

**PROGRESS REPORT 160**  
**PENNSYLVANIA GEOLOGICAL SURVEY**  
**Fourth Series**

**OIL AND GAS DEVELOPMENTS**  
**IN**  
**PENNSYLVANIA**  
**IN**  
**1961**

**by**

**Wm. S. Lytle, Addison S. Cate**  
**Wm. G. McGlade, Walter R. Wagner**

**COMMONWEALTH OF PENNSYLVANIA**  
**DEPARTMENT OF INTERNAL AFFAIRS**  
**Genevieve Blatt, Secretary**  
**TOPOGRAPHIC AND GEOLOGIC SURVEY**  
**Arthur A. Socolow, State Geologist**  
**1962**

## CONTENTS

	Page
ABSTRACT	1
INTRODUCTION	2
ACKNOWLEDGMENTS	4
DEEP-SAND EXPLORATION AND DEVELOPMENT	4
Exploration for and exploitation of gas in Medina rocks,	8
Structure	8
Stratigraphy	8
Developments in the deep gas fields	10
SHALLOW-SAND EXPLORATION AND DEVELOPMENT	19
Shallow-sand gas developments	21
Shallow-sand oil developments	21
SUMMARY	23
ARTICLES ON PENNSYLVANIA GEOLOGY, 1961	28

## ILLUSTRATIONS

### Plates

Plate 1. Pre-Upper Devonian stratigraphy of the Kardosh No. 1 well	3
2. Annual rate of deep-sand exploration and development	6
3. Structure contour map of northwestern Pennsylvania, Erie, Crawford, and Warren Counties	5
4. Stratigraphic cross section of Niagaran-Medinan rocks	9
5. Location of wells reaching or penetrating Lower Silurian Medina Group	15
6. Columnar sections showing stratigraphic positions of oil and gas sands of western Pennsylvania	12
7. Shallow gas wells drilled in 1961 in Armstrong and part of Westmoreland Counties, Pennsylvania	14
8. Oil and gas map of Pennsylvania, 1961	26
9. Crude oil prices, production, and well completions - Bradford Field	18

## Figures

	Page
Figure 1. Crude oil production curve of the Bradford District, Pennsylvania and New York	20
2. Annual production of crude oil in Pennsylvania	22
3. Annual production of natural gas in Pennsylvania	24

## Tables

Table 1. Deep and shallow-well completions summary, Pennsylvania, 1961	4
2. Production and reserves, Pennsylvania, 1961	4
3. Summary of deep well completions Pennsylvania, 1961	7
4. Important discoveries in Pennsylvania, 1961	32
5. Important dry exploratory tests in Pennsylvania, 1961	33
6. Deep gas production in Pennsylvania, 1961	34
7. List of wells reaching or penetrating the Lower Silurian Medina Group	37
8. Shallow-sand well completions in Pennsylvania, 1961	43
9. Shallow-sand wells deepened in Pennsylvania, 1961	44
10. Price per barrel of crude oil, 1961	21
11. Summarized record of deep wells drilled in Pennsylvania, 1961	45
12. Deep well samples collected during 1961	54

## OIL AND GAS DEVELOPMENTS IN PENNSYLVANIA IN 1961

By

William S. Lytle, Addison S. Cate,  
William G. McGlade, and Walter R. Wagner

### ABSTRACT

Exploration in Pennsylvania during 1961 resulted in the discovery of 4 new gas fields, 6 new gas pools, and 2 deeper gas pools. Also several fields and pools were extended.

The outstanding discovery was the Whippoorwill Field in Cameron County on the southeast flank of the Sabinsville anticline. Other important discoveries were the Pavia Field in Blair and Bedford Counties, the Spruell Field in Fayette County, the Brooky Pool in Crawford County, the Lundys Lane Pool in Erie County, and the Bailey and Clarke pools in Westmoreland County. The greatest density of deep drilling (Middle Devonian or older) occurred in Crawford County where 21 wells were drilled. Armstrong County again had the greatest number of shallow-sand completions (Upper Devonian or younger) outside of the secondary-recovery areas with the drilling of 46 wells. No new shallow-sand field or pool was discovered during the year.

During 1961 there was 679 new wells drilled and 30 wells deepened. Of the 679 current-year completions, 642 were in proven fields, and 37 were exploratory tests. Of the 642 proven field wells, 211 were oil, 182 water input, 172 gas, 8 gas input, 10 gas storage, and 59 dry holes. Of the 211 oil wells, 168 were drilled in connection with secondary-recovery operations. Of the 37 exploratory tests, 12 were gas and 25 were dry. Of the 311 completions drilled outside of underground gas storage or secondary-recovery operations, 84 were dry, a dry hole ratio of 1 in slightly over 3.7. The total footage drilled during the year was 1, 722, 955 feet.

Exploratory tests totaled 37, drilling a total of 224, 615 feet of hole, or an average per well of 6, 071 feet. Of the 37 exploratory tests, 12 were successful and 25 were dry, giving a success ratio of 1 in 3.1 or a failure ratio of 1 in 1.5.

Oil pipeline runs totaled 5, 580, 000 bbls., or a decrease of 6.1 percent over the 1960 figure of 5, 942, 000 bbls. Proven oil reserves as of December 31, 1961, were estimated at 102, 448, 000 bbls. Gas produced totaled 98, 318, 000 Mcf as compared with 119, 671, 000 Mcf in 1960. Gas

reserves were estimated at 1, 168, 855, 000 Mcf at the end of the year. The total reservoir capacity for the storage of natural gas in Pennsylvania is 497, 000, 000 Mcf.

The total acreage held by major oil and gas companies for deep oil and gas exploration in Pennsylvania amounted to about 3, 649, 000 acres at the year's end. A number of geological field parties were active during 1961. Seismic crews logged 133 weeks in the state. This is an increase of about 28 percent over the seismic activity shown in 1960.

## INTRODUCTION

A summary of the oil and gas developments during 1961 is presented in this publication. The skeletal logs of the deep wells (those which reached rocks of Middle Devonian age or older) drilled during the year are shown in Table 11 and are supplementary to those published in Bulletins M 31, M 39, and M 45, and Progress Report 158 of the Fourth Series of the Pennsylvania Bureau of Topographic and Geologic Survey. Skeletal logs of the deep wells drilled prior to 1950 and other information on Pennsylvania's oil and gas activities up to that time are to be found in Bulletin M 31; similar information for the 1950 to 1954 period was published in Bulletin M 39, for the 1955 to 1959 period in Bulletin M 45, and for the year 1960 in Progress Report 158. The shallow-sand (Upper Devonian or younger) oil and gas developments are described in Progress Reports 135, 139, 143, 144, 147, 150, 151, 154, 155, 157, and 158 of the Survey.

Both shallow and deep drilling activity decreased during the year as compared with 1960. Deep drilling decreased 31 percent and shallow drilling 10 percent. Crude oil prices remained steady at a high level during the first 11 months of the year and then decreased 17 cents per barrel during December. At the year's end the Bradford District price for a barrel of crude was \$4.63.

The deep and shallow well completion summary for 1961, exclusive of those wells drilled in connection with underground gas storage and secondary-recovery oil operations, are shown in Table 1.

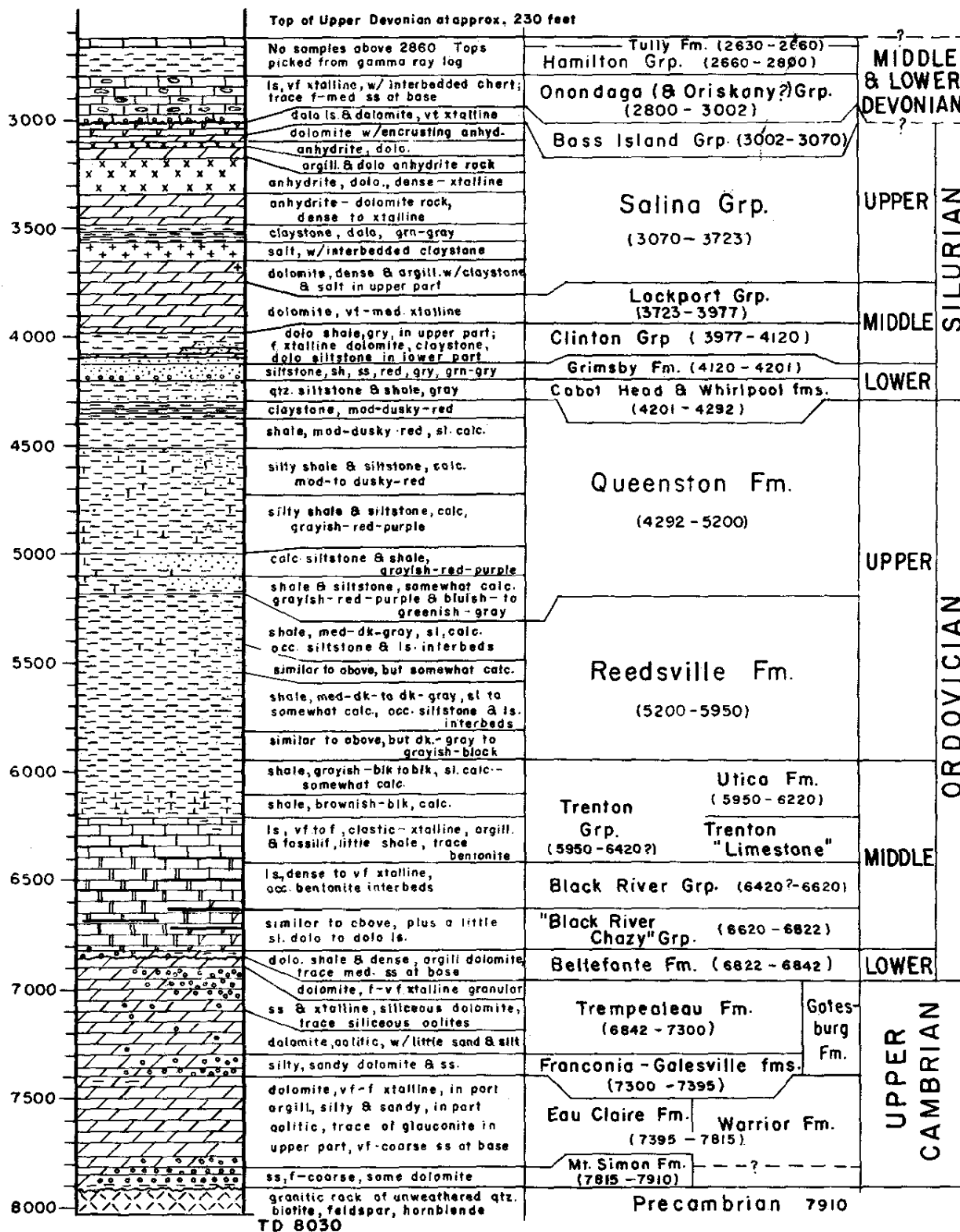
Table 2 shows the amount of crude oil and natural gas produced during the year and the oil and gas reserves as of December 31, 1961.

Listed in Table 12 are the deep wells from which drill cuttings were collected during the year. A complete list of drill cuttings on file with the Survey may be obtained from the Survey's "Catalogue of Deep Well Samples" (I. C. No. 16) as well as from the supplemental lists published in Progress Reports 157, 158, and on Table 12 of this publication.

# Pre-Upper Devonian Stratigraphy of KARDOSH No.1 Well

by M.L. Benedum & Arkansas-Louisiana Gas Co.

Summerhill Twp., Crawford Co., Pennsylvania



W.R. Wagner  
Jan. 1960

TABLE 1. Deep and Shallow Well Completions Summary,  
Pennsylvania, 1961\*

Completions	Oil	Gas	Dry	Total	Percent Successful
Exploratory tests	-	12	25	37	32
Development wells*	43	172	59	274	78
Totals	43	184	84	311	73

\*Does not include wells drilled in connection with underground gas storage or secondary-recovery oil operations.

TABLE 2. Production and Reserves, Pennsylvania, 1961

	1960	1961	Cumulative Total to 12/31/61	Reserves 12/31/61
Oil (bbls.)	5,942,000	5,580,000	1,235,972,000	102,448,000
Gas (Mcf)	119,671,000	98,318,000	7,508,738,000	1,168,855,000

### ACKNOWLEDGMENTS

The writers acknowledge the cooperation, in the preparation of this review, of Donald O. Kauss, the Bradford District Producers Association, and the Northeastern Gas and Oil Scouts. Virginia Fairall and Lillian Heeren of the Pennsylvania Bureau of Topographic and Geologic Survey did the drafting and assisted with the compiling of the data.

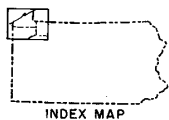
### DEEP-SAND EXPLORATION AND DEVELOPMENT

During 1961 deep-sand exploration in Pennsylvania resulted in the discovery of 4 new gas fields, 6 new gas pools, and 2 successful deeper pools. Deep-sand exploration also extended old fields and pools and resulted in the greatest drilling activity to date in the state in the search for Medina (Lower Silurian) oil and gas. Although there were fewer deep wells drilled in the state during the year, there were more wildcats drilled in 1961 than in 1960. The producing depth record of 8,574 feet (in Oriskany) is still held by Felmont's No. 1 Snyder in Somerset County, and the deepest well drilled is still California Company's No. 1 Bennett in Sullivan County (12,343 feet). The greatest density of deep drilling was in northwestern Pennsylvania in Crawford and Erie Counties where 32 wells were completed, finding 5 new pools and extending

80°30'

80°00'

79°30'



INDEX MAP

# STRUCTURE CONTOUR MAP OF NORTHWESTERN PENNSYLVANIA ERIE, CRAWFORD AND WARREN COUNTIES

PENNSYLVANIA GEOLOGICAL SURVEY  
FOURTH SERIES, PR 160

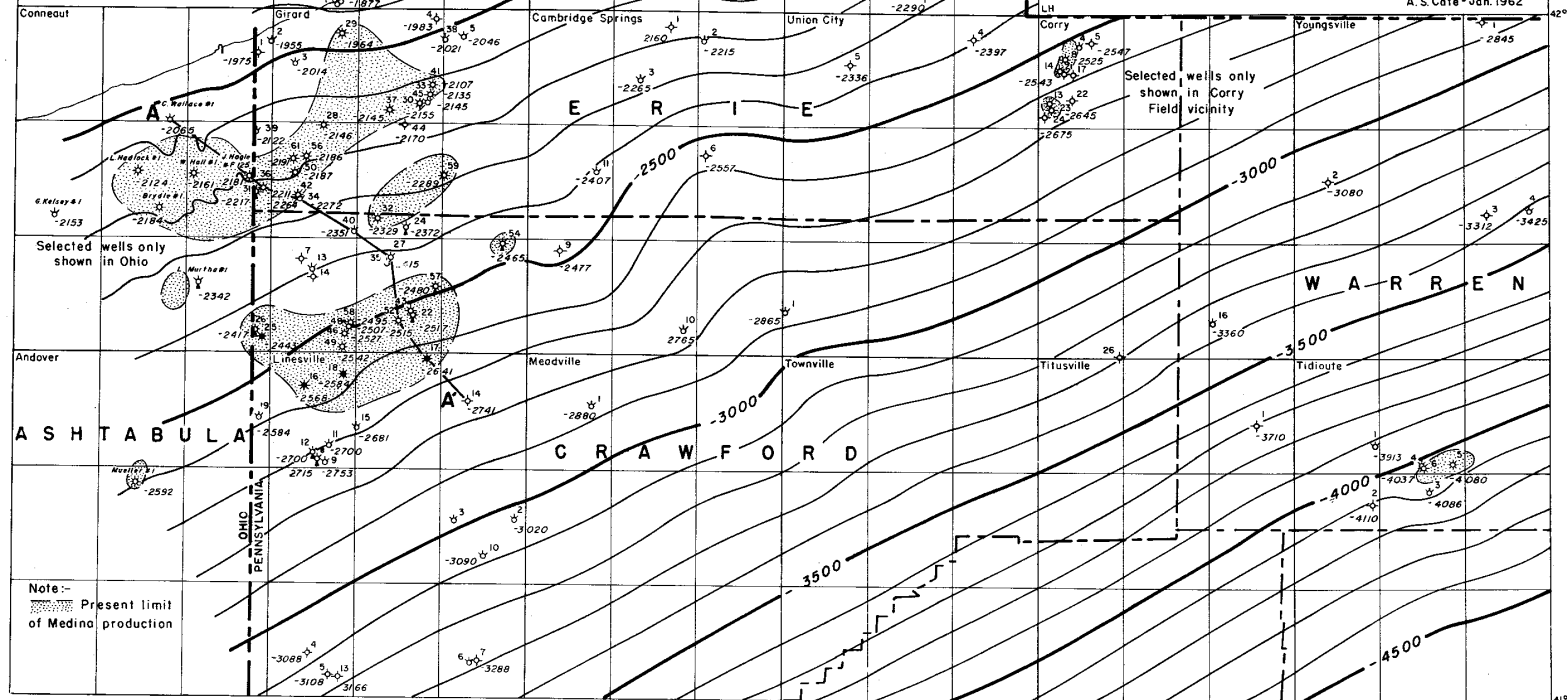
SCALE  
0 40000 80000 FEET

CONTOURED ON BASE OF IRONDEQUOIT FORMATION  
100' CONTOUR INTERVAL ELEVATIONS BELOW SEA LEVEL  
ONLY WELLS REACHING CONTOURED HORIZON SHOWN

- \* Gas well
  - \* Oil and gas well
  - W Well with show of gas
  - W Well with show of oil
  - W No oil or gas reported
- } from Medina Group

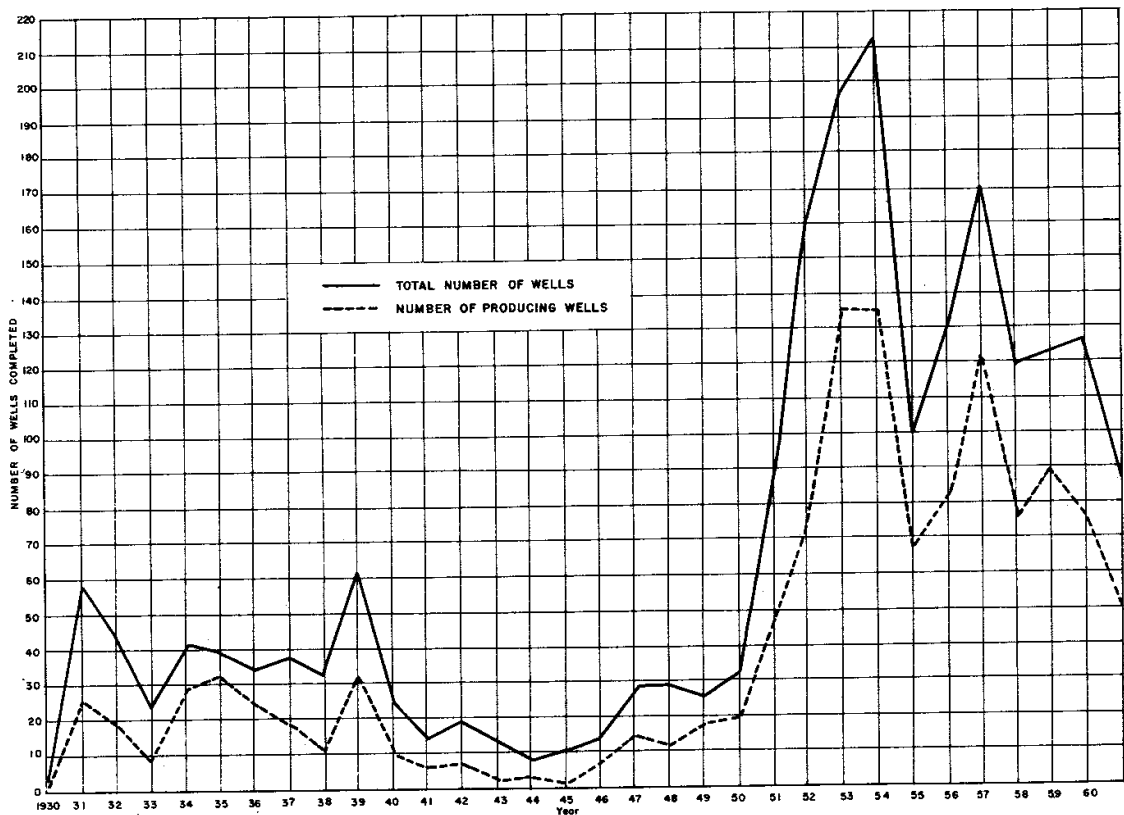
A — A' LINE OF SECTION (see Plate 4.)

A. S. Cate—Jan. 1962



Note:—  
Present limit  
of Medina production

Plate 3.



ANNUAL RATE OF DEEP SAND EXPLORATION AND DEVELOPMENT  
PLATE 2

the Indian Spring Field to the northeast and southwest.

The skeletal logs of the deep wells completed during the year are given in Table 11, and the locations of these deep wells are shown on Plate 8. Plate 1 shows the pre-Upper Devonian stratigraphy of the Kardosh No. 1 well, the only well drilled to the Precambrian in Pennsylvania. By the end of 1961 a total of 2,202 deep wells had been drilled in the state. Of the 2,202 deep wells drilled to date, 1253 were gas wells, 6 were oil and gas wells, 872 were dry holes, 70 were drilled for gas storage, and 1 is to be used as a disposal well for waste pickle liquor.

