Oil and Gas Developments in Kansas During 1964

By Douglas L. Beene
and Margaret O. Oros

STATE
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DOUGLAS L. BEENE
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Oil and Gas Developments in Kansas During 1964

ABSTRACT

Kansas oil production in 1964 totaled 106,252,025 barrels, down 2.6 percent from 1963. Secondary recovery projects accounted for an estimated 20.6 percent of this total. Value of the crude oil output decreased from $323,917,995 in 1963 to $310,255,913 in 1964.

Natural gas production totaled 809.3 billion cubic feet (14.65 psia); the Hugoton Gas Area produced 568 billion cubic feet, about 70 percent of the total.

Seventy-seven new oil fields, 10 new gas fields, and 7 fields that had both oil and gas production were named.

The total number of wells drilled in the State during the year was estimated to be 4,446. Of the recorded completions, 1,465 were oil wells, 175 were gas wells, 24 were both oil and gas, 1,530 (410 wildcats) were dry holes, and 411 were saltwater disposal wells or wells used as input wells in secondary recovery operations.

Natural gas liquids production during 1964 showed a 41.6 percent increase; 802.8 million gallons (19 million barrels), valued at more than 38 million dollars, were extracted at Kansas natural gasoline plants. Helium production showed an increase of over 180 percent; a total of 2,183.3 million cubic feet valued at over 26.6 million dollars was extracted during 1964.

Proved reserves of Kansas crude oil at the end of the year were estimated at 796.5 million barrels. Proved reserves of natural gas liquids were estimated at 210 million barrels. Estimated proved reserves of natural gas were about 17.4 trillion cubic feet.

One natural gasoline plant went on stream in 1964, a new underground natural gas storage area was in use, and construction was underway on a helium extraction plant, the fourth in Kansas in the last three years.

INTRODUCTION

As a result of a questionnaire distributed with the 1963 oil and gas developments report, treatment of data in this report differs from reports of the past. The statistical tables covering oil and gas field and production data are published separately this year as Special Distribution Publication 21. Secondary recovery and pressure maintenance projects are tallied in Special Distribution Publication 20.

A condensed text describing important developments during the year is retained in this report along with a map of oil and gas fields active during the year (Plate I). The tables referred to in the text are in a separate section entitled *Tables*, page 17 and following. Data omitted from this publication that have been included in previous development reports are available from the State Geological Survey of Kansas upon request.

About every five years a map showing many facets of the oil and gas industry within the State is brought up-to-date and published. The most recent edition of such a map, showing pipelines, allied industries, and oil and gas producing areas, has been published by Oros (1963, Map M-2, "Map of Oil and Gas Pipelines and Industries in Kansas").

The total value of raw products (excluding helium) of the petroleum industry (crude oil, natural gas, and natural gas liquids) produced in Kansas in 1964 was almost $440 million.

Oil and gas explorational and developmental activity in Kansas is summarized in Tables 1 and 2. Figure 1 is a generalized map of Kansas showing geographic distribution of areas producing oil and gas. Annual oil and gas production in Kansas since about 1890 is shown graphically in Figure 2. Significant discoveries and developments by the petroleum industry in Kansas are also indicated.

Figure 3 shows the relative values of 1964 oil and gas production by county. Of the 105 counties in Kansas, 83 reported oil and/or gas production during 1964. Because the price of crude oil decreases with decreasing gravity, and because different fields produce oils of differing gravities, value by county is not necessarily proportional to production by county.

Field names and boundaries used in this report are based on decisions made by the Nomenclature Committee of the Kansas Geological Society, who study, name, and describe new fields and producing areas. The Committee also redescribes and combines old fields and reports as abandoned fields that have become depleted. The members of the Nomenclature Committee also act as members of a subcommittee of the Nomenclature Committee of the Mid-Continent

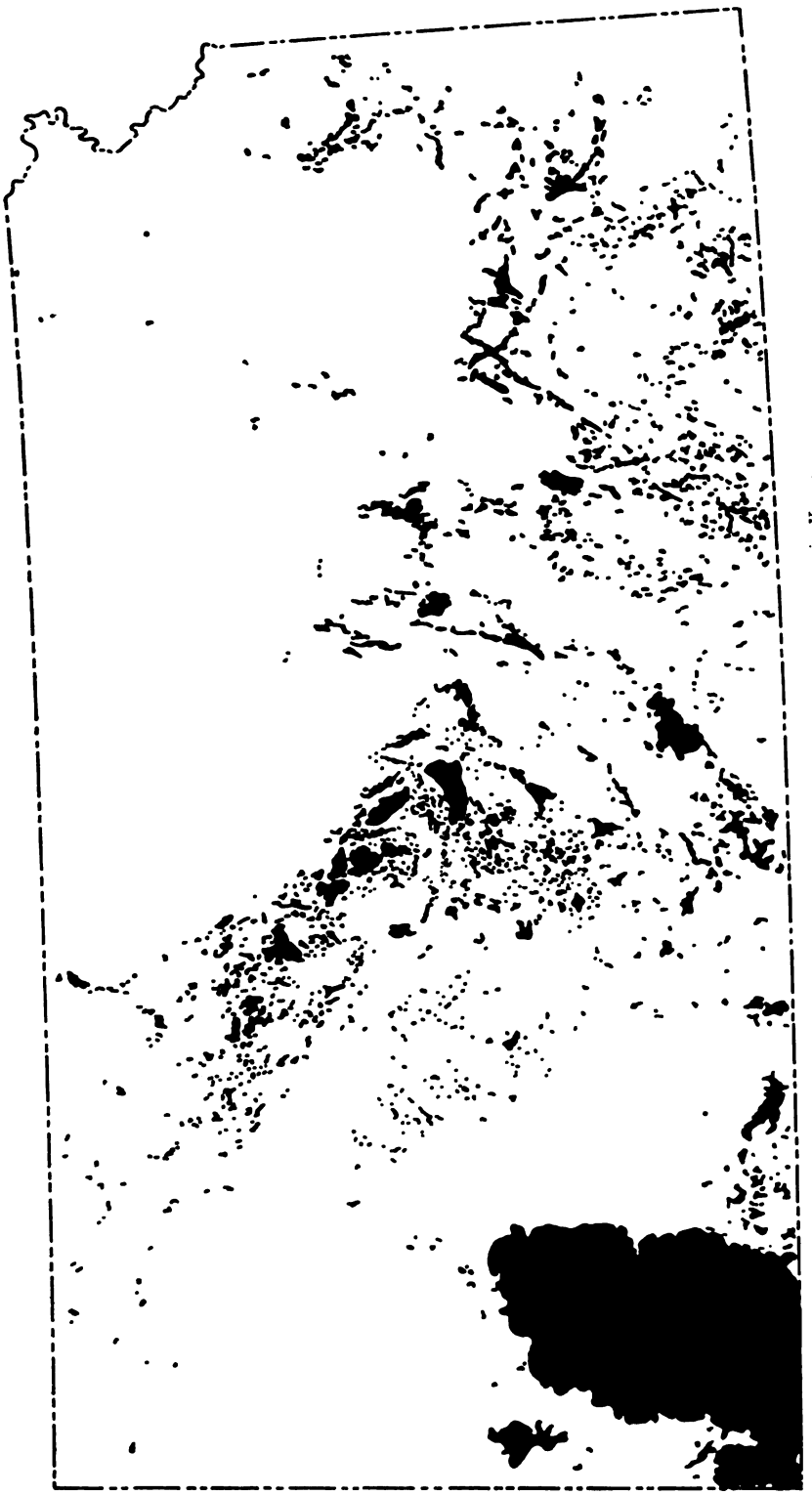

FIGURE 1.—Index map of oil- and gas-producing areas in Kansas.

Oil and Gas Association, Kansas-Oklahoma Division. They act in an advisory capacity to the State Corporation Commission of Kansas, as provided for under Rule 82-2-104 in the "Rules and Regulations for the Conservation of Crude Oil and Natural Gas."

ACKNOWLEDGMENTS

Members of the Conservation Division of the State Corporation Commission (especially John Roberts, Director, H. A. Beverlin, Oil Proration Analyst, and Ray Dietz, Gas Proration Analyst) have long cooperated to the fullest extent with

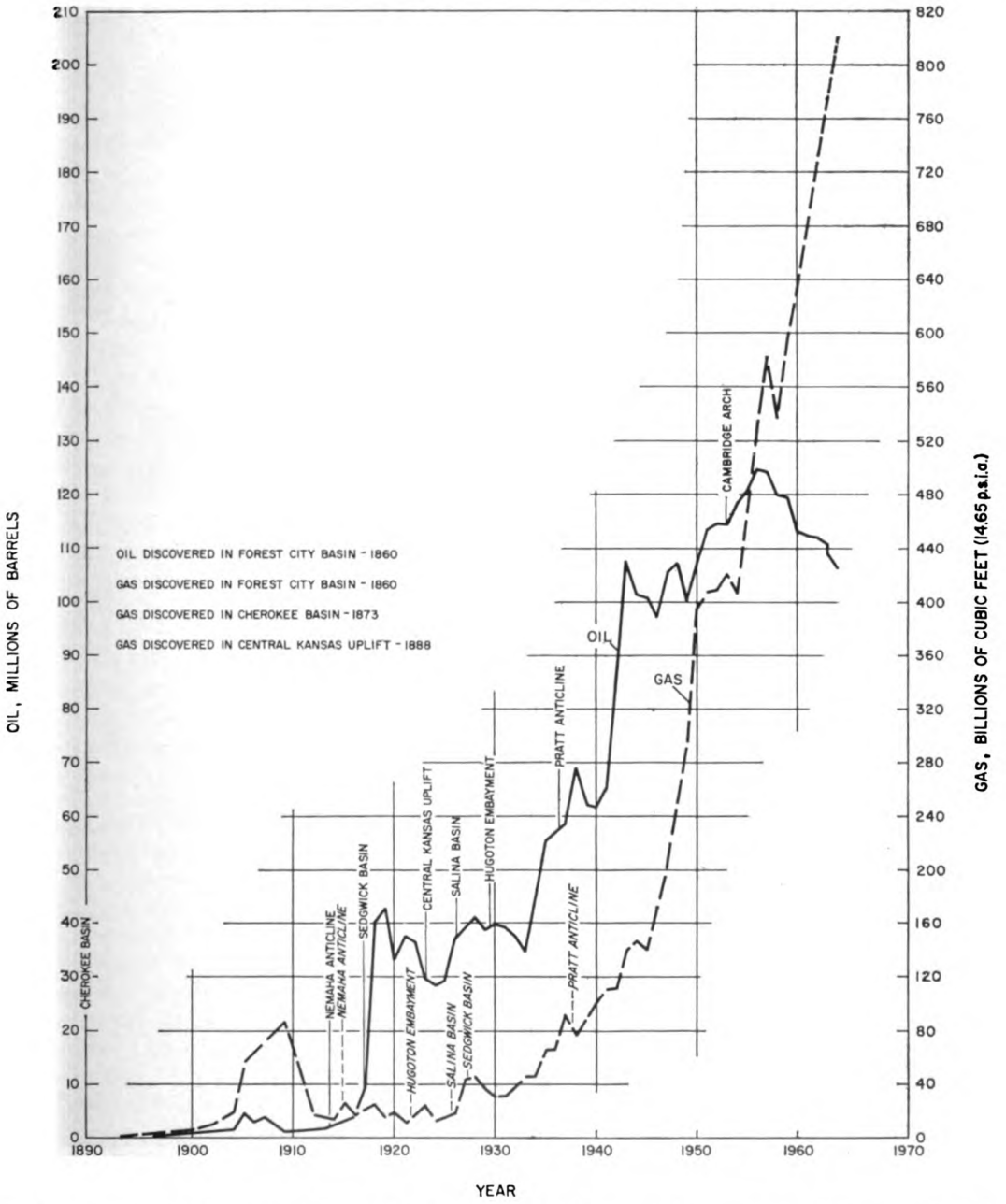

FIGURE 2.—Annual oil and gas production in Kansas from before 1900 to 1964 and year of discovery of oil or gas in different structural provinces.

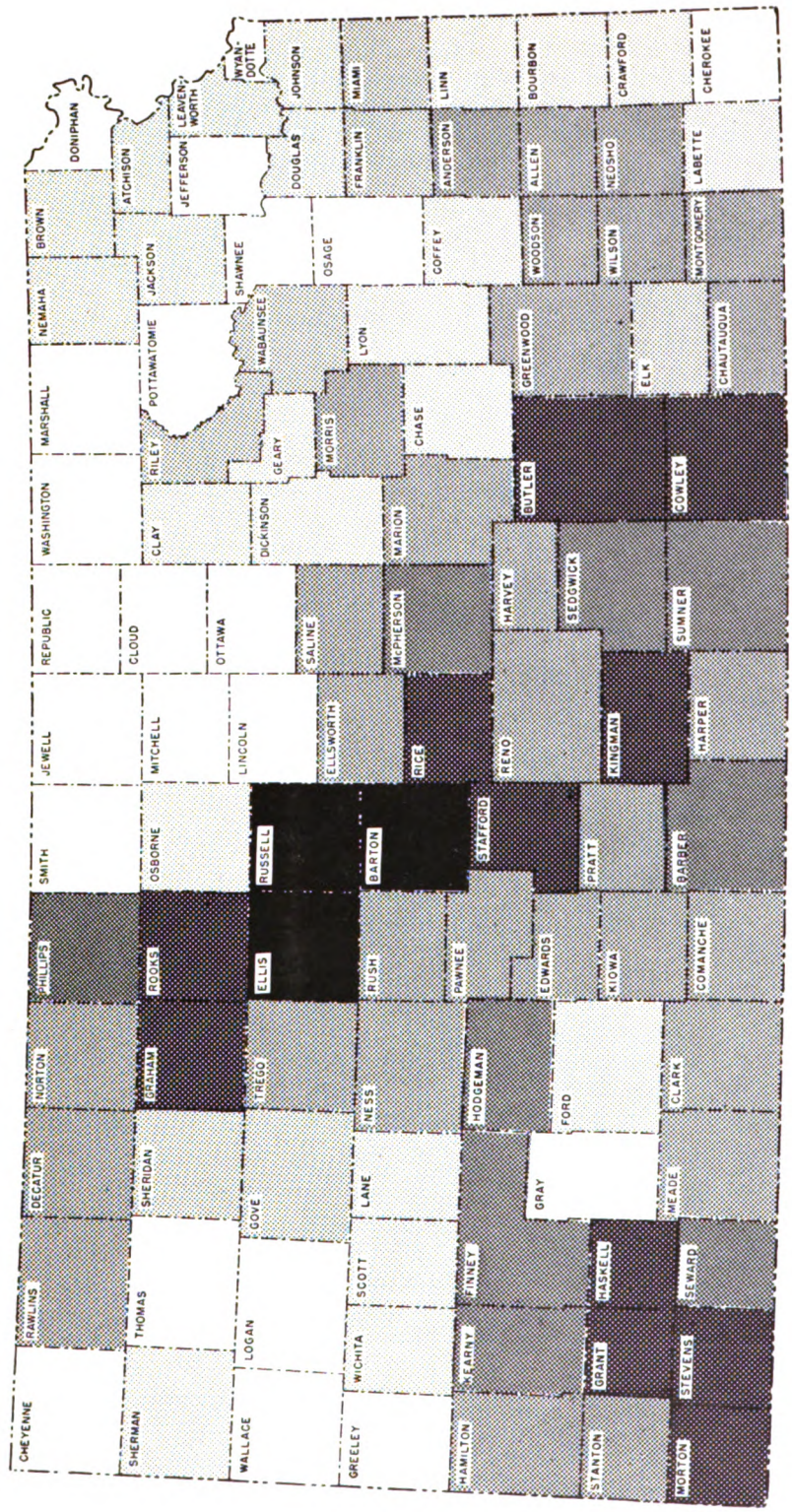

FIGURE 3.—Map of Kansas showing relative value (in millions of dollars) of 1964 oil and gas production by county.

the State Geological Survey of Kansas. Without their assistance this report would not be possible.

The Survey is pleased to acknowledge assistance from Vance E. Rowe, of Petroleum Statistical Guide, Inc., who supplied a part of the crude oil production figures, and from Dwight's Oil and Gas Reports, which made available some gas production figures, and from Data, Inc., for supplying well information.

The assistance and advice of Edwin D. Goebel and Paul L. Hilpman, who have been authors of the annual development report for preceding years, is acknowledged. This report in various stages of its preparation was reviewed by Ronald G. Hardy, economic geologist with the State Geological Survey.

Many thanks are due to Jo Anne Crossfield, Donna Saile, Joan McDaniels, and Carol Klinknett, who helped in the preparation of this report by assembling and tabulating the oil and gas production figures and by typing the manuscript and tables.

Facilities of The University of Kansas Computation Center were utilized in compiling eastern Kansas oil production figures.

IMPORTANT DEVELOPMENTS

Special mention of significant developments is made here. These include leasing and testing in the areas of eastern Kansas where low-gravity oil occurs at shallow depths. Experimental methods of recovery being tried out in this area include the use of steam, fire-flooding, and chemical solvents. Little is known about the results of these experiments except that several new projects were underway in 1964. The area in Kansas with the greatest amount of overall (mostly developmental) drilling continued to be the region of the Central Kansas Uplift.

Atchison County, in the Forest City Basin in northeastern Kansas (the 87th county to report production), had oil production for the first time in 1964. A new natural gasoline plant near the **Wilburton** field in Morton County went on stream, a privately financed helium plant near Otis in Rush County was under construction, and a new natural gas storage area, **Adolph** field in Barton County, was put to use during the year.

OIL AND GAS CONSERVATION DIVISION

The Oil and Gas Conservation Division is the regulatory arm of the State Corporation Commission of Kansas and is charged with the responsibility of preventing waste of all mineral fuels (liquid and gaseous hydrocarbons) and for protecting the correlative rights of individuals. Until proration was inaugurated, ownership of mineral wealth in Kansas depended on "law of capture." Today, the Corporation Commission determines the monthly market demand for fossil fuels and allocates that demand among pools and wells. Within individual pools a fair share of the fuel market is allocated among owners. Kansas does not have compulsory unitization. Approval by the Corporation Commission is necessary for spacing programs and voluntary unitization of royalty interests. The Conservation Division also issues monthly oil and gas proration reports for many of the State's fields, supervises productivity tests of new wells, supervises dual completions and installation of packers in wells, establishes rules for the prohibition of the commingling of water or oil from different zones, supervises the plugging of wells and the subsurface disposal of produced saltwater. The cost of regulating the petroleum industry in Kansas is assessed to the industry itself. A fee of one cent per foot, or a minimum of $10.00 per hole, is charged for supervision of plugging. New regulations issued during 1964, which became effective on July 1, 1964, reduced the conservation tax paid to the State Corporation Commission by oil and gas operators. The oil production tax was reduced from 0.001 to 0.00075 cents per barrel. The gas production tax was reduced from 0.00025 to 0.000125 cents per thousand cubic feet. Purchasing companies are required to file each month a record of the amount of gas and oil purchased from wells in Kansas.

EXPLORATION

Oil and gas explorational and developmental activity in Kansas during 1964 is summarized in Tables 1 and 2. As in past years, wells drilled within one and a half miles of the producing limits of fields are called "extension wells" and wells drilled more than one and a half miles from producing areas are classified as "wild-

cats." Because the location of boundaries of producing areas is arbitrary, definition of wildcat wells is also arbitrary; hence, the total number of wildcat wells reported by different sources is likely to differ. Only wells drilled to completion within the year are counted as 1964 completions in this report. Thus, wells worked over, although completed as producing wells, are not counted as 1964 completions. Unless an unproductive well was drilled expressly for the purpose of injection or for saltwater disposal, it is classified as a dry hole.

WILDCAT DRILLING AND NEW FIELDS

Of the 492 new wildcat tests reported as drilled, 82 discovered oil and gas fields and 410 were dry, for a success ratio of 1:5. Former dry wildcat tests, which were worked over or deepened, opened 12 new fields, giving the State 94 new field discoveries for the year (Table 3). Ellis County, with 13 oil fields named, led in the number of new fields. **Parmely** and **Monmouth Northwest** fields, recognized in 1964, had reported production earlier.

Table 4 lists important dry wildcat tests drilled in 1964. Included in this listing are some deep wells which were completed as producers at shallower depths. They are classified here as dry wildcats on the basis of the deepest stratigraphic unit penetrated, rather than by geographic distance from production.

