200	W	79°07'30"
do.	do.	123-40735	do.	Refiner's Gas #2-502	Oil	1,569	3,100	S	41°47'30"	6,300	W	79°07'30"
do.	do.	123-40736	do.	Refiner's Gas #3-502	Oil	1,494	3,180	S	41°47'30"	5,750	W	79°07'30"
do.	do.	123-40846	Pennsylvania General Energy	Richardson #7P	Oil	1,270	8,560	S	41°50'00"	1,250	W	79°12'30"
do.	do.	123-40847	do.	Richardson #8P	Oil	1,385	9,625	S	41°50'00"	700	W	79°12'30"
do.	do.	123-40848	do.	Richardson #9P	Oil	1,385	9,680	S	41°50'00"	1,750	W	79°12'30"
do.	do.	123-40849	do.	Richardson #10P	Oil	1,375	9,345	S	41°50'00"	1,950	W	79°12'30"
do.	do.	123-40850	do.	Richardson #11P	Oil	1,375	8,950	S	41°50'00"	2,100	W	79°12'30"
do.	do.	123-40851	do.	Richardson #12P	Oil	1,375	8,590	S	41°50'00"	2,300	W	79°12'30"
do.	do.	123-40883	William Southwell Co.	Northern Allegheny Conservation Assn. #N1	Oil	1,332	9,800	S	41°52'30"	10,900	W	79°07'30"
do.	do.	123-40884	do.	Northern Allegheny Conservation Assn. #N2	Oil	1,258	9,860	S	41°52'30"	10,620	W	79°07'30"
do.	do.	123-40885	do.	Northern Allegheny Conservation Assn. #N3	Oil	1,242	10,150	S	41°52'30"	10,710	W	79°07'30"
do.	do.	123-40886	do.	Harris, D. #H-7	Oil	1,442	9,890	S	41°52'30"	11,620	W	79°07'30"
do.	do.	123-40894	do.	Harris, D. #H-11	Oil	1,294	10,180	S	41°52'30"	11,500	W	79°07'30"
do.	do.	123-40927	Sullivan and Clark Co.	Lot 517 #2	Oil	1,450	5,880	S	41°47'30"	10,620	W	79°10'00"
do.	do.	123-40950	Pennsylvania General Energy	GTG (549) #056P	Oil	1,320	13,000	S	41°47'30"	4,890	W	79°10'00"
do.	do.	123-40951	do.	GTG (549) #052P	Oil	1,370	12,600	S	41°47'30"	5,130	W	79°10'00"
do.	do.	123-40952	do.	GTG (549) #048P	Oil	1,277	12,830	S	41°47'30"	5,630	W	79°10'00"
do.	do.	123-40955	do.	GTG (547) #023P	Oil	1,633	14,090	S	41°47'30"	9,990	W	79°10'00"
do.	do.	123-40956	do.	GTG (547) #027P	Oil	1,680	12,410	S	41°47'30"	10,100	W	79°10'00"
do.	do.	123-40957	do.	GTG (547) #035P	Oil	1,630	12,500	S	41°47'30"	9,450	W	79°10'00"

Table 25. *(Continued).*

County	*Quadrangle*	*Permit number*	*Operator*	*Name of well*	*Type of well*	*Total depth (feet)*	*Latitude (feet)*	*Longitude (feet)*
Warren	Warren	123-40971	Synd Enterprises, Inc.	Morrison Run #W-12	Oil	1,185	7,900 S 41°50'00"	85 W 79°07'30"
do.	do.	123-40976	D and L Oil Co.	Lot 514 #21	Oil	1,645	7,820 S 41°47'30"	6,395 W 79°12'30"
do.	do.	123-40980	do.	Lot 514 #25	Oil	1,570	7,820 S 41°47'30"	7,270 W 79°12'30"
do.	do.	123-41022	East Resources, Inc.	Phillips Lease #64	Oil	1,200	4,500 S 41°50'00"	4,800 W 79°07'30"
do.	do.	123-41034	do.	Phillips Lease #63	Oil	1,175	4,650 S 41°50'00"	4,500 W 79°07'30"
do.	do.	123-41050	D and L Oil Co.	Lot 514 #15	Oil	1,630	7,220 S 41°47'30"	7,700 W 79°12'30"