There were 82 wells drilled during the year to the Oriskany Formation or deeper, of which 48 were gas wells, 33 had shows or were dry holes, and one was drilled for gas storage. Three wells were completed in the Onondaga Chert (Middle Devonian), of which one was dry, one had a show of gas, and the third discovered a new gas pool. Two other wells were completed as dry holes above the Onondaga Limestone. Of the 87 deep wells completed during the year, 50 wells were fractured and 40 of these were completed as gas wells. Before fracturing, the total open-flow capacities amounted to 23,750 Mcf of gas per day, compared with 114,408 Mcf of gas per day after fracturing. Nine gas wells were not fractured, and their total initial open-flow capacities amounted to 33,809 Mcf of gas daily. The largest initial open-flow potential was 18,762 Mcf of gas daily after fracturing from a Cameron County well, A. Pardee Estate No. 5. The deep-well total footage amounted to 519,861 feet. Rotary tools completed 76 deep wells during the year, most of them with air rotary, while 11 were completed with cable tools.

During 1961 there were 87 deep wells completed as compared with 126 in 1960. The Indian Spring Field had the greatest number of completions with 5 producers in the Brooky Pool and 7 producers in the Indian Spring Pool. The Whippoorwill Field in Cameron County, a new discovery in 1961, had 5 completions, of which 3 were gas wells, and 2 had shows of gas and were abandoned.

The deep-well completions for Pennsylvania during 1961 are summarized in Table 3.

TABLE 3. Summary of Deep Well Completions, Pennsylvania, 1961

	Development		Wildcat		Storage	Total
Gas	37		12			49
Dry		12		25	1	38
Footage	206,645	82,438	71,300	153,315	6,163	519,861

The annual rage of deep-sand exploration and development since the discovery of the Tioga Field in 1930, the first deep-sand gas field to be discovered in Pennsylvania, is shown in Plate 2. The 1961 discoveries are listed in Table 4 and the more important dry exploratory tests in Table 5. Information on the deep-sand gas pools and fields, including production statistics is recorded in Table 6.

### Exploration for and Exploitation of Gas in Medinan Rocks

During 1961 there were 34 wells drilled in the State with the intent of testing the Medina section; the remainder of the 87 "deep" wells drilled during the year were intended to test Onondaga-Oriskany potentials. The considerable effort expended by the industry to increase Medina gas reserves and production was concentrated in the northwestern part of the State - there were 21 wells drilled in Crawford County, 11 in Erie County, 2 in Warren County, and 1 in Mercer County (Plate 3 covers an area which includes all but one of the wells drilled in 1961 to the Medina).

The search in northwestern Pennsylvania during 1961 for gas in the Medina was stimulated by two factors. The first was the tapering off of development drilling to the west in Ashtabula County, Ohio, (where activity had commenced in 1958) and the subsequent migration of activity eastward; the second was the construction of pipelines providing an outlet for gas produced in the northwestern counties.

Exploration and exploitation in the area is proceeding at an undiminished rate as this is being written in early 1962.

### Structure

Plate 3 shows the homoclinal structural situation at an horizon just above the Medina section; the contoured horizon is the base of the Irondequoit Formation in the Clinton Group. No structural closures or faults are evident, nor are there any but small scale flexures present - these plunging in a southeasterly direction. It is not possible to demonstrate that the present-day structural position of Medina sands is responsible for accumulations which have been found.

### Stratigraphy

Plate 4 is a diagram of a stratigraphic section which is representative of the area in which most of Pennsylvania's Medina gas is produced.

The Medina Group is a sequence of fine to coarse detrital material. Many people who are familiar with the stratigraphy of the region think of the Group as being divided into three formations. These three

C.O. Wallace #1 Tidal Oil Conneaut #128 Ashtabula Co, Ohio El. 693 KB	J. Hogle #1 Felmot Oil Conneaut #91 Ashtabula Co, Ohio El. 903 DF	C. Huston #2 Britton, et al. Girard #36 Erie Co, Pa. El. 956 RT	Borst #1 McConnell Girard #34 Erie Co, Pa. El. 974 RT	L. Sargent #1 Pennsylvania Gas Girard #40 Crawford Co, Pa. El. 905	Shadeland #1 Imperial Oil Girard #27 Crawford Co, Pa. El. 932 DF	G.L. Walton #1 Sylvania Corp. Girard #52 Crawford Co, Pa. El. 955 DF	Page #1 Benedum-Trees Linesville #17 Crawford Co, Pa. El. 1017 DF	Kardosh #1 Ark.-La. Gas Linesville #14 Crawford Co, Pa. El. 1337 KB
---	---	---	---	--	--	--	---	---

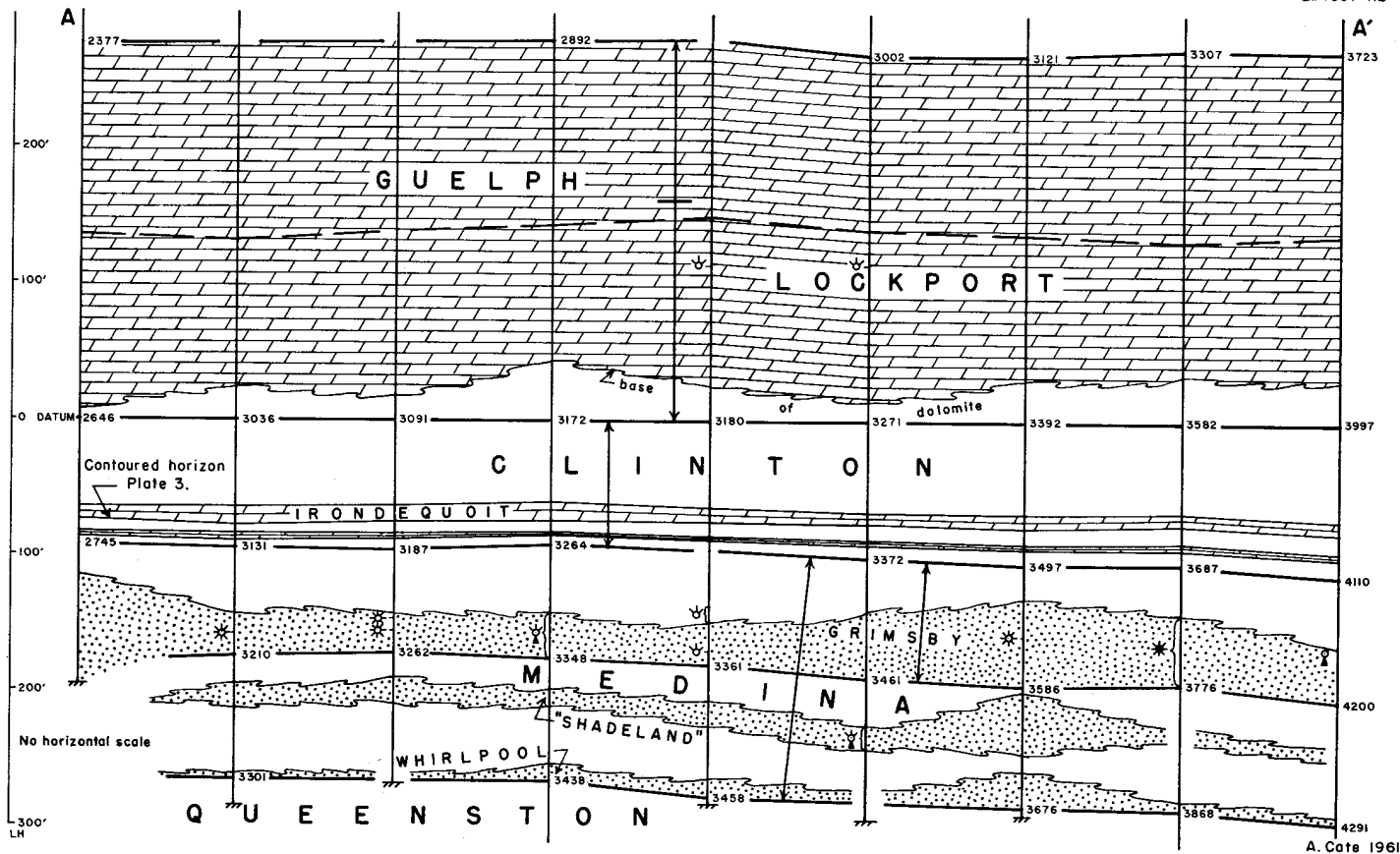


Plate 4. - STRATIGRAPHIC CROSS SECTION OF NIAGARAN — MEDINAN ROCKS  
(See Plate 3. for location)

divisions are, from bottom to top: the Whirlpool Sandstone, the Cabot Head (or Power Glen) Formation, and the Grimsby Formation. The Whirlpool was productive of some gas in the Corry Field (now depleted) in eastern Erie County (Corry Quadrangle, section A), but nowhere else in Pennsylvania has it yielded gas in commercial quantities. Within what is probably the Cabot Head (or Power Glen) Formation is a sandy zone, somewhat erratically developed, which is here referred to informally, and for the first time, as the "Shadeland" Sandstone. This sandstone zone is productive of gas in only one well in Pennsylvania (Girard No. 42 on Plate 3), but shows of gas have been found in numerous wells in the north-western part of the State.

By far the greatest amount of gas produced from the Medina Group comes from the Grimsby Formation. Zones with porosity and permeability sufficiently great to yield any gas that is entrapped range throughout the Grimsby. Of such a lenticular nature are the porous and permeable sandy zones in the Grimsby that it is impossible to identify a single productive zone from well to well. The base of the formation, however, does appear to be marked in this region by an abrupt change from coarse clastics at the base to much finer sediments in the underlying Cabot Head.

Changes in the color of the rocks in the Medina range from red and pink through green and gray to white. The boundaries at which the color changes occur are not reliable regional correlation markers but may be used in very localized areas.

The up-dip entrapment of gas (and minor amounts of oil) is apparently related to the lenticular nature of the Medina sands. Studies of sand-shale ratios, changes in bed thicknesses, cementation, etc., may yield clues to the probable environment of deposition which will make attractive and feasible the extension of the search for Medina gas production beyond its present boundaries.

Plate 5 is a map of the state showing the locations of all the wells reaching or penetrating the Lower Silurian Medina Group. Data on these wells are given in Table 7.

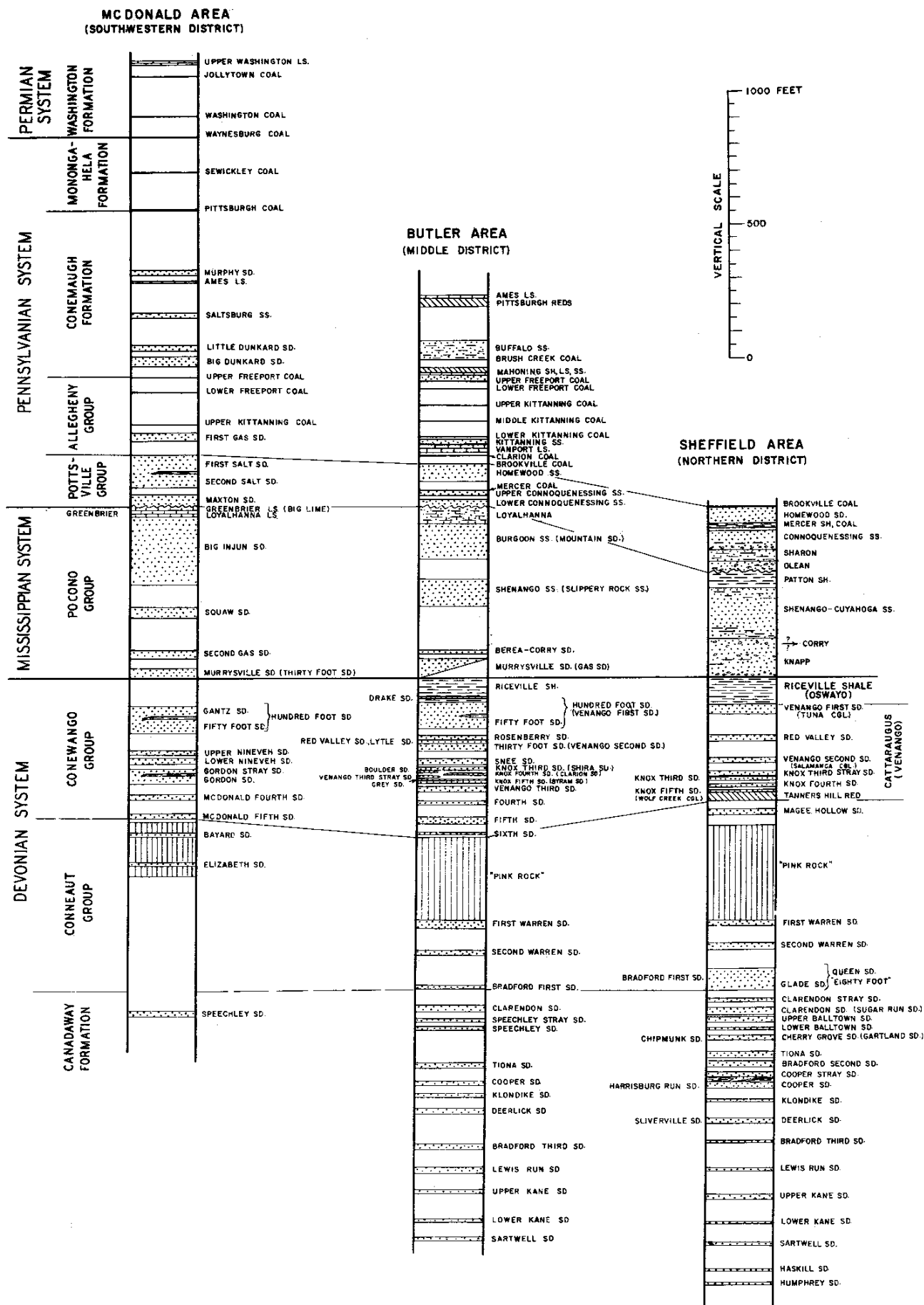
### Developments in the Deep Gas Fields

(Those wells mentioned in the following synopsis which are located in Erie, Crawford, and Warren Counties can be found on Plate 3 as well as Plate 8. In Table 11 the corresponding "map number" (for Plate 8) and "quadrangle number" (for Plate 3) can be compared for any specific well).

Erie County had 10 completions during the year. A new pool was

discovered by Pennsylvania Gas Company's Earl C. Miller No. 1 well (No. 52, Plate 8 and Table 11) in Elk Creek Township. Discovering the Lundys Lane Pool, the well produced 3,000 Mcf of gas (natural) from the Medina (Lower Silurian) at a depth of 3,418 feet and a rock pressure of 1050 psi in 24 hours. This well was completed in November, and by the end of the year no additional locations had been made. The Tracy Pool (Medina production) had 3 development wells completed within its borders. All three were gas wells with the best one producing 3,000 Mcf after fracturing at a rock pressure of 1050 psi in 24 hours. This was the Rositer No. 1 by Pennsylvania Gas Company (No. 54, Plate 8 and Table 11) in Girard Township. The Lexington Pool had one completion which had a show of gas in the Lockport (Middle Silurian); the well was abandoned. The Burgess Field (Medina production) in North East Township had a small successful outpost. After fracturing the well twice, it made 50 Mcf of gas at a rock pressure of 670 psi in 41 hours. The well has been shut in. A second well in the field, the Esterline by Vandenburg (No. 55, Plate 8 and Table 11), produced 300 Mcf with a rock pressure of 830 psi in 16 hours after fracturing the Medina. Four unsuccessful new field wildcats were drilled in Erie County during the year, all 4 wells reaching the Queenston. Apache Oil Company drilled 3 of the wells in Amity, Venango, and Waterford Townships. All 3 had show of gas and saltwater in the Medina and were abandoned. The fourth wildcat was drilled by Redfern and Hurd (No. 49, Plate 8 and Table 11) in Washington Township. The well is shut in with a show of gas in the Medina.

Crawford County had 21 completions during the year which made it the most active county in the state. An extension to the Indian Spring Trend discovered the Brooky Pool. This well, Brooky No. 1 (No. 34, Plate 8 and Table 11) by J. S. McCluskey et al, found 6,000 Mcf of gas at a rock pressure of 1125 psi in 2 days after fracturing the Medina. Four additional successful gas wells were drilled in this pool during the year. One well, the Fred Post, Jr. No. 1 by Benedum Trees Oil Co., had an initial open-flow of 3,500 Mcf after fracturing and a rock pressure of 1150 psi. Two of the wells found some oil with the gas. The Indian Spring Pool had 7 gas producers completed. The one with the highest initial open-flow was the N. Sims No. 1 well (No. 41, Plate 8 and Table 11) by Burnham Gas Company which was gauged at 9,184 Mcf of gas (natural) at a rock pressure of 1140 psi. Another 3 successful new pool wildcats were completed. They are Nos. 35, 46, and 48 on Plate 8 and Table 11. All three of the wells have been shut in. One unsuccessful new field wildcat, the Halfact No. 1 by Albaugh et al (No. 32, Plate 8 and Table 11) in Rome Township, reached the Queenston, was dry, and was abandoned. There were 5 unsuccessful new pool wildcats completed (Nos. 28, 29, 30, 31, and 47, Plate 8 and Table 11). They all reached the Queenston except one which was fractured in the Oriskany Sandstone resulting in saltwater production.



COLUMNAR SECTIONS SHOWING  
STRATIGRAPHIC POSITIONS OF OIL AND GAS SANDS  
OF WESTERN PENNSYLVANIA

JOHN M. BERGSTEN, 1960

A wildcat in West Salem Township, Mercer County, the T. Lihan by Bert Fields, had a show of gas in the Lockport but was abandoned after reaching the Queenston (Upper Ordovician).

A wildcat in Warren County discovered the Camp Run Field in Limestone Township. This was the Wheeler-Dusenberry by Paul Benedum (No. 80, Plate 8 and Table 11). After reaching the Queenston the well was fractured in the Medina. Production amounted to 250 Mcf at a rock pressure of 960 psi in 3 hours. A second well in the same field, F. Kapp No. 2, was completed by Biery et al at an open-flow of 170 Mcf of gas from the Medina.

The Mallory Pool in McKean County had its second completion with the Mallory No. 2 (No. 71, Plate 8 and Table 11) by Ritzos and McBride, producing 3,000 Mcf of gas (after shooting) with a rock pressure of 1866 psi in 47 hours.

Felmont Oil Corporation drilled an interesting wildcat, Pa. Tract 88 No. 1, on the southeast flank of the Marshlands anticline in Potter County, Abbott Township. The well was abandoned after finding the Oriskany Sandstone dry. United Natural Gas Company drilled an Oriskany storage well in the East Fork-Wharton gas storage field.

In Tioga County on the northwest flank of the Sabinsville anticline, New York State Natural Gas Corporation drilled a wildcat to the Helderberg Limestone (Lower Devonian). After finding the Oriskany dry, the well was abandoned.

Two wildcats in Lycoming County (Nos. 69 and 70, Plate 8 and Table 11) were abandoned after finding the Oriskany Sandstone dry. Well number 69 was drilled on the northwest flank of the State Run anticline in Brown Township. Well number 70 was drilled on the northwest flank of the Cogan House anticline in Pine Township.

A wildcat in Clinton County by Felmont Oil Corporation was drilled on the northwest flank of the Hyner anticline and was abandoned after finding the Oriskany dry.

Cameron County had 5 completions, 3 gas wells and 2 with shows of gas. The entire drilling took place in the Whippoorwill Field on the southeast flank of the Sabinsville anticline. The field was discovered by A. Pardee Estate No. 3 (No. 8, Plate 8 and Table 11) by New York State Natural Gas Corporation and G. L. Cabot. Gas production was from the Oriskany Sandstone at a depth of 6,774 to 6,803 feet.