Successful oil and gas exploration during 1964, as in the past few years, was chiefly related to the Central Kansas Uplift and its flanks, as defined by the pinchout of Mississippian strata in the subsurface (Fig. 4). Wildcat exploration was carried on in 74 counties and operations were successful in 40 (Tables 1 and 3). Table 5 lists new zones discovered in producing fields.

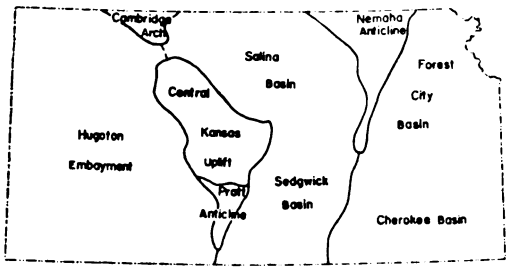

FIGURE 4.—Index map of Kansas showing major post-Mississippian structural provinces.

The first natural gas well ever reported completed in Hodgeman County was the discovery well of the **Reginer** field, drilled by Sunray DX Oil Company. Its reported initial potential was 2,700,000 cubic feet of gas per day from Osagian rocks (Mississippian). A gas analysis of a sample from this well reported that the gas was rated at 774 BTU, had 66.2 percent methane, 27.0 percent nitrogen, and 2.0 percent helium, plus other minor components.

Atchison County, in the Forest City Basin, this year became Kansas' 87th oil-producing county, with the discovery of the **Worner** oil field (Table 3). Production is from the "Hunton" strata through perforations between 2,375 and 2,377 feet. The well was drilled to a total depth of 2,996 feet and "bottomed" in Arbuckle rocks (Cambro-Ordovician).

Other developments in northeastern Kansas included the completion of 13 new oil wells in the **Leach** oil field in Jackson County. **Soldier** field, also in Jackson County, was opened and abandoned in 1964. Brown County had 10 dry holes drilled during the year, compared to only one explorational attempt the previous year. The new **Rokey** field (Nemaha County) was another significant development for northeastern Kansas.

New records for both total depth and producing depth were set by the discovery well of the **Voorhees** oil field, in Stevens County. The Mobil Oil Company, No. 1 Cunningham Estate, C SW SE sec. 13, T 34 S, R 37 W, drilled to 8,714 feet, was completed, producing from St. Louis rocks (Mississippian) at 6,752-6,774 feet. This hole, 471 feet deeper than any previous hole in Kansas, was drilled into Precambrian granite. The top of the granite was picked at 8,688 feet.

During the year 16 abandoned fields were revived (Table 6), 104 fields were abandoned (Table 7), 24 oil or gas fields were combined with other fields (Table 8), and 68 new pay zones in producing fields were discovered (Table 5). A new pay zone, Wabaunsee (Pennsylvanian), was added in the **El Dorado** field in 1964, the 8th for the field.

WELLS DRILLED DURING 1964

A statute requiring drillers to file an intent-to-drill application with the Oil and Gas Conservation Division of the State Corporation Commission of Kansas has facilitated tabulation of new wells, especially in non-scouted eastern Kansas areas. Figure 5 shows, by county, the geographic distribution of wells tabulated on

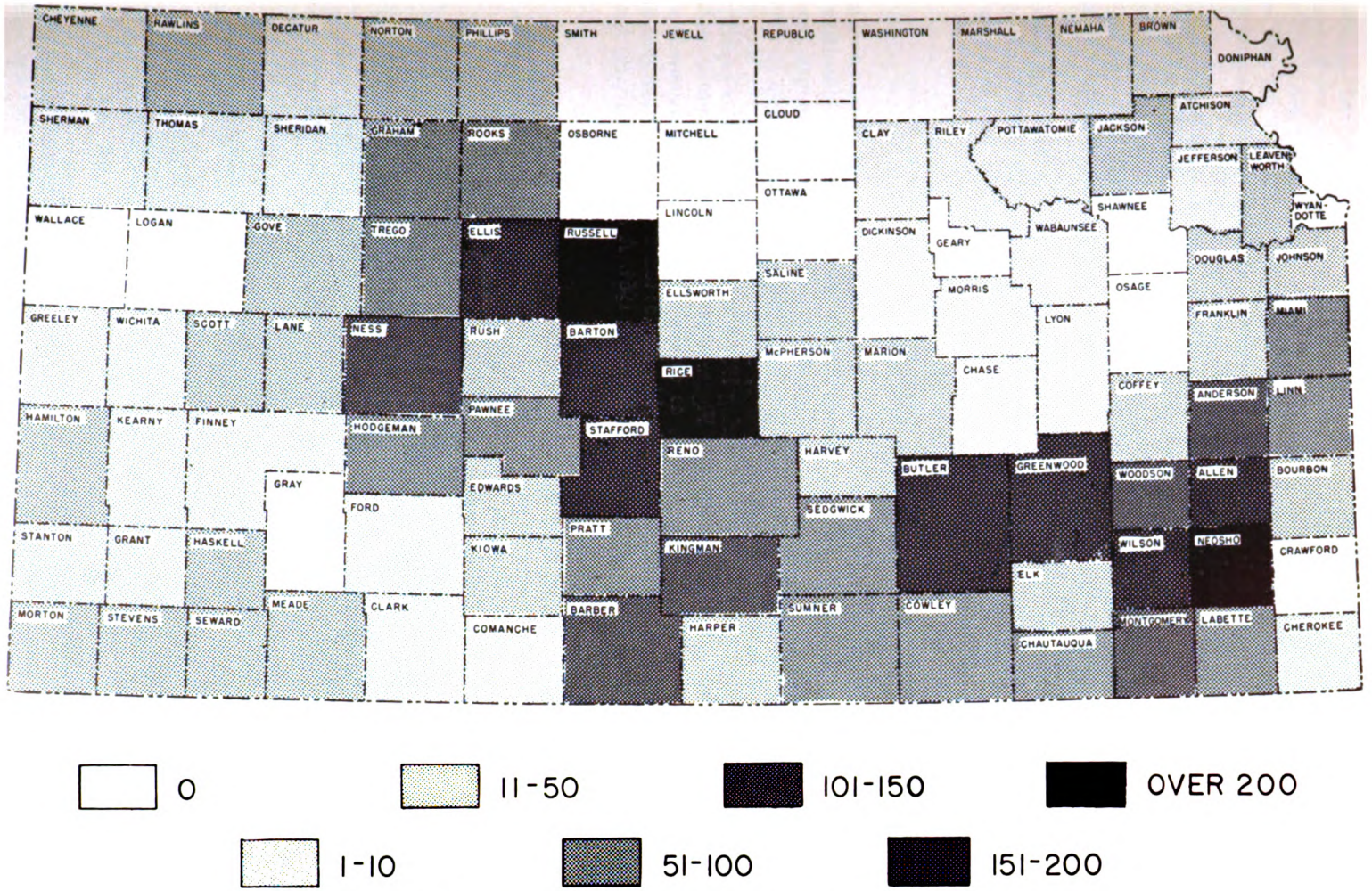

FIGURE 5.—Distribution of intent-to-drill permits issued by State Corporation Commission in 1964.

the basis of applications filed. Table 1 lists, by county, the number of permits issued during 1964.

There were 3,605 wells recorded as drilled in the State during 1964 (Table 2). It is certain that numerous shallow wells in several eastern Kansas counties were not recorded and thus are not included in the above total. It is estimated from Kansas Corporation Commission drilling permits and plugging records, and from other reliable sources, including a survey of secondary recovery projects, that at least 841 such unrecorded wells were drilled in 1964. This brings the total wells drilled during the year to 4,446 (Table 2).

DRILLING RIGS

An average of 278 active rigs (both rotary and cable tool) was reported during 1964, which represents an increase of 69 from the previous year (*World Oil*, February 15, 1965). Rotary rig activity reached a peak of 99 during one month and averaged 87 per month during the year (*Oil and Gas Journal*, January 25, 1965). It is estimated that cable tool drilling accounted for more than 900 wells during 1964.

OIL

PRODUCTION AND VALUE

The 106,252,025 barrels of oil produced in Kansas during 1964 represents a 2.6 percent decrease from 1963. The 4.2 percent decrease in total value of crude oil, from $323,917,995 to $310,255,913 is due to decreased production and a drop in the price of crude oil (Table 9).

During 1964 an estimated 47,000 wells produced about 106.3 million barrels of oil. Average oil production per well has declined from 10 barrels per day in 1951 to about 6.2 barrels per day in 1964. An estimated 41,000 of the total number of active oil wells in Kansas may properly be called "stripper wells," producing less than 10 barrels of oil per day. About 65 million barrels of oil were produced by these "stripper wells" in 1964.

Oil was produced in 83 counties during 1964. The 10 leading oil-producing counties (Table 10) recorded changes in rank during 1964. Most significant was Russell in moving up to first rank from third.

Kansas has 18 counties each of which has produced a cumulative quantity of more than 50,000,000 barrels of oil to the end of 1964 (Table 11). Butler County, in eastern Kansas, ranks first in this group, having produced an estimated 472,554,212 barrels. At the end of 1964 cumulative oil production in Kansas exceeded 3.7 billion barrels.

The **El Dorado** field in Butler County is the only one of the seven major oil fields (Table 13) that lies east of the Sixth Principal Meridian, which runs through Wichita. This multi-pay field completed 50 years of production during 1964.

The **Bemis-Shutts** field in Ellis and Rooks counties, with a production of over 3.5 million barrels of oil, maintained the lead in annual production during 1964.

REFINING

The names and locations of 14 refineries in Kansas during 1964 are listed in Table 14, as well as their crude capacity, throughput, and products per stream day (*Oil and Gas Journal*, April 5, 1965). Petroleum refining in Kansas during 1964 was at about 86 percent of capacity.

Figure 6 shows monthly allocations of crude oil, as compared with crude oil reported received by Kansas refineries, and pipeline runs in Kansas during 1964. A total of 110,877,265 barrels of crude was run to refineries during 1964 (Table 12). Monthly runs to pipelines and runs to refineries generally did not exceed the amount

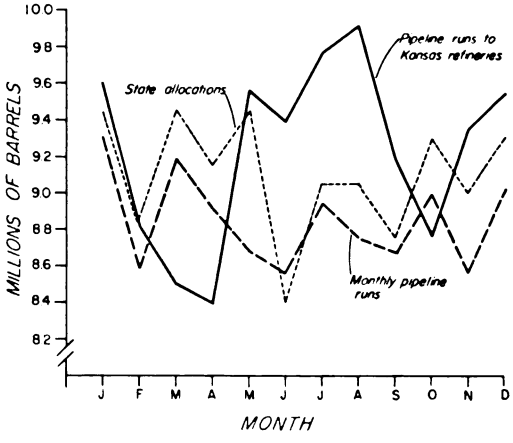

FIGURE 6.—Monthly comparison of crude oil allocated, pipeline runs to Kansas refineries, and pipeline runs in Kansas during 1964.

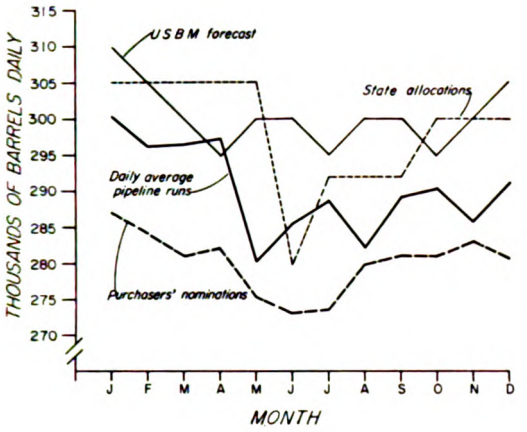

FIGURE 7.—Comparison of daily average crude oil forecast, nominated, allotted, and actual pipeline runs, by months, in Kansas during 1964.

allocated by the State during 1964. Figure 7 compares 1964 monthly crude oil demand forecast by the U.S. Bureau of Mines, amount nominated by purchasers, amount allocated by the State Corporation Commission of Kansas, and amount actually run by pipeline companies. Purchasers' nominations were below daily average runs during most of the year.

SECONDARY RECOVERY AND PRESSURE MAINTENANCE

The significance of secondary recovery activities in the State is shown by the fact that such production has risen from an estimated 7 million barrels in 1949 to 21.8 million barrels in 1964, or about 20.6 percent of the total production (Table 2).

Repressuring of oil-bearing rocks by injection of water, air, gas, or a combination of these agents, has become a principal method of oil production in Kansas since this practice was sanctioned by State law in 1935.

Figure 8 shows graphically the amount of oil produced by secondary recovery methods in Kansas from 1949 to 1964 relative to total oil production.

During 1964, the State Corporation Commission issued 159 permits for secondary recovery operations, more than double the number issued in 1963. The areal distribution of these permits issued in 1964 in relation to the active projects reported during 1964 is shown in Figure 9. The names of the operators to whom permits were issued and the locations of the projects are given in Table 15.

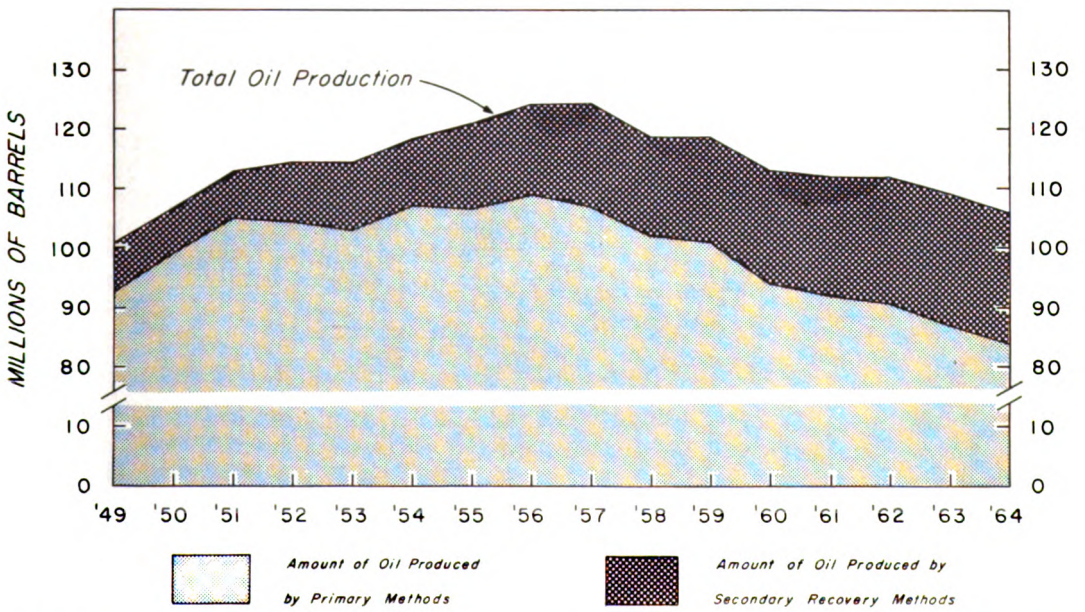

FIGURE 8.—Comparison of oil produced by secondary recovery methods in Kansas to total oil production, 1949-1964.

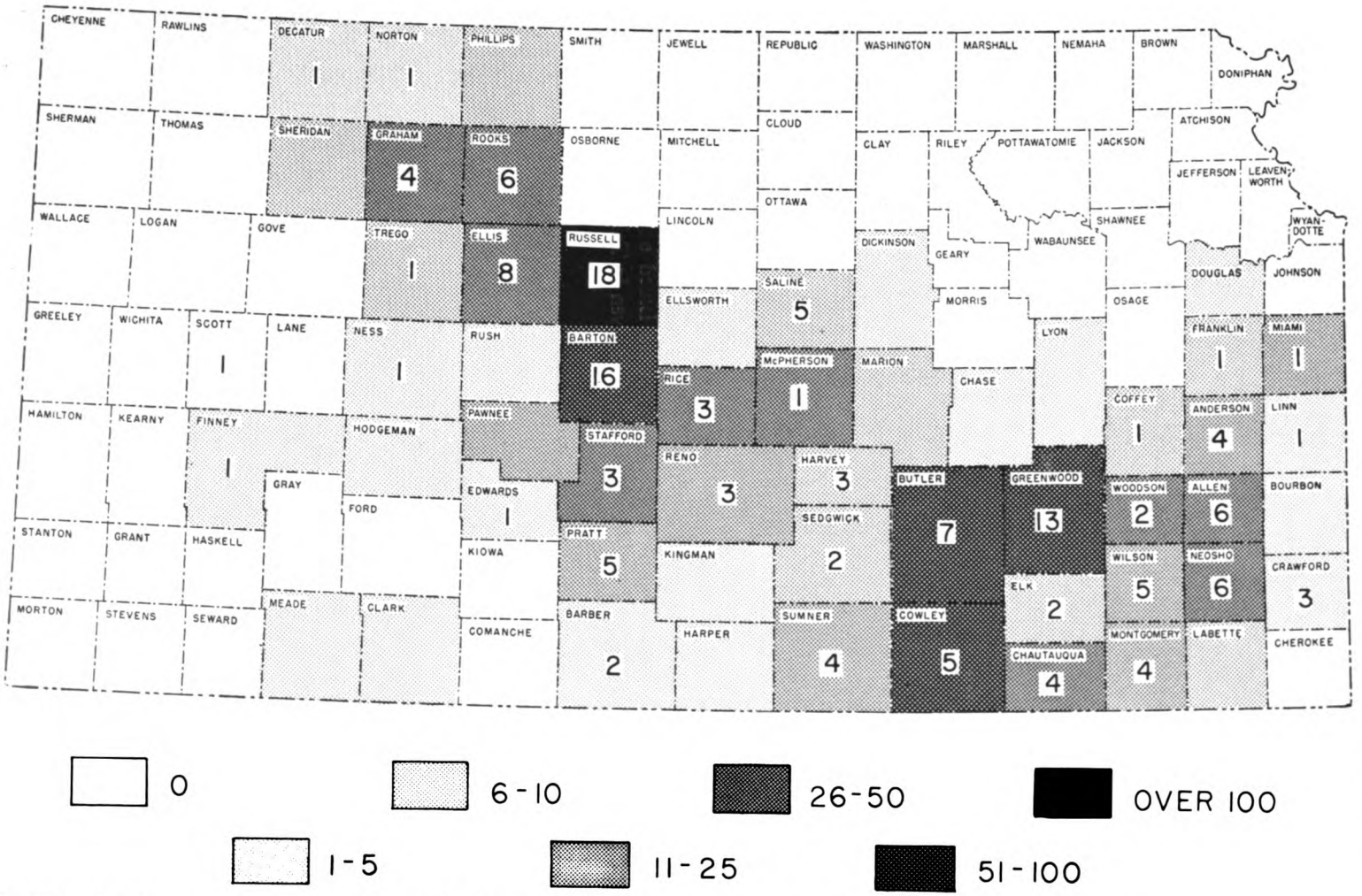

FIGURE 9.—Secondary recovery permits issued during 1964 (numbers) compared to total active projects reported, 1964 (shown by patterns).

NATURAL GAS

PRODUCTION AND VALUE

Natural gas production during 1964 totaled 809,328,250,000 cubic feet (calculated at a base of 14.65 psia), an increase of 4.7 percent over the preceding year. Since 1956, annual gas production has exceeded 500 billion cubic feet, and since 1943 it has been more than 100 billion cubic feet. The estimated value of natural gas, compared to 1963, increased by 4.7 percent to $89,026,108. This increase in value was due entirely to an increase in gas production.

A minimum price of 11 cents per thousand cubic feet, measured at 14.65 psia, has been applied to all Kansas gas production, including minor amounts of non-prorated production, which probably brought a higher price.

Natural gas was produced in 56 counties in 1964 (Table 1), with 17 counties producing 5 billion cubic feet or more (Table 16).

Twenty-three counties in Kansas now have a cumulative production of 20 billion cubic feet or more of natural gas, as of the end of 1964 (Table 17).

Cumulative gas production for the State exceeds 11.5 trillion cubic feet. The Permian gas production (mostly from the Hugoton Gas Area) represents about 74 percent of the total.

The 1964 consumption of marketed natural gas in Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, and South Dakota is reported as a unit quarterly by the U.S. Bureau of Mines. A detailed breakdown of use within Kansas during 1964 is given in Table 18.

Because the demand for natural gas is seasonal, storage of gas during the slack season has been developed. Table 19 gives the locations and capacities of various Kansas underground natural gas storage projects. One new storage area (**Adolph**, in Barton County, owned by the Kansas-Nebraska Natural Gas Company) was added during 1964.

