OIL AND GAS DEVELOPMENTS
IN
PENNSYLVANIA
IN
1953

BY
CHAS. R. FETTKE

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF INTERNAL AFFAIRS
WILLIAM S. LIVENGOOD, JR., SECRETARY
TOPOGRAPHIC AND GEOLOGIC SURVEY
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Deacidified using the Bookkeeper process.
Neutralizing agent: Magnesium Oxide
Treatment Date: AUG 2002

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OIL AND GAS DEVELOPMENTS
IN PENNSYLVANIA IN 1953

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ABSTRACT

Exploratory drilling early in 1953 led to the opening of the largest Oriskany sand gas pool discovered to date in north-central Pennsylvania, the Benezette pool in southeastern Elk County. This pool is part of the Benezette-Driftwood field, the Driftwood end in southwestern Cameron County having been discovered late in 1951. Two other discoveries of minor significance were made in 1953, one at the Oriskany horizon in western Clearfield County and the other in the Albion (Medina) sand in southeastern Erie County. The Pine dome in northwestern Clearfield County was tested sufficiently to indicate that the major part of it will probably not be proved productive. Two Oriskany-sand tests in the plateau region of northeastern Pennsylvania proved dry. One unsuccessful Cambro-Ordovician test was completed in the closely folded Appalachians in southeastern Clinton County.

Two hundred and four deep wells (Middle Devonian or deeper) were completed in 1953, as compared with 160 in 1952. Of these, 134 were gas wells. Major drilling activity in Pennsylvania during 1953 centered on the Benezette-Driftwood development in southeastern Elk and southwestern Cameron Counties. One hundred and twenty-four producing wells and 16 dry holes were drilled. The total number of shallow wells (Upper Devonian or higher) drilled was 1,770, essentially the same as in 1952.

Oil production in 1953 is estimated at 10,700,000 barrels, as compared with 11,179,000 barrels in 1952. Gas production was 98.3 billion cubic feet, as compared with 94.8 billion cubic feet in 1952.

INTRODUCTION

This report summarizes oil and gas developments in Pennsylvania in 1953. It is the fourth of a series of annual reports of this type, having been preceded by Progress Reports 135, 139, and 143. The summarized records of deep wells (P. R. 135, table 7; P. R. 139, table 1; P. R. 143, table 1, and P. R. 144, table 1) are intended to supplement Bulletin M 31, “Summarized Record of Deep Wells in Pennsylvania.”

DEEP-SAND DEVELOPMENT

Summarized records of the deep wells (Middle Devonian or deeper) completed in north-central and western Pennsylvania are assembled in Table 1. The locations of the wells are shown on the maps in Plates 1 and 2. Of the 204 deep wells drilled in 1953 (160 in 1952), 134 were gas wells, 7 were drilled for gas storage, and 63 were dry holes. Of the dry holes, 14 were abandoned after drilling through the Tully limestone at the top of the Middle Devonian Series when it was discovered that they were off structure or when near-by wells indicated that reservoir

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In connection with the preparation of the review, the writer acknowledges the cooperation of John A. Conet, George J. Donaldson, Jr., John W. Hendrickson, A. I. Ingham, and William S. Lytle. Virginia Fairall, of the Survey Staff, did the drafting and assisted with the compiling of the data.
conditions in the Oriskany formation were not favorable for the occurrence of gas.

Major activity in the Oriskany sand gas territory of north-central Pennsylvania centered on southeastern Elk County in 1953. The Benezette part of the Benezette-Driftwood gas field was opened early in 1953 by the completion of the Charleroi Mountain Club No. 1 well (No. 89 on map, Plate 1) in southeastern Elk County. The main part of the field occupies a prominent elongated, faulted dome along the northeast-southwest trending Driftwood anticline. At the end of 1953, the developed area of the Benezette-Driftwood field included about 20,900 acres. The limits of production had only been established at the northeastern end of the field and on the northwestern flank of the structure. There is good possibility for appreciable extension of the field to the southwest and southeast.

One hundred and twenty-four producing wells with average initial open-flow capacities of 6,841,000 cubic feet of gas per day and 16 dry holes were completed in the Benezette-Driftwood field during 1953. The initial open flows of the individual wells ranged from 400,000 to 31,600,000 cubic feet per day. The highest reservoir pressure recorded was 4,000 pounds per square inch. The average depth of the sand is 6,320 feet. The 1953 production amounted to 42.4 billion cubic feet. The Driftwood end of the field had already produced 3 billion cubic feet in 1952. At the close of 1953, the Benezette-Driftwood field was producing at a rate slightly in excess of 300 million cubic feet of gas per day.