After fracturing, the well produced 6,039 Mcf of gas at a rock pressure of 3,802 psi in 18 hours. The 2 other producers had high initial

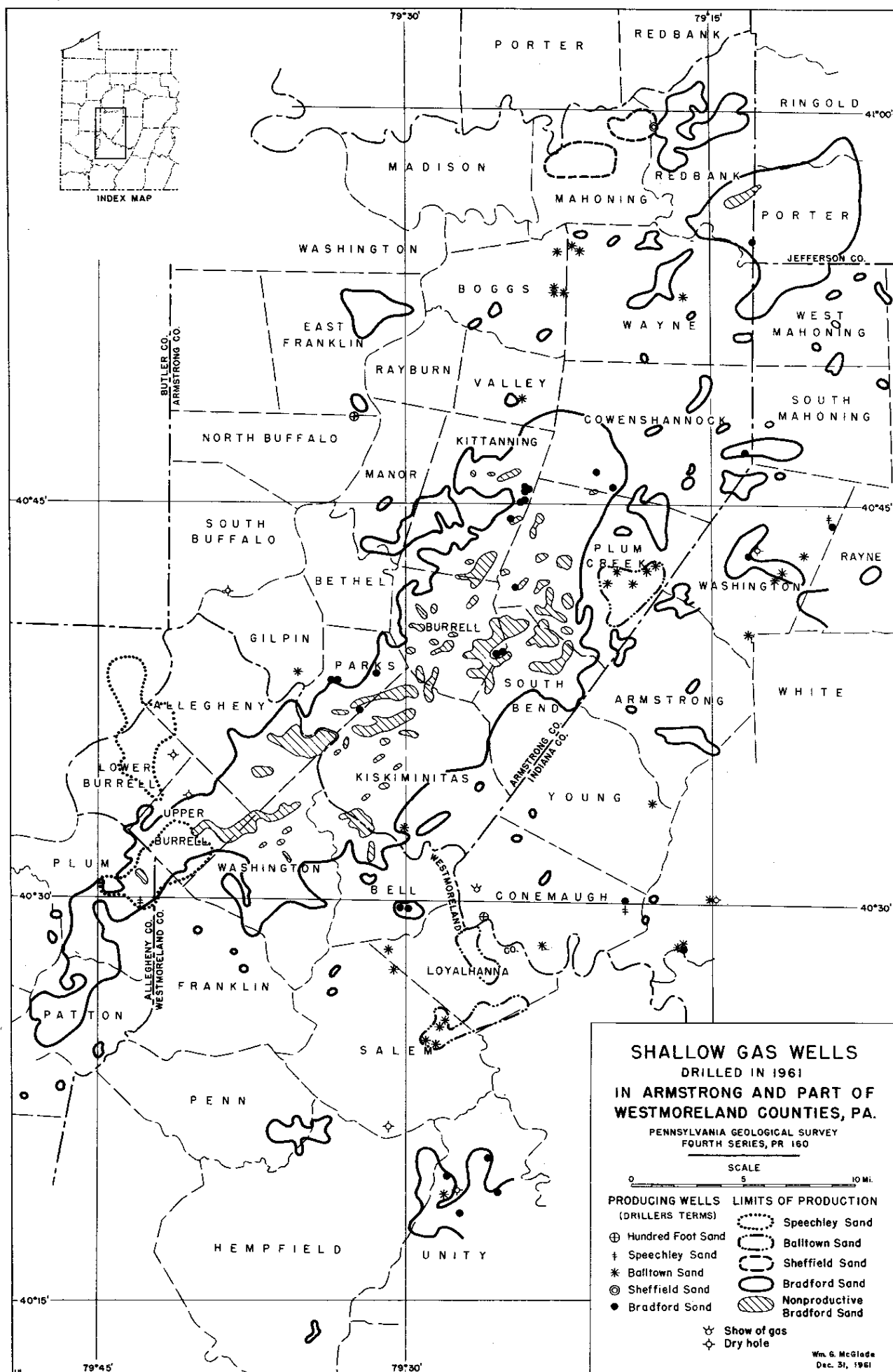
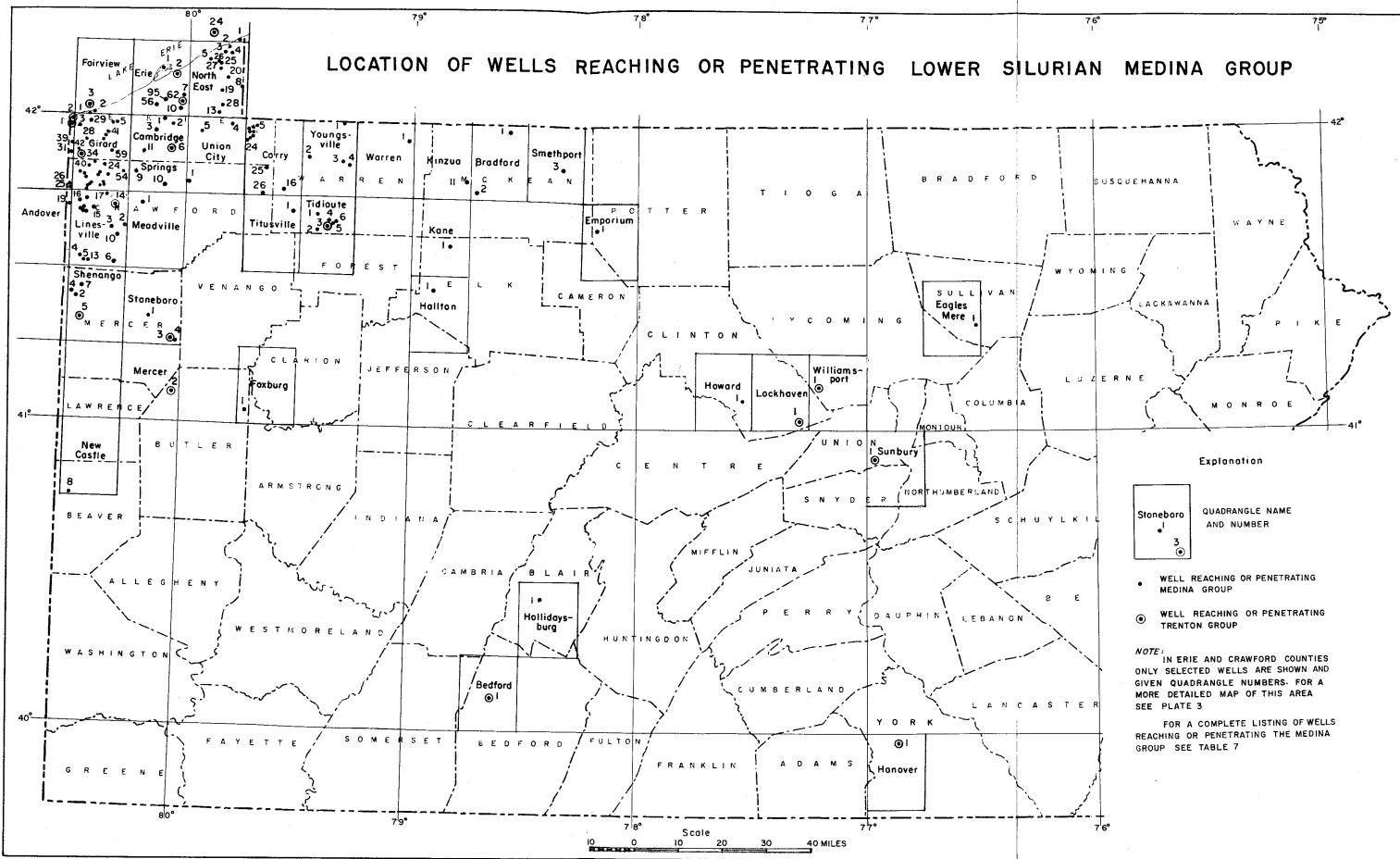


Plate 7

# LOCATION OF WELLS REACHING OR PENETRATING LOWER SILURIAN MEDINA GROUP



## Explanation



QUADRANGLE NAME  
AND NUMBER

- WELL REACHING OR PENETRATING  
MEDINA GROUP
- ⊙ WELL REACHING OR PENETRATING  
TRENTON GROUP

NOTE: IN ERIE AND CRAWFORD COUNTIES  
ONLY SELECTED WELLS ARE SHOWN AND  
GIVEN QUADRANGLE NUMBERS. FOR A  
MORE DETAILED MAP OF THIS AREA  
SEE PLATE 3

FOR A COMPLETE LISTING OF WELLS  
REACHING OR PENETRATING THE MEDINA  
GROUP SEE TABLE 7

open-flows. The A. Pardee Estate No. 5 had an initial open-flow after fracture of 18,762 Mcf of gas.

Development drilling continued in Clearfield County during the year in the DuBois and Helvetia pools. The DuBois Pool had 2 successful outpost completions and 2 successful development wells. The J. Jusnukis No. 1 by Devonian Gas and Oil Company and New York State Natural Gas Corporation had the highest initial open-flow of the 4 wells with 7,020 Mcf of gas and a rock pressure of 2,640 psi in 48 hours, from the Oriskany Sandstone. The Helvetia Pool had 7 completions with 5 producing wells and 2 dry holes. A joint operation by New York State Natural Gas Corporation and Lee Minter in the Helvetia Pool completed an Oriskany producer for 5,876 Mcf of gas after fracturing, with a rock pressure of 2,069 psi in 66 hours. The Benezette and Rockton pools each had a dry hole drilled within their boundaries. Two unsuccessful new field wildcats were drilled in the county. New York State Natural Gas Corporation and Delta Drilling Company drilled a dry hole (No. 12, Plate 8 and Table 11) to the Helderberg in Girard Township near the axis of the Clearfield syncline. The second wildcat (No. 22, Plate 8 and Table 11) was drilled near the axis of the Laurel Hill anticline in Bigler Township by New York State Natural Gas Corporation. The well produced 6 Mcf of gas at a rock pressure of 3,200 psi in 40 days after fracturing. After testing, the well was abandoned.

Two unsuccessful outposts were drilled in Jefferson County, both by New York State Natural Gas Corporation. The Helen G. Rhines, a Boone Mountain Pool outpost, was abandoned after finding a show of gas and saltwater in the Oriskany. The Burt Walls, an outpost of the DuBois Pool, was abandoned after finding saltwater in the Oriskany.

A wildcat in Indiana County by Delta Drilling Company was drilled on the Chestnut Ridge anticline in Cherry Hill Township. The well, J. H. Ralston No. 1D (No. 66, Plate 8 and Table 11) was dry in the Oriskany but was productive in an Upper Devonian sand.

When a wildcat on the Laurel Hill anticline in Cambria County (No. 6, Plate 8 and Table 11) did not find the Tully (Middle Devonian) at 8,455 feet, the well was abandoned by its operator, C. S. Grabiak. No shows were encountered in this well.

The three completions in Westmoreland County discovered a new pool, a deeper pool, and extended the new pool. Peoples Natural Gas Company discovered the new pool on the Laurel Hill anticline when their B. G. Clarke No. 1 (No. 85, Plate 8 and Table 11) found 6,500 Mcf of gas at a rock pressure of 3,309 psi in 96 hours after fracturing the Onondaga Chert which was topped at 8,335 feet. A few months later, Phillips Petroleum Company completed the second well in this pool extending it to

the northeast. The second discovery was made by Peoples Natural Gas Company and Snee & Eberly with their Bailey No. 1 (No. 84, Plate 8 and Table 11) wildcat on the Fayette anticline in South Huntington Township. The well produced 2,700 Mcf of gas at a 4-day rock pressure of 3,950 psi after fracturing the Onondaga Chert-Oriskany Sandstone interval.

Allegheny County had one completion which was the third deep well ever drilled and the first since 1938. Albert Starr drilled the well, Houston-Starr No. 1, which was abandoned without fracturing the gas show in the Oriskany Sandstone.

Washington County had 3 wildcats completed within its borders, all of which reached the Salina (Upper Silurian). Two of the wildcats were abandoned but the third wildcat by John T. Galey in Amwell Township on the Sam V. Cooper farm (No. 82, Plate 8 and Table 11) discovered the Glyde Pool. The well found 1,000 Mcf at a rock pressure of 1,000 Mcf at a rock pressure of 1,929 psi in 3 days after fracturing. Gas is being obtained from the Onondaga-Keyser interval and from an Upper Devonian horizon.

A Green County wildcat on the Bellevernon anticline, drilled by J. A. Fox et al on the G. W. Gordon farm was dry in the Onondaga-Keyser interval. The well was plugged back and completed as a shallow gas well in an Upper Devonian productive zone.

There were 5 completions in Fayette County during the year. Two wells were completed in the Ohiopyle Field, which had a total of 6 producing wells at the year's end. An East Summit Pool outpost well was abandoned after finding a show of gas in the Onondaga Chert and Oriskany Sandstone section. A second well in the Bailey Pool had some gas, and the operators were trying to make this a commercial well at the close of the year. The fifth well in the county, M. Spruell No. 1 (No. 64, Plate 8 and Table 11) on the Chestnut Ridge anticline by Peoples Natural Gas Company and Snee & Eberly, discovered the Spruell Field. Gas was found in the Onondaga Chert-Oriskany Sandstone interval, and production amounted to 3,110 Mcf of gas with a ten-day rock pressure of 3,423 psi after fracturing.

Three producing gas wells were drilled in Somerset County. The Williams Pool had two of these completed within its boundaries. The third was drilled in the Ohiopyle Field finding production in the Onondaga Chert.

A Blair County wildcat, Pa. Tract 26A No. 1 well (No. 4, Plate 8 and Table 11) by Phillips Petroleum Company in Greenfield Township, discovered the Pavia Field. Production from the Onondaga Chert-Oriskany Sandstone section amounted to 1,141 Mcf of gas with a 60-hour rock

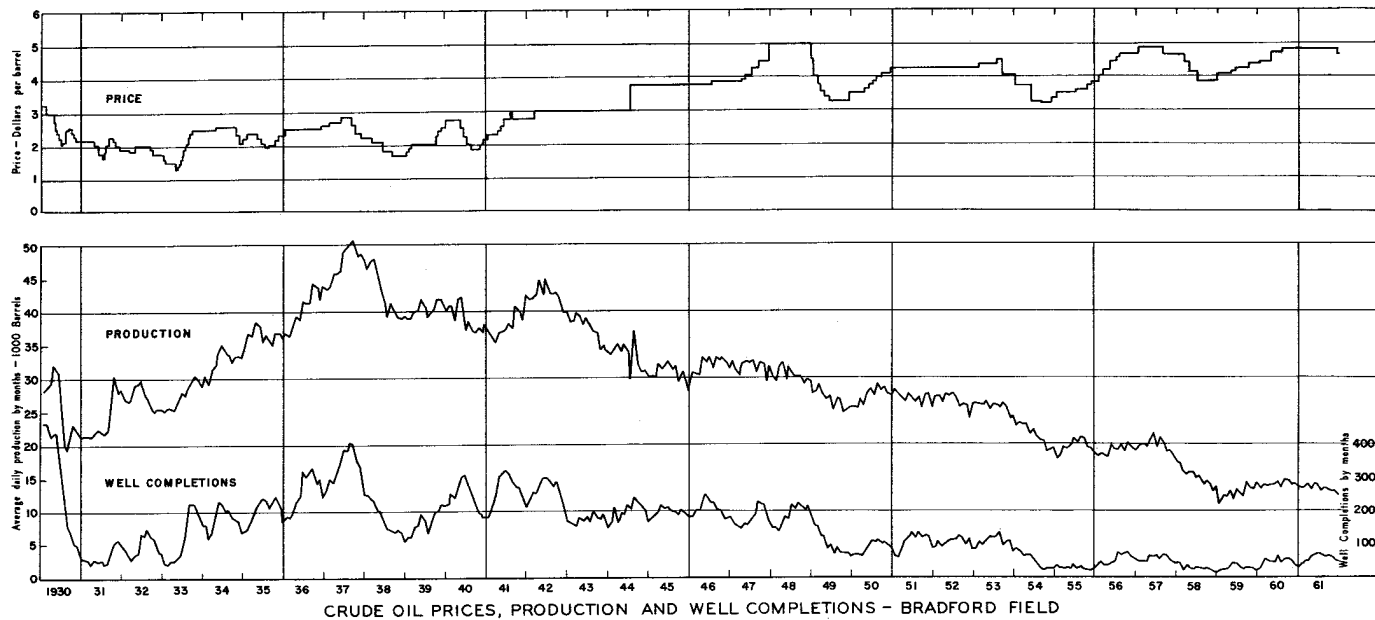


Plate 9

pressure of 3, 185 psi after fracturing. A second well in this field by Phillips Petroleum Company found a show of gas after fracturing the section and the well was abandoned.

The Purcell and Pavia fields, in Bedford County, each had a development well completed within their boundaries. Both wells produced gas from the Oriskany Sandstone. Neither field has been connected to a gas transmission line as yet.

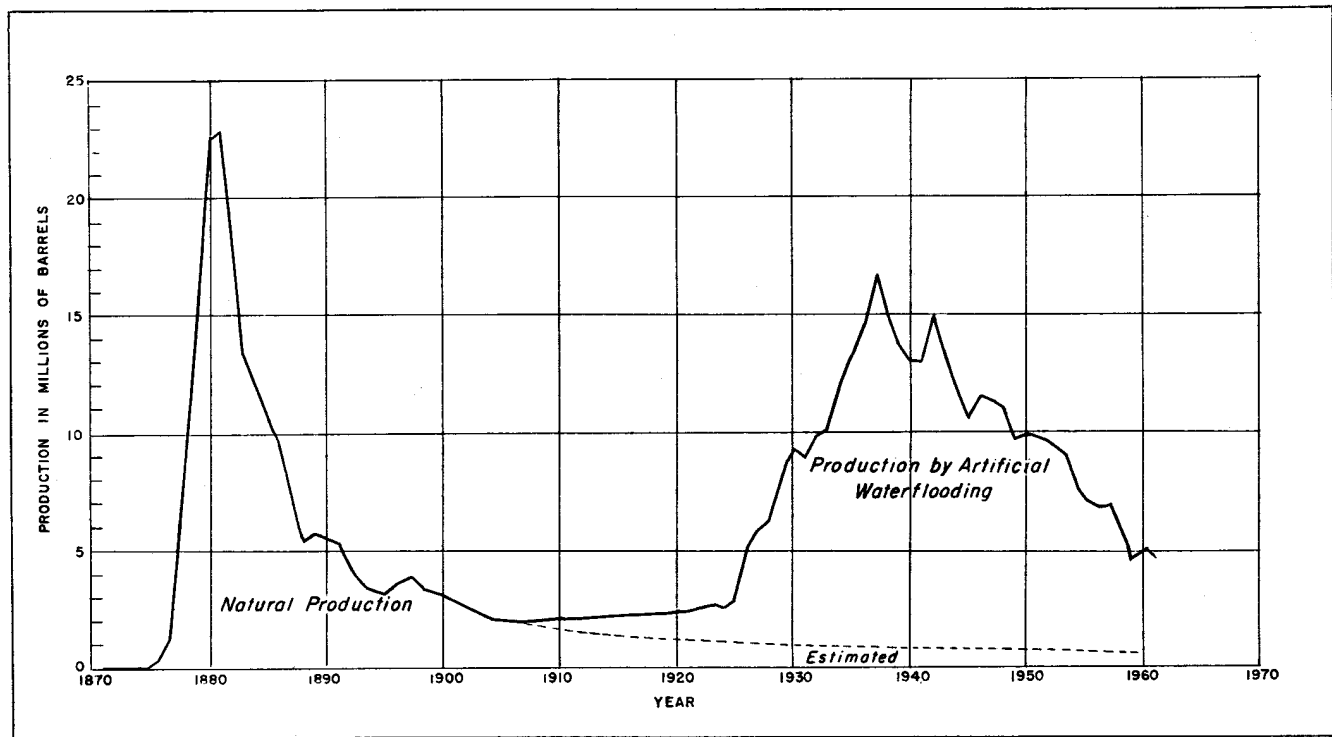
York County had its first deep well completion during 1961. Donelson Company drilled the Harry Leib No. 1 (No. 87, Plate 8 and Table 11) well in Dover Township. The well penetrated over 7, 000 feet of Triassic sediments and reached the Chickies Quartzite (Lower Cambrian) before being plugged and abandoned at 8, 630 feet.

### SHALLOW-SAND EXPLORATION AND DEVELOPMENT

Shallow-sand (Upper Devonian or younger) drilling in Pennsylvania in 1961 showed a decrease over that of 1960. In all, 622 shallow-sand wells were completed, as compared with 745 in 1960. Of these, 135 were gas wells, 43 were oil wells, 47 were dry holes, and 9 were drilled for underground storage of natural gas. Outside of the secondary-recovery areas, 30 wells were deepened. There were 358 wells drilled in connection with secondary-recovery oil operations. The total footage for the new and deepened wells was 1, 203, 094 feet.

Table 8 shows the shallow-sand well completions in western Pennsylvania exclusive of those drilled for underground gas storage or secondary-recovery oil operations. Table 9 shows the results of deepening 30 shallow-sand wells in 1961. The stratigraphic positions of the Upper Devonian or younger oil and gas sands of western Pennsylvania, from the southwest to northeast along the trend of the producing belt shown in Plate 8, are illustrated in the 3 columnar sections appearing in Plate 6.

The total initial open-flow capacity of the 135 new gas wells amounted to 67, 357 Mcf per day as compared with 100, 694 Mcf per day for the 175 gas wells completed in 1960. The figures used for both years are those obtained after fracturing where that method of well completion was employed. Out of the 135 new gas wells, 89 were stimulated by fracturing; the combined initial open-flow capacities of the 89 gas wells was 65, 707 Mcf per day after fracturing, as compared with 2, 981 Mcf per day before fracturing. Of the 21 gas wells deepened, 15 were fractured. The combined initial open-flow capacity of these 15 wells was 8, 797 Mcf per day after fracturing, as compared with 465 Mcf per day before fracturing. The 43 new oil wells completed in 1961 showed an average initial production of over 3.14 per day, as compared with the average initial production of 3.64 bbls. per day of the 24 oil wells drilled in 1960.



CRUDE OIL PRODUCTION CURVE OF THE BRADFORD DISTRICT, PA. & N.Y.  
( Music Mt. field excluded )

Figure 1

### Shallow-Sand Gas Developments

The Speechley, Balltown, and Bradford Third sands continued to be the primary targets for gas production in the shallow-sand gas fields as in the previous 5 years. Plate 7 shows the locations of the shallow gas wells drilled in 1961 in Armstrong and part of Westmoreland Counties in Pennsylvania. Armstrong again had the greatest activity in the shallow-sand gas belt. Forty-three new gas wells were completed in this county, of which 35 were fractured. Fracturing raised the combined initial open-flow capacities of the 35 new gas wells from 1,273 Mcf per day to 19,362 Mcf per day. Clarion County had 24 new gas wells during the year, Westmoreland County 24, and Indiana County 19. In the Donegal Storage Field in Washington County, 9 new gas storage wells were drilled by rotary. No new shallow-sand gas fields or pools were discovered in the state during the year.