HUGOTON GAS AREA

Because the **Hugoton Gas Area** is one of the world's largest known gas reserves, it merits some special comments. The estimated reserves in the entire field at the beginning of 1964 were approximately 35 trillion cubic feet. Production during 1964, almost 568 billion cubic feet, amounted to 70 percent of the total Kansas gas production, a decrease of 2 percent compared to the previous year. Production by year since 1955 from the Kansas portion of the field is shown in Table 20.

With the assistance of Ray Dietz, Gas Proration Analyst, of the Conservation Division of the State Corporation Commission, and Dwight's Oil and Gas Reports, county gas production figures and county cumulative totals for the **Hugoton Gas Area** have been prepared for this report. These data are given in Table 21.

The **Hugoton Gas Area**, as defined by the Nomenclature Committee of the Kansas Geological Society, is limited to wells producing gas from the Chase Group of the Permian System. Pay zones are in the Fort Riley, Towanda, Winfield, Krider, and Herington limestones. Plate I shows the approximate boundary of the area as outlined at the end of 1964. It is about 60 miles wide and 85 miles long (north-south), taking in two entire counties (Stevens and Grant) and parts of seven others (Finney, Hamilton, Haskell, Kearny, Morton, Seward, and Stanton).

Table 22 lists an average analysis of ten natural gas samples taken during late 1964. Sampling was done by four major pipeline companies operating in the **Hugoton Gas Area.** Only Morton County, of the nine counties included in the **Hugoton Gas Area**, is not represented in the samples. The methane content ranged from a high of 82.3 percent to a low of 59.4 percent in the ten samples. The nitrogen content ranged from 30.7 to 8.9 percent. The helium content of these samples ranged between 0.67 and 0.36 percent. The 985 BTU figure is an average of values ranging from 1047 to 825 BTU's per cubic foot of gas.

Figure 10 shows the concentration of plants now operating in the **Hugoton Gas Area.** They include eleven natural gasoline plants, two helium extraction plants, and a plant that produces carbon black. One LPG underground storage area is in use in Grant County.

RELATED PETROLEUM AND NATURAL GAS PRODUCTS

HELIUM

The price and production of helium are controlled by the federal government. Helium extraction in Kansas, reported by the U.S. Bureau of Mines, increased from 775,071,000 cubic feet in 1963 to 2,183,347,000 cubic feet in 1964, an increase of over 180 percent. The 1964 production was more than 50 times the 40,149,000 cubic feet reported for 1962. Of this total (2,183,347,000 cf), it is estimated that 718,000,000 cubic feet

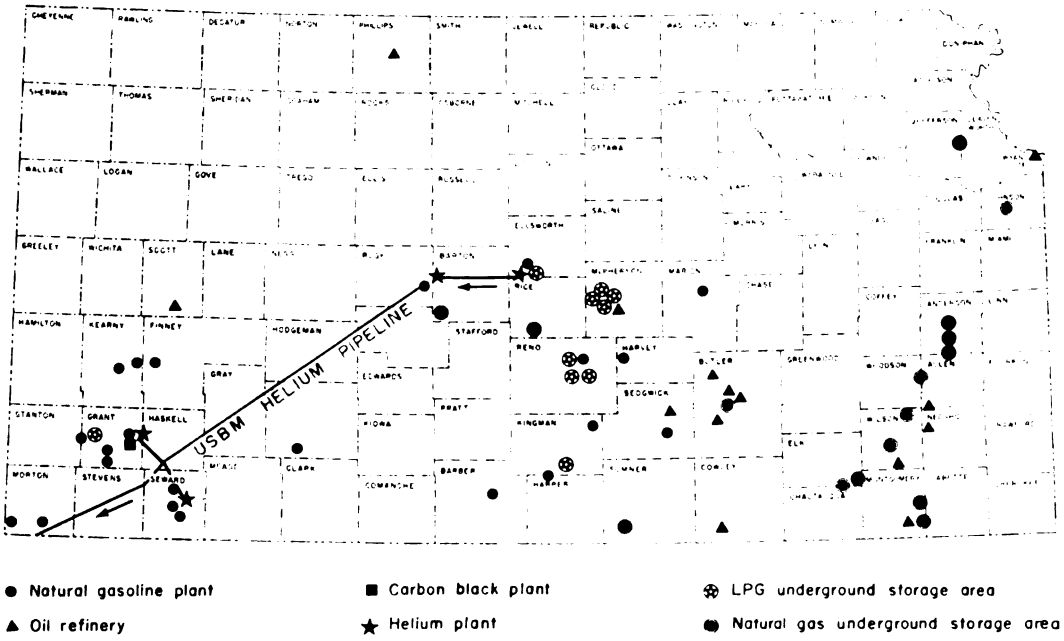

FIGURE 10.—Kansas fractionation plants, helium pipelines, and underground storage sites.

was extracted from gas produced outside of Kansas and shipped into the State for processing; 1,465,000,000 cubic feet of helium, valued at $18,150,392, was estimated to have been extracted during 1964 from Kansas produced gas (Table 2). Revenue from helium extracted during 1964 amounts to $26,608,373 reflecting the considerable increase in quantity.

NATURAL GAS LIQUIDS

Kansas production of natural gas liquids during 1964 from 21 natural gasoline plants was 802.8 million gallons. The average daily production of natural gasoline and LPG in 1964 from all Kansas plants was 52,509 barrels, compared to 38,460 for the previous year (Table 23). The estimated value averaged $2.00 per barrel. Plant locations are given in Figure 10.

Capacities of storage reservoirs for natural gas liquids are given in Table 24 and locations are shown on Figure 10. Additional storage capacity totaling 2.25 million barrels was added during 1964.

CARBON BLACK

Production of carbon black in Kansas continued its downward trend during 1964. The Conservation Division of the State Corporation Commission reported that 48,061,035 pounds of carbon black, valued at $2,643,357 was produced in the Columbian Carbon Company's plant near Hickok, Kansas (Table 25).

RESERVES

The reserves concept within the petroleum industry is a highly involved one in which there are conflicting views about the defining factors and the statistical ways in which these factors are used. As used by the State Geological Survey of Kansas, reserves are those quantities of crude oil, both liquid and gaseous, which are presumed to exist and which could be produced by present recovery methods.

More than 135,000 exploratory and developmental wells have been drilled in Kansas over the years. However, the distribution of these wells is such that there are entire counties in Kansas which have had fewer than a dozen exploratory wells drilled in them. Additional supplies of liquid and gaseous hydrocarbons must come from future exploration. In Kansas there are many geologically favorable areas still unexplored.

The proved reserves and production of oil and gas in Kansas from 1946-64 are shown graphically in Figures 11 and 12. The contrast between production and reserves is demonstrated

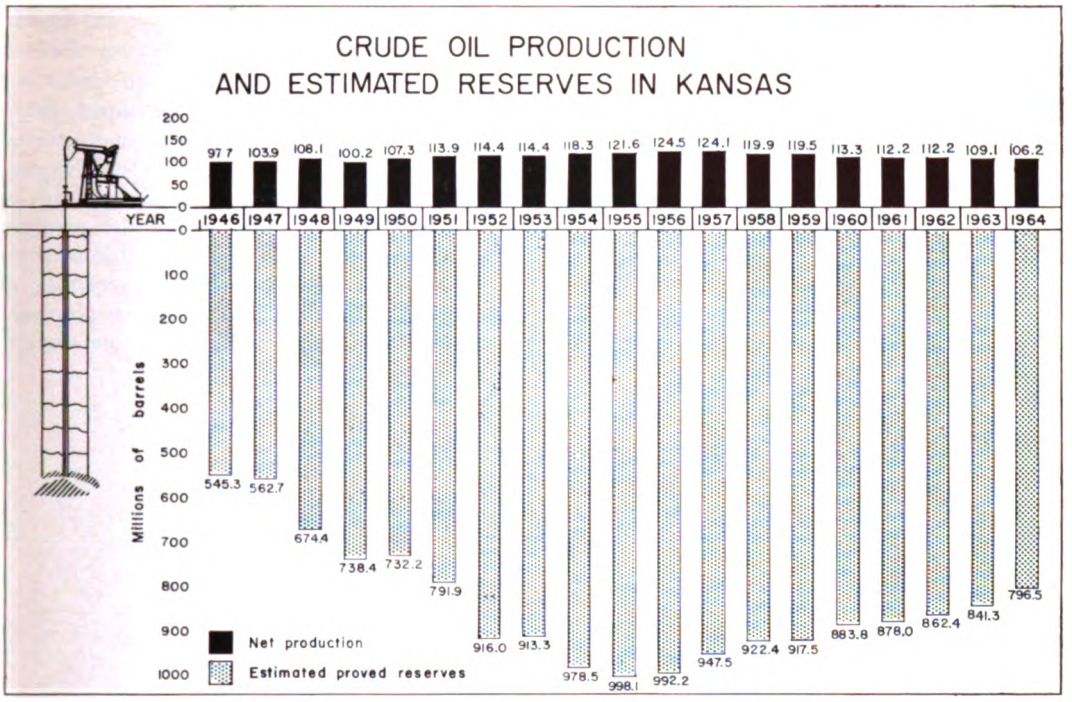

FIGURE 11.—Comparison of crude oil production to estimated reserves in Kansas, 1946-1964.

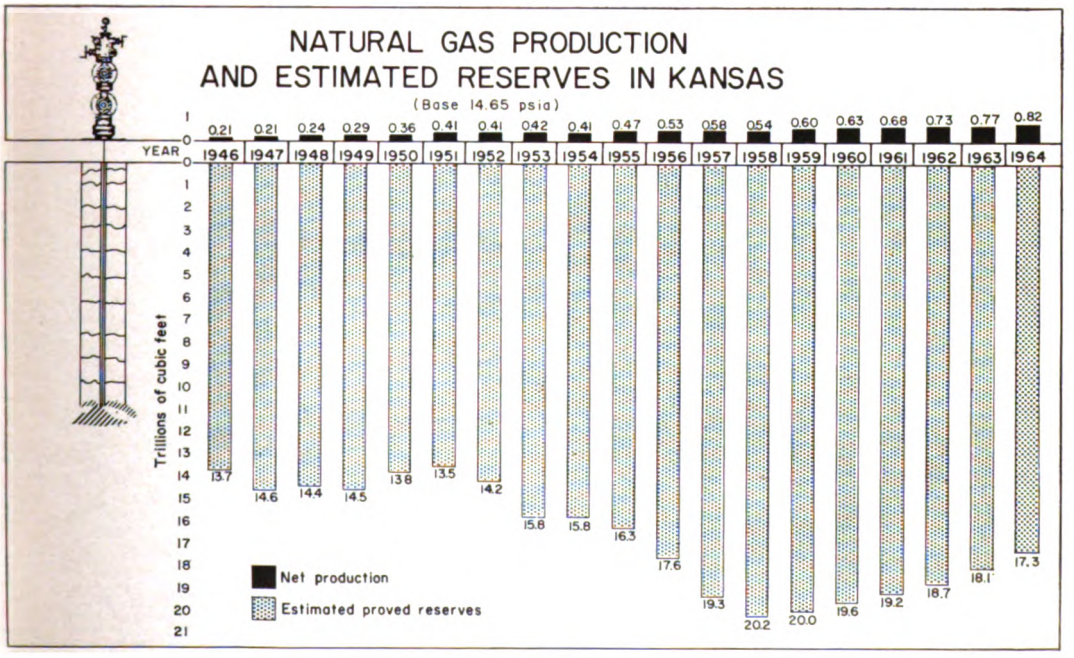

FIGURE 12.—Comparison of natural gas production to estimated reserves in Kansas, 1946-1964.

in these two graphs, as are the trends of production and depletion of reserves.

Estimated proved reserves of crude oil, natural gas liquids, total liquid hydrocarbons, and natural gas are shown in Table 26. All estimates are taken from the American Petroleum Institute and American Gas Association's annual report on reserves (1964). Their estimates for gas reserves are reported at a base of 14.73 psia at 60° F. These estimates (Table 26) have been converted to 14.65 psia at 60° F. to conform to Kansas gas statistics. It should be emphasized that the figures in this report represent proved reserves of crude oil, natural gas liquids, and natural gas. The reserve figures used in this report do not include: (1) oil under the unproved portions of partly developed fields; (2) oil in untested prospects; (3) undiscovered oil that may be present in favorable regions; (4) oil that may become available by fluid injection methods from fields where such methods have not yet been applied; (5) oil that may become available through chemical processing of natural gas; and (6) oil that can be processed from oil shale, coal, or other substitute sources.

TABLES

TABLE 1.—Summary of 1964 operations, by county.

County	No. producing fields	Oil producing, bbl	Gas producing, M cu ft	Wells drilled in 1964						Reworked wells									Total new wells drilled*	No. intents-to-drill issued†	No. producing oil wells	No. producing gas wells
				Oil	Gas	Oil and gas	Repressure or disposal	Dry wildcats	Total dry	Oil	Gas	Oil and gas	Repressure or disposal	Dry	Fields discovered	Fields revived	Fields combined	Fields abandoned				
Allen	11	845,099	617,320	59	....	....	52	....	....	....	....	....	1	....	....	....	....	....	175	196	1,815	113
Anderson	7	436,560	76,230	31	....	....	22	1	1	....	....	....	....	....	....	....	....	....	85	109	1,215	15
Atchison	1	749	.....	1	....	....	....	3	5	....	....	....	....	....	1	....	....	....	6	5	1	.....
Barber	42	961,748	37,206,957	10	28	2	1	8	46	1	2	....	1	5	3	....	....	1	88	109	590	365
Barton	139	8,099,398	1,484,505	86	2	2	3	3	112	16	2	....	3	11	3	4	10	6	205	195	3,210	21
Bourbon	3	57,284	.....	10	....	....	2	....	....	....	....	....	....	....	....	....	....	1	24	29	120	.....
Brown	1	2,194	.....	....	....	....	....	10	10	....	....	....	....	....	....	1‡	....	....	10	10	2	.....
Butler	71	5,978,199	215,946	59	....	....	39	3	48	2	....	....	1	3	....	1	....	1	146	160	3,060	18
Chase	6	75,636	76,000	....	....	....	....	....	1	....	....	....	....	....	....	....	....	1	2	6	54	20
Chautauqua	19	774,482	324,309	12	....	....	....	3	10	....	....	....	....	....	1	1	....	....	45	66	1,840	61
Cherokee	....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	3	.....	.....
Cheyenne	....	.....	.....	....	....	....	....	....	1	....	....	....	....	....	....	....	....	1	1	1	4	.....
Clark	8	229,422	12,727,000	1	2	1	....	....	2	....	1	....	....	1	1	....	....	....	6	9	111	108
Clay	1	5,520	.....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	.....	1	3	.....
Cloud	....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....	0	.....	.....
Coffey	8	108,661	200	8	....	....	1	....	....	....	....	....	....	1	....	....	....	....	17	23	211	3
Comanche	7	75,648	8,464,053	1	....	....	....	3	6	....	....	....	....	1	....	....	....	1	7	8	30	22
Cowley	87	3,358,023	3,744,342	31	2	1	4	13	47	3	1	....	....	4	1	....	....	4	85	83	1,559	662
Crawford	6	71,923	76,230	36	....	....	21	....	....	....	....	....	....	....	....	....	....	....	162	192	238	15
Decatur	18	480,383	.....	3	....	....	1	3	6	....	....	....	....	....	1	....	....	1	10	7	111	.....
Dickinson	3	42,795	10,000	1	....	....	1	5	6	....	....	....	....	....	1	....	....	1	8	7	53	8
Doniphan	....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....	0	.....	.....
Douglas	1	38,255	25,000	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....	11	95	10
Edwards	20	286,929	3,043,946	1	3	1	....	8	11	....	3	....	....	1	2	2	....	3	16	18	150	90
Elk	27	174,233	524,321	3	....	....	....	3	6	....	....	....	....	....	....	....	....	....	9	14	305	51
Ellis	126	9,095,135	....	79	....	....	6	6	73	8	....	....	2	6	13	1	2	13	158	167	2,485	.....
Ellsworth	17	1,470,103	66,455	16	....	....	....	3	29	2	....	....	1	3	1	....	....	1	45	50	564	1
Finney	13	917,552	43,600,228	....	2	....	1	3	5	1	....	....	....	....	....	....	....	2	8	7	172	645
Ford	5	17,094	237,483	1	....	....	....	3	6	....	....	....	....	....	1	....	....	1	7	7	5	3
Franklin	5	229,829	76,230	7	....	....	3	1	2	....	....	....	....	....	....	....	....	....	32	40	838	15
Geary	1	1,058	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....	0	1	.....
Gove	6	209,605	.....	12	....	....	1	20	9	....	....	....	....	1	4	....	....	1	42	41	30	.....
Graham	78	5,196,573	.....	21	....	....	3	3	41	12	....	....	1	4	1	....	....	4	65	76	1,240	.....
Grant	4	16,763	146,725,023	....	4	....	....	1	2	....	....	....	....	....	....	....	....	....	6	9	5	607
Gray	....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....	0	.....	.....
Greeley	....	.....	.....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	1	1	.....	.....

Greenwood	47	3,188,422	95,204	115	....	....	9	3	46	2	....	....	2	1	1	....	....	2	170	164	2,410	20
Hamilton	5	8,939	13,054,769	....	35	....	2	2	3	....	....	....	....	....	....	....	....	....	40	44	2	130
Harper	16	1,093,046	6,159,896	12	3	....	1	17	28	1	1	....	....	1	1	....	....	....	44	37	267	79
Harvey	16	560,776	1,082,813	18	1	....	21	7	18	....	....	....	....	1	1	....	....	....	58	37	160	46
Haskell	11	2,153,377	53,642,767	22	4	3	....	6	7	3	....	....	....	....	....	....	....	....	36	37	182	494
Hodgeman	24	2,177,640	.....	25	2	....	3	24	59	1	....	....	2	2	3	....	....	1	89	79	219	.....
Jackson	1	89,225	.....	14	....	....	1	9	11	....	....	....	....	1	1	....	....	1	26	26	20	.....
Jefferson	....	.....	.....	....	....	....	....	4	4	....	....	....	....	....	....	....	....	....	4	6	.....	.....
Jewell	....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....	0	.....	.....
Johnson	2	47,181	268,255	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	20	29	72	55
Kearny	8	81,696	88,221,740	2	1	....	....	3	4	1	....	....	....	....	3	....	....	....	7	10	10	630
Kingman	32	3,733,402	30,206,729	28	7	4	5§	13	53	5	1	....	1	4	4	....	2	....	97	110	699	552
Kiowa	20	391,491	13,138,622	6	2	3	....	4	17	....	3	....	....	2	....	....	....	3	28	37	140	60
Labette	7	110,426	152,460	4	....	....	1	....	....	....	....	....	....	....	....	....	....	....	74	89	143	30
Lane	5	91,719	.....	2	....	....	....	6	15	....	....	....	....	....	....	....	....	....	17	18	14	.....
Leavenworth	2	8,236	342,920	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	12	16	18	68
Lincoln	....	.....	.....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	1	0	.....	.....
Linn	3	56,921	152,460	23	....	....	5	....	....	....	....	....	....	....	....	....	....	....	49	68	369	30
Logan	....	.....	.....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	1	0	1	.....
Lyon	6	88,345	.....	1	....	....	....	3	3	....	....	....	....	....	....	....	....	....	4	2	68	.....
McPherson	31	2,499,636	513,680	16	....	....	1	3	21	2	....	....	1	1	....	....	....	4	38	38	1,219	11
Marion	20	1,376,359	5,360,676	16	1	....	1	5	19	....	....	....	2	....	1	....	....	....	37	42	843	183
Marshall	....	.....	.....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	....	1	3	.....	.....
Meade	23	633,822	15,668,536	....	7	....	....	4	15	....	....	....	....	1	2	....	....	1	22	29	253	182
Miami	5	262,997	76,230	3	1	....	....	....	....	....	....	....	....	....	....	....	....	....	72	84	914	15
Mitchell	....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....	0	.....	.....
Montgomery	10	440,858	840,761	45	....	....	13	....	1	....	....	....	....	....	....	....	....	....	80	108	1,470	188
Morris	6	382,937	320,103	2	1	....	....	2	4	....	....	....	....	....	....	....	....	....	7	8	65	28
Morton	21	1,919,715	92,229,542	8	7	1	1	3	14	....	1	....	1	1	....	....	2	1	31	26	232	719
Nemaha	2	8,497	.....	1	....	....	....	4	4	....	....	....	....	....	1	....	....	1	5	5	2	.....
Neosho	8	494,908	319,420	25	....	....	24	....	....	....	....	....	....	....	....	....	....	1	237	280	1,700	79
Ness	46	1,338,152	.....	24	....	....	3	32	63	1	....	....	5	....	3	....	....	....	110	130	246	.....
Norton	6	653,624	.....	1	....	....	1	7	11	....	....	....	1	1	1	....	....	....	13	12	178	.....
Osage	....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....	0	.....	.....
Osborne	2	41,742	.....	....	....	....	....	1	1	....	....	....	....	....	....	....	....	1	1	0	14	.....
Ottawa	....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....	0	.....	.....
Pawnee	28	1,011,483	1,734,013	22	1	1	1	10	24	1	1	1	1	1	3	....	....	2	49	52	394	24
Phillips	14	2,103,662	.....	12	....	....	2	1	9	2	....	....	....	....	1	....	....	2	23	32	457	.....
Pottawatomie	....	.....	.....	....	....	....	....	3	3	....	....	....	....	....	....	....	....	....	3	3	.....	.....
Pratt	44	1,262,437	2,498,827	13	....	1	1	7	30	1	....	....	1	2	5	....	....	3	45	55	596	55
Rawlins	8	689,561	.....	3	....	....	....	5	12	....	....	....	....	....	....	....	....	....	15	14	74	.....
Reno	27	1,196,300	2,025,122	19	2	....	41	14	24	1	....	....	1	....	1	....	....	1	86	68	501	48
Republic	....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....	0	.....	.....
Rice	57	6,332,815	758,147	117	9	....	4	10	98	5	....	....	4‖	3	7	1‡	1	1	228	224	1,950	89
Riley	1	194,717	.....	....	....	....	1	2	2	....	....	....	....	....	....	....	....	....	3	3	33	.....
Rooks	89	5,160,994	.....	31	....	....	6	3	34	8	....	....	7	3	1	1‡	....	7	71	72	1,529	.....
Rush	17	307,209	1,712,362	3	4	....	....	1	18	....	1	....	....	1	3	....	....	1	25	29	81	24
Russell	46	9,114,640	418,344	130	1	....	32	14	96	17	....	....	4	3	6	1	3	....	259	219	3,178	19
Saline	16	743,426	.....	28	....	....	4	7	20	....	....	....	2	....	....	....	....	1	52	48	405	.....