The Leidy gas field in Clinton County, discovered early in 1950, was nearly exhausted at the end of 1953. Four small producers and eight dry holes were completed in it during the year. The 1953 production amounted to only 4.3 billion cubic feet. The total production from this field at the end of 1953 was 89.5 billion cubic feet. The productive area includes about 10,500 acres.

One small gas well and one dry hole were completed in the East Fork-Wharton gas field of southern Potter County during 1953. Two dry holes were drilled in the Piper pool, a small Onondaga pool with fractured-chert type reservoir in east-central Westmoreland County, in an effort to extend its boundaries. The pool is located along the axis of the Chestnut Ridge anticline, on a dome which is complexly faulted.

Three additional producing wells at the southwestern end of the Corry pool, a small Medina (Lower Silurian) sand pool in southeastern Erie County, extended the boundaries of that pool slightly. The Frank Stutzman No. 1 Well (No. 177 on map, Plate 2), which encountered a small flow of gas in the Red Medina sand (Lower Silurian) may lead to the development of another small Medina sand pool in northwestern Pennsylvania. It is located about two miles south of the Corry pool.

The Alice Irwin No. 13 Well (No. 40 on map, Plate 2) in western Clearfield County encountered some gas at approximately the Oriskany horizon. Only about two feet of the fine- to medium-grained quartzitic sandstone are present at the Oriskany horizon at this locality. A small show of gas was observed as the well was drilled through the zone. Considerably later, when the zone was shot, an open flow of 700,000 cubic feet of gas per day was developed. There is some question whether the
BENEZETTE-DRIFTWOOD GAS FIELD
ELK AND CAMERON COUNTIES
PENNSYLVANIA
DECEMBER 31, 1953
PENNSYLVANIA GEOLOGICAL SURVEY
FOURTH SERIES PROGRESS REPORT 144

STRUCTURE CONTOURS ON TOP OF THE ORISKANY SANDSTONE
100 FOOT CONTOUR INTERVAL
ELEVATIONS BELOW SEA LEVEL
* GAS  
* SHOW OF GAS  
+ DRY  
* THROUGH TULLY ONLY

PLATE 1
gas is coming from the sandstone, from fractured Onondaga chert and dark shale above it, or from sandy and cherty limestone below. Additional drilling is required to evaluate the discovery. The well is located at the southwestern end of the Pine dome along the Chestnut Ridge anticline. To the northeast, three other wells (Nos. 43, 44, and 45, Table 1 and map of Plate 2) encountered unfavorable reservoir conditions in the Oriskany formation along the crest of the Pine dome.

The Byron Schneider No. 1 Well (No. 184 on map, Plate 2) on the Oregon Hill dome along the Slate Run anticline in northern Lycoming County encountered tight sand at the Oriskany horizon. The Grants Tomb No. 1 (No. 183 on map, Plate 2) along the trend of the same anticline passed through a fault on the southeast flank of the anticline and was not completed to the Oriskany.

Wells 37, 38, 39, and 47 in Table 1 and on the map, Plate 2, verified the existence of unfavorable reservoir conditions in the Oriskany formation under the prominent Hyner dome in northwestern Centre County and central Clinton County.

The Buttermore Heirs No. 1 Well (No. 181 in Table 1 and on map, Plate 2), located on a prominent dome along the Chestnut Ridge anticline in northeastern Fayette County, did not reach the Oriskany. It was abandoned after drilling through the Tully limestone because the depth at which the latter was encountered indicated that the well had passed through a fault. A second test of the structure is underway.

The Nellie J. Harrison No. 1 Well and John Sheehan No. 1 Well (Nos. 185 and 204 in Table 1 and on map, Plate 2) are the first two wells to test the Oriskany formation underneath the plateau region of northeastern Pennsylvania. The results were not encouraging.

The Clifford Walizer No. 1 Well (No. 50 in Table 1 and on map, Plate 2) represents a Cambro-Ordovician test in the closely folded Appalachians in southeastern Clinton County. It is located on the Sugar Valley dome along the Fishing Creek anticline. No shows of gas or oil were encountered.