do.	do.	123-41051	do.	Lot 514 #16	Oil	1,570	7,710 S 41°47'30"	7,590 W 79°12'30"
do.	do.	123-41091	Synd Enterprises, Inc.	Morrison Run #W-21	Oil	1,213	6,200 S 41°50'00"	300 W 79°07'30"
do.	do.	123-41092	do.	Morrison Run #W-20	Oil	1,185	6,790 S 41°50'00"	300 W 79°07'30"
do.	do.	123-41093	do.	Morrison Run #W-19	Oil	1,251	7,010 S 41°50'00"	620 W 79°07'30"
do.	do.	123-41094	do.	Morrison Run #W-18	Oil	1,257	7,350 S 41°50'00"	600 W 79°07'30"
do.	do.	123-41095	do.	Morrison Run #W-17	Oil	1,305	7,600 S 41°50'00"	880 W 79°07'30"
do.	do.	123-41096	do.	Morrison Run #W-30	Oil	1,248	5,870 S 41°50'00"	280 W 79°07'30"
do.	do.	123-41097	do.	Morrison Run #W-16	Oil	1,255	8,100 S 41°50'00"	880 W 79°07'30"
do.	do.	123-41126	do.	Morrison Run #W-45	Oil	1,417	6,500 S 41°50'00"	2,500 W 79°07'30"
do.	do.	123-41127	do.	Morrison Run #W-42	Oil	1,469	6,550 S 41°50'00"	2,070 W 79°07'30"
do.	do.	123-41128	do.	Morrison Run #W-40	Oil	1,467	6,900 S 41°50'00"	1,880 W 79°07'30"
do.	do.	123-41129	do.	Morrison Run #W-39	Oil	1,466	6,680 S 41°50'00"	1,540 W 79°07'30"
do.	do.	123-41130	do.	Morrison Run #W-38	Oil	1,437	6,250 S 41°50'00"	1,400 W 79°07'30"
do.	do.	123-41131	do.	Morrison Run #W-37	Oil	1,372	6,130 S 41°50'00"	900 W 79°07'30"
do.	do.	123-41132	do.	Morrison Run #W-36	Oil	1,317	6,500 S 41°50'00"	1,080 W 79°07'30"
do.	do.	123-41133	do.	Morrison Run #W-35	Oil	1,358	6,830 S 41°50'00"	1,220 W 79°07'30"
do.	do.	123-41134	do.	Morrison Run #W-34	Oil	1,257	6,700 S 41°50'00"	750 W 79°07'30"
do.	do.	123-41135	do.	Morrison Run #W-33	Oil	1,167	6,650 S 41°50'00"	330 W 79°07'30"
do.	do.	123-41136	do.	Morrison Run #W-32	Oil	1,270	6,370 S 41°50'00"	620 W 79°07'30"
do.	do.	123-41137	do.	Morrison Run #W-31	Oil	1,354	5,900 S 41°50'00"	580 W 79°07'30"
do.	do.	123-41147	do.	Morrison Run #W-41	Oil	1,242	7,800 S 41°50'00"	450 W 79°07'30"
do.	do.	123-41170	do.	Morrison Run #W-41	Oil	1,447	6,890 S 41°50'00"	2,280 W 79°07'30"
do.	do.	123-41171	do.	Morrison Run #W-43	Oil	1,517	6,200 S 41°50'00"	1,790 W 79°07'30"
do.	do.	123-41172	do.	Morrison Run #W-44	Oil	1,467	6,150 S 41°50'00"	2,280 W 79°07'30"
do.	do.	123-41196	Sullivan and Clark Co.	Lot 507 #40	Oil	1,400	5,075 S 41°47'30"	9,575 W 79°10'00"
do.	do.	123-41197	do.	Lot 507 #41	Oil	1,355	5,140 S 41°47'30"	9,190 W 79°10'00"
do.	do.	123-41198	do.	Lot 507 #42	Oil	1,410	5,385 S 41°47'30"	9,450 W 79°10'00"
do.	do.	123-41203	George W. Yeagle Co.	Yeagle, George #4	Oil	1,445	3,980 S 41°50'00"	11,200 W 79°07'30"
do.	do.	123-41204	do.	Yeagle, George #2	Oil	1,451	3,980 S 41°50'00"	10,850 W 79°07'30"
do.	do.	123-41259	Sullivan and Clark Co.	Lot 507 #36	Oil	1,400	4,200 S 41°47'30"	9,325 W 79°10'00"