TABLE 1.—Summary of 1964 operations, by county (concluded).

County	No. producing fields	Oil producing, bbl	Gas producing, M cu ft	Wells drilled in 1964						Reworked wells												
				Oil	Gas	Oil and gas	Repressure or disposal	Dry wildcats	Total dry	Oil	Gas	Oil and gas	Repressure or disposal	Dry	Fields discovered	Fields revived	Fields combined	Fields abandoned	Total new wells drilled*	No. intents-to-drill issued†	No. producing oil wells	No. producing gas wells
Scott	6	78,136	84,447	3	....	....	1	3	7	....	....	....	....	....	1	....	....	....	11	13	19	1
Sedgwick	38	2,454,400	76,230	37	....	....	....	7	25	....	....	....	....	1	....	....	....	6	62	71	672	15
Seward	24	1,019,639	27,800,829	2	15	2	....	3	9	1	....	1	....	....	....	....	....	....	28	34	121	433
Shawnee	....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	..	....	....	.....	0	.....	.....
Sheridan	11	322,901	.....	1	....	....	....	4	6	....	....	....	....	....	1	....	....	3	7	7	76	.....
Sherman	1	31,148	.....	....	....	....	....	2	2	....	....	....	....	....	....	....	....	....	2	2	13	.....
Smith	....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....	0	.....	.....
Stafford	161	5,090,741	2,736,537	57	2	....	12	4	73	15	1	1	3	6	5	3	5	8	144	152	1,584	53
Stanton	8	17,139	30,751,648	....	1	....	....	2	3	....	....	....	....	....	....	....	....	....	4	4	11	249
Stevens	10	380,803	156,202,650	1	23	2	....	....	3	....	2	....	....	....	1	....	....	1	29	32	40	783
Sumner	58	2,665,785	830,515	9	2	....	1	13	49	5	....	....	7	3	1	....	....	5	61	78	854	31
Thomas	....	.....	.....	....	....	....	....	2	2	....	....	....	....	....	....	....	....	....	2	2	1	.....
Trego	30	1,572,005	.....	25	....	....	....	14	39	4	....	....	2	2	2	....	....	3	64	60	351	.....
Wabaunsee	6	244,255	.....	....	....	....	....	6	8	....	....	....	....	....	....	....	....	....	8	8	38	.....
Wallace	....	.....	.....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	.....	0	.....	.....
Washington	....	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....	0	.....	.....
Wichita	1	1,096	.....	....	....	....	....	1	2	....	....	....	....	....	....	....	....	....	2	2	1	....
Wilson	11	378,216	527,718	31	....	....	20	1	1	....	....	....	....	....	....	....	1	....	148	161	681	75
Woodson	19	914,677	1,500	19	....	....	32	....	1	....	....	....	....	....	....	....	1	1	113	127	1,009	5
Wyandotte	1	.....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	.....	0	.....	.....

* Includes estimated wells.
† Based on intents-to-drill filed with Oil and Gas Conservation Division, State Corporation Commission of Kansas.
‡ Field erroneously reported abandoned.
§ Includes 3 LPG storage wells.
¶ Includes 1 saltwater disposal well.

TABLE 2.—Oil and gas data and percentage changes for Kansas and the United States, 1963-1964.

	Kansas figures		Change from previous year, percent	
	1963	1964	Kansas	United States
Crude oil production (bbl)	109,063,298•	106,252,025•	−2.6	+1.96
Crude oil attributed to secondary recovery (est. bbl)	21,600,000	21,800,000	+0.9	.....
Value of crude oil produced	$323,917,995	$310,255,913†	−4.2	.....
Kansas oil production as percentage of U.S. total	4.2	4.0	−4.8	.....
Average price of oil (bbl)	$2.97	$2.92‡	−1.7	.....
Rank of Kansas among oil-producing states	6th	7th	.....	.....
Proved reserves of liquid hydrocarbons, at year end (thousands of barrels)	1,010,590§	1,006,527§	−0.4	+0.24
Ratio of proved liquid hydrocarbon reserves to current annual production	8.7:1	8.7:1	0.0	.....
Oil-producing area of "western Kansas" (acres)'|	952,630	976,418	+2.5	.....
Gas-producing area of "western Kansas" (acres)'|	3,173,190	3,223,760	+1.6	.....
Natural gas production (M cu ft)	773,373,504•	809,328,250•	+4.7	+3.96
Value of natural gas produced#	$85,071,085	$89,026,108	+4.7	.....
Proved reserves of natural gas (MM cu ft)	18,092,493§	17,372,489§	−4.0	+1.85
Ratio of proved natural gas reserves to current annual production	23.4:1††	21.5:1	−8.1	.....
Helium production (Kansas gas only) (M cu ft)	500,000	1,465,000	+193.0	.....
Value of helium produced (Kansas gas only)	$6,847,432	$18,150,392	+166.22	.....
Total helium production (M cu ft)	775,071	2,183,347	+181.9	.....
Total value of helium produced	$10,088,110	$26,608,373	+163.5	.....
Production of natural gasoline and natural gas liquids (LPG) (gallons)	567,210,000•	802,750,000•	+41.6	+3.97
Value of natural gasoline and LPG••	$27,010,000	$38,226,000	+41.6	.....
New oil and gas fields named‡‡	121	94	−22.3	.....
Recorded well completions in Kansas:				
Oil§§	1,503	1,465	−2.5	.....
Gas§§	169	175	+3.6	.....
Oil and gas§§	32	24	−25.0	.....
Dry	1,569	1,530	−2.5	.....
Repressure or disposal	376	411	+9.3	.....
Unrecorded, estimated||||	793	841	+6.1	.....
Total recorded and estimated	4,442	4,446	+0.1	.....
Wildcats and discovery wells (included in total above)	663	492	−25.8	.....

• Figures supplied by Oil and Gas Conservation Division, State Corporation Commission of Kansas. Barrels have 42 U.S. gallons and gas is based at 14.65 psia @ 60°F.

† Crude oil value does not reflect exact total value of oil produced; price was reduced April 15, 1964.

‡ Price changed April 15, 1964.

§ Figures from American Petroleum Institute and American Gas Association, 1964. Barrels have 42 U.S. gallons and gas (reported by the American Gas Association at a base of 14.73° @ 60°F) has been converted to a base of 14.65 psia @ 60°F.

'| The oil and gas area of "western Kansas" includes all producing counties west of the west line of Cowley, Butler, Marion, and Dickinson counties.

The minimum value of 11 cents per M cu ft of gas at 14.65 psia has been applied to all Kansas gas production.

•• This aggregate figure is based on unit value of the several products that reflect wholesale prices at the plant.

†† Corrected figure; it was reported as 22.9:1 in Kansas Geol. Survey Bulletin 172, Table 2.

‡‡ Revived fields are omitted.

§§ Includes field wells and new discoveries.

'|| Counties for which number of wells drilled is entirely or in part estimated include Allen, Anderson, Bourbon, Chautauqua, Coffey, Crawford, Elk, Franklin, Greenwood, Labette, Linn, Miami, Montgomery, Neosho, Wilson, and Woodson. Estimates are based on "intent-to-drill" records, and data available from the Secondary Recovery and Pressure Maintenance Committee's questionnaires, and assessment records.

TABLE 3.—Oil and gas fields named in Kansas during 1964.

County, field, and location of discovery well	Discovery well	Producing zone	Production depth, ft	Month named	Initial production
Atchison County					
Worner C NE SE 19-7S-17E	Fred B. & Phillip Anschutz No. 1 Worner	"Hunton"	2375-2377	June	42½ bbl/7 hr
Barber County					
Deerhead North C SE NW 14-32S-15W	Walters Drlg. & Ferguson Oil No. 1 Skinner	Maquoketa	4965-4968	Dec.	80 bbl/2 hr 640,000 cu ft
Gilbert SW SE 18-32S-11W	Beardmore Drlg. Co. No. 1 Gilbert	Douglas sd	3568-3574	Nov.	874,000 cu ft
Medicine River C SW NW 4-32S-12W	Mull Drlg. Co. No. 1 Clarke*	Mississippian	4208-4220	July	1,250,000 cu ft
Barton County					
Carroll Southeast SE SE SE 27-17S-14W	Abercrombie Drlg. Co. No. 1 Finger	Arbuckle	3352-3356	Oct.	69 bbl/day
Chaffee South NE NE NE 7-20S-13W	E. K. Edmiston No. 1 Russell-Brewer	Marmaton	3442-3444	Dec.	72 bbl/6 hr
Galatia South NW NW SW 13-16S-15W	Western Petrol. Co., Inc. No. 1 Karst	Lansing	3333-3346	Aug.	16 bbl/3 hr
Chautauqua County					
Cloverdale NW NW NW 13-33S-8E	Olympic Petrol. Co. No. 4 Hawkins	"Cattleman sd"	2058	July	25 bbl/day
Clark County					
Snake Creek West C SE 10-34S-22W	Graham-Michaelis Drlg. Co. No. 1-10 Carlson	Morrowan	5406-5484	May	96 bbl/day 500,000 cu ft
Coffey County					
Parmely† 29-22S-17E		Cherokee		Dec.	
Cowley County					
Seacat Southeast SE SE SW 26-33S-4E	Harbar Oil and Gas Co. No. 2 Sparks	Mississippian	3220-3223	Dec.	16 bbl/8 hr
Crawford County					
Monmouth Northwest‡ 3-31S-22E		Cherokee		Dec.	
Decatur County					
Oberlin§ NE NE SW 35-2S-29W	Burch Expl., Ltd. No. 1 Torluemke	Lans.-K.C.	3762-3768	Jan.	5¼ bbl/hr
Dickinson County					
Holland Creek NE NE NW 2-15S-1E	Saline Basin Petrol. Co. No. 1 Phillips	"Burgess"	2391-2393	Sept.	25 bbl/day
Edwards County					
Bordewick East C SW SE 23-26S-18W	Western Petrol. Co., Inc. No. 1 Bordewick*	Wabaunsee	3216-3236	Oct.	3,930,000 cu ft
Gard‖ C NE NE 16-25S-20W	Sunray DX Oil Co. No. 1 Dora-Gard	Osagian	4681-4686	April	10 bbl/day
Ellis County					
Air Base North NE SW NW 15-13S-16W	Raymond Oil Co., Inc. No. 1 Riedel	Lansing	3235-3240	Jan.	9 bbl/hr
Bowlby S/2 SE SE 1-11S-16W	Birmingham-Bartlett Drlg. Co. No. 1 Bowlby "A"	Lansing	3107-3113	Aug.	85 bbl/day
Dortland SE NE NW 24-13S-16W	Abercrombie Drlg., Inc. No. 1 Dortland	Lansing	3143-3302	July	138 bbl/day
Dreiling North NE SW NW 15-14S-16W	Clinton Oil & Jones-Gebert No. 1 Robben	Lansing	3142-3166	April	83 bbl/day
Elru# SE SE SW 35-15S-19W	Donald Slawson No. 2 Seelye "B"*	Reagan	3587-3588½	Nov.	3 bbl/hr
Hammerschmidt NW NE SW 12-14S-16W	O. A. Sutton No. 1 Hammerschmidt	Lans.-K.C.	3291-3316	July	37½ bbl/13 hr

County, field, and location of discovery well	Discovery well	Producing zone	Production depth, ft	Month named	Initial production
Hays NE SW SW 13-13S-18W	Chief Drlg. Co., Inc. No. 1 Politka	Lans.-K.C.	3620-3623	July	87 bbl/day
Pfeifer SE NE NW 19-13S-19W	Clinton Oil & Jones-Gebert No. 1 Pfeifer	Lans.-K.C.	3560-3565	March	19 bbl/hr
Schoenthaler SE SE NE 31-12S-19W	Martin & Keller No. 1 Schoenthaler	Lansing	3466-3617	Dec.	138 bbl/24 hr
Sessin West** N/2 NE SW 16-11S-19W	Okmar Oil Co. No. 1 Simmons	Arbuckle	3528-3531	Jan.	5 bbl/hr
Solburn SW NE NE 28-14S-20W	Rains & Williamson Oil Co. No. 1 Solomon-Burnett	Lansing	3445-3480 3552-3572	Dec.	198 bbl/day
Vincent NW NE NW 32-14S-16W	Clinton Oil Co. No. 1-X Wellbrock	Lansing	3345-3351	Sept.	14 bbl/hr
Weitzel Northeast NW SW SE 31-15S-19W	Mull Drlg. Co. No. 1 Riedel	Lansing Marmaton Reagan	3375-3525 3664-3675 3691½-3694	Aug.	26 bbl/day 155' muddy oil 64 bbl/day
Ellsworth County					
Green Garden West SE SE SE 4-17S-9W	Western Petrol. Co., Inc. No. 1 Kruse	Lansing	3126-3130	Aug.	52 bbl/11½ hr
Ford County					
Tasset C NW SE 10-25S-22W	Slawson, Murfin & Javhawk Oil No. 1 Tasset "A"	Spergen	4780-4798	Feb.	37 bbl/6 hr
Gove County					
Horchem C SW NW 27-15S-26W	Time Petroleum Co. No. 1 Horchem	Lansing Mississippian	4002-4014 4374-4382	March	82 bbl/13 hr 88 bbl/13 hr
Horchem West C NE NW 31-15S-26W	Time Petroleum Co. No. 1 Curtis	Mississippian	4386-4402	April	101 bbl/day
Jacka C NE SE 8-15S-26W	Time Petroleum Co. No. 1 Jacka	Mississippian	4175-4180	Sept.	16 bbl/hr
Valhalla C NE NE 14-15S-28W	Funk-Morrison, etal No. 1 Bentley	Lansing	3726-3737	Oct.	75 bbl/day
Graham County					
Zeigler North C S/2 S/2 NW 34-10S-21W	Nadel & Gussman & D&D Drlg. No. 1 Rathburn	Lansing	3533-3554	May	19 bbl/hr
Greenwood County					
Sutherland NE SW SE 14-23S-12E	Brunson-Spines No. 2 Sutherland	Arbuckle	2167½-2169	Oct.	25 bbl/day
Harper County					
Wohlschlegel C SE SE 9-31S-6W	Petroleum, Inc. No. 1 Wohlschlegel	Mississippian	4292-4325	Dec.	2,000,000 cu ft
Harvey County					
Harmac Southeast C SE SE 1-22S-3W	Donald Slawson No. 1 Gehring "B"	Mississippian	3114-3125	Dec.	517,000 cu ft/9 hr
Hodgeman County					
Hanston-Oppy East C SW NE 13-22S-22W	Wilcox No. 1 Kuhn	Osagian	4389-4405	March	33 bbl/7 hr
Hanston-Oppy Southeast C NW NW 3-23S-22W	Birmingham-Bartlett Drlg. Co. No. 1 Baldrey "A"	Mississippian	4439-4442	Dec.	20 bbl/2½ hr
Reginer C SW NW 2-24S-21W	Sunray DX Oil Co. No. 1 Reginer	Osagian	4617-4623	Nov.	2,700,000 cu ft
Jackson County					
Soldier†† C NE NW 35-6S-13E	Mendenhall Drlg. Co. No. 1 Johnson	"Hunton" Viola	2872-2900	March	480' clean oil
Kearny County					
Moser C NE NE 31-24S-36W	W. B. Osborne No. 1 Moser*	St. Louis	4946-4966	Oct.	90 bbl/20 hr

TABLE 3.—Oil and gas fields named in Kansas during 1964 (continued).

County, field, and location of discovery well	Discovery well	Producing zone	Production depth, ft	Month named	Initial production
Kearny County (concluded)					
Patterson Southeast C NE NE 36-22S-38W	Cleary Petroleum, Inc. No. 1 Campbell	Morrowan	4744	Oct.	30 bbl/day
Rupp‡‡ C NE NE 5-21S-38W	Cleary Petroleum, Inc. No. 1 Rupp	Morrowan	4834-4838	Sept.	192 bbl/day
Kingman County					
Belmont Center C SW NW 23-29S-8W	Pickrell Drlg. Co. No. 1 Young "D"	Mississippian	4196-4200	June	438,000 cu ft
Georgia Spur Northeast SE SE SE 32-27S-6W	Capital Production, Inc. No. 1 Capital Robinson*	Mississippian Viola	3863 4252½-4253½	Feb.	5 bbl/1½ hr
Kysor C NE NW 17-30S-5W	Tenneco Oil Co. No. 1 Ruth A. Kysor	Lans.-K.C.	3594-3606	May	53 bbl/day
Varner C SE SW 8-27S-6W	Mercury Drlg. No. 1 Hampel	Viola	4087-4089	July	40 bbl/day
Marion County					
Hillsboro West SE NE NE 11-19S-2E	Slusser Drlg. Co. No. 1 Riesen	Mississippian	2529-2533	Jan.	1½ bbl/hr 2,500,000 cu ft
Meade County					
Cherry C NW SW 3-31S-26W	Burk Royalty Co. No. 1 Cherry	Lansing Kansas City	4532-4536 4892-4896	Nov.	2,950,000 cu ft 2,100,000 cu ft
Meierdierks C SW 27-34S-28W	Imperial Oil of Kansas, Inc. No. 1 Meierdierks	Council Grove	3075-3107	July	680,000 cu ft
Nemaha County					
Rokey E/2 SE SE 4-2S-14E	Brunson-Spines No. 1 Rokay	Viola	3550-3555	Nov.	7 bbl/hr
Ness County					
Betz C NE SE 9-20S-21W	Pickrell Drlg. Co. No. 1 Betz Estate	Mississippian	4404-4411	Oct.	101 bbl/day
Bondurant C NW NW 24-20S-22W	Rains & Williamson Oil Co. No. 1 Bondurant	Osagian	4385-4390	Aug.	100 bbl/day
Harkness C NW SW 4-17S-23W	Murfin Drlg. Co. & Sunray DX Oil Co. No. 1 Harkness	Osagian	4436-4443	May	45 bbl/day
Norton County					
Densmore East SW NW NW 18-5S-21W	D. G. Hansen No. 2 Noone	Reagan	3537½-3539	July	20 bbl/day
Pawnee County					
Antone NW NW SE 10-21S-18W	Jerald W. Gearhart No. 1 O. Browne*	Lansing	3756-3764	Nov.	65 bbl/24 hr
Burdett§§ NW NW SE 4-22S-20W	D. R. Lauck Oil Co., Inc. No. 1 Ditus*	Mississippian	4306-4340	Sept.	22 bbl/day 2,000,000 cu ft
Dunes North NE NE SE 15-22S-15W	Woodman & Iannitti Oil Co. No. 1 Lovett	Lansing	3620-3660	May	105 bbl/day
Phillips County					
Stoneman SE SW NE 20-4S-18W	Petroleum Management, Inc. No. 1 Stoneman	Lansing	3200-3202	Dec.	3½ bbl/hr
Pratt County					
Lunt C NW NW 33-27S-12W	Kern-Landes Expl. Co., Inc. No. 1 Lunt	Simpson	4349-4352	April	25 bbl/day
Petrowsky NW SE NW 10-26S-12W	Hinkle Oil Co. No. 2 Petrowsky	Arbuckle	4274-4283	Nov.	6 bbl/hr
Stead SW SW NE 27-26S-12W	Continental Oil Co. & Appleman Co. No. 1 Stead	Simpson	4328-4332	Jan.	10 bbl/hr