### Shallow-Sand Oil Developments

Forty-three oil wells were drilled in 11 counties during the year outside of the secondary-recovery projects. Fifteen new oil wells were drilled in Venango County averaging 1.25 bbls. per day. Warren County was second with 7 new oil wells averaging 7.5 bbls. per day while Forest County followed with 6 new oil wells.

The state's oil production averaged 15,302 bbls. per day as compared with 16,236 bbls. per day for 1960. Crude oil prices remained the same during the year until the middle of December when they were cut 17 cents. See Table 10 which shows the price of crude oil during the year in the 3 marketing districts in Pennsylvania.

TABLE 10. Price per Barrel of Crude Oil, 1961

Date	Northern or Bradford District	Middle or Venango District	Southwestern District
January 1, 1961	\$4.80	\$4.52	\$4.25
December 13, 1961	4.63	4.35	4.08

The Bradford Field includes the Bradford, Guffy, and Burning Well pools. Statistics for this field show that 642 new wells were drilled in 1961 in connection with secondary-recovery oil operations, as compared with 585 in 1960, an increase of about 10 percent. One hundred ninety-two wells were fractured. The daily average production for the field decreased from 13,913 bbls. in 1960 to 13,267 bbls. in 1961. In the Pennsylvania part of the field (14 percent is in New York State) 350 new wells were completed, of which 143 were fractured. Production amounted

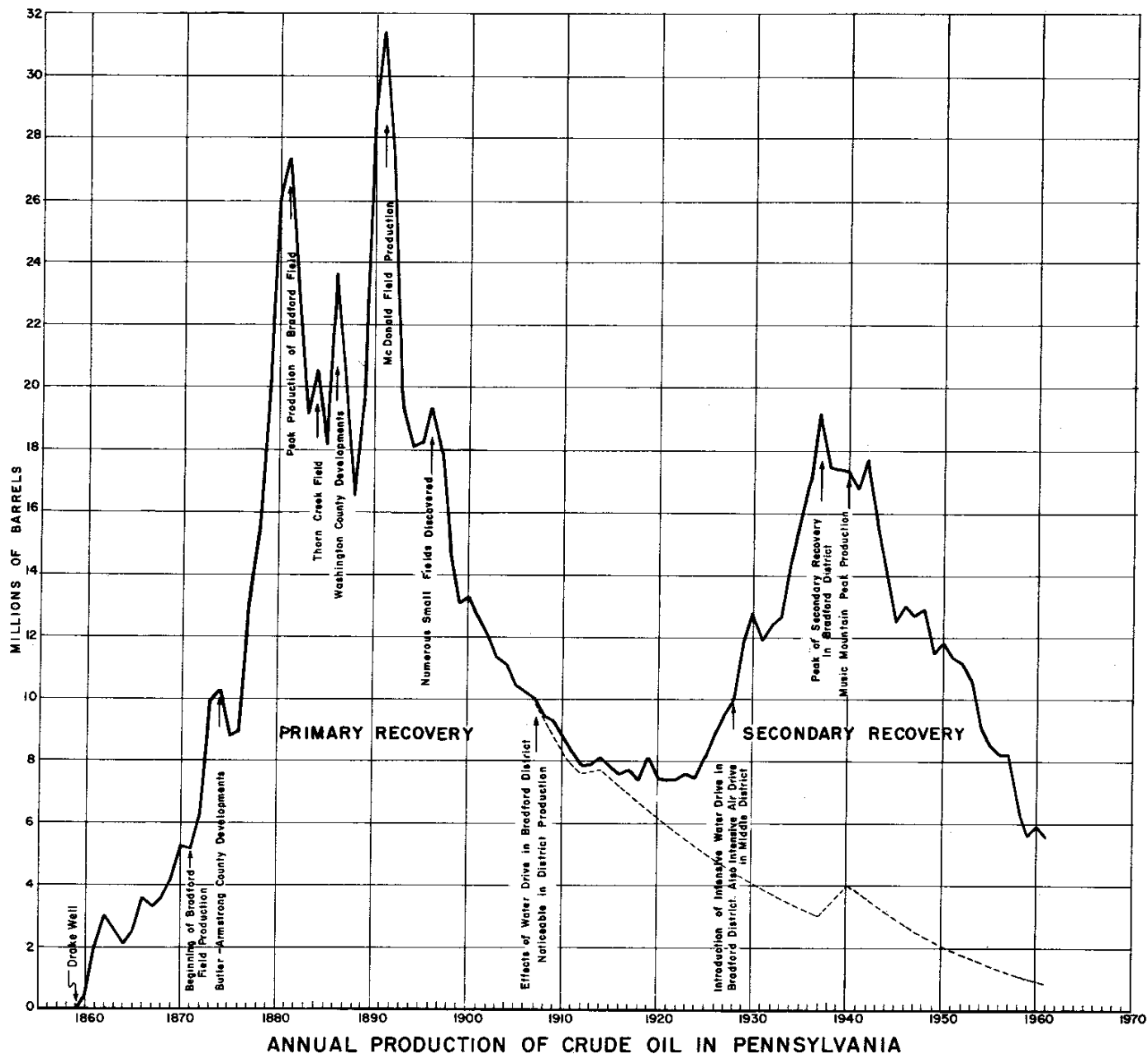


Figure 2

to 11,664 bbls. daily of crude oil, an amount which represents 76 percent of the total production of the state in 1961. Plate 9 shows the crude oil prices, production and well completions in the Bradford Field. The annual crude oil production of the Bradford District is shown in Figure 1.

The average daily oil production of the Middle and Southwestern Districts of Pennsylvania was 3,638 bbls. in 1961 as compared with 3,922 bbls. in 1960, a decline of about 7 percent. The annual production of crude oil in Pennsylvania since 1859 is shown on Figure 2. Figure 3 shows the annual gas production in the state since 1882. No new shallow-sand oil fields or pools were discovered in Pennsylvania during the year.

### SUMMARY

Production in the oil and gas fields of Pennsylvania amounted to 5,580,000 bbls. of crude oil during the year and 98,318,000 Mcf of gas. The proved recoverable reserves on December 31, 1961, were 102,448,000 bbls. of crude oil and 1,168,855,000 Mcf of gas. The total reservoir capacity for storage of natural gas in Pennsylvania is 497,000,000 Mcf.

Pennsylvania's Oil and Gas Conservation Law was passed by the 1961 Legislature and became effective September 24, 1961. The rules and regulations promulgated by the Oil and Gas Conservation Commission will become effective when published. The publication date is about March 15, 1962. Other regulations pertaining to the oil and gas industry in Pennsylvania are Acts 225, 322, and 352, and the rules and regulations of the Sanitary Water Board of Pennsylvania relating to the disposal of waste from oil and natural gas wells.

The Pennsylvania Game Commission leased 7,690 acres of State Game Lands in 1961 for the exploration of oil and gas. The rental bid ranged from \$2.11 to \$12.12 per acre and royalties ranged from \$0.04 to \$0.087 per Mcf for gas and one-eighth royalty for oil.

The Pennsylvania Department of Forests and Waters during 1961 offered seven (7) tracts totaling 20,673 acres by regular bidding procedures. Acceptable bids were received on four (4) tracts, numbers 98 to 101, totaling 12,879 acres. Three leases bid on the rental to be paid drew bids ranging from \$2.55 to \$18.16 per acre and averaged \$10.02 per acre per year, with a royalty of \$.04 per Mcf. One lease bid on the royalty to be paid drew a bid of \$.0566 per Mcf with a rental of \$5.00 per acre per year. A total of four (4) wells were drilled on lands leased by Forests and Waters, resulting in one (1) gas well and three (3) dry holes. The seismic surveying policy adopted in 1961 by the Department began briskly with twelve (12) applications by seven (7) companies that tested ten different structures in fourteen separate counties.

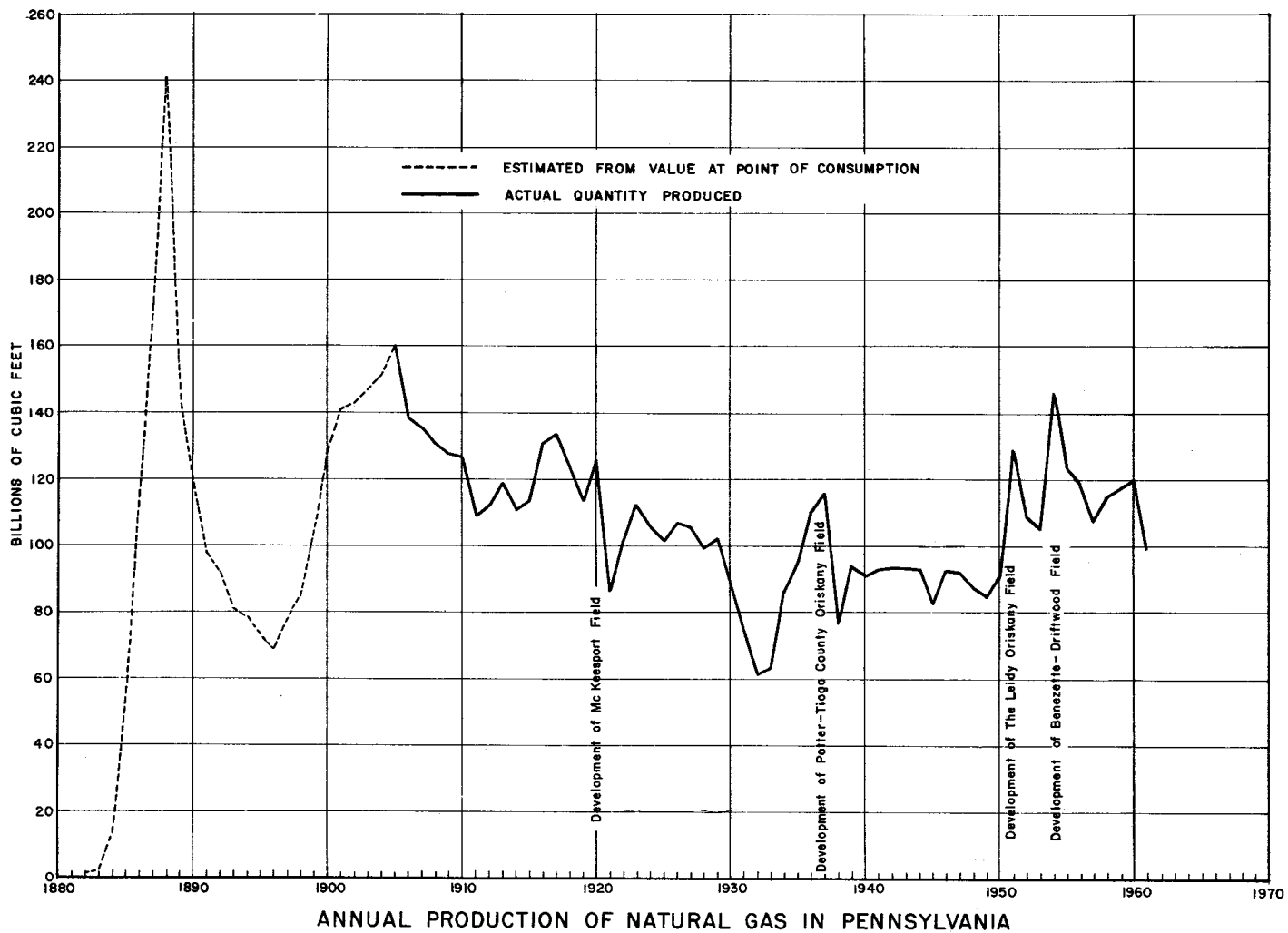


Figure 3

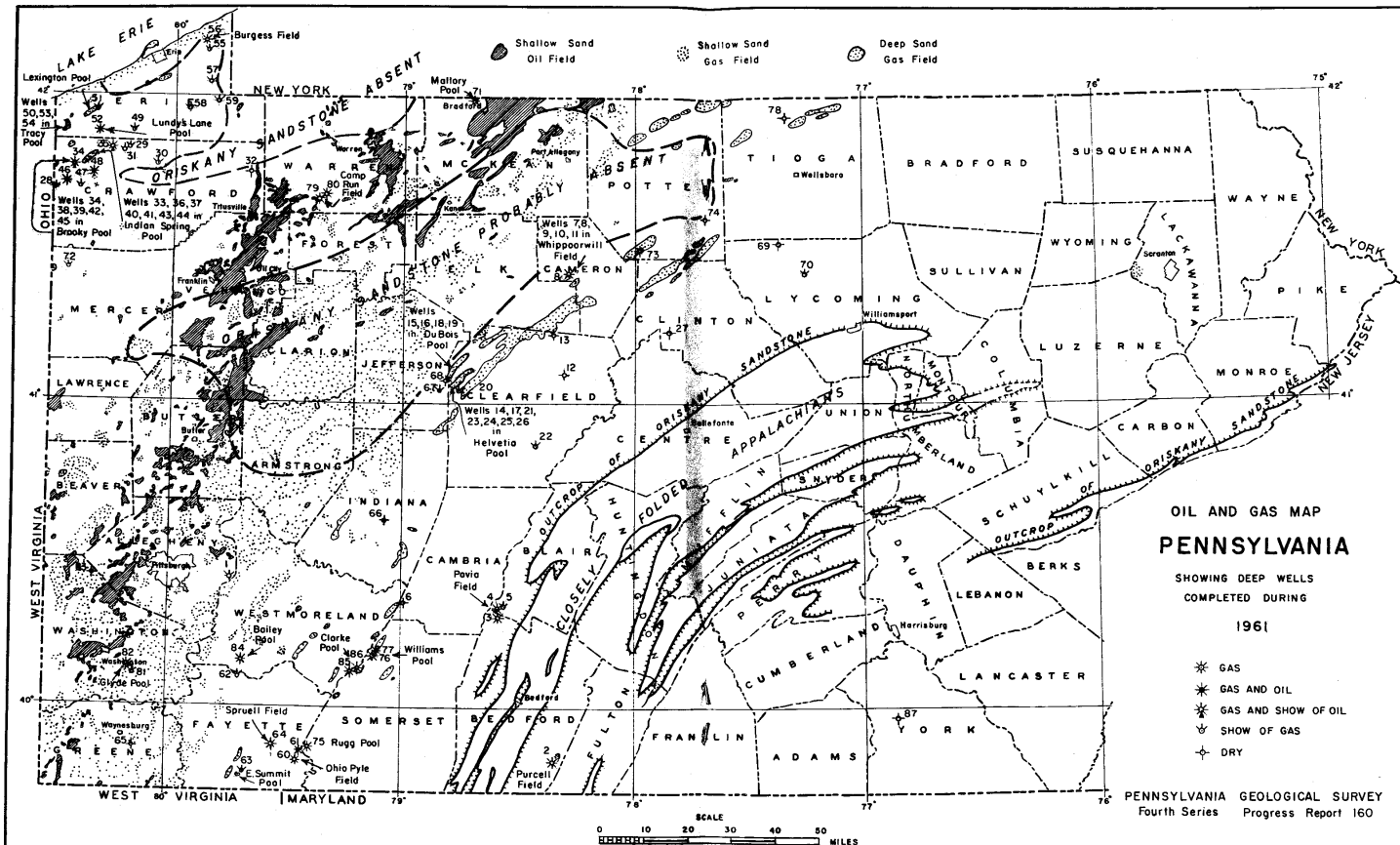
Leasing in the state started out with a rush in the beginning of the year in the Valley and Ridge Province. In the fall considerable leasing activity took place in northeastern Pennsylvania. By the end of 1961 leasing was progressing at a slow pace. The total acreage held by major oil and gas companies for deep oil and gas exploration in Pennsylvania amounted to about 3,649,000 acres at the years end.

A number of geological field parties were active during 1961. In the state 133 seismic crew weeks were logged. This is an increase of about 28 percent over the seismic activity shown in 1960.

For the second consecutive year considerable interest was shown in the Medina play in northwestern Pennsylvania. This was the most active area in the state with 32 completions during the year. Activity should continue at a brisk rate in this area in 1962 with operators developing and extending the new pools discovered in 1961. Out of the 87 wells drilled during the year 37 of them were wildcats. This high percentage of wildcat drilling should continue during 1962.

Two wildcats are of considerable interest to the operators. The one creating the most interest is the basement test by Minard Run Oil Company on their Moody Lot in Bradford Township, McKean County. The target depth is about 11,000 feet. At the writing of this report the well was drilling at 6,100 feet. Only one well in western Pennsylvania has ever reached basement. This is the Kardosh No. 1 well in Crawford County whose log is shown on Plate 1. The second interesting wildcat is the Pure Oil Company well on the Charles Blenle farm in Wilmot Township, Bradford County. This is a Lower Silurian test in an area of very little deep drilling. The well was drilling at 8,175 feet at the writing of this report.

The oil producers are watching closely the two experiments in tertiary oil recovery. South Penn Oil Company in the Bradford Oil Field has completed injecting isopropyl alcohol into the Bradford Third Sand in their alcohol slug project and have switched to water. Some indication of the success of this project should be seen in the early part of 1962. The Thermal Experiment by Quaker State Refining Corporation in the First Sand of the Middle District near Grand Valley is also of considerable interest to the oil producers. After burning a mixture of air and gas in an injection well for over three months the fire was put out and a well is now being cored 14 feet away from the injection well to see what changes have taken place in the oil sand at that point.



## ARTICLES ON PENNSYLVANIA GEOLOGY, 1961

- Alling, H. L. and Briggs, L. I. (1961), Stratigraphy of Upper Silurian Cayugan evaporites, Am. Assoc. Petroleum Geologists Bull., v. 45, no. 4, (April), p. 515-547.
- Anonymous (1961), Appalachian area tries Tertiary recovery, The Oil and Gas Jour., v. 59, no. 24, (June 12), p. 86, 87.
- \_\_\_\_\_ (1961), New drilling arena to open in Ohio's offshore Lake Erie, The Oil and Gas Jour., v. 59, no. 15, (April 10), p. 149, 151.
- \_\_\_\_\_ (1961), Gas prospects underlie the revival of Pennsylvania, The Oil and Gas Jour., v. 59, no. 17, (April 24), p. 119, 120, 122.
- \_\_\_\_\_ (1961), Early leasing in Lake Erie is likely, Petroleum Week, v. 12, no. 16, (April 21), p. 33.
- \_\_\_\_\_ (1961), Action in Appalachian basin sets fast pace, The Oil and Gas Jour., v. 59, no. 44, (October 30), p. 214, 215.
- \_\_\_\_\_ (1961), Pennsylvania underground combustion experiment, Producers Monthly, v. 25, no. 10, (October), p. 11, 21.
- Beerbower, J. R. (1961), Origin of cyclothems of the Dunkard Group (Upper Pennsylvanian-Lower Permian) in Pennsylvania, West Virginia, and Ohio, Geol. Soc. America Bull., v. 72, no. 7, (July), p. 1029-1050.
- Bergsten, J. M. and Heeren, L. A. (1961), Oil and gas field atlas of the Foxburg quadrangle, Pennsylvania, Pa. Geol. Survey, 4th ser., Spec. Bull. 9, 12 p., 9 maps, 4 pls.
- Brown, W. B. III (1961), Appalachian spotlight...central Pennsylvania, Producers Monthly, v. 25, no. 4, (April), p. 19.
- \_\_\_\_\_ (1961), Appalachian spotlight - Clearfield and Jefferson Counties, Producers Monthly, v. 25, no. 6, (June), p. 18.
- \_\_\_\_\_ (1961), Appalachian spotlight - eastern and central Pennsylvania, Producers Monthly, v. 25, no. 7, (July), p. 20.
- Bureau of Mines (Staff, Petroleum Research Lab. Morgantown, West Virginia), Appalachian Region oil field reservoir investigations, Venango Group First sand, Goodwill Hill-Grand Valley Field,

Southwest Township, Warren Co., Pa., Producers Monthly, v. 25, no. 7, (July), p. 2, 4, 5.

- Caspero, N. A., Wertman, W. T., and Wood, Q. E. (1961), Thermal oil recovery experiment in the Pennsylvania Middle District producing area, Producers Monthly, v. 25, no. 2, (February), p. 27, 28.
- Cate, A. S. (1961), Stratigraphic studies of the Silurian rocks of Pennsylvania. Part I Stratigraphic cross section of Lower Devonian and Silurian Rocks in western Pennsylvania and adjacent areas, Pa. Geol. Survey, 4th ser., Spec. Bull. 10, 3 p., 6 pls., 1 fig.
- Cramer, H. R. (1961), Annotated bibliography of Pennsylvania geology to 1949, Pa. Geol. Survey, 4th ser., Bull. G 34, 453 p., 1 fig.
- Deasy, G. F. and Griess, P. R. (1961), Fuel competition in Pennsylvania's electric generating industry, Pa. Geol. Survey, 4th ser., Bull. M 44, 54 p., 21 figs.
- Donnan, B. C. (1961), Offshore exploration in Great Lakes region, Am. Assoc. Petroleum Geologists Bull., v. 45, no. 11, (November), p. 1847-1858.
- Fettke, C. R. (1961), Well-sample descriptions in northwestern Pennsylvania and adjacent states, Pa. Geol. Survey, 4th ser., Bull. M 40, 691p., 4 pls.
- Finn, F. H. (1961), Memorial - Charles Reinhard Fettke, Am. Assoc. Petroleum Geologists Bull., v. 45, no. 5, (May), p. 684-688.
- Fischer, A. G. (1961), Stratigraphic record of transgressing seas in light of sedimentation on Atlantic coast of New Jersey, Am. Assoc. Petroleum Geologists Bull., v. 45, no. 10, (October), p. 1656-1666.
- Gains, W. C., Jr., and Magner, H. J. (1961), How to use foaming agents in air and gas drilling, World Oil, v. 152, no. 4, (March), p. 59-64.
- Gardner, F. J. (1961), Pennsylvania gas hunters look toward the East, v. 59, no. 8, (February 20), p. 193.
- Gray, C. and Lapham, D. M. (1961), Guide to the geology of Cornwall, Pennsylvania, Pa. Geol. Survey, 4th ser., Bull. G 35, 16 p., 2 pls., 5 figs.