do.	do.	123-41260	do.	Lot 507 #37	Oil	1,400	4,545 S 41°47'30"	8,850 W 79°10'00"
do.	do.	123-41293	do.	Lot 507 #38	Oil	1,375	4,590 S 41°47'30"	9,590 W 79°10'00"
do.	do.	123-41294	do.	Lot 507 #39	Oil	1,355	4,750 S 41°47'30"	9,245 W 79°10'00"

Washington	Washington West	125-21684	Jesmar Energy, Inc.	Varner, Kenneth #1	Gas	504	11,350	S	40°10′00″	3,825	W	80°17′30″
do.	West Middletown	125-21652	Pennzoil Products Co.	Blayney, V. #019	Service	2,495	12,100	S	40°12′30″	130	W	80°22′30″
do.	do.	125-21658	do.	Blayney, V. #022	Service	2,460	14,550	S	40°12′30″	1,700	W	80°22′30″
Westmore-land	Avonmore	129-23341	PC Exploration, Inc.	Stover, Leonard #1	Gas	2,042	13,650	S	40°32′30″	3,300	W	79°27′30″
do.	Blairsville	129-23311	Phillips Production Co.	Latrobe Brewing #3	Gas	4,186	14,730	S	40°27′30″	10,860	W	79°15′00″
do.	do.	129-23347	PC Exploration, Inc.	Latrobe Brewing #2	Gas	4,121	14,050	S	40°27′30″	50	W	79°17′30″
do.	Donora	129-23409	Dorso Energy Co.	Gillock Estate #2	Gas	3,095	12,750	S	40°10′00″	5,925	W	79°47′30″
do.	Greensburg	129-23366	Angerman Assoc., Inc.	West Estate #2	Gas	3,534	9,250	S	40°17′30″	4,025	W	79°30′00″
do.	Latrobe	129-23263	do.	Weaver, P. #2	Gas	3,793	4,200	S	40°17′30″	7,050	W	79°27′30″
do.	do.	129-23321	Standard Steel Co.	Forbes #4	Gas	3,437	8,450	S	40°22′30″	8,475	W	79°22′30″
do.	do.	129-23343	Kriebel Gas, Inc.	Cole, Edward #001	Gas	3,807	2,310	S	40°17′30″	6,125	W	79°27′30″
do.	do.	129-23382	Phillips Production Co.	Milks, Margaret #2-1	Gas	3,893	1,475	S	40°20′00″	8,250	W	79°22′30″
do.	Mt. Pleasant	129-21979	Questa Petroleum	U.S.S. Alverton #1	Gas	3,848	8,000	S	40°10′00″	4,300	W	79°35′00″
do.	do.	129-22292	Ashtola Production Co.	Cole, M. #3	Gas	4,008	10,750	S	40°10′00″	5,850	W	79°35′00″
do.	do.	129-22862	Questa Petroleum	Folwarczny #1	Gas	4,192	12,000	S	40°12′30″	11,600	W	79°30′00″
do.	do.	129-22908	do.	Muellerleile #2	Gas	4,104	10,800	S	40°12′30″	10,480	W	79°30′00″
do.	New Kensington East	129-22951	Penneco Oil Co., Inc.	Wise #1	Dry	3,433	3,550	S	40°32′30″	7,250	W	79°40′00″
do.	do.	129-23205	do.	Whitten #8	Gas	4,321	5,500	S	40°32′30″	8,390	W	79°37′30″
do.	do.	129-23250	do.	Plowman #2	Gas	4,527	8,200	S	40°32′30″	350	W	79°40′00″
do.	do.	129-23346	Kriebel Gas, Inc.	Crooks, William #001	Gas	3,428	6,780	S	40°32′30″	6,655	W	79°40′00″
do.	do.	129-23349	Penneco Oil Co., Inc.	Coward, Shirley #1	Gas	3,955	12,850	S	40°37′30″	5,140	W	79°40′00″
do.	do.	129-23363	Kriebel Gas, Inc.	Schrayer, G. #001	Gas	3,553	7,000	S	40°32′30″	4,250	W	79°37′30″
do.	do.	129-23377	H and H Production Management Corp.	Haffey, Rebecca #2	Gas	4,036	1,875	S	40°32′30″	5,475	W	79°40′00″
