Approved:
Date 1-24-01

MINUTES OF THE SENATE UTILITIES COMMITTEE.

The meeting was called to order by Chairperson Senator Stan Clark at 9:30 a.m. on January 17, 2001 in Room 231-N of the Capitol.

All members were present except: Senator Wagle, excused

Committee staff present: Emalene Correll, Legislative Research
Raney Gilliland, Legislative Research
Bruce Kenzie, Revisor of Statutes
Lisa Montgomery, Revisor of Statutes
Ann McMorris, Secretary

Conferees appearing before the committee:
Steve Johnson, Kansas Gas Service Company
Daryl Johnson, Williams Pipeline Central
Robert Krehbiel, Kansas Independent Oil & Gas Association
Dick Brewster, bp

Others attending: See attached list

Presentations by the Oil and Gas Industry

Steve Johnson, Executive Director Corporate Relations, Kansas Gas Service Company, provided a graphic showing the distribution of natural gas from wellhead to burner tip. He discussed three major components to ensure natural gas service is provided to Kansas homes and businesses. (Attachment 1)

Daryl Johnson, Williams Gas Pipelines Central, covered the highlights of the interstate pipelines' current role in the natural gas industry. (Attachment 2)

Robert Krehbiel, EVP, Kansas Independent Oil & Gas Association, provided a history of oil and gas producers and current trends. (Attachment 3)

Dick Brewster, Director of Public Affairs for bp, presented the perspective of a major gas producer and provided language for proposed changes in a current law. (Attachment 4) Each committee member was provided a Natural Gas Supply Association brochure on Building America with Natural Gas.

Following the presentation, the chair opened for questions.

Introduction of Bills
Moved by Senator Barone, seconded by Senator Emler, a bill be introduced containing the proposed changes presented by Dick Brewster. Motion carried.

Approval of Minutes
Moved by Senator Barone and seconded, that the minutes for the Senate Utilities meetings on January 11, 2001 and January 16, 2001 be approved. Motion carried.

Next meeting will be held on January 18, 2001 at 9:30 a.m.

Adjournment.

Respectfully submitted,
Ann McMorris, Secretary

Attachments - 4

SENATE UTILITIES COMMITTEE GUEST LIST

DATE: JANUARY 17 - 2001

NAME	REPRESENTING
Whitney Damron	KS Gas Service
Steve Johnson	KS Gas Service
Rebecca Lepicek	Sen. Barnett
Jim Allen	EKOGA
Ron Hein	Pioneer Natural Resources
LEE EISENHAUER	PMAK
Ken PETERSON	KS Petroleum Council
J.P. SMALL	EXXON MOBIL
TOM DAY	KCC
Joe White	KCC
Bob Hubbell	Ashcroft
Don Kspiles	KEC
Kerri Spielman	Sen Majority Ldr's Office
JAMES G. FLAHERTY	Anderson Byrd Richey Fidelity & Hyrick's
Tom Stephens	Atmos Energy Corp.
BOB ALDERSON	" " "
JIM BARTLING	GREELEY GAS CO / ATMOS ENERGY CORP
Paul Johnson	PACK
Brad Wilson	Coffeyville Co.

SENATE UTILITIES COMMITTEE GUEST LIST

DATE: JANUARY 17- 2001

NAME	REPRESENTING
[illegible]	Ltr. County
Thomas J. Fuhrmann	Landmark Appraisal, Inc.
Roger Freuzie	KGC
Judy Bygnett	Sen. Pres. Office
Jack Blaves	Duke Power & Kinder Morgan
JC Ring	UCU

UNDERSTANDING THE NATURAL GAS INDUSTRY

Steve Johnson
Executive Director Corporate Relations
Kansas Gas Service Company

PRESENTATION OVERVIEW:

Discussion on three major components that ensure natural gas service is provided to Kansas homes and businesses.

1. Local Distribution Companies (LDC)
2. Gas Pipelines
3. Producers (large & independents)

LOCAL DISTRIBUTION COMPANIES (LDC)

Three LDCs serve approximately 90% of all Kansans. Municipal gas companies serve the other 10%. The basic function of an LDC is to safely deliver gas through its distribution pipelines to the meter at your home or business and to maintain the pipeline system.

- Kansas Gas Service serves 630,000 customers in 340 communities with 1225 employees
- Greeley Gas serves 117,000 customers in 114 communities with 146 employees
- Peoples/Kansas Public Service serves 98,000 customers in 41 communities with 147 employees

LDCs generally provide service from the edge of town (town border station) to the burner tip at a home or business.

LDC's are regulated businesses. The Kansas Corporation Commission (KCC) has responsibility for overseeing all rates, terms & conditions, safety & service standards and engineering standards.

OPERATIONS

- In order for the local gas company to provide service to its customers it must have personnel in the field to maintain pipelines, manage construction projects to build, repair or replace pipelines, read meters, and take care of service lines (pipes that run from the street to your home) and mains (pipes which run under streets and alleys).
- Monthly billing and customer service
- Maintain and accurately measure the gas.
- Purchasing (gas & materials)

RATES

- Natural gas purchases come mostly from Kansas suppliers both large and small.
  - Gas purchased in the field is not regulated. Price is market driven
- Transportation for LDCs and large downstream customers, i.e. large commercial, schools and large industrial customers.
  - Interstate transportation pipelines are regulated by FERC (Federal Energy Regulatory Commission)
- Customer Charge, Energy Charge and Cost of Gas or PGA (purchase gas adjustment) are elements of the customer bill.