County, field, and location of discovery well	Discovery well	Producing zone	Production depth, ft	Month named	Initial production
Tatlock East SE SW NE 27-26S-15W	Schermerhorn Oil Corp. No. 1 Libby	Lansing	4130	April	218 bbl/24 hr
Welli C NE SW 7-28S-13W	Graybol Oil Corp. No. 1 Welli	Simpson	4444-4448	Aug.	16 bbl/hr
Reno County					
Arlington C NE NE 23-25S-8W	E. H. Riggs No. 1 Krehbiel	Mississippian	3756	Oct.	33 bbl/11 hr 500,000 cu ft
Rice County					
Babcock NE NE SE 13-20S-9W	Carl Lebsack Oil Prod. Co. No. 2 Babcock Chandler	"Kinderhook"	3251-3262	June	55 bbl/6 hr
Babcock South SE SE SE 24-20S-9W	Justa Oil No. 1 Schwamborn•	"Kinderhook"	3298-3304	June	18 bbl/hr
Fitzpatrick NW NW NE 30-21S-8W	Northeastern Petrol Co. No. 1 Fitzpatrick	Penn. congl.	3320-3332	July	7,693,000 cu ft
Lyons Townsite C NE NE 34-19S-8W	Western Petrol Co., Inc. No. 1 Stockham	"Kinderhook"	3344-3348	Dec.	41 bbl/day
Shuler NW SW SE 11-20S-9W	Carl Lebsack Oil Prod. Co. No. 1 Shuler	Simpson	3317-3339	Feb.	14 bbl/day
Shumway SE SW SE 9-20S-8W	Ben C. W. Hyde, Jr. No. 1 Shumway	"Kinderhook"	3404-3448	Dec.	30 bbl/day
Wellman SE SE SE 28-21S-9W	J. W. Hershberger No. 1 Wellman•	Kansas City	3011-3014	Dec.	36 bbl/24 hr
Rooks County					
U.S. 24 NE NE NW 20-7S-19W	Bill Justice No. 1 Crowe	Reagan	3442-3452½	Jan.	8 bbl/hr
Rush County					
Litt SE SE NW 20-16S-19W	Solar Oil Co. No. 1 Littler•	Lans.-K.C.	3467½-3470	Feb.	30 bbl/day
Nekoma NE NW NE 30-18S-19W	Hellar Drlg. Co., Inc. No. 1 Felder	Penn. congl.	3979-3984	Aug.	57 bbl/day
Reichel East SE NE NE 34-17S-16W	Frontier Oil Co. No. 1 Brack "A"	Topeka	2995-3001	Sept.	575,000 cu ft
Reichel Field SW NW NE 23-17S-17W	(Formerly designated Reichel Gas Area; discovered in 1953)				
Russell County					
Aley‖ ‖ SW SW NE 29-14S-15W	Shields Drlg. Co., Inc. No. 1 Foster-Aley	Lansing	3115-3140	Dec.	11 bbl/day
Baxter SW NW SE 33-14S-15W	Imperial Oil of Kansas, Inc. No. 1 Baxter	Toronto Lansing	3084-3088 3190-3310	June	18 bbl/hr 20 bbl/hr
Cliff E/2 NE NW 12-15S-11W	Tidal Oil & Gas, Inc. No. 1 Davidson•	Simpson	3300-3309	Dec.	3 bbl/hr
Coal Creek Northeast NE NE NE 15-15S-11W	Leo J. Dreiling Oil Co. No. 1 Seifers	Penn. congl.	3211-3214	May	56 bbl/8 hr
Donovan Southeast SW SE SW 14-15S-15W	Imperial Oil of Kansas, Inc. No. 1 Wegele	Lansing	3259-3278	Jan.	12 bbl/hr
Kingsley NE NE SW 31-12S-14W	Tomlinson-Kathol, Inc. No. 1 Kingsley	Lansing	3024-3028	Oct.	6 bbl/hr
Scott County					
Rodenberg C NW NW 16-17S-31W	Rine Drlg. Co. No. 1 Rodenberg	Penn. congl.	4567-4575	June	23 bbl/15 hr
Sheridan County					
Minium C NW NW 4-9S-26W	Raymond Oil Co., Inc. No. 1 Minium	Lansing	3746-3764 3788-3792	Nov.	70 bbl/4 hr
Stafford County					
Halley NW SW SE 33-24S-13W	Beardmore Drlg. Co. No. 1 Halley	Lans.-K.C.	3751-3821	Feb.	84 bbl/day

TABLE 3.—Oil and gas fields named in Kansas during 1964 (concluded).

County, field, and location of discovery well	Discovery well	Producing zone	Production depth, ft	Month named	Initial production
Stafford County (concluded)					
Leesburgh West SE SW NW 11-25S-13W	Jay Bergman Oil Co. No. 1 Kachelman	Simpson	4189-4191	Dec.	3.75 bbl/4 hr
Long Valley NW SW NE 2-23S-13W	Alpine Oil Co., Inc. No. 1 Allen Long	Arbuckle	3833	Nov.	8½ bbl/5 hr
Soden SE NE SE 23-23S-13W	J. W. Hershberger No. 1 Soden*	Lansing	3624-3628	Dec.	16 bbl/day 3,100,000 cu ft
Vanhoozer SW NE SW 36-23S-14W	Range Oil Co., Inc. No. 1 Vanhoozer	Lansing	3758-3760	Nov.	7 bbl/hr
Stevens County					
Voorhees## C SW SE 13-34S-37W	Mobil Oil Co. No. 1 Cunningham	St. Louis	6752-6774	June	131 bbl/24 hr 36,000 cu ft
Sumner County					
Dickson C NE NE 3-31S-3W	Mull Drlg. Co. No. 1 Dickson	Kansas City	3341-3349	Dec.	38 bbl/day
Trego County					
Seibel SE SE SE 6-13S-21W	Leo J. Dreiling Oil Co. No. 1 Seibel	Lans.-K.C.	3635-3675	June	44 bbl/day
Zeigler NE SW NE 4-11S-21W	Nadel & Gussman & D&D Drlg. No. 1 Zeigler	Arbuckle	3763-3767	April	8 bbl/hr

Data represent the official action of the Kansas Geological Society's Nomenclature Committee during 1964.
* Old well worked over.
† Parmely field officially named in 1964.
‡ Monmouth Northwest field, discovered in 1947, was unofficially called "Houston" until 1964.
§ Oberlin field, January, 1964, discovery, abandoned in November.
|| Gard field, April, 1964, discovery, abandoned in August.
Elru field produces in both Ellis and Rush counties.
** Session West field, January, 1964, discovery, combined with Sessin in November.
†† Soldier field, March, 1964, discovery, abandoned in June.
‡‡ Rupp field produces in both Kearny and Wichita counties.
§§ Burdett field discovery well was D&A in 1957; worked-over in 1962 and completed as shut-in gas well; reworked and completed as oil and gas well in 1964.
|| || Aley field discovery well was completed December 17, 1963.
Vorhees field discovery well is deepest hole in Kansas (8709 feet) and deepest producing well (6752-6774 feet).

TABLE 4.—Important dry wildcat tests drilled during 1964.

County, company, and farm	Location	Surface, elevation, feet	Depth to top of formation, feet								Total depth, feet	Notes
			Heebner	Lans.-K.C.	Mississippian	"Kinderhook"	"Hunton"	Viola	Simpson	Arbuckle		
Allen County												
International Oil & Gas Co. (was Deerfield Oil Corp.) No. 1 Guy Shirley*†	NE NE SE 29-26S-21E	1,060	.....	.....	866	.....	.....	.....	1,606[11]	1,238	1,640	Water supply well Savonburg field
Brown County												
Smith Bros. & Woodman-Iannitti No. 1 Gall†‡	SW SW SE 31-1S-17E	1,002	645	850	2,194	2,371	2,630	3,276	.....	.....	3,312	
Aladdin Petrol. Corp. No. 1 Fridell†‡	SW SW SW 12-3S-17E	1,059	578	789	2,030	2,275	2,497	3,044	3,208	.....	3,272	Elevation est.
Aladdin Petrol. Corp. No. 1 Findley†‡	NE NE SE 34-3S-17E	1,097	635	850	2,102	2,332	2,554	3,104	3,244	3,337	3,370	
Aladdin Petrol. Corp. No. 1 Glenn†‡	NE NE SW 8-3S-18E	1,056	553	766	1,958	2,210	2,405	3,002	3,172	3,262	3,311	
Smith Bros. & Woodman-Iannitti No. 1 Brook†	SW SW SW 1-4S-16E	1,701	706	924	2,173	2,440	2,703	3,225	.....	.....	3,249	
Clay County												
L. B. Jackson Co. (was Earl F. Wakefield) No. 1 Swenson*†	SW SW NW 15-9S-2E	1,336	1,623	1,750	2,246	2,395	2,559	.....	.....	.....	2,649	
Decatur County												
Barron Kidd No. 1 Huff†	C SE SE 8-1S-26W	2,407	.....	3,186	1,875[1]	3,036[2]	.....	3,490[13]	3,520[14]	.....	3,530	Huff field D & A
Empire Drlg. Co. No. 1 Kathka "B"†	NE NE NW 7-1S-28W	2,596	3,444	3,478	3,334[4]	3,998[12]	.....	4,017[13]	4,042[14]	3,930	4,057	Kathka field D & A
Dunne-Gardner Drlg. Co. No. 1 Eckhart†‡	C NW SW 11-2S-26W	2,541	3,374	3,414	3,210[4]	3,757[12]	.....	3,761[13]	.....	3,752	3,780	
Dickinson County												
Willis D. Waterman No. 1 Leonard	NW NW NW 10-14S-3E	1,221	1,497	1,651	2,211	.....	2,523	2,870	2,983	.....	3,018	
Ford County												
Time Petrol. Co. & Assoc. No. 1 Koelling	C SW NW 6-29S-21W	2,441	.....	.....	.....	.....	.....	.....	.....	.....	5,365(?)	Bucklin field No tops on card TD in Miss.

TABLE 4.—Important dry wildcat tests drilled during 1964 (concluded).

County, company, and farm	Location	Surface, elevation, feet	Depth to top of formation, feet								Total depth, feet	Notes
			Heebner	Lans.-K.C.	Missis-sippian	"Kinder-hook"	"Hunton"	Viola	Simp-son	Arbuckle		
Grant County												
Cities Service Oil Co. No. 1 Gano "D"	C SE NE 23-28S-36W	3,083	3,991	4,100	5,606	2,867[3]	.....	3,585[4]	5,660[5]	5,758[6]	6,251	Devatz field D & A
Anadarko Prod. Co. No. 2 Patterson "A"†‡	C NE SW 25-28S-37W	3,013	3,802	3,910	5,316	2,659[3]	.....	5,483[5]	5,592[6]	6,095[9]	6,247	
Hugoton Prod. Co. No. 2-22 Eichenberger†	C SE SE 22-29S-37W	3,068	3,900	4,018	5,554	2,722[3]	.....	5,716[5]	5,818[6]	.....	5,894	Panoma Gas Area CG gas well WC as deep test
Greeley County												
Terrel Drlg. & Prod. Co. No. 1 Wheeler†	C NW SW 5-18S-41W	3,725	4,030	4,082	.....	.....	.....	2,556[1]	5,185[5]	5,238[6]	5,291	
Greenwood County												
Rock Island Oil & Refg. Co. No. 1 Moege‡	SW NE NE 17-26S-9E	1,197	791	1,159	2,223	2,577	.....	.....	2,635	2,656	2,709	Reece field D & A
Jackson County												
Mendenhall Drlg. Co. No. 1 Johnson	C NE NW 36-6S-13E	1,208	.....	1,311	2,543	2,607	2,856	3,402	3,514	3,630	3,664	Soldier field disc. D & A in '64.
Kearny County												
Horizon Oil & Gas Co. No. 1-20 Krehbiel†	C SE SE 20-24S-37W	3,282	2,826[3]	3,922	5,211	5,342[6]	.....	.....	.....	.....	5,450	
Osborne County												
D. & D. Drlg. Co. No. 1 Cornwell†‡	C SE SW 27-8S-13W	1,691	2,858	2,914	886[1]	.....	.....	3,539	3,670	3,725	3,767	
Sherman County												
Siegel Oil Co. No. 1 Finegan†‡	C SE NW 29-6S-42W	3,867	4,556	4,608	5,435	5,606	.....	3,500[1]	5,682[10]	.....	5,700	
Stevens County												
Socony Mobil Oil Co. No. 1 Cunningham Estate†‡	C SW SE 13-34S-37W	3,149	4,289 2,740[2]	4,350 3,040[3]	6,374 6,720[6]	7,550 6,970[7]	..... 7,200[8]	7,665 7,312[9]	7,863 8,659[12]	7,905 8,679[14]	8,714	Voorhees disc. St. L. oil prod. deepest prod. in Kans. Deepest hole in Kans.

* Old well worked over.
† Electric or radioactivity log available.
‡ Sample log available.

[1] Anhydrite.
[2] Chase.
[3] Council Grove.
[4] Topeka.
[5] Ste. Genevieve.
[6] St. Louis.
[7] Salem.
[8] Warsaw.
[9] Osage.
[10] Kinderhook dolomite.
[11] Roubidoux.
[12] Reagan.
[13] Granite wash.
[14] Precambrian granite.

TABLE 5.—New oil and gas pools in producing fields, 1964.

County, field, and location of discovery well	Discovery well	Producing zone	Production depth, ft	Month of discovery	Initial production
Barber County					
Aetna Northwest C NW SW 2-34S-15W	Tomlinson-Kathol, Inc. No. 1 Davis Ranch	Mississippian	4888	Feb.	120 bbl/day
Ketner SW NE SE 9-31S-13W	Petroleum Management, Inc. No. 2 Ketner	Mississippian	4282-4288	Feb.	43 bbl/day
Medicine-Lodge-Boggs C NW NW 35-32S-13W	Bowers Drlg. Co., Inc. No. 1 Binning "B"	"Elgin"	3586-3590	May	2,120,000 cu ft
Palmer C SE NE 14-32S-14W	Mull Drlg. Co. No. 1 Elsea "B"	Lansing	4126-4138	May	70,000 cu ft 120′ clean oil
Whelan Southwest C NW NW 3-32S-12W	Mull Drlg. Co. No. 2 Wheeloch	Mississippian	4245	Aug.	5,200,000 cu ft
Whelan West NW NW NW 25-31S-12W	Raymond Gear No. 1 Phye*	Mississippian	4300	Feb.	4,050,000 cu ft
Barton County					
Great Bend Airport NE NE NE 34-19S-14W	Allied Construction No. 1 Great Bend Airport*	Penn. congl.	no information	Nov.	gas
Two-Eighty One (281) SW NW SE 22-16S-14W	Helmerich & Payne, Inc. No. 1 Niedens	Arbuckle	3404-3426	April	8⅓ bbl/day
Butler County					
El Dorado SE SE SE 6-25S-5E	Ramsey, et al No. 1 Ramsey	Wabaunsee	955-964	April	25 bbl/day
Chautauqua County					
Oliver SW NW SE 2-32S-10E	E. H. Adair No. 1 Oliver	Mississippian	2016-2024	May	25 bbl/day
Cowley County					
Rock NE NE NW 24-31S-3E	Shawver-Armour, Inc. No. 1-A Holderness	Arbuckle	3336-3337	Aug.	22 bbl/day
Edwards County					
Bradbridget C SE 2-24S-16W	Messman-Rinehart Oil Co. No. 1 Klein	Howard	2994-3000	Aug.	1,150,000 cu ft
Ellis County					
Air Base East SE NW NE 36-13S-16W	Birmingham-Bartlett Drlg. Co. No. 2 Nowak	Penn. congl.	3366	July	25 bbl/day
Experiment SW SW SW 8-14S-18W	Leben Drlg., Inc. No. 1 Ft. Hays College "A"	Lans.-K.C.	3528-3680	May	80 bbl/8 hr
Ellsworth County					
Gregory N/2 N/2 NW 36-16S-9W	Glickman Oil Co. No. 1 Rolfs	Lansing	3002-3007	May	10 bbl/day
Lorraine SW SW NW 23-17S-9W	Northeastern Pet. No. 1 Dees	Simpson	3177-3191	Sept.	600′ gas, 480′ clean oil, 180′ muddy oil
Harper County					
Goheen C NW NW 19-31S-6W	Phillips Petroleum Co. No. 1 Hostetler	Simpson	4660-4664	Feb.	37 bbl/3 hr
Runnymede NE NE SE 23-31S-6W	Texaco, Inc. No. 1 Springer*	Mississippian	4243	Sept.	5,800,000 cu ft
Runnymede SW SE SW 24-31S-6W	Texaco, Inc. No. 2 Springer*	Kansas City	3726-3757 3804-3808	Nov.	72 bbl/day
Stohrville NE NW NE 36-33S-6W	Herndon Drlg. Co. No. 2 Gerberding "A"*	Kansas City	3804-3807 3912-3920	April	25 bbl/day
Harvey County					
Burrton C NW SW 31-22S-3W	Driller's Prod. Co., Inc. No. 1 Peters	Mississippian	3312-3328	Aug.	416,000 cu ft 9 bbl/day
Haskell County					
Eubank North C NE NE 8-28S-34W	Rine Drlg. Co. No. 1-B Fletcher*	Chesteran	5408-5412	Dec.	40 bbl/day
Victory C NE SE 24-30S-34W	Pan American Pet., Inc. No. 1 Garner Unit "B"	Marmaton	4743-4745	July	1,174,000

TABLE 5.—New oil and gas pools in producing fields, 1964 (continued).