- Grunau, J. C. (1961), Search for Red Medina gas sparked by Brooky hit, The Oil and Gas Jour., v. 59, no. 20, (May 15), p. 218-220.
- Hooper, W. F. and Earley, J. W. (1961), Compositional logging of air-drilled wells, Am. Assoc. Petroleum Geologists Bull., v. 45, no. 11, (November), p. 1870-1883.
- Hoskins, D. M. (1961), Stratigraphy and paleontology of the Bloomsburg Formation of Pennsylvania and adjacent states, Pa. Geol. Survey, 4th ser., Bull. G 36, 125 p., 8 pls., 1 table, 6 figs.
- Koppe, E. F. (1961), Some geological factors affecting the Upper Freeport Coal and its quality, Pa. Geol. Survey, 4th ser., P.R. 159, 5 p. 5 figs.
- Kornfield, J. A. (1961), A new look at an old province, World Oil, v. 153, no. 6, (November), p. 110-112.
- LeGrand, H. E. (1961), Summary of geology of Atlantic Coastal Plain, Am. Assoc. Petroleum Geologists Bull., v. 45, no. 9, (September), p. 1557-1571.
- Lytle, W. S. (1961a), Developments in Pennsylvania in 1960, Am. Assoc. Petroleum Geologists Bull., v. 45, no. 6, (June), p. 734-748.
- \_\_\_\_\_, (1961b), Pennsylvania oil and gas developments 1960, International Oil Scouts Assoc. and Soc. of Petroleum Engineers of AIME, Yearbook 1961, (Review of 1960), v. 31, p. 257-264.
- \_\_\_\_\_, Bergsten, J. M., Cate, A. S., and Wagner, W. R. (1961), Oil and gas developments in Pennsylvania in 1960, Pa. Geol. Survey, 4th ser., P. R. 158, 50 p., 7 pls., 12 tables, 5 figs.
- \_\_\_\_\_, and others (1961), A summary of oil and gas developments in Pennsylvania 1955 to 1959, Pa. Geol. Survey, 4th ser., Bull. M 45, 133 p., 10 pls., 15 tables, 5 figs.
- McCauley, J. F. (1961), Uranium in Pennsylvania, Pa. Geol. Survey, 4th ser., Bull. M 43, 71 p., 9 pls., 7 tables, 13 figs.
- McKinstry, H. (1961), Structure of the Glenarm series in Chester County, Pennsylvania, Geol. Soc. America Bull., v. 72, no. 4, (April), p. 557-578.
- Miller, J. T. (1961), Geology and mineral resources of the Loysville quadrangle, Pa. Geol. Survey, 4th ser., Atlas A 127, 47 p., 2 pls., 8 figs.

- Patterson, J. R. (1961), Ordovician stratigraphy and correlations in North America, Am. Assoc. Petroleum Geologists Bull., v. 45, no. 8, (August), p. 1364-1377.
- Satyabrata, R. and Gault, H. R. (1961), Mineralogy of Jacksonburg (Middle Ordovician) Formation in eastern Pennsylvania and western New Jersey, Am. Assoc. Petroleum Geologists Bull., v. 45, no. 1, (January), p. 39-50.
- Schramm, M. W. Jr., (1961), Oil and gas possibilities of the northern Appalachian Basin, Producers Monthly, v. 25, no. 4, (April), p. 22-25.
- Sisler, J. D. (1932), Bituminous coal fields of Pennsylvania Part II - Detailed description of coal fields, Pa. Geol. Survey, 4th ser., Bull. M 6, Pt. II, 3rd printing (1961), 511 p., 14 pls., 152 figs.
- Swann, D. H. and Willman, H. B. (1961), Megagroups in Illinois, Am. Assoc. Petroleum Geologists Bull., v. 45, no. 4, (April), p. 471-483.
- Thomson, R. D., Otte, M. E., and Ela, R. E. (1961), The mineral industry of Pennsylvania in 1959, Pa. Geol. Survey, 4th ser., I. C. 43, 48 p., 15 tables, 1 fig.
- Wagner, W. R. (1961), Subsurface Cambro-Ordovician stratigraphy of northwestern Pennsylvania and bordering states, Pa. Geol. Survey, 4th ser., P.R. 156, 22 p., 1 pl., 1 fig.
- Willard, B. (1961), Stratigraphy of the Cambrian sedimentary rocks of eastern Pennsylvania, Geol. Soc. America Bull., v. 72, no. 12, (December), p. 1765-1776.
- Wood, G. H. and Kehn, T. M. (1961), Sweet arrow fault, east-central Pennsylvania, Am. Assoc., Petroleum Geologists Bull., v. 45, no. 2, (February), p. 256.
- Woodward, H. P. (1961a), Reappraisal of Appalachian geology, Am. Assoc. Petroleum Geologists Bull., v. 45, no. 10, (October), p. 1625-1633.
- \_\_\_\_\_ (1961b), Preliminary subsurface study of southeastern Appalachian Interior Plateau, Am. Assoc. Petroleum Geologists Bull., v. 45, no. 10, (October), p. 1634-1655.

TABLE 4. Important Discoveries in Pennsylvania, 1961

1	2	3	4	5	6	7	8	9	10	11	12	13
Map No.	Operator	Well Name	Well Location	Completion Date	Total Depth (Feet)	Prod. Depth (Feet)	Initial Gas-MCF/D Oil-Bbls.	Producing Formation	Deepest Formation Reached	Field or Pool	Exploration Classification	Remarks
4	Phillips Petroleum Co.	Pa. Tract 26 A No. 1	Greenfield Twp. Blair Co.	1/20/61	6,964	6,859	1,141 after frac	Oriskany	Helderberg	Pavia	NF	Disc. well Pavia Field on minor anticline 6 miles west of Oriskany outcrop.
8	New York State Nat. Gas Corp.	A. Pardee Estate No. 3	Shippen Twp. Cameron Co.	7/10/61	6,804	6,774	6,039 after frac	Oriskany	Helderberg	Whip-poor-will	NF	Disc. well Whip-poor-will Field on the southeast flank of the Sabinsville Anticline.
34	J.S. McCluskey et al	Brooky No. 1	Beaver Twp. Crawford Co.	4/21/61	3,780	3,721	6,000 after frac	Medina	Medina	Brooky	NP	Disc. well Brooky Pool on Indian Spring Trend northwestern Pennsylvania.
52	Pennsylvania Gas Co.	Earl C. Miller No. 1	Elk Creek Twp. Erie Co.	11/9/61	3,460	3,418	3,000 natural	Medina	Medina	Lundys Lane	NP	Disc. well Lundys Lane Pool in Medina play in northwestern Pennsylvania.
64	Peoples Nat. Gas Co. & Snee & Eberly	Melvin Spruell No. 1	Stewart Twp. Fayette Co.	7/13/61	7,964	7,640	3,110 after frac	Onondaga Chert and Oriskany	Helderberg	Spruell	NF	Disc. well Spruell Field on the southeast flank of the Chestnut Ridge Anticline.
80	Paul Benedum	Wheeler-Dusenberry No. 1	Limestone Twp. Warren Co.	5/12/61	6,038	5,926	250 after frac	Medina	Queenston	Camp Run	NF	Disc. well Camp Run Field on minor anticline on the Plateau Province of NW Pennsylvania.
82	John T. Galey	Sam V. Cooper No. 2	Amwell Twp. Washington Co.	9/6/61	8,135	4,128 7,451	1,000 after frac	Bradford Third Onondaga Chert Oriskany Ss Helderberg Ls	Salina	Glyde	DP	Disc. well Glyde Pool on Amity Anticline in Daniels Run Field.
84	Peoples Nat. Gas and Snee & Eberly	A. E. Bailey No. 1	S. Huntington Twp. Westmoreland Co.	12/26/61	8,005	7,385	2,700 after frac	Onondaga Chert and Oriskany	Salina	Bailey	DP	Disc. well Bailey Pool on Fayette Anticline in Jacobs Creek Field.
85	Peoples Nat. Gas Co.	B. G. Clarke No. 1	Cook Twp. Westmoreland Co.	3/15/61	8,435	8,365	6,500 after frac	Onondaga Chert	Onondaga Chert	Clarke	NP	Disc. well Clarke Pool on Laurel Hill Anticline in Seven Springs Field.

TABLE 5. Important Dry Exploratory Tests in Pennsylvania, 1961

1	2	3	4	5	6	7	8	9
Map No.	Operator	Well Name	Well Location	Expl. Class	Compl. Date	Total Depth (Feet)	Deepest Formation Reached	Remarks
1	Albert Starr	Houston-Starr No. 1	Monroeville Twp. Allegheny Co.	NFW	9/20/61	7904	Salina	Wildcat on Murrysville Anticline had show of gas in Oriskany.
12	N. Y. State Nat. Gas Corp. & Delta Drilg. Co.	Clearfield Trust Co. No. 1	Girard Twp. Clearfield Co.	NFW	9/14/61	7836	Helderberg	Wildcat near axis of Clearfield Syncline.
22	N. Y. State Nat. Gas Corp.	Mid-Penn Coal Co. No. 1	Bigler Twp. Clearfield Co.	NFW	8/14/61	8151	Helderberg	Tested the Lower Devonian section on the Laurel Hill Anticline 11 miles from nearest test.
27	Felmont Oil Corp.	Pa. Tract 91 No. 1	Beech Creek Twp. Clinton Co.	NFW	5/10/61	8160	Helderberg	Tested the Lower Devonian section on the Hyner Anticline.
30	Atlas Expl. Co.	Joe E. Hindle No. 1	Cambridge Twp. Crawford Co.	NFW	8/18/61	4336	Queenston	Tested the Devonian and Silurian rocks in area of Oriskany pinchout.
31	Atlas Expl. Co. & Son Oil Co.	Revak No. 1	Cusawago Twp. Crawford Co.	NFW	8/18/61	3959	Queenston	A Devonian and Silurian test east of Indian Spring trend 8 miles from nearest production.
32	Albaugh, et al	Halfast No. 1	Rome Twp. Crawford Co.	NFW	9/13/61	5340	Queenston	A Devonian and Silurian test north of Titusville.
49	Redfern & Hurd	Vanco No. 1	Washington Twp. Erie Co.	NFW	10/1/61	4097	Queenston	A Devonian and Silurian test 4 miles from nearest test.
58	Apache Oil Co.	Lenart No. 1	Waterford Twp. Erie Co.	NFW	12/15/61	4021	Queenston	A Devonian and Silurian test found 24 feet of Oriskany.
59	Apache Oil Co.	Tomcho No. 1	Amity Twp. Erie Co.	NFW	9/8/61	4139	Queenston	Devonian-Silurian test in area of Oriskany pinchout.
65	J. A. Fox, et al	Geo. H. Gordon No. 1	Franklin Twp. Greene Co.	NFW	4/29/61	8659	Keyser	A Devonian test on the Bellevern Anticline producing from an Upper Devonian pay.
66	Delta Drilg. Co. et al	J. H. Ralston No. 1	Cherry Hill Twp. Indiana Co.	NFW	1/17/61	8017	Helderberg	A Devonian test on the Chestnut Ridge Anticline producing from Upper Devonian pay in Strongs Hill Field.
69	Felmont Oil Corp.	Pa. Game Lands Tract 75A No. 1	Brown Twp. Lycoming Co.	NFW	3/3/61	6865	Helderberg	Devonian test on the Slate Run Anticline; prior test on this structure in 1954.
70	Felmont Oil Corp.	Wm. P. Day	Pine Twp.	NFW	4/26/61	7990	Helderberg	Devonian test on the Cogan House Anticline.
71	Bert Fields	Thomas Lihan No. 1	West Salem Twp. Mercer Co.	NFW	10/26/61	4792	Queenston	Devonian-Silurian test in western Mercer County.
74	Felmont Oil Corp.	Pa. Tract 88 No. 1	Abbot Twp. Potter Co.	NFW	5/29/61	7326	Helderberg	Devonian test on southeast flank of Marshlands Anticline in an area of Oriskany pinchout.
81	John T. Galey & Gulf Oil Corp.	Aaron Conner No. 1	W. Bethlehem Twp. Washington Co.	NPW	1/20/61	8125	Salina	Devonian-Upper Silurian test on Amity Anticline.
87	Donelson Co.	Harry Leib No. 1	Dover Twp. York Co.	NFW	4/25/61	8630	Chickies Quartzite	Tested over 7000 feet of Triassic sediments and some Lower Cambrian rocks.

TABLE 6. Deep Gas Production in Pennsylvania, 1961

County	Field	Pool	Discovery Date	Production in MCF			Status of Field or Pool at end of 1961
				Cumulative Production at End of 1960	Production 1961	Cumulative Production at End of 1961	
Armstrong	Shellhammer	Rupert	11/14/58	220,823	40,784	261,607	Producing
Bedford	Purcell		12/14/57				Shut In
Bedford and Blair	Pavia		1/20/61		1961 discovery		Shut In
Cameron and Elk	Whippoorwill		7/10/61		1961 discovery		Producing
Cameron, Elk, Jefferson, Clearfield and Indiana	Punxsutawney-Driftwood		9/15/51	374,500,000	30,800,000	405,300,000	Producing
		Benezette	1/ 5/53				
		Driftwood	9/15/51	222,000,000	4,000,000	226,000,000	Producing
		Boone Mt.	8/19/58				
		DuBois	1/ 6/60	62,000,000	13,500,000	75,500,000	Producing
		Helvetia	5/11/60				
		Rockton	2/25/55				
		Reed-	5/ 9/55	88,000,000	13,000,000	101,000,000	Producing
		Deemer	12/ 1/53				
		Sykesville	11/10/60				
		Hicks Run	6/ 7/56	2,500,000	300,000	2,800,000	Producing
Clinton and Potter	Leidy		1/ 9/50	155,140,400	2,312,432	157,452,832	Producing & Gas Storage
		Downs	5/18/54				
		Tamarack	2/25/52	11,400,000			Gas Storage 1959
		Greenlick	1/25/55	49,000,000	400,000	49,400,000	Gas Storage 1961
		Leidy	1/ 9/50	94,000,000			Gas Storage 1959
		Ole Bull	1/ 9/59	740,400	1,912,432	2,652,832	Producing
Crawford	Indian Spring		9/11/57		569,970	569,970	Producing
		Indian Spring	9/11/57				
		Brooky	4/21/61		569,970	569,970	Producing
Crawford and Erie	Conneaut		9/11/57	162,500	7,600	170,100	Producing-Shut In
		Beaver Creek	5/26/49				Shut In
		Blass	7/ 2/58				Shut In
		Conneaut	9/18/59				Shut In
		Forro	1/14/58				Shut In
		Lexington	9/26/59	162,500	7,600	170,100	Producing
		Lundys Lane	11/ 9/61		1961 discovery		Producing
		Penside	9/ 9/59				Shut In
		Pierce	12/31/58				Producing
		Roberts	11/ 1/58				Shut In
		Tracy	8/10/60	?	?	?	Producing

TABLE 6. Deep Gas Production in Pennsylvania, 1961 (Continued)

County	Field	Pool	Discovery Date	Production in MCF			Status of Field or Pool at end of 1961
				Cumulative Production at End of 1960	Production 1961	Cumulative Production at End of 1961	
Erie	Burgess Corry		10/17/60		26,844	26,844	Producing
			4/29/47	953,800	6,522	960,322	Producing & Gas Storage
	Meade Phillipsville	Beaver Dam Corry	5/20/53	100,100	6,522	106,622	Producing
			4/29/47	853,700			Gas Storage 1955
			8/23/46	4,886,600			Gas Storage 1959
			7/17/56	5,000			Shut In
Fayette	Spruell Summit		10/13/61		1961 discovery		Shut In
			3/24/38	38,726,586	479,232	39,205,818	Producing
		East Summit	12/31/60				Shut In
		North Summit	3/24/38	19,869,632	121,783	19,991,415	Producing
		South Summit	5/ 9/42	18,856,954	357,449	19,214,403	Producing
	Ohiopyle		12/28/59		949,304	949,304	Producing
		Rugg	2/25/60				Producing
Indiana	Jacksonville		9/21/56	14,535,238	984,069	15,519,307	Producing
	Nolo		9/30/56	5,000,000	400,000	5,400,000	Producing
McKean	Allegany State Park	Mallory	12/ 1/60	?	?	?	Producing
Potter	East Fork-Wharton Ellisburg		2/23/33	32,347,000	preparing field for storage		
			9/ 1/33	78,000,000	92,571	78,092,571	Producing
			1/ 2/39				Producing
			9/ 1/33	78,000,000	92,571	78,092,571	Producing
	Harrison	Bingham Center	7/16/36				Producing
		West Bingham					Producing
			6/15/34	33,974,000			Shut In & Gas Storage
	Hebron	Brookfield	5/16/38	600,000			Shut In
		Harrison	6/15/34	33,374,000			Gas Storage 1953
			12/ 3/31	44,559,000			Shut In & Gas Storage
	Sharon Ulysses	Champlin	3/ 3/34	500,000			Shut In
		Hebron	12/ 3/31	44,059,000			Gas Storage 1953
			12/23/38	11,555,000			Gas Storage 1948
			10/ 2/39	1,400,000	20,460	1,420,460	Producing
Somerset	Boswell		11/11/58	2,911,406	1,199,838	4,111,244	Producing
		Boswell	11/11/58	2,846,410	1,082,456	3,928,866	Producing
		Snyder	6/16/60	64,996	117,382	182,378	Producing

TABLE 6. Deep Gas Production in Pennsylvania, 1961 (Continued)

County	Field	Pool	Discovery Date	Production in MCF		Cumulative Production at End of 1961	Status of Field or Pool at end of 1961
				Cumulative Production at End of 1960	Production 1961		
Tioga	Sabinsville Tioga		8/19/35	32,680,000			Gas Storage 1951
			Sept. 1930	37,213,000			Gas Storage
		East Tioga (Boom)	1930	37,213,000			Gas Storage 1940
		Meeker	1930				Gas Storage 1935
		West Tioga (Palmer)	1930				Gas Storage 1935
Warren	Camp Run		5/12/61		1961 discovery		Producing
Washington	Daniels Run	Glyde	9/ 6/61		1961 discovery		Producing
Westmoreland	Dry Ridge Jacobs Creek		8/25/46	?	?	?	Producing
		Bailey	12/26/61		1961 discovery		Shut In
	Lycippus		8/17/49	4,073,114	348,454	4,421,568	Producing
		Derry	12/ 5/58	8,506	34,399	42,905	Producing
		Piper	8/17/49	610,552	17,077	627,629	Producing
		St. Boniface					
		Chapel	9/13/56	3,454,056	296,978	3,751,034	Producing
Westmoreland and Somerset	Johnstown		5/16/57	5,787,912	2,352,024	8,139,936	Producing
		Baldwin	5/22/60				
		Beck	5/16/57	1,310,880	1,037,510	2,348,390	Producing
		Williams	2/14/58	4,477,032	1,314,514	5,791,546	Producing
	Seven Springs		12/ 5/58	1,956,034	1,079,453	3,035,487	Producing
		Blair	12/ 5/58	1,779,439	850,487	2,629,926	Producing
		Clarke	3/15/61		174,485	174,485	Producing
		Kooser	5/19/59	176,595	54,481	231,076	Producing