do.	do.	129-23390	Penneco Oil Co., Inc.	Hartge, William #2	Gas	3,926	8,210	S	40°35′00″	10,100	W	79°40′00″
do.	do.	129-23392	H and H Production Management Corp.	Cowan, Louis #2	Gas	4,107	13,225	S	40°35′00″	1,525	W	79°42′30″
do.	do.	129-23398	Penneco Oil Co., Inc.	Keibler #1	Gas	4,018	90	S	40°32′30″	2,500	W	79°42′30″
do.	do.	129-23401	do.	Starnes, Margaret #1	Gas	3,735	13,920	S	40°37′30″	5,600	W	79°40′00″
do.	do.	129-23403	B and B Oil and Gas Production	Horvath, Anna #1	Gas	4,071	10,390	S	40°32′30″	3,210	W	79°40′00″
do.	Saltsburg	129-21981	Questa Petroleum	Waddle #4	Gas	2,458	9,900	S	40°30′00″	2,250	W	79°25′00″
do.	do.	129-21988	do.	DeFloria, J. #2	Gas	4,192	13,100	S	40°30′00″	10,600	W	79°27′30″
do.	do.	129-22311	PC Exploration, Inc.	Bell, Boyd #1	Gas	4,270	2,400	S	40°30′00″	3,300	W	79°27′30″
do.	do.	129-22320	Questa Petroleum	Serene, J. #2	Gas	3,833	3,700	S	40°30′00″	10,500	W	79°25′00″
do.	do.	129-23238	PC Exploration, Inc.	Bortz, Frank #1	Gas	3,992	4,700	S	40°27′30″	2,100	W	79°27′30″
do.	do.	129-23317	do.	Atlantic Coke #8	Gas	3,988	9,010	S	40°30′00″	4,300	W	79°25′00″
do.	do.	129-23325	do.	Atlantic Coke #10	Gas	4,025	7,780	S	40°30′00″	4,290	W	79°25′00″
do.	do.	129-23327	do.	Gray, Robert #9	Gas	3,865	6,220	S	40°30′00″	5,660	W	79°25′00″
do.	do.	129-23344	do.	Miller, Guy #1	Gas	4,181	4,250	S	40°27′30″	5,850	W	79°27′30″
do.	do.	129-23353	do.	Atlantic Crushed #7	Gas	3,927	7,700	S	40°30′00″	5,520	W	79°25′00″
do.	do.	129-23380	Phillips Production Co.	Haslop, Robert #2-1	Gas	4,002	25	S	40°27′30″	7,700	W	79°22′30″

Table 25. *(Continued).*

County	*Quadrangle*	*Permit number*	*Operator*	*Name of well*	*Type of well*	*Total depth (feet)*	*Latitude (feet)*	*Longitude (feet)*
Westmore-land	Saltsburg	129-23383	Phillips Production Co.	McCoy, James #2-1	Gas	4,124	6,125 S 40°27'30"	3,750 W 79°25'00"
do.	do.	129-23389	do.	McCoy, James #3-1	Gas	4,114	5,175 S 40°27'30"	2,900 W 79°25'00"
do.	do.	129-23404	do.	Lasher, Emmett #1	Gas	3,924	10,250 S 40°30'00"	9,125 W 79°25'00"
do.	Slickville	129-22705	CNG Producing Co.	Boyle and Krivach #3	Dry	4,110	6,010 S 40°27'30"	258 W 79°30'00"
do.	do.	129-23294	Angerman Assoc., Inc.	Karp, J. #1	Gas	2,811	2,050 S 40°27'30"	7,450 W 79°35'00"
do.	do.	129-23322	do.	Bue, Svein #2	Gas	2,809	150 S 40°27'30"	5,750 W 79°35'00"
do.	do.	129-23329	do.	Heckrein, I. #2	Gas	2,651	12,000 S 40°30'00"	4,650 W 79°35'00"
do.	do.	129-23337	do.	Monheim, A. J. #1	Gas	2,606	14,275 S 40°30'00"	6,200 W 79°35'00"
do.	do.	129-23360	H and H Production Management Corp.	Klingensmith, C. #2	Gas	4,200	8,925 S 40°30'00"	4,200 W 79°30'00"
do.	do.	129-23361	Angerman Assoc., Inc.	Metzgar, George #3	Gas	2,655	10,400 S 40°30'00"	650 W 79°35'00"