County, field, and location of discovery well	Discovery well	Producing zone	Production depth, ft	Month of discovery	Initial production
Haskell County (concluded)					
Victory C NE NW 19-30S-33W	Pan American Pet., Inc. No. 2 W. M. Wilson "B"	Morrowan	5269-5272	Dec.	605,000 cu ft 84 bbl/day
Jackson County					
Leach C NE SW 15-7S-13E	Phillips Pet. & Pet., Inc. No. 1 Leach "A"	"Hunton"	2711-2725	Jan.	84 bbl/day
Kingman County					
Broadway West NW NW SE 18-28S-5W	D. R. Lauck Oil Co., Inc. No. 1 Delp	Lansing	3403-3407	Dec.	10 bbl/1 hr
Casley SW SE NW 1-28S-5W	Martin & Keller No. 1 Simons	Indian Cave	1692-1706	Oct.	1,200,000 cu ft
Goetz NE SW SW 29-29S-9W	Bachus Oil Co. No. 1 Goetz "B"•	Indian Cave	2383-2400	Dec.	3,400,000 cu ft
Prather C NW NW 18-28S-7W	Tomlinson-Kathol, Inc. No. 1 Prather•	Lansing	3682-3686	March	50 bbl/hr
Spivey-Grabs-Basil SW NW NE 11-30S-9W	Sierra Petroleum Co., Inc. No. 1 Swingle	Indian Cave Burlingame Topeka	2349-2415 2734-2758 2919-2956	Nov.	1,000,000 cu ft 825,000 cu ft 3,310,000 cu ft
Kiowa County					
Alford C SE NW 24-30S-19W	Graham-Michaelis Drlg. Co. No. 1-24 Kane	Mississippian	5111-5119	Nov.	93½ bbl/day
Einsel C NE SW 25-27S-19W	Hall-Jones Oil Corp. No. 1 Einsel Dunn Unit	Mississippian	4800-4807	Feb.	6 bbl/24 hr 411,000 cu ft
Einsel C NW NW 6-28S-18W	Oil & Gas Property Mgmt., Inc. No. 1 Colclazier	"Kinderhook"	4838-4848	Sept.	2¼ bbl fluid/hr, 95 % oil
Ness County					
Arnold North C SE SE 4-16S-25W	Birmingham-Bartlett Drlg. Co. No. 1 Miller et al	Fort Scott	4375-4395	Dec.	70 bbl/day
Dumler C NW SE 11-17S-26W	Pickrell Drlg. Co. No. 1 Dumler "A"•	Marmaton	4411-4421	July	108 bbl/day
Harkness C NW SW 4-17S-23W	Murfin Drlg. Co. & Sunray DX Oil Co. No. 1 Harkness	Cherokee	4326-4330	Sept.	71 bbl/day
L.T.P. C NW SW 21-18S-24W	Mack Oil Co. No. 5 Peters	Mississippian	4326-4332	Jan.	43 bbl/day
Pawnee County					
Benson SE SE NE 36-23S-16W	Messman-Rinehart Oil Co. No. 1 Peters•	Penn. congl.	4032-4043	Aug.	9,000,000 cu ft
Eddy NW SE NW 13-22S-18W	Bell Bros. No. 2 A. D. Eddy	Lansing	3834-3843	Dec.	3,390' clean oil
Oro Northwest NW NW SE 5-20S-19W	Thunderbird Drlg., Inc. No. 2 Van Rensselaer•	Pawnee	4178-4182	Dec.	128 bbl/8 hr
Shiley NE NE SW 13-20S-20W	Cities Service Oil Co. No. 1 Jennings "D"	Cherokee	4186-4187	June	216 bbl/day
Pratt County					
Brehm SW NE SW 23-28S-13W	Continental Oil Co. No. 3 Brehm	Simpson	4422	Feb.	240 bbl/day
Carver-Robbins NW SE NW 14-27S-15W	J. E. Newman No. 1 Newby	Cherokee	4442-4448	March	29 bbl/day
Moore C SE SW 2-26S-14W	Time Petroleum Co. No. 1 Henderson	Mississippian	4210	Oct.	110 bbl/day
Rice County					
Kepley C SE NE 6-19S-7W	Imperial Oil of Kansas, Inc. No. 1 Spoon	"Kinderhook"	3308	Feb.	2,240,000 cu ft
Lyons Southwest NW NW NE 21-20S-8W	Hyde & Isern No. 1 Hutchins	Penn. congl.	3277-3285	April	5.8 bbl/hr
Ringwald NE SE NE 32-18S-10W	Union Texas Pet. No. 1 Ringwald•	Topeka	2675	Sept.	16 bbl/1 hr

County, field, and location of discovery well	Discovery well	Producing zone	Production depth, ft	Month of discovery	Initial production
Rooks County					
Dancer SW SW NW 33-7S-17W	Robinowitz No. 1 Stambauch	Arbuckle	3363-3367	April	9 bbl/hr
Pywell NW NE SE 30-9S-18W	E. K. Edmiston No. 1 Stucky	Lansing	3424-3428	Aug.	42 bbl/no time 600' oil/1 hr
Russell County					
Donovan SE NE NE 15-15S-15W	J. W. Hershberger No. 3 Steinert	Arbuckle	3250-3254	Jan.	18 bbl/hr
Donovan NE NW NE 15-15S-15W	J. W. Hershberger No. 5 Steinert	Marmaton	3214-3220	March	10 bbl/hr
Scott County					
Rothfelder C SE NW 18-20S-33W	Morrison Producing Co. No. 2 Williams	Cherokee	4544-4549	Feb.	54 bbl/day
Sedgwick County					
Curry S/2 NE SW 2-27S-1W	Drillers Prod. Co., Inc. No. 6 Southwestern College	Viola	3390-3390½	Feb.	15 bbl/day
Seward County					
Ang North C NE 34-31S-33W	Pan American Pet., Inc. No. 2 Fair (B-1)	Marmaton-Morrowan	no information (comp. 1962)	Jan.	5 bbl/day
Arkalon C NE SW 2-34S-32W	Whitestone Petroleum, Inc. No. 1 Hatfield	(commingled) Morrowan	5831-5838	Feb.	53,000,000 cu ft
Arkalon West S/2 N/2 SW 28-33S-32W	Cities Service Oil Co. No. 1 Salley "F"	Morrowan-Chesteran	5662-5688 5976-5983	Dec.	1,725,000 cu ft
Condit C NE SW 12-34S-33W	Anadarko Prod. Co. No. 1 Worthington "A"	(commingled) Chesteran	6255-6269	June	11,600,000 cu ft
Stafford County					
Farmington Northeast SE SE NE 35-24S-15W	J. W. Hershberger No. 1 Giles*	Mississippian	4168-4172	May	1,121,000 cu ft 1 bbl oil
Green Ridge SE NW SE 19-23S-14W	Kansas Exploration Co. No. 2 Kachelman	Viola	3913	Sept.	240 bbl/4 hr
Hudson South SW SW NE 4-23S-12W	E. H. Riggs No. 1 Spangenberg*	Lans.-K.C.	3449-3475 3491-3494	June	75 bbl/day
Leiss Southwest SW SW SE 26-25S-13W	Rock Island Oil & Ref. Co., Inc. No. 2 Fisher	Simpson	4232-4242	Feb.	35 bbl/day
Max North SE SE SW 26-21S-12W	Don Moore & Assoc. No. 1 Siefkes*	Lansing	3386-3389½	April	100 bbl/day
Rugan NE SE NW 2-21S-11W	F. G. Holl No. 2 Rugan "D"	Penn. congl.	3348-3350	June	27 bbl/day
Snider NW SE NW 11-21S-11W	F. G. Holl No. 1 Schaffer	Viola	3362-3368	April	33 bbl/day
Stevens County					
Voorhees C SW NE 24-34S-37W	Mobil Oil Co. No. 2 Peachey Unit	Morrowan Mississippian	6328-6334 6713-6722	Oct.	5,300,000 cu ft 15,500,000 cu ft
Sumner County					
Olive Branch C NE SW 11-33S-3W	Leben Drlg. & N.C.R.A. No. 2 Armstrong	Lans.-K.C.	3517-3527	Nov.	57 bbl/day
Trego County					
Ogallah SE NE SW 27-12S-22W	Texaco, Inc. No. 4 G. Bittle	Lans.-K.C.	3608-3836	March	122 bbl/day
Seibel NE NE NE 7-13S-21W	Leo J. Dreiling Oil Co. No. 1 Glass	Arbuckle	3959-3967	Nov.	35 bbl/day

Data represent the official action of the Kansas Geological Society's Nomenclature Committee during 1964.
* Old well worked over.
† Bradbridge field is in Edwards and Stafford counties.

TABLE 6.—Fields revived in Kansas during 1964.

County, field, and location of revival well	Revival well	Producing zone	Production depth, ft	Month revived	Initial production
Barton County					
Clarence South	(revived and combined with Clarence)	.....	.....	Dec.	.....
Frank E/2 SE SE 7-19S-12W	Raymond Oil Co., Inc. No. 1 Hammeke	Lansing	3162-3186 3199-3231 3312-3339	June	41¼ bbl/hr 28 bbl/hr 23½ bbl/hr
Laud C SE NE 23-18S-14W	Alpine Oil Co., Inc. No. 1 Brack	Lans.-K.C.	3236-3240	Jan.	35 bbl/5 hr
Rolling Green*	(revived and combined with Shaeffer-Rothgarn)	.....	.....	Dec.	.....
Brown County					
Livingood 3-1S-15E	(erroneously abandoned in 1964)	.....	.....	Dec.	.....
Butler County					
Womack†	O. A. Sutton	Mississippian	2789-2794	March	33 bbl/day
NE SE SW 17-28S-6E	No. 1 Jones	Viola	3120-3124		15½ bbl/10 hr
Chautauqua County					
Berlin NW SW NE 32-32S-11E	Stelbar Oil Corp., Inc. No. 5 Floyd "B"	Mississippian	1908-1910	Dec.	20 bbl/day
Edwards County					
Groner NW SW NW 6-23S-20W	Imperial Oil of Kansas, Inc. No. 1 Jensen‡	Mississippian	4513-4542	Feb.	1,450,000 cu ft/15 min
Wayne C SE SE 22-24S-17W	Donald C. Slawson No. 1 Cross "A"	Mississippian	4375-4385	Dec.	140 bbl/6 hr 1,500,000 cu ft/6 hr
Ellis County					
Haller NE SE NW 10-11S-18W	Jones-Gebert & Raymond Oil Co., Inc. No. 1 Meistrell	Lansing	3297½-3302½ 3335½-3339½	June	30 bbl/8 hr
Rice County					
Cow Creek 28-18S-9W	(erroneously abandoned in 1962)	.....	.....	June	.....
Rooks County					
Yohe 4-9S-18W	(erroneously abandoned in 1962)	.....	.....	June	.....
Russell County					
Claussen West SE SE NE 29-12S-14W	Rudy Herman Oil Operations No. 1 Foster‡	Lansing	2841-2860	June	20 bbl/day
Stafford County					
Hart NW SW NE 36-22S-14W	John Graves Drlg. Co., Inc. No. 1 Miller	Lansing	3573-3577	Sept.	37 bbl/hr + gas
Kennil NE SW NW 4-23S-13W	Inger Oil Co. No. 1 Metz	Lans.-K.C.	3576-3582	Jan.	15,200,000 cu ft + spray of oil
Pleasant Grove South SE NW NE 35-22S-12W	J. W. Hershberger No. 1 McCune‡	Lansing	3465-3468	Dec.	39 bbl/day

Data represent the official action of the Kansas Geological Society's Nomenclature Committee during 1964.
* Rolling Green field, abandoned November 4, 1964, was revived December 2, 1964, for combination with Shaffer Rothgarn.
† Womack field was abandoned in May, 1964, and revived in June, 1964.
‡ Old well worked over.

TABLE 7.—Fields abandoned in Kansas during 1964.

County, field and location of discovery well		Discovery well	Producing zone						
			Name	Depth, ft	Thickness, ft	Aver. gravity	Cumulative* production, bbl	Year discovered	Month abandoned
Barber County									
DeGeer	2-33S-15W	No. 1 DeGeer	Mississippian Viola Simpson	4,002 5,176 5,356	.... 10 2	.... 40	140,442 M cfg 755,590 none	1948	October
Barton County									
Claflin	3-18S-11W	No. 1 Simmons	Lans.-K.C. Arbuckle	3,044 3,320	4 4	....	7,614	1954	October
Claflin Northeast	3-18S-11W	No. 1 Preager	Lans.-K.C.	3,040	21	....	27,596	1955	October
Esteld	15-16S-11W	No. 1 Esfeld	Arbuckle	3,343	....	43	14,584	1947	October
Merten Southwest	7-19S-15W	No. 1 Peterson	Reagan	3,597	....	....	none	1958	October
Olmitz	1-18S-15W	No. 1 Schugart	Lans.-K.C.	3,295	....	....	9,348	1958	October
Popp	3-16S-14W	No. 1 Popp	Arbuckle	3,352	5	....	1,453	1958	October
Rolling Green†	36-20S-13W	No. 1 Schartz	Lans.-K.C.	3,257	6	....	54,286	1948	November
Bourbon County									
Garland	26S-25E	.....	.....	.....	....	....	.....	.....	December
Butler County									
Fox-Bush West	15-29S- 5E	No. 1 Young	"Bartlesville"	2,837	11	....	29,260	1953	October
Womack‡	19-28S- 6E	No. 1 Womack	"Bartlesville"	2,715	....	....	17,230	1947	May
Chase County									
Hymer	18S- 7E	.....	"Shallow Gas"	.....	....	....	.....	.....	December
Cheyenne County									
Rueb South	36- 3S-42W	No. 1 Liebrandt	Lansing	4,445	7	23	5,031	1959	October
Comanche County									
Robbins Ranch	23-31S-16W	No. 1 Robbins	Mississippian	4,915	....	....	538,864 M cfg	1953	October
Cowley County									
Guthrie	30-33S- 8E	No. 1 Guthrie	"Bartlesville"	.....	....	....	Gas	1936	December
Peck	9-35S- 4E	No. 1 Peck	"Bartlesville"	.....	....	....	935	1958	October
Rahn Northeast	27-33S- 6E	No. 1 Fry	"Bartlesville"	.....	....	....	71,193	1949	October
Walnut Bend North	36-33S- 4E	No. 1 Mueller	Mississippian	3,188	8	....	187	1956	October
Decatur County									
Oberlin	35- 2S-29W	No. 1 Torluemke	Lans.-K.C.	.....	....	....	Oil	1964	November
Dickinson County									
Bonaccord	30-14S- 1E	No. 1 Miller	"Burgess"	2,483	2	....	44,108	1943	October

TABLE 7.—Fields abandoned in Kansas during 1964 (continued).

County, field and location of discovery well		Discovery well	Producing zone: Name	Depth, ft	Thickness, ft	Aver. gravity	Cumulative* production, bbl	Year discovered	Month abandoned
Edwards County									
Gard	16-25S-20W	No. 1 Dora-Gard	Mississippian	.....	....	....	.....	1964	August
McCarty	31-25S-17W	No. 1 McCarty	Penn. congl.	4,528	....	....	312,798 M cfg	1954	October
Wokaty	25-25S-17W	No. 1 Wokaty	Penn. congl.	4,390	....	....	79,504 M cfg	1954	October
Ellis County									
Emmeram Townsite	6-13S-16W	No. 1 Windholz	Lans.-K.C.	3,291	....	32	35,410	1952	October
			Arbuckle	3,520	10	....			
Engel West	33-14S-18W	No. 1 Engel	Lans.-K.C.	3,368	4	40	1,980	1956	October
Gasaway	2-11S-19W	No. 1 Herrman	Topeka	3,079	8	....	2,327	1958	October
Gottschalk	36-15S-18W	No. 1 Gottschalk	Lans.-K.C.	3,251	7	....	4,204	1957	October
Herbert North	18-13S-20W	No. 1 Nicholson "B"	Lans.-K.C.	3,470	7	36	1,651	1960	October
Hertel Southwest	17-14S-16W	No. 1 Rohleder	Lans.-K.C.	3,215	4	38	16,501	1952	October
Jacob	6-11S-19W	No. 1 Keller	Lans.-K.C.	3,542	4	23	16,946	1951	October
Pleasant Southeast	12-14S-20W	No. 1 Weigel	Arbuckle	3,771	6	....	none	1960	October
Scurlock	20-15S-16W	No. 1 Scurlock	Penn. congl.	3,431	5	33	6,418	1957	October
Staab	23-12S-20W	No. 1 Staab "A"	Lansing	3,523	2	....	none	1963	February
			Marmaton	3,803	6	....			
			Penn. congl.	3,843	2	....			
Sunnydale	1-14S-20W	No. 1 Hertel	Arbuckle	3,850	....	....	5,570	1952	October
Toulon Southeast	11-14S-17W	No. 1 Lang	Lansing	3,348	4	36	43	1958	October
Windholz	32-12S-16W	No. 1 Windholz "C"	Lans.-K.C.	3,348	5	37	3,835	1957	October
Ellsworth County									
Satran	5-14S- 9W	No. 1 Satran	Herrington	1,276	....	....	none	1932	October
Finney County									
Beyer	24-26S-33W	No. 1 Beyer	Lans.-K.C.	4,398	8	36	23,340	1952	October
Sonderegger	21-22S-31W	No. 1 Sonderegger	Mississippian	4,737	....	29	6,543	1952	October
Ford County									
Konda	11-27S-22W	No. 1 Anna Konda	Mississippian	5,010	32	36	6,010	1956	October
Gove County									
Grinnell	16-12S-30W	No. 1 Wilson	Mississippian	4,489	6	35	1,439	1959	October
Graham County									
Brassfield South	2-10S-22W	No. 2 Collison "A"	Lans.-K.C.	3,764	5	39	880	1958	October
Fargo West	34- 9S-22W	No. 2 Walker-Russell	Lans.-K.C.	3,755	....	....	4,540	1951	October
Mildrexter	12- 9S-23W	No. 1 Mildrexter "A"	Lans.-K.C.	3,814	2	38	75,259	1955	October
Mitchell	20- 9S-24W	No. 1 Mitchell	Lansing	4,053	3	....	1,212	1958	October

Greenwood County									
Ferrell North	15-28S- 8E	No. 1 Youngmeyer	Mississippian	.....	...	...	.....	1944	December
Toronto§	16-26S-13E	.....	"Peru"	1,000	....	....	.....	1913	November
		.....	"Bartlesville"	1,700	....	....	.....	.....	.....
Hodgeman County									
Goebel	14-21S-24W	No. 1 Goebel	Mississippian	4,420	5	37	5,591	1959	October
Jackson County									
Soldier	35- 6S-13E	No. 1 Johnson	"Hunton"	.....	....	....	.....	1964	June
			Viola	.....	....	....	.....		
Kiowa County									
Mullinville	11-28S-20W	No. 1 McKinley	Mississippian	4,890	8	38	32,040	1955	November
Nichols South	8-30S-18W	No. 1 Parkin	Mississippian	4,994	....	....	none	1959	November
Soldier Creek	24-29S-16W	No. 1 Piester	Cherokee	4,596	4	....	42,954	1955	November
			Mississippian	4,598	10	42			
McPherson County									
Battle Hill	24-18S- 1W	No. 1 Crowther	"Chat"	2,825	10	36	52,854	1945	November
Gottland	3-18S- 3W	No. 1 Finney	Simpson	3,634	10	29	463	1959	November
Graber East	15-21S- 1W	No. 1 Unruh	"Hunton"	3,403	6	38	none	1961	November
Groveland	10-20S- 4W	No. 1 T. L. Fleming	Viola	3,728	8	38	17,473	1953	November
Meade County									
Stevens West	6-33S-30W	No. 1 A. J. Collingwood	Morrowan	5,596	....	....	none	1957	November
Morton County									
Reyer	17-32S-43W	No. 1 Drever	Marmaton	3,993	....	....	45,553 M cfg	1957	November
Nemaha County									
Sabetha	13- 2S-14E	No. 1 Oreon Strahm	"Hunton"	.....	....	....	.....	1950	December
Neosho County									
Hertha	?-29S-19E	.....	.....	.....	....	....	.....	.....	December
Osborne County									
Worley	4-11S-15W	No. 1 Worley	Lans.-K.C.	.....	....	....	1,643	1955	November
Pawnee County									
Evers South	12-22S-16W	No. 1 C. Boyd	Arbuckle	3,920	....	....	15,446 M cfg	1956	November
Zook	16-23S-16W	No. 1 Smith	Simpson	4,028	....	....	7,016	1942	November
			Arbuckle	4,066	....	....			
Phillips County									
Bow Creek	25- 5S-18W	No. 1 Donaldson	Lans.-K.C.	3,111	53	40	85,736	1939	November
Glenwood	21- 1S-17W	No. 1 Rolland	Lans.-K.C.	3,597	21	37	31,705	1951	November
Pratt County									
Coats North	12-29S-14W	No. 1 Shriver Estate	Marmaton	4,342	10	28	108,314	1954	November
			Simpson	4,584	16	....			
Ludwick	4-29S-13W	No. 1 Ludwick	Simpson	4,490	27	39	39,310	1944	November
Ward	11-26S-12W	No. 1 Ward "B"	Viola	4,129	....	....	none	1941	November

TABLE 7.—Fields abandoned in Kansas during 1964 (concluded).