TABLE 7. List of Wells Reaching or Penetrating Lower Silurian Medina Group

COUNTY Quadrangle & Number	Farm Name	Year Compl. 19__	Depth to Medina	Trenton	Deepest Formation Reached	
BEAVER New Castle 8	Jas. Tennis Hrs.	40	6,588	-	Queenston	
BEDFORD Bedford 1	Jessie B. Miller	52	2,870	7,810	Beekmantown	
BLAIR Hollidaysburg 1	Edward Bigley	57	907	-	Juniata	
BUTLER Foxburg 1	J. S. Walker	55	7,215	-	Queenston	
	Mercer 2	Jessie G. Hockenberry	44	6,433	8,812	Gatesburg
CLINTON Howard 1	Corman	53	?	-	Tuscarora (Medina)	
	Lock Haven 1	Cliford Walizer	53	-	Gatesburg	
CRAWFORD Andover 19	Fred Carter	61	3,731	-	Queenston	
	Cambridge Springs 9	Revak	61	3,746	-	Queenston
	Cambridge Springs 10	Joe E. Hindle	61	4,102	-	Queenston
	Corry 26	Halfast	61	5,136	-	Queenston
	Girard 7	Herbert Gates	16	?	-	Medina
	Girard 10	Pierce Lorance	16	3,415	-	Medina
	Girard 13	Alpha Cózadd	49	3,426	-	Queenston
	Girard 14	Wilbur Bittel	46	?	-	Medina
	Girard 22	Indian Spring	57	3,625	-	Medina
	Girard 24	Henry Rippert	58	3,498	-	Queenston
	Girard 25	Louis Forro	58	3,611	-	Queenston
	Girard 26	Harry Wigand	58	3,568	-	Queenston
	Girard 27	Shadeland #1	58	3,372	-	Queenston
	Girard 32	Conneaut Valley Farms	59	3,333	-	Queenston
	Girard 35	Shadeland #2	60	3,347 ?	-	Medina
	Girard 40	Lewis Sergeant	60	3,276	-	Queenston
	Girard 43	J. Lehman	60	3,536	-	Medina
	Girard 46	Brooky	61	3,672	-	Medina
	Girard 47	Jos. Jorski	61	3,548	-	Medina
	Girard 48	Fred Post, Jr.	61	3,639	-	Medina
	Girard 49	C. H. Tyler #2B	61	3,706	-	Medina
	Girard 51	Worden	61	3,449 ?	-	Medina
	Girard 52	Gerald L. Walton	61	3,497	-	Queenston

TABLE 7. List of Wells Reaching or Penetrating Lower Silurian Medina Group (Continued)

COUNTY Quadrangle & Number	Farm Name	Year Compl. 19__	Depth to		Deepest Formation Reached
			Medina	Trenton	
CRAWFORD (continued)					
Girard 53	Nan Sims	61	3, 528 ?	-	Medina
Girard 54	George Hlopic	61	3, 684	-	Queenston
Girard 55	Harry Ransom	61	3, 440 ?	-	Medina
Girard 57	Rudy Andress	61	3, 750	-	Queenston
Girard 58	John Post	61	3, 620	-	Queenston
Girard 60	L. W. Holloway	61	3, 500 ?	-	Medina
Linesville 2	Jas. Naylor	23	4, 212	-	Queenston
Linesville 3	Huide Koper	16	4, 080 ?	-	Queenston
Linesville 4	G. Scott	36	4, 243 ?	-	Queenston
Linesville 5	R. C. Jamison	30	4, 348	-	Queenston
Linesville 6	E. Calvin #2	48	4, 663	-	Queenston
Linesville 8	G. J. Russell	51	3, 875	-	Queenston
Linesville 9	Good, Walsh & Russell	52	3, 908	-	Queenston
Linesville 10	Zickefoose	52	4, 186	-	Queenston
Linesville 11	T. R. Cain	55	3, 900 ?	-	Queenston
Linesville 12	Robert L. Oaks	56	3, 840	-	Queenston
Linesville 13	Ed. Mullen	56	4, 496	-	Queenston
Linesville 14	J. Kardosh	58	4, 108	6, 220	Precambrian
Linesville 15	R. A. Lampman	61	3, 890	-	Queenston
Linesville 16	W. E. Hart	61	3, 721	-	Queenston
Linesville 17	Page	61	3, 687	-	Queenston
Linesville 18	C. R. Berkheimer	61	3, 804	-	Queenston
Meadville 1	N. D. Dahl	37	4, 245	-	Queenston
Union City 1	J. Chapin	37	4, 115	-	Queenston
ELK					
Hallton 1	Pa. Game Lands Wt. 3653 #1	45	7, 340	-	Queenston
Kane 1	Warrant 3788 Well 3737	28	7, 076	-	Queenston
ERIE					
Cambridge Springs 1	Marsh Hrs. (Rick, Lampson)	14	3, 502	-	Queenston
Cambridge Springs 2	Chauncey Blount	32	3, 685	-	Queenston
Cambridge Springs 3	Wm. Steadman (Stafford)	12	3, 472	-	Queenston

TABLE 7. List of Wells Reaching or Penetrating Lower Silurian Medina Group (Continued)

COUNTY Quadrangle & Number	Farm Name	Year Compl. 19__	Depth to		Deepest
			Medina	Trenton	Formation Reached
ERIE (continued)					
Cambridge Springs 6	Ethridge	57	3,935	5,875	Gatesburg
Cambridge Springs 11	Vanco	61	3,900	-	Queenston
Corry 1	W. W. Stutzman #1	47	4,233	-	Queenston
Corry 2	C. J. Follette #1	47	4,391	-	Queenston
Corry 3	C. J. Follette #2	48	4,347 ?	-	Queenston
Corry 4	A. D. Peterson	48	4,418 ?	-	Queenston
Corry 5	John Kalika	47	4,412	-	Queenston
Corry 6	Frank Cooper	51	4,343	-	Queenston
Corry 7	C. J. Follette #3	51	4,348 ?	-	Whirlpool ?
Corry 8	Hazen Follette #1	51	4,325	-	Queenston
Corry 9	C. J. Follette #4	52	4,349 ?	-	Queenston
Corry 10	Hazen Follette #2	52	4,345 ?	-	Queenston
Corry 11	Hazen Follette #3	52	4,339	-	Queenston
Corry 12	Ivan Miller	53	4,318	-	Queenston
Corry 13	Frank Stutzman	53	4,143	-	Queenston
Corry 14	Edith Adams #1	53	4,310	-	Queenston
Corry 15	W. W. Stutzman #2	53	4,295	-	Queenston
Corry 17	Boyd Spencer	54	4,273	-	Queenston
Corry 18	Sicklucky	54	4,372	-	Queenston
Corry 19	Nelson Williams	54	4,322	-	Queenston
Corry 20	Edith Adams #2	54	4,238	-	Queenston
Corry 21	J. L. Sill	54	4,349 ?	-	Medina
Corry 22	M. DeWitt	54	4,210 ?	-	Medina
Corry 23	Lee Proctor	54	4,201	-	Queenston
Corry 24	L. I. Sill	55	4,135	-	Queenston
Erie 1	Presque Isle	10	2,340 ?	-	Reedsville
Erie 2	Erie Deep Well	1889	2,430 ?	4,250 ?	Trenton
Erie 7	Chester Fuhrman	48	3,233	-	Queenston
Erie 10	T. Lininger	13	3,420 ?	-	Queenston
Erie 56	C. A. Blass	58	3,095	-	Queenston
Erie 62	Goodwell-Curley	56	3,291	5,176	Gatesburg
Erie 95	Lillian Zimmerly	56	3,046	-	Queenston

TABLE 7. List of Wells Reaching or Penetrating Lower Silurian Medina Group (Continued)

COUNTY		Year	Depth to		Deepest
Quadrangle & Number	Farm Name	Compl. 19__	Medina	Trenton	Formation Reached
ERIE (continued)					
Fairview 1	Frances Miles	32	2,550	-	Medina
Fairview 2	J. F. Miles #3	33	2,502	-	Medina
Fairview 3	Pa. Offshore Block 1, #1	58	2,492	4,291	Gatesburg
Girard 1	J. Childs	41	2,624	4,437	Gatesburg
Girard 2	N. Blickensderfer #22	42	2,615	4,397	Trenton
Girard 3	Jack Benedict	32	2,712 ?	-	Queenston
Girard 4	Chas. B. Berst	32	2,779	-	Queenston
Girard 5	Wm. C. Kibler	27	2,776	-	Queenston
Girard 28	Edna Roberts	58	3,050	-	Queenston
Girard 29	F. Pierce	58	2,683	-	Queenston
Girard 30	Korynoski	59	3,030	-	Medina
Girard 31	C. Huston #1	59	3,195	-	Queenston
Girard 33	Frank Kominsky #1	60	3,044	-	Medina
Girard 34	Borst	60	3,264	5,225	Gatesburg
Girard 36	Huston #2	60	3,187	-	Queenston
Girard 37	Wilkinson	60	3,018	-	Medina
Girard 38	Barney	60	2,881 ?	-	Medina
Girard 39	R. Hammer #1	60	2,985	-	Queenston
Girard 41	John Vojtko	60	3,002	-	Medina
Girard 42	Pa. Game Comm. Tract 101 A	60	3,229	-	Queenston
Girard 44	C. Ebner	60	3,082 ?	-	Queenston
Girard 45	Mary Leech	61	3,050	-	Medina
Girard 50	O. E. Park	61	3,162	-	Queenston
Girard 56	Rossiter	61	3,121	-	Queenston
Girard 59	Earl C. Miller	61	3,368 ?	-	Medina
Girard 61	Jud Harrington	61	3,134	-	Queenston
Northeast 1	Mattier Bros.	?	?	-	Queenston
Northeast 2	Heard	14	2,345	-	Queenston
Northeast 3	Jas. Sheridan	?	?	-	Queenston
Northeast 4	Silliman	?	?	-	Queenston
Northeast 5	Moorhead	?	?	-	Queenston
Northeast 8	Dell Lewis	32	3,482	-	Queenston

TABLE 7. List of Wells Reaching or Penetrating Lower Silurian Medina Group (Continued)

COUNTY Quadrangle & Number	Farm Name	Year Compl. 19__	Depth to		Deepest Formation Reached
			Medina	Trenton	
ERIE (continued)					
Northeast 13	Truesdail	58	3,820	-	Medina
Northeast 19	James Henderson	58	3,453	-	Queenston
Northeast 20	Pa. State Game Lands	58	3,418	-	Queenston
Northeast 24	Pa. Offshore Block 2	59	2,085	3,950	Gatesburg
Northeast 25	D. W. Thompson	60	2,774 ?	-	Queenston
Northeast 26	Esterline	61	2,672 ?	-	Queenston
Northeast 27	Eades	61	3,132 ?	-	Queenston ?
Northeast 28	Kobielski	61	3,766	-	Queenston
Union City 4	Tomcho	61	3,947	-	Queenston
Union City 5	Lenart	61	3,811	-	Queenston
LYCOMING					
Williamsport 1	W. E. Snyder	51	-	-	Mid Cambrian ?
MCKEAN					
Bradford 1	Delo	14	5,560	-	Queenston
Bradford 2	L. D. Wilson #18	48	6,163	-	Reedsville
Kinzua 11	Warrant 3410 #1	57	6,424	-	Queenston
Smethport 3	Chas. Nunn #2	45	6,425	-	Queenston
MERCER					
Shenango 2	Herm K. Smith	46	4,768	-	Queenston
Shenango 3	A. S. McCullough	39	5,262	-	Queenston
Shenango 4	Maffie	52	4,678 ?	-	Queenston
Shenango 5	Emma McKnight	56	4,653	6,749	Warrior-Eau Claire
Shenango 7	Thomas Lihan	61	4,586	-	Queenston
Stoneboro 1	J. Paul Miller (Coulson)	45	5,429	-	Queenston
Stoneboro 3	Maude Davidson	45	?	8,179	Beekmantown ?
Stoneboro 4	Earl B. Minnis	42	?	-	Medina ?
Youngstown 4	Chas. Cromartie	52	4,920	-	Queenston
POTTER					
Emporium 1	Crawford Est.	38	8,005	-	Queenston
SULLIVAN					
Eagles Mere 1	A. Bennett	51	11,740	-	Juniata
UNION					
Sunbury 1	Solomon	55	0	6,232	Beekmantown
WARREN					
Corry 16	Orin Smith	53	5,138	-	Queenston

TABLE 7. List of Wells Reaching or Penetrating Lower Silurian Medina Group (Continued)

COUNTY		Year	Depth to		Deepest
Quadrangle & Number	Farm Name	Compl. 19__	Medina	Trenton	Formation Reached
WARREN (continued)					
Tidioute 1	UIF	28	5,597	-	Queenston
Tidioute 2	J. Bowman Proper	55	5,732	-	Queenston
Tidioute 3	Shaw	57	5,840	8,300	Gatesburg
Tidioute 4	Frank Kapp #1	60	5,648	-	Queenston
Tidioute 5	Wheeler-Dusenberry	61	5,860	-	Queenston
Tidioute 6	Frank Kapp #2	61	5,650 ?	-	Medina
Titusville 1	Reeves	45	5,401	-	Queenston
Warren 1	Chas. Erickson	38	5,408	-	Queenston
Youngsville 1	Anderson	47	4,228	-	Queenston
Youngsville 2	Spetz #1184	37	4,961	-	Queenston
Youngsville 3	I. L. Anderson	22	4,537 ?	-	Queenston
Youngsville 4	Mrs. Carl Keester	57	4,721	-	Queenston
YORK					
Hanover 1	Harry Leib	61	-	-	Cambrian

TABLE 8. Shallow-Sand Well Completions in Pennsylvania, 1961\*

County	TOTAL		GAS			OIL			DRY	
	No. of Wells	Aver. Total Depth (Feet)	No. of Wells	Aver. Init. Open-flow (MCF PD)	Aver. Total Depth (Feet)	No. of Wells	Aver. Init. Prod. (BOPD)	Aver. Total Depth (Feet)	No. of Wells	Aver. Total Depth (Feet)
Allegheny	5	2, 571	1	550	3, 975	3	-	2, 314	1	1, 938
Armstrong	46	3, 043	43	553	3, 107	1	-	1, 612	2	2, 370
Butler	2	3, 220	2	373	3, 220	-	-	-	-	-
Clarion	26	2, 468	24	172	2, 473	-	-	-	2	2, 405
Clearfield	4	2, 640	2	155	2, 796	-	-	-	2	2, 483
Crawford	1	789	-	-	-	1	-	789	-	-
Elk	5	2, 244	2	35	2, 058	2	2.75	2, 554	1	2, 000
Fayette	1	1, 359	1	904	1, 359	-	-	-	-	-
Forest	20	982	6	6	1, 270	6	-	917	8	815
Greene	3	1, 883	-	-	-	2	1.2	2, 157	1	1, 335
Indiana	24	3, 505	19	1, 292	3, 352	-	-	-	5	2, 609
Jefferson	12	2, 928	8	36	2, 970	-	-	-	4	2, 845
McKean	4	1, 870	2	7	1, 814	-	-	-	2	1, 927
Mercer	4	1, 152	-	-	-	1	-	773	3	1, 279
Potter	5	1, 503	-	-	-	5	-	1, 503	-	-
Venango	20	892	-	-	-	15	1.25	857	5	998
Warren	7	569	-	-	-	7	7.5	569	-	-
Washington	5	2, 445	1	5	1, 905	-	-	-	4	2, 581
Westmoreland	31	3, 248	24	1, 090	3, 264	-	-	-	7	3, 195
Total	225	2, 368	135	679	2, 883	43	3.14	1, 149	47	2, 151

\* Does not include wells drilled in connection with underground gas storage or secondary-recovery oil operations.

TABLE 9. Shallow-Sand Wells Deepened in Pennsylvania, 1961\*

County	TOTAL		GAS			OIL			DRY	
	No. of Wells	Aver. Amount Deepened (Feet)	No. of Wells	Aver. Init. Open-flow (MCF PD)	Aver. Amount Deepened (Feet)	No. of Wells	Aver. Init. Prod. (BOPD)	Aver. Amount Deepened (Feet)	No. of Wells	Aver. Amount Deepened (Feet)
Armstrong	13	1, 184	11	458	1, 225	-	-	-	2	963
Butler	1	2, 287	-	-	-	-	-	-	1	2, 287
Clarion	2	1, 545	-	-	-	1	-	500	1	2, 590
Fayette	1	1, 360	1	22	1, 360	-	-	-	-	-
Greene	2	82	2	52	82	-	-	-	-	-
Indiana	7	1, 169	5	1, 011	1, 051	-	-	-	2	1, 465
Jefferson	3	1, 447	2	41	1, 867	-	-	-	1	610
Westmoreland	1	2, 700	-	-	-	-	-	-	1	2, 700
Total	30	1, 251	21	499	1, 281	1	-	500	8	1, 630

\* Does not include wells drilled in connection with underground gas storage or secondary-recovery oil operations.

TABLE II SUMMARIZED RECORDS OF DEEP WELLS DRILLED IN PENNSYLVANIA IN 1961

SHEET I

ELEVATIONS AND DEPTHS ARE IN FEET

COUNTY	Allegheny	Bedford	Bedford	Blair	Blair	Cambria	Cameron	Cameron	Cameron	Cameron
MAP NUMBER	1	2	3	4	5	6	7	8	9	10
NAME OF WELL	Houston-Starr 1	Herbert Akers 2	Pa Tract 26-B 1	Pa Tract 26-A 1	Pa Tract 26-A 2	Piney Run Mining Co	F Coleman 1	A. Pardee Est. 3	A. Pardee Est. 4	A. Pardee Est. 5
OPERATOR	Albert Starr	NYS NG Corp N-793	Phillips Petroleum Co.	Phillips Petroleum Co.	Phillips Petroleum Co.	Charles S. Grabiak	Lee E. Minter	NYS NG Corp G.L. Cabot, Inc.	NYS NG Corp G.L. Cabot, Inc.	NYS NG Corp G.L. Cabot, Inc.
TOWNSHIP	Monroeville	Monroe	Union	Greenfield	Greenfield	Lower Yoder	Shippen	Shippen	Shippen	Shippen
QUADRANGLE	Greensburg 2	Clearville 9	Ebensburg 3	Ebensburg 1	Ebensburg 2	Johnstown 1	Benezette 280	Benezette 276	Benezette 277	Benezette 278
LATITUDE	6000 ft. S. 40° 25'	2200 ft. S. 39° 50'	1,200 ft. S. 40° 20'	6550 ft. S. 40° 20'	2750 ft. S. 40° 20'	3300 ft. N. 40° 20'	1800 ft. N. 41° 25'	4900 ft. N. 41° 25'	6700 ft. N. 41° 25'	3000 ft. N. 41° 25'
LONGITUDE	3800 ft. E. 79° 45'	6150 ft. W. 78° 20'	2250 ft. W. 78° 35'	350 ft. W. 78° 35'	2000 ft. E. 78° 35'	3200 ft. E. 79° 00'	12,000 ft. W. 78° 15'	7200 ft. W. 78° 15'	4800 ft. W. 78° 15'	9450 ft. W. 78° 15'
DATE COMPLETED	9 - 20 - 61	2 - 8 - 61	7 - 3 - 61	1 - 20 - 61	3 - 18 - 61	4 - 19 - 61	12 - 12 - 61	7 - 10 - 61	10 - 18 - 61	9 - 23 - 61
ELEVATION	985 KB	1010 DF	2409 KB	2395 KB	2318 KB	2292 G	1515 G	1595 DF	1572 KB	1528 DF
TULLY	6953 -			Hamilton, 5785 -	Hamilton, 5707 -	Burket, 8430 -	6029 - 6121	6139 -	6136 - 6220	6050 -
ONONDAGA	LIMESTONE	4468 - 4569	6734 -	6766 -	6747 -		6630 -	6737 -	6740 -	6650 -
	CHERT	7428 -	6785 -	6800 -	6800 -		6642 -	6749 -	6750 -	6660 -
ORISKANY	7610 - 7659 SG	4569 - 4700 Gas, 4585 - 4600 4614 - 4624	6827 - 6903 SG, 6830 - 6845	6859 - 6932 Gas, 6853 - 89	6842 - SG		6673 - 6703 Gas of 6673	6771 - Gas of 6771 - 6803	6774 - 6810	6688 - 6721 Gas, 6689 - 6703
HELDERBERG	7659 -	4700 -	6903 -	6932 -			6703 -	6803 -	6810 -	6721 -
SALINA										
GUELPH - LOCKPORT										
MEDINA	RED MEDINA (GRIMSBY)									
	WHITE MEDINA (WHIRLPOOL)									
QUEENSTON										
TOTAL DEPTH	7904	4714	6984	6964	6864	8455	6704	6804	6813	6722
DEEPEST FORMATION REACHED	Keyser	Helderberg	Helderberg	Helderberg	Helderberg	Burket	Helderberg	Helderberg	Helderberg	Helderberg
RESULT	Show of gas Abandoned	450 Mcf gas AF RP 1895 psi 72 hrs.	539 Mcf gas AF RP 2760 psi 4 days	SG, 6672 - 6680 114 Mcf gas AF RP 3185 psi, 60 hrs Discovery Well Pavia Field	25 Mcf gas AF Abandoned	Dry Abandoned 1	1200 Mcf gas AF RP 3788 psi 25 hrs	6039 Mcf gas AF RP 3902 psi 18 hrs Discovery Well Whippoorwill Field	85 Mcf gas AF from Oriskany 3500 ft. of salt water Abandoned	18,762 Mcf gas AF RP 3760 psi 84 hrs.