do.	do.	129-23379	do.	Schmidt, John #1	Gas	2,586	9,100 S 40°30'00"	3,050 W 79°35'00"
do.	do.	129-23381	do.	Walter, W. F. #1	Gas	2,774	14,850 S 40°30'00"	8,400 W 79°35'00"
do.	do.	129-23384	H and H Production Management Corp.	Klingensmith, C. #3	Gas	4,168	7,750 S 40°30'00"	4,925 W 79°30'00"
do.	Smithton	129-22866	Questa Petroleum	Snyder #4	Gas	3,668	10,030 S 40°12'30"	2,800 W 79°42'30"
do.	do.	129-22900	do.	Momyer #3	Gas	3,731	10,850 S 40°12'30"	3,520 W 79°42'30"
do.	do.	129-23051	do.	Sherbondy, F. #2-441	Dry	4,310	9,050 S 40°12'30"	8,100 W 79°42'30"
do.	do.	129-23055	do.	Nyswaner, R. #2-A	Dry	3,513	6,350 S 40°12'30"	9,000 W 79°40'00"
do.	do.	129-23127	do.	Steiner, J. #2	Dry	4,031	10,390 S 40°10'00"	3,900 W 79°42'30"
do.	do.	129-23166	do.	Rupert, Bruce #1	Dry	4,275	6,750 S 40°15'00"	9,570 W 79°40'00"
do.	Vandergrift	129-23193	Angerman Assoc., Inc.	Kunkle, E. N. #2	Gas	3,595	9,950 S 40°35'00"	5,500 W 79°35'00"
do.	do.	129-23249	CNG Producing Co.	Hickman, V. #1-3859	Gas	3,710	9,000 S 40°32'30"	2,225 W 79°32'30"
do.	do.	129-23257	do.	Hickman, V. Q. #2	Gas	3,863	8,500 S 40°32'30"	12,175 W 79°30'00"
do.	do.	129-23259	do.	Warner #2-3856	Gas	3,490	3,225 S 40°32'30"	3,125 W 79°32'30"
do.	do.	129-23278	Kriebel Gas, Inc.	Lutz, Charles #002	Gas	4,024	4,750 S 40°32'30"	3,100 W 79°30'00"
do.	do.	129-23306	Victory Energy Co.	Schaeffer #1	Gas	4,023	13,575 S 40°35'00"	4,200 W 79°32'30"
do.	do.	129-23307	do.	Schall-Kyle #2	Gas	3,898	4,025 S 40°32'30"	1,875 W 79°30'00"
do.	do.	129-23320	do.	Schall-Kyle #3	Gas	4,019	4,000 S 40°32'30"	875 W 79°30'00"
do.	do.	129-23323	do.	Lutz/Kriebel #003	Gas	3,991	5,100 S 40°32'30"	1,475 W 79°30'00"
do.	do.	129-23328	Kriebel Gas, Inc.	McKown #001	Gas	3,737	13,025 S 40°35'00"	1,125 W 79°35'00"
do.	do.	129-23339	Dorso Energy Co.	Lewis and King #1	Gas	3,415	13,620 S 40°35'00"	8,080 W 79°32'30"
do.	do.	129-23340	Angerman Assoc., Inc.	G and G Gas Co. #1	Gas	3,942	11,225 S 40°35'00"	7,925 W 79°35'00"
do.	do.	129-23351	Victory Energy Co.	Hronyetz/Kyle #1	Gas	3,831	12,300 S 40°35'00"	6,850 W 79°35'00"
do.	do.	129-23352	Angerman Assoc., Inc.	Kunkle, E. N. #4	Gas	3,663	11,550 S 40°35'00"	5,600 W 79°35'00"
do.	do.	129-23357	do.	Speicher/Biesecker 1	Gas	3,784	6,350 S 40°32'30"	875 W 79°32'30"
do.	do.	129-23358	do.	DeForno, Mary #1	Gas	3,784	11,300 S 40°32'30"	3,900 W 79°30'00"
do.	do.	129-23359	do.	Rubright, Clair #3	Gas	3,449	5,250 S 40°32'30"	5,050 W 79°32'30"
do.	do.	129-23370	do.	Kunkle, E. #3	Gas	3,692	11,000 S 40°35'00"	4,700 W 79°35'00"
do.	do.	129-23393	do.	Blair, D. C. #5	Gas	3,656	11,650 S 40°35'00"	4,100 W 79°32'30"