County, field and location of discovery well		Discovery well	Producing zone: Name	Depth, ft	Thickness, ft	Aver. gravity	Cumulative* production, bbl	Year discovered	Month abandoned
Reno County									
Yoder	34-24S- 5W	No. 1 Miller	"Chat"	3,402	....	....	93,285	1935	November
			"Chat"	3,450	51	35			
Rice County									
Ponce Southeast	27-21S- 7W	No. 1 Howe	Mississippian	3,414	18	37	1,365	1959	November
Rooks County									
Berland Southeast	29-10S-19W	No. 1 Dick	Arbuckle	3,755	5	26	87,367	1953	November
Brungardt Northwest	34-10S-17W	No. 1 Brumitt	Penn. congl.	3,441	2	....	15,693	1953	November
			Arbuckle	3,477	7	30			
McClellan	9- 9S-19W	No. 1 McClellan	Lans.-K.C.	3,343	5	34	73,742	1945	November
Marc	18- 9S-19W	No. 1 Marcotte	Lans.-K.C.	3,370	8	37	22,339	1948	November
Palco Townsite	20- 9S-20W	No. 1 Neil	Arbuckle	3,847	15	29	47,826	1945	November
Ray Southeast	9- 6S-20W	No. 1 Steele	Reagan	3,600	6	38	87,180	1942	November
Vohs Southeast	24-10S-19W	No. 1 Whisman	Lansing	3,200	....	....	1,703	1959	November
Rush County									
Ryan East	36-19S-16W	No. 1 Peterson	Arbuckle	3,648	....	....	.....	1954	November
Saline County									
Ash Grove West	12-15S- 1W	No. 1 Robson	"Burgess"	2,618	8	....	none	1959	November
Sedgwick County									
Bentley	19-25S- 1W	No. 1 Jones	Kansas City	2,866	24	....	22,250	1934	November
Gladys South	5-29S- 1E	No. 1 Howell	Mississippian	3,194	16	....	74,499 M cfg	1955	November
							10,131		
Kechi	6-26S- 2E	No. 1 Swanson	"Burgess"	3,069	2	....	34,321	1929	November
Petrie Northwest	25-26S- 1W	No. 2 Petrie	Viola	3,445	2	....	42,135	1951	November
Schulte	7-28S- 1W	No. 1 Jordan	Mississippian	3,349	....	45	1,287,655 M cfg	1934	November
			Simpson	3,658	....	....	199,626		
Ulmer	28-25S- 2E	No. 1 J. Ulmer	"Burgess"	2,908	10	....	none	1959	November
Sheridan County									
Studley South	27- 8S-26W	No. 1 Pratt Estate	Lansing	3,746	2	27	2,087	1959	November
Studley Southwest	32- 8S-26W	No. 1 Hoxie	Lans.-K.C.	3,758	26	37	120,491	1945	November
Wessel	27- 6S-29W	No. 1 Wessel	Lans.-K.C.	3,985	4	38	115,562	1953	November
Stafford County									
Besthorn	9-22S-13W	No. 1 Southern Besthorn	Lansing	3,574	8	....	none	1956	November
Brock	12-23S-12W	No. 1 Brock	Lans.-K.C.	3,366	14	....	437,146	1944	November
			Arbuckle	3,680	4	20			

Cline South	36-24S-13W	No. 1 Winchester	"Kinderhook"	3,913	9	....	none	1961	November
St. John East	24-24S-13W	No. 1 McCune	Lansing	3,543	6	....	3,625	1959	November
Taylorville	29-25S-12W	No. 1 Wendelburg	Viola	4,006	15	37	28,763	1953	November
Taylor West	16-21S-14W	No. 1 Laudick	Simpson	3,704	4	32	4,400	1959	November
Waters East	33-24S-14W	No. 1 Waters	Lansing	3,683	4	36	952	1959	November
Stevens County									
Grigsby	4-31S-36W	No. 1 Grigsby	Morrowan	5,360	....	....	68,629 M cfg	1962	January
Sumner County									
Beatie	21-31S- 2W	No. 1 Beatie	Simpson	4,189	3	....	18,381	1956	November
Caldwell Northwest	8-35S- 3W	No. 1 Seltzer	Simpson	4,835	20	39	61,790	1952	November
Metz	7-32S- 2E	No. 1 Metz	Simpson	3,735	6	37	56,080	1951	November
			Arbuckle	3,773	4	....			
Padgett West	21-34S- 2E	No. 1 Hills	"Layton"	2,829	8	34	9,584	1954	November
			Mississippian	3,519	....	....			
Pride	34-31S- 2W	No. 1 Fuqua	.....	.....	....	....	.....	1958	November
Trego County									
Adair	21-12S-21W	No. 1 Baugher	Marmaton	3,879	5	37	23,162	1953	November
Ogallah Northwest	21-12S-22W	No. 1 Benson	Lans.-K.C.	3,724	3	38	15,893	1957	November
Sunny Slope Northwest	21-14S-21W	No. 1 Switzer	Penn. congl.	3,944	5	....	2,052	1958	November

Data represent the official action of the Kansas Geological Society's Nomenclature Committee during 1964.
* Cumulative figures represent field totals and do not reflect production by individual zones.
† Rolling Green field, abandoned November 4, 1964, was revived December 2, 1964, for combination with Shaeffer-Rothgarn.
‡ Womack field was abandoned in May, 1964, and revived in June, 1964.
§ Toronto field extends into Woodson County.

TABLE 8.—Fields combined in Kansas during 1964.

County and name of field combined	Discovery well location	Prod. area, acres	Producing zone: Name	Depth, ft	Thickness, ft	Year of discovery	Cumulative production, bbl	Month of combination	Combined as part of
Barber County									
Salt Fork*	11-35S-15W	700	Mississippian	4,955	....	1954	38,383	September	Aetna Gas Area
Barton County									
Clarence Northwest	35-19S-15W	160	Lansing	3,394	8	1954	164,192	February	Clarence
			Precambrian	3,531	12				
Clarence South	2-20S-15W	.....	Penn. congl.	.....	....	1954	gas	February	Clarence
Redwing East	33-17S-12W	380	Lans.-K.C.	3,120	5	1955	530,259	March	Redwing
			Arbuckle	3,352	2				
Redwing Southeast	8-18S-12W	400	Lans.-K.C.	3,090	20	1960	121,036	March	Redwing
			Arbuckle	3,350	4				
Redwing Southwest	1-18S-13W	180	Lans.-K.C.	3,080	12	1959	85,865	March	Redwing
			Arbuckle	3,327	3				
Rolling Green	36-20S-13W	80	Lansing	3,238	8	1960	54,286	December	Shaeffer-Rothgarn†
Shaeffer Northeast†	35-20S-13W	480	Lans.-K.C.	3,259	5	1960	323,792	December	Shaeffer-Rothgarn†
			Arbuckle	3,525	18				
Ellis County									
Sessin West	16-11S-19W	.....	Arbuckle	3,526	3	1964	.....	November	Sessin
Zimm	23-13S-20W	.....	Lansing	3,522	19	1959	7,048	November	Irvin
Kingman County									
Bolinger	29-28S- 5W	240	Mississippian	3,897	2	1957	263,581	September	Broadway
Rosedale East	34-29S- 6W	80	Lans.-K.C.	3,274	4	1963	4,967	March	Rosedale Northeast
Morton County									
Kinsler Southeast	12-32S-40W	120	Morrowan	5,504	....	1960	3,403 + gas	August	Kinsler
Shrauner	18-35S-42W	.....	Morrowan	4,312	4	1960	oil	April	Elkhart
Rice County									
Le Clerc	12-19S- 8W	80	Arbuckle	3,298	....	1963	2,883	October	Geneseo-Edwards‡
Russell County									
Brundage	9-12S-15W	1,000	Lans.-K.C.	2,852	4	1957	694,692	February	Fairport§
			Arbuckle	3,136	4				
Brundage South	16-12S-15W	120	Lansing	2,971	5	1958	115,391	February	Fairport§
			Arbuckle	3,240	6				
Reich South	32-12S-15W	40	Lansing	3,031	6	1959	9,481	December	Fairport§
Stafford County									
Grow	16-21S-13W	400	Lans.-K.C.	3,463	7	1949	647,404	December	Shaeffer-Rothgarn†
			Arbuckle	3,705	....				
Prairie Home South	11-21S-13W	.....	Lans.-K.C.	3,395	3	1953	25,713	December	Shaeffer-Rothgarn†

Rothgarn	10-21S-13W	700	Lans.-K.C.	3,369	....	1943	538,258	December	Shaeffer-Rothgarn†
			Arbuckle	3,569	5				
Shaeffer	3-21S-13W	680	Lans.-K.C.	3,404	....	1941	1,193,231	December	Shaeffer-Rothgarn†
			Penn. congl.	3,519	....				
			Simpson	3,536	....				
			Arbuckle	3,546	4				
Wilson County									
Buffalo‖	27S-16E	2,100	"Bartlesville"	1,025	....	1924	.....	June	Buffalo-Vilas‖
			Cherokee	1,150	....				
Vilas	27S-17E	280	"Bartlesville"	1,000	....	1905	.....	June	Buffalo-Vilas‖

Data represent the official action of the Kansas Geological Society's Nomenclature Committee during 1964.
• Portion of Salt Fork deleted and combined into Aetna Gas Area.
† Shaeffer-Rothgarn and Shaeffer Northeast fields are in Barton and Russell counties.
‡ Geneseo-Edwards field is in Ellsworth and Rice counties.
§ Fairport field is in Ellis and Russell counties.
‖ Buffalo and Buffalo-Vilas fields are in Wilson and Woodson counties.

TABLE 9.—Crude oil price changes in the Midcontinent area, 1947-1964.

Date		Oklahoma Kansas 36-36.9° gravity, $/bbl
1947	March 10	$1.87
	October 15	2.07
	December 6	2.57
1951	Frozen at Jan. 25 level	2.57
1953	June 15	2.82
1957	January 3	3.07
1958	October 3	2.93
	October 3	3.00
1959	February 20	2.97
1960	No changes	.....
1961	No changes	.....
1962	No changes	.....
1963	No changes	.....
1964	April 15	2.92

From *World Oil*, February 15, 1965.

TABLE 10.—Ten leading oil-producing counties in Kansas, 1963-1964.

County	Production, bbl		Rank	
	1963	1964	1963	1964
Russell	8,469,460	9,114,640	3	1
Ellis	9,494,856	9,095,135	1	2
Barton	8,646,420	8,099,398	2	3
Rice	5,387,084	6,332,815	6	4
Butler	6,538,780	5,978,199	4	5
Graham	5,240,344	5,196,573	8	6
Rooks	5,566,097	5,160,994	5	7
Stafford	5,329,999	5,090,741	7	8
Kingman	3,957,826	3,733,402	9	9
Cowley	3,794,917	3,358,023	10	10

TABLE 11.—Counties in Kansas having cumulative production of 50 million barrels or more of oil to end of 1964 (based on recorded and estimated production).

County	Cumulative production, bbl		Rank	
	1963	1964	1963	1964
Butler	466,576,013	472,554,212	1	1
Barton	370,197,564*	378,296,962	2	2
Russell	339,389,508	348,504,156	3	3
Ellis	267,793,998*	276,876,665	4	4
Rice	244,453,237*	251,110,261	6	5
Greenwood	244,691,243	247,879,655	5	6
Stafford	161,424,191	166,425,694	7	7
McPherson	160,747,931	163,250,544	8	8
Cowley	116,191,811	119,549,834	9	9
Rooks	108,268,844*	113,183,385	10	10
Ellsworth	100,510,590	101,724,299	11	11
Sumner	85,184,970	87,850,755	12	12
Graham	80,124,865	85,321,438	13	13
Sedgwick	79,709,197	82,163,597	14	14
Reno	67,485,931	68,681,464	15	15
Marion	54,580,135	55,956,494	16	16
Chautauqua	53,086,717	53,861,199	17	17
Pratt	52,468,600	53,731,037	18	18

* Corrected figure.

TABLE 12.—Barrels of oil produced, imported, refined, and exported in Kansas, 1963 and 1964.

	1963	1964
Produced	109,063,298	106,252,025
Imported	42,038,689	40,575,900
Totals	151,101,987	146,827,925
Exported	38,074,169	35,950,660
Crude oil refined	113,027,818	110,877,265
Totals	151,101,987	146,827,925

Data from the Oil and Gas Conservation Division, State Corporation Commission of Kansas.

TABLE 13.—Leading oil fields (annual production) in Kansas, 1963-1964.*

Field	Year discovered	County	Annual production, bbl		Rank	
			1963	1964	1963	1964
Bemis-Shutts	1935	Ellis Rooks	3,750,485	3,567,325	1	1
Spivey-Grabs-Basil	1949	Harper Kingman	3,648,105	3,399,517	2	2
Hall-Gurney	1931	Barton Russell	3,204,476	3,327,854	4	3
El Dorado	1915	Butler	3,555,758	3,141,303	3	4
Chase-Silica	1931	Barton Rice Stafford	2,813,629	2,964,368	6	5
Trapp	1936	Barton Russell	2,874,552	2,950,547	5	6
Kraft-Prusa	1937	Barton Ellsworth	2,085,083	2,031,408	7	7

* Fields producing more than 2 million barrels during 1964.

TABLE 14.—Capacities of Kansas refineries, 1964.

Company and location	County	Nearest town	Crude capacity b/cd	Crude capacity b/sd	Charge, bbl/stream day: Vacuum distillation	Thermal operations	Catalytic cracking: Fresh feed	Catalytic cracking: Recycle	Catalytic reforming	Hydrogen treating: unit	Hydrogen treating: feed	Production, bbl/stream day: Alkylation	Polymerization	Lubes	Coke (tons)	Asphalt
American Oil Co.																
19-30S-16E	Wilson	Neodesha	30,600	32,000	.....	.....	10,000	1,000	7,200	7,200	SR naph.	1,600	.....	.....	.....	.....
American Petrofina Co. of Texas																
27-25S- 5E	Butler	El Dorado	21,400	22,500	9,000	.....	8,000	4,000	2,800	.....	.....	.....	450	.....	.....	2,800
Apco Oil Corp.																
34-34S- 4E	Cowley	Arkansas City	25,000	26,000	5,000	.....	7,500	4,800	5,000	.....	.....	2,200	.....	.....	.....	1,300
Century Refining Co.																
13-20S-33W	Scott	Shallow Water	5,700	6,000	2,000	.....	3,000	3,000	.....	.....	.....	800	.....	.....	.....	900
The Chanute Refining Co.																
32-27S-18E	Neosho	Chanute	(This plant is now manufacturing waxes.)													
Cooperative Refinery Assoc.																
22- 3S-18W	Phillips	Phillipsburg	13,000	14,000	4,500	.....	5,000	4,500	2,500	3,500	SR naph.	1,570	.....	.....	.....	1,975
25-34S-16E	Montgomery	Coffeyville	25,000	27,000	6,000	8,000	10,000	10,000	4,500	3,000	Mid. dist	1,500	500	1,500	250	1,200
Derby Refining Co.																
4-27S- 1E	Sedgwick	Wichita	21,500	23,000	7,600	3,500	8,700	3,800	2,800	4,000	SR naph.	2,000	600	.....	150	.....
Mid-America Refining Co.																
17-27S-18E	Neosho	Chanute	2,800	3,000	1,600	1,250	.....	.....	.....	.....	.....	.....	.....	.....	.....	500
Mobil Oil Co.																
27-27S- 4E	Butler	Augusta	45,000	47,000	16,000	4,100	18,500	4,500	10,500	.....	.....	2,400	.....	.....	.....	7,000
National Coop. Refinery Assoc.																
5-20S- 3W	McPherson	McPherson	31,000	33,000	.....	2,000 12,000	12,000	6,000	5,000	8,000	SR naph.	2,300	1,000	.....	400	.....
Phillips Petroleum Co.																
34-10S-25E	Wyandotte	Kansas City	70,000	NR	15,000	.....	29,000	19,000	16,000	.....	.....	6,600	.....	2,500	.....	2,400
Skelly Oil Co.																
10-26S- 5E	Butler	El Dorado	47,000	49,000	24,000	8,500	20,500	14,500	15,000	10,000 4,800	SR naph.	6,600	.....	.....	500	3,000
Vickers Refining Co.																
29-24S- 4E	Butler	Potwin	15,000	NR	5,000	2,800	6,000	1,000	3,000	3,000	SR naph.	.....	1,200	.....	.....	.....
Totals			353,000	371,975*	95,700	42,150	138,200	76,100	74,300	43,500		27,570	3,750	4,000	1,300	20,700

Data from *Oil and Gas Journal*, April 5, 1965, with modifications.
* Total includes calendar-day figures converted to stream-day basis.

TABLE 15.—Repressuring applications approved in Kansas during 1964.

County	Location	Name of Company
Allen	10-26S-19E	Avjay Oil Co., Ltd.
do	20-26S-19E	do
do	32-26S-21E	Walter Duncan
do	28-25S-21E	International Oil & Gas Corp.
do	29-26S-21E	do
do	7-25S-20E	Sun Oil Co.
Anderson	34-21S-19E	J. W. Peery
do	9-22S-19E	James E. Russell
do	22-22S-19E	do
do	27-21S-19E	Welda Recover., Inc
Barber	22-30S-15W	Aylward Dr.
do	8-33S-15W	Sunray DX Oil Co.
Barton	23-19S-12W	Aladdin Petrol. Corp.
do	8-16S-12W	Franco Western Oil Co
do	3-19S-11W	Graybol Oil Corp.
do	2-19S-11W	C. L. Hanes
do	30-19S-12W	W. L. Hartman
do	2-19S-12W	Inger Oil Co.
do	2-16S-13W	K & E Drlg., Inc.
do	1-20S-11W	Simon Lebow Corp.
do	11-19S-12W	Monsanto Chemical Co.
do	17-16S-11W	Nat'l. Coop. Refn. Assn
do	22-16S-12W	do
do	24-19S-11W	do
do	2-16S-14W	Shell Oil Co.
do	34-16S-12W	Shields Oil Prod., Inc.
do	16-17S-13W	Thunderbird Drlg., Inc.
do	30-18S-11W	do
Butler	35-27S- 4E	Economy Drlg. Co.
do	16-29S- 4E	L. W. Ewalt
do	36-24S- 3E	Goering-Hedrick
do	31-24S- 4E	do
do	8-27S- 7E	Rex & Morris Drlg. Co.
do	17-25S- 5E	Texaco, Inc.
do	2-25S- 3E	Robert F. White
Chautauqua	6-35S-12E	Walter E. Darnall
do	18-32S-13E	R. L. Orr
do	29-33S-12E	Raven Oil Co.
do	6-34S-12E	do
Coffey	12-23S-16E	Leland E. Bartlett, *et al.*
Cowley	34-31S- 4E	Gralapp & Everly
do	21-33S- 4E	Moran Oil Co.
do	31-30S- 6E	Texaco, Inc.
do	30-30S- 4E	Trees Oil Co., James A. Lewis, *et al.*
do	4-32S- 4E	Earl F. Wakefield
Crawford	2-28S-23E	Walter Duncan and Tenneco Oil Co.
do	19-30S-22E	High Crest Oils, Inc.
do	6-31S-22E	Eugene A. Roberts, Jr.
Decatur	21- 3S-28W	Halliburton Oil Producing Co.
Edwards	28-25S-16W	Helmerich & Payne
Elk	12-31S- 8E	Aladdin Petrol. Corp.
do	19-31S- 9E	Dale Arbuckle
Ellis	32-11S-18W	CRA, Inc.
do	4-13S-16W	do

County	Location	Name of Company
do	27-14S-16W	Davis Brothers
do	13-11S-17W	Gulf Oil Corp.
do	27-13S-20W	Imperial Oil of Kansas, Inc.
do	7-14S-16W	Jay Kornfeld
do	10-11S-19W	Okmar Oil Co.
do	1-13S-16W	Petroleum Management, Inc.
Finney	27-24S-33W	Cities Service Oil Co.
Franklin	31-15S-21E	Fred J. Williams
Graham	25- 7S-23W	Imperial Oil of Kansas, Inc.
do	5- 8S-24W	do
do	28- 8S-24W	do
do	17- 9S-23W	do
Greenwood	17-24S-12E	George A. Barnard
do	7-24S-12E	Berentz Drlg. Co.
do	7-24S-12E	Eureka Drlg. Co.
do	6-25S- 9E	K & B Producers, Inc.
do	23-25S- 8E	Melvin F. Roberts
do	6-24S-12E	Robin Supply Corp.
do	6-25S- 9E	E. W. Sauder, A & E Oil Co.
do	7-22S-12E	George E. Sauder
do	8-24S-12E	do
do	9-25S- 9E	Shallow Water Refining Co.
do	12-23S- 9E	K. E. Snyder
do	18-24S-13E	Stover & Eager
do	7-22S-12E	Dewey F. Weaver
Harvey	36-22S- 2W	Acme Oil Corp.
do	5-22S- 3W	Kantor Oil Co.
do	32-24S- 2E	Mid-Co Minerals, Inc.
Linn	8-20S-23E	Midwest Trailer & Equipment Co.
McPherson	19-17S- 3W	Millneva Oil Co.
Marion	11-19S- 3E	Oil Property Management, Inc.
do	2-19S- 3E	Rounds & Stewart
do	10-19S- 3E	do
do	16-19S- 3E	do
Miami	9-17S-25E	E. Buddrus
Montgomery	8-35S-15E	Burgess and Shertzer
do	35-34S-14E	Millneva Oil Co.
do	17-34S-14E	Shannon Brothers
do	3-31S-16E	Gordon J. Willis, *et al.*
Neosho	9-28S-19E	BDK Company
do	23-28S-20E	Deerfield Oil Corp.
do	13-28S-19E	Deerfield Oil Corp. & Artex Oil Co.
do	1-27S-18E	International Oil & Gas Corp.
do	26-28S-18E	do
do	25-28S-19E	do
Ness	36-18S-24W	Oil Property Management, Inc.
Norton	36- 3S-24W	Theodore Gore
Pratt	13-27S-13W	CRA, Inc.
do	3-26S-12W	Petroleum Management, Inc.
do	28-26S-12W	Shell Oil Co.
do	32-26S-12W	Skelly Oil Co.
do	31-26S-12W	Socony Mobil Oil Co., Inc.
Reno	9-24S- 4W	Home-Stake Production Co.
do	18-22S- 9W	Lario Oil & Gas Co.
do	11-26S- 6W	Vaughn E. Wiggins

TABLE 15.—Repressuring applications approved in Kansas during 1964 (concluded).