DF Derrick Floor  
G Ground  
KB Kelly Bushing  
RT Rotary Table  
TC Top of Casing

## SUMMARIZED RECORDS OF DEEP WELLS (continued)

COUNTY	Cameron	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield
MAP NUMBER	11	12	13	14	15	16	17	18	19	20
NAME OF WELL	A Pardee Est 7	Clearfield Trust, Co.	Pa. Tract 36 7	TW Chapman 1	Joseph Cherry 1	Jos Jusnukis 1	L. & S. Kouther 1	C. H. Prescott et al, 1	Geo Prokop 1	R & P Coal Co. 2
OPERATOR	NYSNG Corp G. L. Cabot, Inc.	NYSNG Corp Delta Drlg. Co.	Parsons Bros	NYSNG Corp Lee E. Minter	Lee E. Minter NYSNG Corp	Devonian GEO Co NYSNG Corp.	S. W. Jack et al	The Sylvania Corp, 386	Fairman Drilling Co.	NYSNG Corp N-805
TOWNSHIP	Shippen	Girard	Goshen	Brady	Sandy	Sandy	Sandy	Sandy	Sandy	Brady
QUADRANGLE	Benezette 279	Clearfield 45	Clearfield 44	Du Bois 26	Du Bois 33	Du Bois 27	Du Bois 29	Du Bois 34	Du Bois 35	Du Bois 28
LATITUDE	7500 ft. N. 41° 25'	6300 ft. N. 41° 05'	7750 ft. S. 41° 15'	1350 ft. S. 41° 05'	7200 ft. N. 41° 05'	300 ft. N. 41° 05'	2000 ft. N. 41° 05'	7100 ft. N. 41° 05'	3600 ft. N. 41° 05'	15,950 ft. S. 41° 05'
LONGITUDE	6200 ft. W. 78° 15'	5000 ft. E. 78° 20'	6400 ft. W. 78° 25'	2100 ft. W. 78° 45'	7300 ft. W. 78° 45'	5500 ft. W. 78° 45'	4200 ft. W. 78° 45'	8200 ft. W. 78° 45'	8750 ft. W. 78° 45'	4300 ft. W. 78° 45'
DATE COMPLETED	12 - 1 - 61	9 - 14 - 61	6 - 9 - 61	2 - 4 - 61	7 - 21 - 61	4 - 3 - 61	4 - 23 - 61	10 - 13 - 61	11 - 28 - 61	7 - 6 - 61
ELEVATION	1581 DF	1437 DF	2062 DF	1554 DF	1540 DF	1614 DF	1510 DF	1540 DF	1573 DF	1511 DF
TULLY	6062 -	6874 -	6418 -	6610 - 6715	6632 -	6705 -	6615 -	6650 - 6755	6665 -	6625 -
ONONDAGA	LIMESTONE	6675 -	7722 -	7195 -	7186 -	7258 -	7191 -	7205 -	7219 -	7233 -
	CHERT	6689 -	7737 -	7213 -	7205 -	7275 -	7205 -	7220 -	7237 -	7251 -
ORISKANY	6707 - 6742	7763 - 7785		7269 - Gas at 7271-74	7265 - Gas at 7268	7329 - Gas at 7332	7265 - SG at 7269 SW	7289 - Gas	7302 - Gas	7302 SG at 7303-06 SW at 7306
HELDERBERG	6142 -	7785 -								
SALINA										
GUELPH-LOCKPORT										
MEDINA	RED MEDINA (GRIMSBY)									
	WHITE MEDINA (WHIRLPOOL)									
QUEENSTON										
TOTAL DEPTH	6743	7836	6538	7282	7273	7341	7279	7299	7314	7322
DEEPEST FORMATION REACHED	Helderberg	Helderberg	Hamilton	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany	Oriskany
RESULT	39 Mcf gas AF from 6691-6743 900 ft. SW in 36 hrs. Abandoned	Dry Abandoned	Abandoned above Onondaga	5876 Mcf gas AF RP 2069 psi 66 hrs.	3450 Mcf gas natural RP 3889 psi 132 hrs.	7020 Mcf gas AF RP 2640 psi 48 hrs.	630 ft. SW. in 14 hrs. Abandoned	1345 Mcf gas natural RP 3690 psi 63 hrs.	1111 Mcf gas natural RP 3707 psi 72 hrs.	9 Mcf gas & salt water Abandoned

TABLE 11  
SHEET 3

## SUMMARIZED RECORDS OF DEEP WELLS (continued)

COUNTY	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clearfield	Clinton	Crawford	Crawford	Crawford
MAP NUMBER	21	22	23	24	25	26	27	28	29	30
NAME OF WELL	Gea Robertson 1	Mid Penn Coal Co, 1	J.L. Chick 1	Green Glen (16) Wt 3580-2	Green Glen (16) Wt 3580-3	E.B. Shettler 1	Pa Tract 91 1	Fred D. Carter 1	Tony Gasick 1	Joe E. Hindle 1
OPERATOR	Lee E. Minter et al	NYSNG Corp. N-808	Lee E. Minter NYSNG Corp	Fairman Drilling Co.	Fairman Drilling Co.	NYSNG Corp N-801	Felmont Oil Corp. F-133	J.S.McCluskey	Atlas Drilg. Co. Sun Oil Co	Atlas Exploration Co
TOWNSHIP	Sandy	Bigler	Sandy	Sandy	Sandy	Sandy	Beech Creek	Conneaut	Cussewaga	Cambridge
QUADRANGLE	DuBois 31	Houtzdale 1	Penfield 275	Penfield 273	Penfield 274	Penfield 276	Snow Shoe 5	Andover 19	Cambridge Springs, 8	Cambridge Springs, 10
LATITUDE	1200 ft. S. 41° 05'	11,050 ft. N. 40° 50'	4700 ft. N. 41° 05'	9800 ft. N. 41° 05'	10,800 ft. N. 41° 05'	5800 ft. N. 41° 05'	3800 ft. S. 41° 15'	17,200 ft. S. 41° 45'	500 ft. S. 41° 50'	6700 ft. N. 41° 45'
LONGITUDE	7250 ft. W. 78° 45'	6130 ft. W. 78° 25'	5100 ft. E. 78° 45'	8700 ft. W. 78° 40'	9950 ft. W. 78° 40'	9100 ft. E. 78° 45'	4100 ft. W. 77° 50'	2500 ft. W. 80° 30'	11,600 ft. W. 80° 10'	3350 ft. W. 80° 05'
DATE COMPLETED	4 - 26 - 61	8 - 14 - 61	2 - 21 - 61	1 - 12 - 61	2 - 6 - 61	3 - 21 - 61	5 - 10 - 61	6 - 27 - 61	5 - 19 - 61	8 - 18 - 61
ELEVATION	1564 DF	1580 RT	1651 DF	1532 DF	1464 DF	1546 DF	2158 RT	1120 DF	1345 DF	1303 KB
TULLY	6630 -	7035 - 7098	6711 -	6584 -	6574 -	6560 -	7093 - 7224	2240 - 2272	2422 - 2485	2616 - 2692
ONONDAGA	LIMESTONE	7182 -	7932 -	7274 -	7179 -	7161 -	7159 -	8048 -		
	CHERT	7200 -	7955 -	7288 -	7189 -	7172 -	7176 - Gas	2384 -	2623 -	2820 -
ORISKANY	7268 - Gas at 7270	8006 - 8026 SG	7340 - Gas at 7342	7243 - Gas at 7245		7234 - Gas	8081 - 8110	2596 - SW at 2605	2850 - 2854 Gas	3029 - 3033
HELDERBERG		8026 -					8110 -		Bass Island, Hole full SW, 2875	
SALINA								2680 -		3080 -
GUELPH-LOCKPORT								Lockport 3376 - Clinton 3630-3731 Irons- sault 3696-3704		Lockport 3708 - Clinton 4004 - Irons- sault 4060-4068
MEDINA	RED MEDINA (GRIMSBY)							3731 - 3823 SSG		4102 - SG
	WHITE MEDINA (WHIRLPOOL)							3907 - 3910		4270 - SG
QUEENSTON								3910		4280 -
TOTAL DEPTH	7280	8151	7355	7258	7173	7249	8160	3931	3034	4336
DEEPEST FORMATION REACHED	Oriskany	Helderberg	Oriskany	Oriskany	Onondaga	Oriskany	Helderberg	Queenston	Salina	Queenston
RESULT	928 Mcf gas natural RP 3535 psi 24 hrs.	6 Mcf gas AF RP 3200 psi 40 days. Abandoned	4470 Mcf gas and SW, AF RP 2203 psi 44 hrs.	2115 Mcf gas AF RP 2232 psi 72 hrs.	Dry Abandoned	Gas 7177-7249 1185 Mcf gas AF RP 2010 psi 24 hrs. 50 of about 2800	Dry Abandoned	Small show of gas Abandoned	2500 Mcf gas blew out Salt water, AF Abandoned	Show of gas Abandoned

TABLE II  
SHEET 4

## SUMMARIZED RECORDS OF DEEP WELLS (continued)

COUNTY	Crawford	Crawford	Crawford	Crawford	Crawford	Crawford	Crawford	Crawford	Crawford	Crawford
MAP NUMBER	31	32	33	34	35	36	37	38	39	40
NAME OF WELL	Revak 1	Halfast 1	Rudy Address 1	Brooky 1	Geo. Hlopick 1	L.W. Holloway 1	Jos. Jorshi 1	Fred Post, Jr. 1	John F. Post 1	H.W. Ransom 1
OPERATOR	Atlas Expl. Co. Sun Oil Co.	Albaugh et al	Grantley Co.	J.S. McCluskey et al	J.S. McCluskey et al	Burnham Gas Co.	Burnham Gas Co.	Benedict Trees Co.	The Sylvania Corp. 387	The Sylvania Corp. 388
TOWNSHIP	Cussewago	Rome	Spring	Beaver	Spring	Spring	Spring	Beaver	Beaver	Spring
QUADRANGLE	Cambridge Springs, 9	Corry 26	Girard 57	Girard 46	Girard 54	Girard 60	Girard 47	Girard 48	Girard 57	Girard 55
LATITUDE	3000 ft. S. 41° 50'	50 ft. N. 41° 45'	12,400 ft. S. 41° 50'	4750 ft. N. 41° 45'	1150 ft. S. 41° 50'	9700 ft. N. 41° 45'	9150 ft. N. 41° 45'	7200 ft. N. 41° 45'	7800 ft. N. 41° 45'	11,400 ft. N. 41° 45'
LONGITUDE	8300 ft. E. 80° 15'	1000 ft. W. 79° 40'	1600 ft. W. 80° 20'	2600 ft. W. 80° 25'	6600 ft. W. 80° 15'	11,700 ft. W. 80° 20'	9900 ft. W. 80° 20'	1750 ft. W. 80° 25'	1200 ft. W. 80° 25'	3600 ft. E. 80° 25'
DATE COMPLETED	8 - 18 - 61	9 - 13 - 61	11 - 3 - 61	4 - 21 - 61	9 - 22 - 61	12 - 2 - 61	6 - 3 - 61	6 - 5 - 61	11 - 10 - 61	9 - 28 - 61
ELEVATION	1243 DF	1744 G	1230 RT.	1120 KB	1197 DF	970 DF	1004 DF	1105 RT	1102 DF	925 DF
TULLY	2323 - 2386	3640 -		2240 - (est)	2250 - 2310	2055 -	2095 - 2139	2212 - 2233	2195 - 2215	
ONONDAGA	2520 -	3899 -	2530 -	2398 -	2445	2230 -	2260 -	2372 -	2357 -	2179 -
ORISKANY	2731 - 2737	4045 -	2714 - SG at 2714	2605 - 2609	2676 - 2677	2436 - 2441 SG & SW	2480 - 2487 Show SW	2584 - 2590 SW	2568 - 2575	2385 - SG at 2390
HELDERBERG										
BASS ISLAND	SW at 2754	4051 -				2441 -				
SALINA	2805 - 3363	4109 -		2680 - 3300 (est)	2750 - 3303	Salt, 2710 - 36 2831 - 81	Salt, 2744 - 69 2860 - 2901	2659 -	2645 - 3249	
GUELPH-LOCKPORT	3363 - 3635 SG, 3505 - 3515	4730 -		3300 - 3567 (est)	3303 - 3577	Black water at 3260 - 65	SG, 50, SW at 3312	3268 - 3534	3249 -	Black water at 3240
CLINTON	3635 - 3746 3710 - 3720	4950 -	3710 - 3720	3567 - 3672 3636 - 3646	3577 - 3684 3647 - 3657	3450 -	3508 -	3534 - 3639 3602 - 3612	3514 - 3584 - 3594	3408 - 3415
MEDINA	RED MEDINA (GRIMSBY)	3746 -	5136 -	3780 - 3836 Gas 3805 - 10	3672 - Gas 3721 - 55	3684 - 3765 Gas 3732 - 57	Gas 3506 - 76	Gas at 3512	3639 - Gas at 3707	3620 - 3706 Gas at 3663
	WHITE MEDINA (WHIRLPOOL)	3915 - 3922		3919 - 3927		3850 - 3858				3440 - Gas at 3480
QUEENSTON	3922 -	5309 -	3927 -		3858 -				3795 - 3804	
TOTAL DEPTH	3959	5340	3932	3780	3888	3585	3596	3788	3825	3520
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Medina	Queenston	Medina	Medina	Medina	Queenston	Medina
RESULT	Show of gas Abandoned	Dry Abandoned	500 Mcf gas and 50 AF RP 825 psi 18 hrs. PB to 3816	6000 Mcf gas and 50 AF RP 1125 psi 2 days Discovery Well Brooky Pool	300 Mcf gas and 550 AF Shut in	520 Mcf gas AF RP 1080 psi 18 hrs.	4000 Mcf gas natural AF RP 1200 psi 24 hrs.	3500 Mcf gas AF RP 1150 psi	264 Mcf gas 5661 oil, AF RP 1050 psi	7791 Mcf gas natural RP 1150 psi 24 hrs.

TABLE II  
SHEET 5

## SUMMARIZED RECORDS OF DEEP WELLS (continued)

COUNTY	Crawford	Crawford	Crawford	Crawford	Crawford	Crawford	Crawford	Crawford	Erie	Erie
MAP NUMBER	41	42	43	44	45	46	47	48	49	50
NAME OF WELL	Nan Sims 1	C. H. Tyler 28	Gerald L. Walton (on Johnson farm)	W. D. Worden 1	C. R. Berkheimer 1	Walter E. Hart 1	R. A. Lampman 1	Page 1	Vanco 1	J. Harrington 1
OPERATOR	Burnham Gas Co.	Benedum Trees Co.	The Sylvania Corp. 385	Nicholas Sevich	Lake Shore Pipe Line Co.	Lake Shore Pipe Line Co.	Lake Shore Pipe Line Co.	Benedum Trees Co.	Redfern and Hurd	Pa. Gas Co. No. 1598
TOWNSHIP	Spring	Conneaut	Spring	Spring	Conneaut	Conneaut	Conneaut	Summerhill	Washington	Conneaut
QUADRANGLE	Girard 53	Girard 49	Girard 52	Girard 51	Linesville 18	Linesville 16	Linesville 15	Linesville 17	Cambridge Springs, 11	Girard 61
LATITUDE	10,600 ft. N. 41° 45'	1800 ft. N. 41° 45'	8700 ft. N. 41° 45'	10,800 ft. N. 41° 45'	5600 ft. S. 41° 45'	8800 ft. S. 41° 45'	10,500 ft. N. 41° 40'	1500 ft. S. 41° 45'	12,200 ft. S. 41° 55'	9450 ft. S. 41° 55'
LONGITUDE	11,100 ft. W. 80° 20'	3800 ft. W. 80° 20'	11,500 ft. W. 80° 20'	11,500 ft. W. 80° 20'	3250 ft. W. 80° 25'	9100 ft. E. 80° 30'	300 ft. E. 80° 20'	3800 ft. W. 80° 10'	4500 ft. W. 80° 30'	5250 ft. E. 80° 30'
DATE COMPLETED	9 - 21 - 61	7 - 28 - 61	9 - 15 - 61	8 - 19 - 61	12 - 1 - 61	9 - 22 - 61	8 - 18 - 61	9 - 22 - 61	10 - 1 - 61	12 - 31 - 61
ELEVATION	980 DF	1138 KB	955 DF	922 RT	1191 KB	1126 KB	1178 RT	1017 DF	1473 DF	921 T.C.
TULLY		2265 - 2283			2340 - 2357	2257 - 2266	2394 - 2404	2228 - 2263	2460 - 2523	
ONONDAGA	2238 - 2450	2423 -	2232 -	2189 - 2401	2498 -	2407 -	2544 -	2396 -	2666 -	1876 -
ORISKANY	2450 - 2455 SG, SSW	2626 - SG, SSW	2435 - 2443 SW at 2437	2401 -	2702 - 2710 SG, SW	2619 - 2625 SW at 2625	2750 - 2754 SW at 2752	2592 - 2600 SW at 2600	2928 - 2934 SG at 2933	2161 - 2167
HELDERBERG	2455 -									
BASS ISLAND		2634 -							SW at 2975	SW at 2170
SALINA		2707 - 3335	2510 - 3121		2788 - 3424	2698 - 3343	2840 -	2669 - 3307	2999 - 3531	2250 - 2747
GUELPH-LOCKPORT	Black water at 3280	3335 -	3121 - 3392	Black water at 3227	3424 - 3697	3343 - 3616	3509 - SG, SW at 3672	3307 - 3579	3531 -	2747 - 3034
CLINTON		3576 - 3670 - 3683	3392 - 3497 3460 - 3470	3418 -	3697 - 3804 3764 - 3775	3616 - 3721 3684 - 3694	3780 - 3890 3850 - 3859	3579 - 3648 - 3658	3798 - 3904 3870 - 3880	3034 - 3134 3100 - 3112
MEDINA	RED MEDINA (GRIMSBY)	Gas at 3546	3706 - 3794 Gas at 3774	3497 - 3586 Gas at 3549	3449 - Gas at 3505	3804 - 3890 Gas at 3856	3721 - 3810 50 at 3799, 56 at 3775	3890 - 3984 SG	3687 - 3776 SG, 50	3904 - 3991 SG at 3944
	WHITE MEDINA (WHIRLPOOL)		3650 - 3678			3963 - 3983	3881 - 3902	4051 - 4072	3860 - 3866	4062 -
QUEENSTON			3678 -		3983 -	3902 -	4072 -	3866 -	4077 -	3298 -
TOTAL DEPTH	3550	3828	3679	3526	4012	3916	4075	3911	4097	3305
DEEPEST FORMATION REACHED	Medina	Medina	Queenston	Medina	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULT	9184 Mcf gas natural RP 1140 psi	2500 Mcf gas AF RP 1000 psi	446 Mcf gas AF RP 1025 psi 48 hrs.	3500 Mcf gas AF RP 1175 psi	521 Mcf gas 1½ bbls oil, AF RP 1160 psi 70 hrs.	100 Mcf gas 4 bbls oil, AF RP 960 psi 72 hrs. Shut in	Show of gas 15 bbls oil, AF RP 800 psi Shut in	101 Mcf gas 15 bbls oil, AF RP 800 psi Shut in	Show of gas Shut in	56 Mcf gas AF RP 450 psi 40 hrs.

COUNTY	Erie	Erie	Erie	Erie	Erie	Erie	Erie	Erie	Erie	Fayette
MAP NUMBER	51	52	53	54	55	56	57	58	59	60
NAME OF WELL	Mary Leech 1	Earl C. Miller 1	O. E. Park 1	L. Rossiter 1	Eades 1	Esterline 1	Kobie/ski 1	Geo L. Lenart 1	Paul Tomcho 1	Ikle Morrison 1
OPERATOR	Worldwide Petroleum Co.	Pa. Gas Co. No. 1597	R. C. Ernst	Pa. Gas Co. No. 1596	Vandenburg	Vandenburg	Apache Oil Co.	Apache Oil Co.	Apache Oil Co.	Peoples Natural Gas Co. Snee & Eberly
TOWNSHIP	Elk Creek	Elk Creek	Conneaut	Girard	North East	North East	Venango	Waterford	Amity	Stewart
QUADRANGLE	Girard 45	Girard 59	Girard 50	Girard 56	North East 27	North East 26	North East 28	Union City 5	Union City 4	Confluence 12
LATITUDE	5900 ft. N. 41° 55'	13,400 ft. S. 41° 55'	13,100 ft. S. 41° 55'	8450 ft. S. 41° 55'	3500 ft. S. 42° 10'	6300 ft. N. 42° 10'	17,500 ft. S. 42° 05'	13,600 ft. S. 42° 00'	6500 ft. S. 42° 00'	2700 ft. S. 39° 50'
LONGITUDE	4250 ft. W. 80° 20'	1100 ft. E. 80° 20'	6000 ft. E. 80° 30'	13,600 ft. W. 80° 25'	11,500 ft. W. 79° 50'	10,000 ft. W. 79° 50'	5900 ft. W. 79° 50'	5300 ft. W. 79° 55'	5500 ft. E. 79° 50'	8200 ft. W. 79° 25'
DATE COMPLETED	3 - 17 - 61	11 - 9 - 61	8 - 4 - 61	10 - 25 - 60	5 - 26 - 61	1 - 13 - 61	12 - 22 - 61	12 - 15 - 61	9 - 8 - 61	12 - 9 - 61
ELEVATION	878 DF	878 DF	945 DF	916 DF	1280 DF	896 DF	1538 DF	1451 DF	1528 DF	2590 KB
TULLY	1647 - 1680			1712 - 1718	1864 -	1405 - 1525	2393 - 2460	2350 - 2425	2508 - 2578	Hamilton 7322 - Marcellus 7775 -
ONONDAGA	1837 -	2133 -	1920 -	1874 -	2082 - Chert, 2170 -	1640 -	2619 -	2575 -	2743 -	7934 - Chert, 7954 -
ORISKANY	2111 - 2112	2391 - 2411 SW at 2404	2194 - 2210	2157 - 2162 SG & SW	2323 - 2326	1880 - 1883 SG & SW	2845 - 2850	2822 - 2846 SG & SW	2980 - 2998	8121 -
HELDERBERG										
BASS ISLAND	SW at 2152		SW at 2225							
SALINA	2194 - 2688			2246 - 2740			2923 - 3403	2922 - SG, 2968 - 71	3062 - 3572	
GUELPH-LOCKPORT	2688 - 2950 SG, SW	Black water at 3190	2785 - 3064 (est.)	2740 - 3026 SW at 2914	Black water at 2923	Black water at 2485	3403 -	3444 -	3572 - 3842 SG & SW at 3705	
CLINTON	2950 - 3017 - 3030	3344 -	3064 - 3162 3129 - 3142	3026 - 3121 3090 - 3102		2650 -	3666 - 3734 - 3746	3722 - 3776 - 3787	3842 - 3912 - 3924	
MEDINA	RED MEDINA (GRIMSBY)	3050 -	3368 - Gas at 3418	3162 - 3237 Gas at 3235	3121 - 3202 Gas at 3168	3132 - SG	2672 - Gas	3766 - SG & SW	3811 - 3918 SW	3947 - SG at 3974
	WHITE MEDINA (WHIRLPOOL)			3333 -	3280 - 3294		2818 -	3916 -	3972 -	4104 - SW at 4106
QUEENSTON			3336 -	3294 -	3300 -	2840 -	3930 -	3982 -	4115 -	
TOTAL DEPTH	3123	3460	3384	3298	3313	2852	3956	4021	4139	8232
DEEPEST FORMATION REACHED	Medina	Medina	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Helderberg
RESULT	Dry Abandoned	3000 Mcf gas natural RP 1050 psi 24 hrs Discovery Well/ Lundys Lane Pool	1750 Mcf gas AF RP 1025 psi	3000 Mcf gas AF RP 1050 psi 24 hrs.	50 Mcf gas after 2nd frac RP 670 psi, 4 hrs 850 ft SW/day Shut in	300 Mcf gas AF RP 830 psi 16 hrs.	50 Mcf gas, AF RP 1095 psi 36 hrs 2000 ft SW Abandoned	Show of gas salt water Abandoned	Show of gas salt water Abandoned	Gas at 8014, 8060 3510 Mcf gas AF RP 3190 psi 96 hrs.