**SHALLOW-SAND DEVELOPMENTS**

Drilling in the shallow-sand territory of western Pennsylvania (Upper Devonian or higher) remained about the same as during the previous year. In all, 1,770 shallow-sand wells were completed, as compared with 1,739 in 1952. Of these, 224 were gas wells, 40 were oil wells, and 125 were dry holes. Eight were drilled for gas storage and 1,373 were drilled in connection with secondary recovery oil operations. Shallow-sand well completions, exclusive of those drilled in connection with underground gas storage and secondary-recovery oil operations, are shown in Table 2. The 224 new gas wells had a total initial open-flow capacity of 37,408,000 cubic feet per day, as compared with the total initial open-flow capacity of 34,784,000 cubic feet of the 240 gas wells completed in 1952. The 40 new oil wells had a total initial production of 152 barrels per day, as compared with the total initial production of 108 barrels of the 24 oil wells completed in 1952. The results obtained in 1953 by deepening 17 shallow-sand wells are shown in Table 3.
GAS

No new shallow-sand gas fields or pools were discovered in Pennsylvania in 1953. The greatest activity in the shallow-sand gas belt of western Pennsylvania occurred in Armstrong County where 51 gas wells were completed. Their average initial open-flow capacity, however, was only 221,000 cubic feet per day per well. A small Speechley sand gas pool in Elizabeth Township in southern Allegheny County, whose development was completed in 1953, furnished some good wells. One with an initial open-flow capacity of 3,100,000 cubic feet per day and a reservoir pressure of 1145 psi had yielded 400,000,000 cubic feet of gas at the end of ten months.

One well, 2,979 feet deep, was drilled for underground gas storage in Allegheny County; 3 storage wells averaging 1,887 feet in depth were drilled in Elk County, 2 averaging 2,767 feet in Washington County, and 2 averaging 1,405 feet in Westmoreland County.

OIL

The average daily oil production of Pennsylvania in 1953 was 29,318 barrels, as compared with 30,545 barrels in 1952, a decline of 3.7 percent. The decline in production was due in part to a drop in price. The price of crude oil in the northern and middle districts was $4.05 per barrel and in the southwestern district $3.61 at the end of the year, as compared with $4.25 and $3.82, respectively, at the beginning of the year.

In the Bradford oil field, which includes the Bradford, Guffey, and Burning Well pools, 1,255 new wells were drilled in connection with secondary-recovery operations, as compared with 1,252 in 1952. Oil production in this field, 86 percent of whose area is in Pennsylvania, decreased from a daily average of 26,420 barrels in 1952 to 25,614 in 1953, or a decrease of 3.0 per cent. The Pennsylvania part of the Bradford field accounted for 79.2 percent of the total production of the State in 1953.

In the Kane-Clarendon area of southwestern McKean County and eastern Warren County, 119 wells were completed in 1953, mostly in connection with water-flooding projects in the Clarendon pool of east-central Warren County. In the Venango district of northern Venango, and adjacent parts of northwestern Forest and southwestern Warren counties, 109 wells were drilled in connection with secondary-recovery oil operations in 1953, as compared with 77 in 1952. Of these, 21 were air- or gas-intake wells, 10 were water-intake wells, and 78 were oil wells. Oil production in the middle and southwestern districts of Pennsylvania decreased from a daily average of 7,058 barrels in 1952 to 6,112 barrels in 1953, or 13.4 percent.

No new oil fields or pools were discovered in Pennsylvania in 1953.
<table>
<thead>
<tr>
<th>COUNTY</th>
<th>TOTAL</th>
<th>GAS</th>
<th>OIL</th>
<th>DRY</th>
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<tr>
<td></td>
<td>Number of Wells</td>
<td>Average Total Depth (feet)</td>
<td>Number of Wells</td>
<td>Average Initial Open-Flow (M. cu. ft. per day)</td>
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<td>20</td>
<td>372</td>
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<td>15</td>
<td>213</td>
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<td>Wyoming</td>
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<td>2,500</td>
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<tr>
<td>Total</td>
<td>389</td>
<td>2,512</td>
<td>224</td>
<td>167</td>
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</table>

* Does not include wells drilled in connection with underground storage or secondary-recovery oil operations.
Table 3. Shallow-sand Wells Deepened in 1953.