County	Location	Name of Company
Rice	16-20S-10W	Ben C. W. Hyde, Jr. *et al.*
do	10-18S- 9W	Isern-Wells
do	32-21S- 9W	Thunderbird Drilling, Inc.
Rooks	2- 9S-16W	Broadview Oil Co.
do	3- 9S-16W	do
do	11- 9S-16W	do
do	19- 8S-17W	Shell Oil Co.
do	9- 9S-17W	Morris Sitrin, Inc.
do	34-10S-20W	Chester Williams, Inc.
Russell	33-13S-15W	Addis, Icer
do	4-14S-15W	do
do	8-15S-13W	do
do	22-14S-13W	CRA, Inc.
do	27-15S-13W	Ray C. Fleming
do	22-14S-13W	Fred J. Haynes
do	29-12S-15W	Holland, Thompson & Holland
do	20-14S-12W	Independent Drlg. Co.
do	16-14S-13W	Louis M. Mai
do	21-14S-13W	do
do	21-14S-13W	do
do	22-14S-13W	do
do	2-14S-14W	R. P. Nixon Operations, Inc.
do	10-14S-15W	R. P. Nixon Oil Producer
do	8-12S-15W	Pan American Petr. Corp.
do	14-15S-13W	Shell Oil Co.
do	29-15S-11W	Simon Lebow Corp.
do	11-14S-14W	Texaco, Inc.
Saline	3-16S- 3W	Tom Brown Construction, Inc.
do	23-15S- 2W	Hollar Oil Co.
do	36-15S- 4W	Socony Mobil Oil Co., Inc.
do	36-15S- 4W	do
do	33-16S- 1W	F. S. Williams
Scott	23-18S-32W	Imperial Oil of Kansas, Inc.
Sedgwick	7-26S- 1E	Home-Stake Production Co.
do	3-26S- 2E	E. B. Kucera, *et al.*
Stafford	12-25S-13W	Continental Oil Co.
do	13-25S-13W	do
do	16-23S-14W	Western Petroleum Co., Inc.
Sumner	27-31S- 1W	Aladdin Petr. Corp
do	7-31S- 1W	Beardmore Drilling Co.
do	19-31S- 1W	do
do	18-31S- 3W	South Texas Development Co.
Trego	25-11S-23W	Oil Property Management, Inc.
Wilson	9-28S-15E	Brazos Oil & Gas Co.
do	16-29S-17E	International Oil & Gas Corp.
do	34-27S-15E	T. J. Johnson & R. Wood
do	16-28S-17E	Murco Production Co.
do	12-30S-15E	Gordon J. Willis
Woodson	4-24S-14E	Joseph L. Rosenberg
do	29-25S-14E	H. J. Uhl

Data from Oil and Gas Conservation Division, State Corporation Commission of Kansas.

TABLE 16.—Kansas counties producing 5 billion cubic feet or more of natural gas during 1963 and 1964.

County	Production M cu ft (14.65 psia) 1963	1964	Rank 1963	1964
Stevens	153,669,101	156,841,110	2	1
Grant	155,929,843	146,725,023	1	2
Morton	82,536,286	92,229,542	3	3
Kearny	77,069,683	88,221,740	4	4
Haskell	43,997,344	53,642,767	6	5
Finney	52,941,853	43,600,228	5	6
Barber	40,821,124	37,206,957	7	7
Stanton	21,995,914	30,751,648	10	8
Kingman	28,468,031	30,206,729	8	9
Seward	27,432,546	27,800,828	9	10
Meade	15,964,362	15,668,535	11	11
Kiowa	12,850,357	13,138,622	12	12
Hamilton	2,273,579	13,054,769	....	13
Clark	12,478,916	12,727,000	13	14
Comanche	7,491,271	8,464,053	14	15
Harper	5,755,571	6,159,896	16	16
Marion	7,308,862	5,360,656	15	17

TABLE 17.—Counties in Kansas having cumulative production of 20 billion cubic feet or more of gas to end of 1964 (based on recorded and estimated production).

County	Cumulative production M cu ft (14.65 psia) 1963	1964	Rank 1963	1964
Stevens	2,337,547,427	2,494,208,537	1	1
Grant	1,484,358,342	1,631,083,365	2	2
Kearny	1,019,260,985	1,107,482,725	3	3
Morton	933,579,000	1,025,808,542	4	4
Barber	633,705,596	670,912,553	5	5
Finney	597,253,205	640,853,433	6	6
Haskell	519,040,114	572,682,881	7	7
Seward	413,527,606	441,328,434	8	8
Stanton	262,931,386	293,683,034	9	9
Kingman	146,894,411	177,101,140	10	10
Meade	114,738,338	130,406,873	11	11
Clark	57,292,664	70,019,664	12	12
Hamilton	56,500,709	69,555,478	13	13
Kiowa	46,937,181	60,075,803	15	14
Pawnee	50,164,358	51,898,371	14	15
Harper	31,828,586	37,988,482	17	16
Rice	37,148,558	37,906,705	16	17
Pratt	30,850,377	33,349,202	18	18
Barton	28,204,014	29,688,519	19	19
Edwards	24,264,549	27,308,495	21	20
Reno	24,915,400	26,940,522	20	21
Stafford	23,832,591	26,569,128	22	22
Comanche	17,266,723	25,730,776	....	23

TABLE 18.—Consumption of marketed natural gas in Kansas during 1964.

Use	No. of Customers	Value (cents/Mcf)	Amount Used (Mcf)
Residential	563,000	57.2	86,049,000
Commercial	51,000	41.4	37,412,000
Industrial	.....	22.7	309,968,000
Total		31.1 aver.	433,429,000

Source: U.S. Bureau of Mines.

TABLE 19.—Underground natural gas storage areas in Kansas, 1964.

Company and field or area	Township and range	County	Capacity, M cu ft			Zone
			Working gas	Cushion gas	Total reservoir	
Arkansas Louisiana Gas Corp.						
Collinson	34S- 3E	Cowley	1,130,000	440,000	1,570,000	.....
Cities Service Gas Co.						
Alden	21S- 9W	Rice	4,915,000	9,609,000	14,524,000	"Misener"
Boyer	26S- 5E	Butler	385,000	617,000	1,003,000	Wabaunsee
Colony	22, 23S-19E	Anderson	4,078,000	4,970,000	9,048,000	"Colony"
Craig	13S-23E	Johnson	1,532,000	4,442,000	5,973,000	"Bush City"
Elk City	31, 32S-13, 14E	Montgomery and Elk	9,831,000	9,831,000	19,662,000	"Burgess"
McLouth	9, 10S-19, 20, 21E	Jefferson and Leavenworth	5,124,000	7,571,000	12,695,000	"Bartlesville"
Piqua	24, 25S-17E	Allen and Woodson	1,525,000	1,651,000	3,175,000	"Colony"
Welda North	21S-19E	Anderson	4,446,000	5,407,000	9,852,000	"Colony"
Welda South	22S-19E	Anderson	5,223,000	6,366,000	11,590,000	"Colony"
Kansas-Nebraska Natural Gas Co.						
Adolph	20S-15W	Barton	1,460,000	3,445,000	5,045,000	Arbuckle
Union Gas System, Inc.						
Buffalo	27S-16E	Wilson				Iola
Fredonia	29S-19E	Wilson				"Layton"
Liberty North	33S-17E	Montgomery	2,833,000	3,440,000	8,205,000	"Squirrel"
Liberty South	34S-17E	Montgomery				"Squirrel"
Longton	32S-12E	Chautauqua				"Layton"
Totals			42,482,000	57,789,000	102,342,000	

From Bizal, R. B., *Oil and Gas Journal*, May 3, 1965, with modifications.

TABLE 20.—Natural gas production from Kansas part of Hugoton Gas Area, 1955-1964.

Year	M cu ft gas (14.65 psia)	Year	M cu ft gas (14.65 psia)
1955	394,257,153	1960	451,820,153
1956	381,874,779	1961	467,842,078
1957	396,889,199	1962	518,069,603
1958	349,263,723	1963	556,067,168
1959	404,764,021	1964	567,988,557

TABLE 21.—Annual and cumulative natural gas production* by county, Hugoton Gas Area.

County	Cumulative production to end of 1963	1964 production	Cumulative production to end of 1964
Stevens	2,326,907,728	153,493,898	2,480,401,626
Grant	1,482,755,046	144,683,430	1,627,438,476
Kearny	1,019,260,985	88,221,740	1,107,482,725
Haskell	508,481,716	50,276,991	558,758,707
Finney	597,107,130	43,600,228	640,707,358
Morton	442,041,396	33,014,613	475,056,009
Stanton	233,939,213	28,632,228	262,571,441
Seward	341,528,847	19,466,796	360,995,643
Hamilton	56,257,843	6,598,633	62,856,476
Totals	7,008,279,904	567,988,557	7,576,268,461

* M cu ft @ base 14.65 psia @ 60°F.

TABLE 22.—Average natural gas analysis from Chase pay zone, Hugoton Gas Area.

Component	Analysis (percent)
Methane	72.5
Ethane	5.7
Propane	3.1
Normal butane	1.0
Isobutane	0.4
Normal pentane	0.2
Isopentane	0.2
Hexane+	0.1
Nitrogen	16.3
Helium	0.5
Hydrogen sulfide	T
Carbon dioxide	T
	100.0
Heating value*	985

Based on ten pipeline samples taken late in 1964 and early 1965 by four major pipeline companies.

* Calculated gross BTU per cu ft, dry, @ 60°F and 30 inches Hg.

TABLE 23.—Natural gasoline and helium plant survey: plant capacities* and production in Kansas, 1964.

Company and plant	Sec., T., R.	County	Nearest town	Capacity million cu ft/day	Through-put million cu ft/day	Process method	Production—gal/day						Production of natural gasoline and allied products (bbl)†
							Propane	Isobutane	Normal butane	LPG mix	Natural gasoline	Debutanized natural gasoline	
Anadarko Production Co.													
Cimarron River plant	26-33S-32W	Seward	Liberal	10.0	10.1	Refr.-abs.	.....	.....	.....	.....	5,560	.....	52,492
Interstate plant	29-34S-43W	Morton	Elkhart	6.0	5.2	Refr.-abs.	.....	.....	.....	.....	7,190	.....	64,744
Brunson & Spines (Independent Lease Management Co.)	23-18S-16W	Rush	Otis	.....	.....	.....	(not reported)				.....	.....	.....
Cities Service Helex, Inc.													
Jayhawk plant	2-29S-35W	Grant	Ulysses	507.0	450.0	Refr.-abs.	(helium production 2 MMcfd)				.....	.....	.....
Cities Service Oil Co.													
Hutchinson fractionator	22-23S- 6W	Reno	Hutchinson	.....	.....	.....	122,000	17,000	28,000	.....	.....	10,000	2,418,180
Wilburton plant‡	33-34S-41W	Morton	Wilburton	5.0	0.4	Refr.	.....	.....	.....	.....	1,000	.....	.....
Wichita plant	17-28S- 1E	Sedgwick	Wichita	125.0	120.0	Abs.	36,000	15,000	40,000	.....	31,000	.....	1,052,037
Colorado Interstate Gas Co.	29-24S-36W	Kearny	Lakin	215.0	71.0	Abs.	.....	.....	.....	.....	10,350	.....	91,081
Hugoton Production Co.	3-30S-37W	Grant	Ulysses	90.0	78.0	Abs.	20,160	22,295	.....	.....	18,345	.....	525,296
Kansas Hydrocarbons Co.													
Burrton plant	16-23S- 3W	Harvey	Burrton	3.0	2.5	Refr.	.....	.....	.....	.....	1,800	.....	11,929
Cheney plant	33-27S- 5W	Kingman	Cheney	28.0	24.0	Refr.-abs.	7,000	.....	5,000	.....	9,000	.....	179,579
Kansas-Nebraska Natural Gas Co., Inc.	4-24S-35W	Kearny	Deerfield	125.0	90.0	Abs.	2,510	.....	1,435	1,435	.....	12,195	134,157
Kansas Ref'd. Helium Corp.	35-17S-16W	Rush	Otis	.....	.....	.....	(plant under construction)				.....	.....	.....
Mobil Oil Co.													
Hickok plant	31-28S-35W	Grant	Hickok	134.0	135.0	Abs.	26,000	.....	8,000	.....	.....	38,000	700,491
Spivey plant	5-31S- 8W	Harper	Spivey	70.0	60.0	Abs.	27,000	.....	13,000	.....	.....	31,000	687,514
National Helium Corp.§	23-33S-32W	Seward	Liberal	850.0	NR	Refr.	60,000‖	.....	120,000‖	.....	.....	130,000‖	2,568,619
(Helium plant, in conjunction with above)	23-33S-32W	Seward	Liberal	.....	.....	Refr.	(helium capacity is 1 billion cu ft/yr)					.....	.....
Northern Gas Products Co.#	31-17S- 9W	Ellsworth	Bushton	896.0	805.0	Refr.-abs.	536,500	60,800	148,000	.....	61,600	.....	7,288,095
Northern Helex Co.	31-17S- 9W	Ellsworth	Bushton	476.0	282.0	Refr.	(helium production 1,183 Mcfd)				.....	.....	.....
Northern Natural Gas Co.													
Holcomb plant	3-24S-34W	Finney	Holcomb	185.0	192.0	Refr.	.....	.....	.....	.....	15,880	.....	138,796
Sublette plant	1-32S-33W	Seward	Sublette	325.0	253.0	Abs.	.....	.....	.....	.....	41,540	.....	358,709
Pan American Petroleum Corp.													
Ulysses plant	5-29S-38W	Grant	Ulysses	325.0**	286.0	Refr.-abs.	73,000	22,000	88,000	.....	.....	80,000	2,088,200
Kinsler plant	10-30S-37W	Grant	Ulysses	20.0	8.3	Refr.-abs.	.....	.....	.....	.....	11,000	.....	60,000

TABLE 23.—Natural gasoline and helium plant survey: plant capacities* and production in Kansas, 1964 (concluded).

Company and plant	Sec., T., R.	County	Nearest town	Capacity million cu ft/day	Through-put million cu ft/day	Process method	Production—gal/day					Debutanized natural gasoline	Production of natural gasoline and allied products (bbl.)†
							Propane	Isobutane	Normal butane	LPG mix	Natural gasoline		
Panhandle Eastern Pipeline Co.				.....	.....	.....	(see Anadarko Production Co. and National Helium Corp.)						
Rounds & Stewart Natural Gasoline Co., Inc.	2-19S-3E	Marion	Marion	30.0	17.0	Refr.-abs.	24,480	4,590	10,350	.....	13,185	.....	437,267
Skelly Oil Co.											9,000	.....	113,999
Minneola plant	13-29S-25W	Ford	Dodge City	25.0	NR	Refr.-abs.	6,000	.....	.....	.....	9,000	.....	141,920
Medicine Lodge plant	13-32S-12W	Barber	Medicine Lodge	60.0	NR	Abs.	8,000	.....	.....	.....			
U.S. Bureau of Mines							(helium production 126 Mcfd)						
Otis plant	1-18S-16W	Rush	Otis	15.0	12.0	Refr.	936,650	141,785	437,785	1,435	245,450	275,195	19,113,105
Totals††				4,525.0	3,649.5								
Daily average production for year 1964									52,509 barrels				
Daily average production for year 1963									38,460 barrels				
Daily average production for year 1962									19,614 barrels				

* Data on capacities from Robert B. Bizal, Editorial Research Director, *Oil and Gas Journal*, March 29, 1965; modified for this bulletin.

† Production information was obtained from the Oil and Gas Conservation Division, State Corporation Commission of Kansas. Figure represents 42-gallon barrels.

‡ Began operation during 1964.

§ Panhandle Eastern Pipe Line Company and National Distillers and Chemical Corporation.

|| Capacity. Throughput figures not available.

Subsidiary of Northern Natural Gas Company.

** Summer capacity is 257 MMcfd.

†† To arrive at more accurate totals, throughput and production are estimated at 80% of capacity when figures were not reported.

TABLE 24.—Underground LPG storage areas and capacities in Kansas, 1964.

Company	Sec., T., R.	County	Nearest town	Capacity (bbl)	Product
Cities Service Oil Co.	22-23S- 6W	Reno	Hutchinson		
Salt layer (5 caverns)				400,000	Butane
Salt layer (17 caverns, including 7 new ones)				1,105,000	Propane
Salt layer (3 caverns nearing completion)				195,000	Propane
Salt layer (2 caverns)				130,000	Crude NGL
Salt layer (2 caverns, including 1 new one)				130,000	Isobutane
Salt layer (new)				65,000	Gasoline
Mid-America Pipeline Co.	24-19S- 5W	McPherson	Conway		
Salt layer (7 caverns)				1,000,000	Propane
Salt layer (new enlargement)				200,000	Propane
Salt layer (2 caverns)				72,000	Isobutane
Salt layer				44,000	Butane
Salt layer (2 caverns)				117,000	Natural gasoline
National Coop. Refinery Assoc.	29-19S- 4W	McPherson	Conway		
Salt layer (7 caverns)				350,000	Butane
Salt layer (23 caverns)				1,150,000	Propane
Salt layer (7 new caverns)				350,000	Propane
Northern Gas Products Co.	31-17S- 9W	Ellsworth	Bushton		
Salt formation				2,500,000	Butane and Propane
Pan American Petroleum Co.	5-29S-38W	Grant	Ulysses		
Salt layer (6 caverns)				181,000	LP-gas
Salt layer (completion 1965)				50,000	LP-gas
Phillips Petroleum Co.	15-30S- 7W	Kingman	Rago		
Salt layer (6 caverns)				417,000	Butane and Propane
Security Underground Storage Co.	28-19S- 4W	McPherson	Conway		
Salt bed				3,350,000	Propane
Salt bed (new)				750,000	Propane
Sinclair Oil & Gas Co.	14-24S- 6W	Reno	Hutchinson		
Salt layer (7 caverns)				342,000	Propane
Skelly Oil Co.	30-19S- 4W	McPherson	Conway		
Salt layer				1,050,000	Propane
Salt layer (new)				60,000	Butane
Tuloma Gas Products Co.	14-24S- 6W	Reno	Hutchinson		
Salt bed (10 caverns)				650,000	Butane and Propane
Total				14,608,000	

From Bizal, R. B., *Oil and Gas Journal*, October 19, 1964, with modifications.

TABLE 25.—Quantity and value of carbon black produced in Kansas in 1963 and 1964 (including fuel used in production).

Year	Carbon black produced		Estimated fuel consumed	
	Quantity, lb	Value	Gas, billion cu ft	Natural gasoline, million bbl
1963	61,916,880	$3,983,554	2.55	0.26
1964	48,061,035	$2,643,357	2.10	0.15

Data from Oil and Gas Conservation Division, State Corporation Commission of Kansas.

TABLE 26.—Kansas proved reserves of crude oil, natural gas liquids, total liquid hydrocarbons, and natural gas, and change in storage capacity, December 31, 1964.

	Reserves as of 12-31-63	Extensions and revisions, 1964	Discoveries, 1964	Production during 1964	Proved reserves, 12-31-64	Net change in underground storage	Difference in reserves, 1963-64	Percentage change, 1963-64
Crude oil (M bbl.*)	841,349	51,024	10,034	105,866	796,541	.....	— 44,808	— 5.3
Natural gas liquids (M bbl.*)	169,241	49,981	676	9,912	209,986	+2,274‡	+ 40,745	+24.1
Total liquid hydrocarbons (M bbl.*)	1,010,590	101,005	10,710	115,778	1,006,527	+2,274	— 4,063	— 0.4
Natural gas (MM cu ft†)	18,092,493	42,387	57,445	882,429	17,372,489	+2,593	—720,004	— 4.0

From the American Petroleum Institute and American Gas Association, 1964.
* Based on 42 U.S. gallons per barrel.
† Reported at 14.73 psia and converted, by the State Geological Survey of Kansas, to 14.65 psia at 60° F.
‡ From Bizal, R. B., *Oil and Gas Journal*, Oct. 19, 1964, with modifications.

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