TABLE 11  
SHEET 7

## SUMMARIZED RECORDS OF DEEP WELLS (continued)

COUNTY	Fayette	Fayette	Fayette	Fayette	Greene	Indiana	Jefferson	Jefferson	Lycoming	Lycoming
MAP NUMBER	61	62	63	64	65	66	67	68	69	70
NAME OF WELL	MR. Morrison 1	G.G. Gault 1	Lee Smith 1	Melvin Spruell 1	Geo. W. Gordon 1	J.H. Rolston 1D	Helen G. Rhines 1	Burt Walls 2	Pa. Game Lands Tract 15-A, 1	Wm. P. Day 1
OPERATOR	Snee & Eberly Peoples Nat. Gas Co.	Snee & Eberly Peoples Nat. Gas Co.	Snee & Eberly Peoples Nat. Gas Co.	Peoples Nat. Gas Co. Snee & Eberly	John Fox et al	Delta Drilling Co., et al	NYSN G Corp N-807	NYSNG Corp N-814	Felmont Oil Corp. F-132	Felmont Oil Corp. F-130
TOWNSHIP	Stewart	Lower Tyrone	Wharton	Stewart	Franklin	Cherry Hill	Winslow	Winslow	Brown	Pine
QUADRANGLE	Confluence 10	Connellsville 4	Uniontown 36	Uniontown 37	Waynesburg 2	Indiana 10	Du Bois 30	Du Bois 32	Antrim 14	Waterville 4
LATITUDE	8700 ft. N. 39° 50'	1800 ft. N. 40° 05'	18,500 ft. S. 39° 50'	14,600 ft. S. 39° 55'	9950 ft. N. 39° 50'	11,700 ft. N. 40° 35'	13,150 ft. S. 41° 05'	2000 ft. S. 41° 05'	9100 ft. N. 41° 30'	1750 ft. N. 41° 25'
LONGITUDE	4050 ft. W. 79° 25'	7700 ft. W. 79° 40'	3500 ft. W. 79° 40'	6500 ft. E. 79° 36'	5500 ft. E. 80° 10'	2800 ft. E. 79° 05'	2550 ft. W. 78° 50'	6400 ft. E. 78° 50'	11,200 ft. W. 77° 20'	1500 ft. W. 77° 15'
DATE COMPLETED	2 - 6 - 61	11 - 10 - 61	10 - 31 - 61	10 - 13 - 61	4 - 29 - 61	1 - 17 - 61	4 - 22 - 61	5 - 24 - 61	3 - 3 - 61	4 - 26 - 61
ELEVATION	1434 KB	1439 DF	1835 KB	2353 KB	1405 RT	1714 KB	1439 DF	1550 DF	1579 RT	1799 RT
TULLY	Hamilton, 5813-	7158 -	6701 - 6805	7065 -	7660 - 7720	7174	6618 -	6773 -	5678 - 5794	6594 - 6754
ONONDAGA	LIMESTONE 6362 -	7612 -	7205 -	7590 -	7978 -	7825 -	7186 -	7370 -	6768 - 6818	7768 -
	CHERT 6380 -	7626 -	7225 -	7612 -		7838 -	7203 -	7381 -		
	Gas at 6399			Gas at 7640						
ORISKANY	6534 - 6616 Gas		7375 -	7760 - 7848 Gas at 7765	8224 -	7955 - 7970	7260 - 7290 SG & SW	7448 - SW	6818 - 6853	7836 - 7890 SG, 7860 - 70
HELDERBERG	6616 -		7460 -	7848 -	8280 -	7970 -	7290 -		6853 -	7890 -
SALINA			7758 -		Keyser, 8532 -					
GUELPH-LOCKPORT										
MEDINA	RED MEDINA (GRIMSBY)									
	WHITE MEDINA (WHIRLPOOL)									
QUEENSTON										
TOTAL DEPTH	6785	7801	8026	7964	8659	8017	7298	7458	6865	7990
DEEPEST FORMATION REACHED	Helderberg	Onondaga	Salina	Helderberg	Keyser	Helderberg	Helderberg	Oriskany	Helderberg	Helderberg
RESULT	3130 Mcf gas from chert & Oriskany after acidizing RP 3271 psi 4.8 hrs. Shut in	1200 Mcf gas and SW AF from chert RP 3773 psi 4.8 hrs. Shut in	20 Mcf gas and SW after acidizing chert & Oriskany Abandoned	3110 Mcf gas AF RP 3423 psi 10 days Discovery Well Spruell Field	Dry in Oriskany Plugged back to Bayard sand Gas 3180 - 3195 169 Mcf	Dry in Oriskany PB to 3000 Gas 2810 - 2831 1675 Mcf AF RP 1020 psi 5 days	Show of gas 8 bbls SW/hr. Abandoned	12 gals. SW per hr. Abandoned	Dry Abandoned	8 Mcf gas & SW, AF Abandoned

COUNTY	McKean	Mercer	Potter	Potter	Somerset	Somerset	Somerset	Tioga	Warren	Warren
MAP NUMBER	71	72	73	74	75	76	77	78	79	80
NAME OF WELL	Mallory 2	Thomas Lihan 1	W H - 52	Pa. Tract 88 1	E & M Rugg 1	J Forkas, et al 1	Lutheran Camp Assoc. 1	W Linder 1	F Kapp 2	Wheeler- Dusenberry, 1 WT 5206
OPERATOR	Fitkos and M <sup>c</sup> Bride	Bert Fields	United Natural Gas Co.	Felmont Oil Corp. F-134	M. L. & H. Co. No 4660	Snee & Eberly Peoples Nat. Gas Co.	Snee & Eberly Peoples Nat. Gas Co.	NYSNG Corp. N-832	Biery et al	Paul Benedum
TOWNSHIP	Foster	West Salem	Wharton	Abbott	Lower Turkey Foot	Jenner	Jenner	Farmington	Limestone	Limestone
QUADRANGLE	Bradford 4	Shenango 7	Conrad 35	Galeton 41	Confluence 11	Somerset 23	Somerset 21	Elkland 36	Tidioute 6	Tidioute 5
LATITUDE	1600 ft. S 42° 00'	3500 ft. N 41° 25'	1000 ft. N 41° 30'	7100 ft. N 41° 35'	17,700 ft. S 39° 55'	3300 ft. N 40° 10'	7000 ft. N 40° 10'	3150 ft. N 41° 55'	1300 ft. N 41° 40'	1800 ft. N 41° 40'
LONGITUDE	11,400 ft. W 78° 40'	7650 ft. W 80° 25'	2750 ft. E 78° 00'	7000 ft. W 77° 40'	2900 ft. E 79° 25'	10,000 ft. W 79° 05'	5900 ft. W 79° 05'	2200 ft. W 77° 20'	10,900 ft. W 79° 20'	2800 ft. W 79° 20'
DATE COMPLETED	5 - 27 - 61	10 - 26 - 61	9 - 13 - 61	5 - 29 - 61	10 - 23 - 61	7 - 21 - 61	3 - 5 - 61	12 - 20 - 61	7 - 3 - 61	5 - 12 - 61
ELEVATION	2074 G	1160 RT	1999 KB	2257 DF	2550 KB	2470 KB	2290 KB	1918 G	1602 DF	1725 RT
TULLY	3992 -	2930 - 2938	5405 - 5478	6406 - 6480	Hamilton, 7527 -	Hamilton, 7168 -	7352 -	4080 -	3993 -	4172 - 4215
ONONDAGA	LIMESTONE	4334 -	3070 -	6100 -	7259 -	8070 -	7902 -	8315 -	4945 -	4460 -
	CHERT					8089 - Gas	7922 - Gas	8334 -		SG
ORISKANY	4409 - Gas at 4410	3284 - 3288 SN at 3284	6115 -	7289 - 7290	8232 - 8330	8053 - Gas	8459 - SG at 8468	4954 - 4990	4371 - 4384	4530 - 4534
HELDERBERG		SW at 3301		7290 -	8330 -			4990 -	4384 -	
SALINA		3400 -							Salt 4732 -	4648 -
GUELPH-LOCKPORT		Lockport 4173 - SG Clinton 4463 -							5364 - Black water at 5450	Lockport 5400 - Clinton 5682 - Irons 5798 - 5805
MEDINA	RED MEDINA (GRIMSBY)	4586 -							5650 - Gas, 5732 - 49	5860 - Gas, 5926 - 38
	WHITE MEDINA (WHIRLPOOL)	4773 - 4788								6028 - 6031
QUEENSTON		4788 -								6031 -
TOTAL DEPTH	4417	4792	6163	7326	8368	8133	8591	5003	5778	6038
DEEPEST FORMATION REACHED	Oriskany	Queenston	Helderberg	Helderberg	Helderberg	Oriskany	Oriskany	Helderberg	Medina	Queenston
RESULT	3000 Mcf gas after shot RP 1866 psi 47 hrs.	Show of gas Abandoned	Drilled for gas storage	Dry Abandoned	1443 Mcf gas AF RP 3230 psi 48 hrs.	7450 Mcf gas AF RP 3029 psi 6 days	268 Mcf gas AF RP 2090 psi 84 hrs. Shut in	Dry Abandoned	170 Mcf gas AF RP 1235 psi 69 hrs.	250 Mcf gas AF RP 960 psi 3 hrs. Discovery Well Camp Run Field

TABLE II  
SHEET 9

## SUMMARIZED RECORDS OF DEEP WELLS (continued)

COUNTY	Washington	Washington	Washington	Westmoreland	Westmoreland	Westmoreland	York			
MAP NUMBER	81	82	83	84	85	86	87			
NAME OF WELL	Aaron Conner 1	Samuel Cooper 2	Adolph Allison 1	A.E. Bailey 1	B.G. Clarke 1	Pa. Tract 98 1	Harry Leib 1			
OPERATOR	John T. Galey Gulf Oil Co.	John T. Galey	James Drilling Co.	Peoples Nat Gas Co. Snee & Eberly	Peoples Nat Gas Co.	Phillips Petroleum Co.	Donelson Co.			
TOWNSHIP	W. Bethlehem	Amwell	Robinson	S Huntington	Cook	Cook	Dover			
QUADRANGLE	Amity 1	Amity 2	Burgettstown 6	Cannellsville 5	Somerset 22	Somerset 24	Hanover 1			
LATITUDE	5300 ft. N. 40° 05'	10,900 ft. N. 40° 05'	650 ft. N. 40° 25'	8500 ft. S. 40° 10'	12,000 ft. N. 40° 05'	13,500 ft. N. 40° 05'	10,450 ft. S. 40° 00'			
LONGITUDE	6550 ft. E. 80° 10'	1200 ft. E. 80° 10'	1600 ft. E. 80° 20'	2500 ft. W. 79° 40'	6100 ft. W. 79° 10'	5000 ft. W. 79° 10'	9500 ft. W. 76° 50'			
DATE COMPLETED	1 - 20 - 61	9 - 6 - 61	9 - 26 - 61	12 - 26 - 61	3 - 15 - 61	8 - 21 - 61	4 - 25 - 61			
ELEVATION	1242 KB	1148 KB	1168 KB	1272 KB	2677 G	2693 KB	500 G			
TULLY	7160 - 7250	7102 - 7130	5685 - 5765	6860 -	Hamilton, 7595 -	Hamilton, 7581 -				
ONONDAGA	LIMESTONE	7500 - 656 of 7505, 7575, 8 7690 1	7498 - 56, 7451 - 7455 7470 - 7476	5962 -	7310 - 7329 - Gas at 7385	8310 - 8335 - Gas at 8365, 8371	8336 - 8361 - SG			
	CHERT									
ORISKANY	7743 - 7803	7682 - 7737 SG, 7703-7707	6146 - 6204 SW at 6148	7508 - Gas		8518 - Gas				
HELDERBERG	7803 -	7737 - 7960 SG, 7778 - 84	6204 - 6382	7594 -						
SALINA	Keyser 8026 - SG at 8042	Keyser 7960 - SG at 7984 - 87 7989 - 34	Keyser 6382 -							
GUELPH - LOCKPORT										
MEDINA	RED MEDINA (GRIMSBY)									
	WHITE MEDINA (WHIRLPOOL)									
QUEENSTON										
TOTAL DEPTH	8125	8135	6506	8005	8435	8580	8630			
DEEPEST FORMATION REACHED	Salina	Salina	Salina	Salina	Onondaga	Helderberg	Chickies Quartzite			
RESULT	14 Mcf gas after acidizing RP 200 psi 60 hrs Abandoned	1000 Mcf gas AF RP 1929 psi. 3 days Discovery Well Glyde Pool	Dry Abandoned	2700 Mcf gas AF RP 3950 psi 4 days Discovery Well Bailey Pool	6500 Mcf gas AF RP 3369 psi 96 hrs. Discovery Well Clarke Pool	440 Mcf gas and SW AF RP 2690 psi 36 hrs.	Dry Abandoned			

TABLE 12. Deep Well Samples Collected During 1961  
(Supplement to Information Circular No. 16 and Progress Reports 157 & 158)

COUNTY Quadrangle & Number	Operator	Farm Name	Total Depth	Year Compl.	Sampled Interval	Deepest Formation Sampled
ALLEGHENY Greensburg 2	Albert Starr	Houston-Starr #1	7,904	61	5,310-7,865	Helderberg
BEDFORD Ebensburg 3	Phillips Petroleum	Pa. Tract 26B #1	6,984	61	6,830-6,982	Helderberg
BLAIR Ebensburg 1	Phillips Petroleum	Pa. Tract 26A #1	6,964	61	50-6,960	Helderberg
CAMBRIA Johnstown 1	Chas. Grabiak	Piney Run Mining Co. #1	8,455	61	40-8,450	Upper Devonian
CAMERON Benezette 276	N. Y. State Nat. Gas	A. Pardee Est. #3	6,804	61	6,400-6,804	Oriskany
CLEARFIELD Clearfield 45	N. Y. State Nat. Gas	Clearfield Trust Co. #1	7,836	61	Samples not yet cut	
Dubois 22	N. Y. State Nat. Gas	H. S. Reasinger #1	7,314	60	6,600-7,314	Helderberg
Dubois 27	Devonian Gas & Oil	Jos. Jusnukis #1	7,341	61	7,210-7,340	Oriskany
Houtzdale 1	N. Y. State Nat. Gas.	Mid-Penn Coal Co. #1	8,140	61	29-8,140	Helderberg
Penfield 74	Devonian Gas & Oil & Fair- man	Emery Miller #1	7,343	57	7,265-7,327	Oriskany
Penfield 95	Devonian G & O	Scholl #2	7,406	57	6,300-7,406	Onondaga
Penfield 246	Felmont Oil Corp.	Deemer-Green Glen #4	7,244	60	(1,300-1,800) (6,300-7,242)	Oriskany
Penfield 247	Felmont Oil Corp.	Deemer-Green Glen #3	7,305	60	(0 -1,260) (6,300-7,305)	Oriskany
Penfield 260	Felmont Oil Corp.	Deemer-Green Glen #8	7,349	60	( 145-1,300) (6,500-7,348)	Oriskany
Penfield 262	Felmont Oil Corp.	Deemer-Green Glen #10	7,201	60	( 45-1,320) (6,500-7,108)	Onondaga
Penfield 265	Felmont Oil Corp.	Deemer-Green Glen #11	7,336	60	100-1,180	Upper Devonian
Penfield 271	N. Y. State Nat. Gas	Walter Dunlap #1	7,270	60	6,500-7,279	Helderberg
Penfield 272	N. Y. State Nat. Gas	Dubois Nat. Bank (H. E. Ginter) #1	7,344	60	6,800-7,267	Onondaga
Penfield 276	N. Y. State Nat. Gas	E. B. Shettler #1	7,249	61	(2,500-3,500) (6,000-7,175)	Onondaga
CLINTON Snow Shoe 5	Felmont Oil Corp.	Pa. Tract 91 #1	8,160	61	50-8,160	Helderberg
CRAWFORD Cambridge Springs 8	Atlas & Sun Oil Co.	Tony Gosick #1	3,034	61	Samples not yet cut	
Cambridge Springs 9	Atlas & Sun Oil Co.	Revak #1	3,959	61	Samples not yet cut	
Corry 26	Albaugh et al	Halfast #1	5,340	61	2,487-5,322	Queenston

TABLE 12. Deep Well Samples Collected During 1961 (Continued)  
(Supplement to Information Circular No. 16 and Progress Reports 157 & 158)

COUNTY Quadrangle & Number	Operator	Farm Name	Total Depth	Year Compl.	Sampled Interval	Deepest Formation Sampled
<b>CRAWFORD (continued)</b>						
Girard 26	Felmont Oil Corp.	Harry Wigand #1	3,853	58	2,277-3,860	Queenston
Girard 46	S. McClusky	Brooky #1	3,792	61	2,219-3,780	Medina
<b>ERIE</b>						
Cambridge Springs 11	Redfern & Hurd	Vanco #1	4,103	61	2,470-4,103	Queenston
Erie 103	Stephens et al	C. Innes #1	2,517	58	2,270-2,485	Oriskany
Union City 5	Apache Oil Co.	Lenart #1	4,017	61	2,803-4,017	Queenston
<b>FAYETTE</b>						
Connellsville 4	Snee & Eberly	G. G. Gault #1	7,803	61	0-7,801	Onondaga
Uniontown 35	Snee & Eberly & Peoples Nat. Gas	Earl Rahl #1	8,022	60	3,700-8,000	Onondaga
<b>GREENE</b>						
Waynesburg 2	J. A. Fox et al	Geo. W. Gordon #1	8,659	61	50-8,650	Keyser
<b>INDIANA</b>						
Indiana 10	Delta Drilg. Co.	J. H. Ralston #1 D	8,017	61	30-8,015	Helderberg
<b>JEFFERSON</b>						
Dubois 21	Sam Jack Drilg. Co.	J. Bobal #1	7,110	60	5,150-7,102	Helderberg
<b>LYCOMING</b>						
Antrim 14	Felmont Oil Corp.	Pa. Game Lands Tract 75 A #1	6,865	61	50-6,896 ?	Oriskany
Waterville 4	Felmont Oil Corp.	Wm. P. Day #1	7,990	61	10-7,990	Helderberg
<b>POTTER</b>						
Galeton 41	Felmont Oil Corp.	Pa. Tract 88 #1	7,326	61	5,900-7,325	Helderberg
<b>SOMERSET</b>						
Somerset 15	Felmont & Peoples	Leroy Wilt #1	8,560	60	( 0- 945) (7,210-8,560)	Oriskany ?
Somerset 19	Felmont Oil Corp.	C. W. Friedline #1	8,586	60	7,100-8,578	Onondaga
<b>TIOGA</b>						
Antrim 13	J & J Enterprises	H. P. Jones #1	6,081	60	50-6,074	Helderberg
Galeton 17	James Drilg. Co.	Hubert #1	5,747	55	5,695-5,742	Oriskany
<b>WARREN</b>						
Tidioute 5	Paul Benedum	Wheeler-Dusenberry #1	6,038	61	5,938-5,958 (core)	Medina
<b>WASHINGTON</b>						
Amity 1	Gulf Oil & J. T. Galey	Aaron F. Conner #1	8,125	61	85-8,125	Keyser
Amity 2	John T. Galey	Samuel V. Cooper #2	8,135	61	Samples not yet cut	