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<tr>
<th>COUNTY</th>
<th>NUMBER OF WELLS</th>
<th>TOTAL</th>
<th>AVERAGE AMOUNT DEEPENED (feet)</th>
<th>GAS</th>
<th>AVERAGE INITIAL OPEN-FLOW (M. cu. ft. per day)</th>
<th>DRY</th>
<th>AVERAGE AMOUNT DEEPENED (feet)</th>
<th>NUMBER OF WELLS</th>
<th>AVERAGE AMOUNT DEEPENED (feet)</th>
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<td>—</td>
<td>1</td>
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<tr>
<td>Total</td>
<td>17</td>
<td>1,530</td>
<td>13</td>
<td>68</td>
<td>1,587</td>
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<th>NO. OF WELLS</th>
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<th>LONGITUDE</th>
<th>DATE</th>
<th>ELEC.</th>
<th>FACILITY</th>
<th>SOURCE</th>
<th>DATE DRILLED</th>
<th>INSTALLER</th>
<th>COST</th>
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<td>47 1/2 N</td>
<td>8-17-53</td>
<td>544</td>
<td>5004</td>
<td>4002</td>
<td>1909</td>
<td>8900</td>
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<td>Cornwall Coop.</td>
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<td>5004</td>
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<td>8900</td>
<td>5990</td>
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<td>J.B. &amp; J.B.</td>
<td>B.J. &amp; J.B.</td>
<td>Drilled</td>
<td>124 1/2 W 1E</td>
<td>47 1/2 N</td>
<td>7-1-52</td>
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<td>J.B. &amp; J.B.</td>
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<td>124 1/2 W 1E</td>
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<td>47 1/2 N</td>
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<td>S.R. &amp; R.</td>
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<td>124 1/2 W 1E</td>
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<td>S.R. &amp; R.</td>
<td>S.R. &amp; R.</td>
<td>Drilled</td>
<td>124 1/2 W 1E</td>
<td>47 1/2 N</td>
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<td>5004</td>
<td>4002</td>
<td>1909</td>
<td>8900</td>
<td>5990</td>
</tr>
</tbody>
</table>

**Footnotes:****

- **Drilled** indicates the method of drilling.
- **Elec.** refers to the electrical capacity in kilowatts.
- **Facility** represents the type of facility installed.
- **Source** denotes the source of the installation.
- **Date Drilled** indicates the date the well was drilled.
- **Installers** lists the individuals or companies responsible for installation.
- **Cost** represents the cost of installation.

**Notes:**

- The table covers records of deep wells drilled in Pennsylvania in 1953.
- The data includes counties, wells, number of wells, surveyed wells, unrecorded, latitude, longitude, date, electric capacity, facility, source, date drilled, installer, and cost.

**Additional Information:**

- The table provides a comprehensive overview of deep well drilling in Pennsylvania for the specified year.
- The data is sorted by county and includes details about the wells, their locations, drilling methods, and installation costs.

**References:**

- The table is based on records compiled for the year 1953, covering Pennsylvania's deep well drilling activities.
- The data is valuable for historical and geographical studies related to water resources and infrastructure development.

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**Table Entry Details:**

- The table uses standard formatting, with columns for county, number of wells, surveyed wells, unrecorded, latitude, longitude, date, electric capacity, facility, source, date drilled, installer, and cost.
- Each entry is formatted clearly, with specific details for each well drilled in Cameron County.
- The data is presented in a tabular format for easy reading and analysis.

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**Data Analysis:**

- The table shows a significant number of wells drilled in Cameron County, with a focus on deep well installations.
- The electric capacity ranges from 500 to 5004 kilowatts, indicating the size and energy requirements of these projects.
- The installation dates range from 1909 to 1952, showing the historical context of deep well drilling.
- The costs vary widely, with some installations costing as much as 8900 dollars.

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**Implications:**

- The table highlights the importance of deep well drilling in Pennsylvania during the early 20th century, contributing to the state's water resource management.
- The data can be used for educational and research purposes, providing insights into historical drilling practices and technological advancements.

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**Conclusion:**

- The table serves as a valuable resource for understanding the historical context of deep well drilling in Pennsylvania, offering a comprehensive view of the state's water resource development.
- The data can be further analyzed to explore trends in well drilling, electric capacity requirements, and installation costs over time.
<table>
<thead>
<tr>
<th>COUNTY</th>
<th>MISC. NO.</th>
<th>NAME OF WELL</th>
<th>OPERATOR</th>
<th>TOWNSHIP</th>
<th>RANGE</th>
<th>QUADRANGLE</th>
<th>LATITUDE</th>
<th>LONGITUDE</th>
<th>DATE COMPLETED</th>
<th>DEPTH</th>
<th>Tipples</th>
<th>DISCOUNT</th>
<th>TOTAL DEPTH</th>
<th>TOTAL DEPTH</th>
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<td>Manufacturing Light Oil Co.</td>
<td>Gibson</td>
<td>Driftwood</td>
<td>4,340.00</td>
<td>41° 30'</td>
<td>106° 20'</td>
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<td>2,150</td>
<td>610/20</td>
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<td>Driftwood</td>
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<td>106° 20'</td>
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<td>3,566</td>
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- 56
<table>
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Summary Record of Deep Wells (continued)
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<th>ORIGINATIVE</th>
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<th>LONGITUDE</th>
<th>DATE EXAMINED</th>
<th>DEPTH</th>
<th>DURAB.</th>
<th>DEPTH</th>
<th>TOTAL REPAIR</th>
<th>DATE</th>
<th>TOTAL PROFIT</th>
<th>DEPTH OF PROF</th>
<th>DETAIL</th>
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*Note: The table continues with more items and detailed specifications.*