COMMUNITY

- Employees are involved in the fabric of their communities. They are active with the Chamber of Commerce, civic clubs and social service agencies like the American Red Cross and United Way.

LDC

Natural Gas Industry Issues

1. UNBUNDLING – Transportation today and in the future

2. PRICING
   - Gas commodity purchase contracts
   - Fixed price contracts for buying gas – retail & wholesale
   - Performance based rates – efficient gas purchasing practices

3. REGULATION
   - Leading to more or less competition
   - KCC – managing change

4. ENCOURAGE GREATER OPPORTUNITY FOR EXPLORATION
   - Increased production

5. INCREASED DEMAND FOR THE PRODUCT
   - Electric generation
   - New & existing uses for natural gas

Presentation by Daryl Johnson
Williams Pipelines Central

Submitted to
Senate Utilities Committee

Wednesday, January 17, 2001
Natural Gas Industry Overview

Good morning. My name is Daryl Johnson and I represent Williams Gas Pipelines Central (Williams). I have been with Williams for 25 years and I have worked in a number of different capacities. During the time allotted to me this morning, I hope to cover the highlights of the interstate pipelines' current role in the natural gas industry.

The role of interstate pipelines has changed dramatically over the past 25 years. To fully appreciate this change, it is helpful to look back and review the evolution of the natural gas industry.

In 1938, Congress enacted the Natural Gas Act commonly referred to as the NGA. The purpose of the NGA was to allow the Federal Power Commission, now the Federal Energy Regulatory Commission (FERC) to determine just and reasonable rates for natural gas companies, which included both producers and interstate pipelines, engaging in the sale for resale of gas in interstate commerce. The structure of the NGA was simple. The producers would sell their natural gas in the production area to the interstate pipelines at FERC-determined just and reasonable rates. The interstate pipelines would then transport their purchased gas to the city gate for sale to local distribution companies (LDC's) at FERC-determined just and reasonable rates which recovered both the pipelines cost of gas and cost of transportation. Therefore, the central features of the NGA-regulated

natural gas industry were FERC-determined just and reasonable prices for gas delivered to the city gate in transactions that combined or bundled into one package the interstate pipelines' gas supply and transmission costs.

The interstate natural gas shortages of the 1970's were the catalyst for reform of the regulation of the natural gas industry. Simply put, the FERC's determination of just and reasonable rates at the wellhead did not prove adequate to the task of ensuring an adequate supply of interstate natural gas. Hence, Congress responded to the natural gas shortages by enacting the Natural Gas Policy Act (NGPA) in 1978 to increase the flow of natural gas into the interstate market. The NGPA created new statutory rates for the wholesale gas market, for so-called "first sales" of natural gas, in lieu of rates established by the FERC. Those new rates were intended to provide investors with adequate incentives to develop new sources of supply. As part of the new rate structure, the NGPA also started the process of decontrolling wellhead prices of natural gas. The NGPA's aim was to start the evolution towards a competitive wellhead market where market forces would begin to play a significant role in determining the supply, demand and the price of natural gas. Moreover, the NGPA set the stage for a fundamental change in the natural gas industry where natural gas would become a separate and distinct economic commodity: distinct from

transportation, distinct from storage, distinct from load balancing and distinct from other services provided by the interstate pipelines.

During this era of regulation, it was common for interstate pipelines to enter into long-term contracts with the producers that dedicated the producers' gas to the pipelines for many years and in some cases, the economic life of the production field. Likewise, it was common for the LDC's to enter into long-term contracts with the interstate pipelines to provide their full natural gas requirements at the city gate.

In 1985, the Commission adopted Order 436 in response to the NGPA's aim to permit a more competitive wellhead market and to allow natural gas to become a separate and distinct commodity. Order 436 began the process of instituting open-access, non-discriminatory transportation by the interstate pipelines to permit gas users such as LDC's and industrials to buy natural gas directly from the producers in the production area and to transport that gas via the interstate pipelines. This resulted in pipelines, producers and other gas merchants becoming direct competitors for the sale of natural gas to LDC's and other end users.

In 1989, Congress built upon the significant changes in the natural gas industry shaped by the NGPA and Order 436 by enacting the Decontrol Act. This legislation amended the NGPA to repeal all remaining price controls on

"first sales" of natural gas and was intended to provide for more abundant supplies at lower prices by creating competition among the producers of natural gas.

In 1992, the Commission adopted Order 636. The main tenant of Order 636 was to remove all perceived competitive advantages the interstate pipelines might have to buy and sell gas. Therefore, it precluded pipelines from providing a bundled sales and transportation service at the city gate. Further, it provided that pipelines must unbundle and price separately, still at FERC-approved just and reasonable rates, their transportation, storage and load balancing services. This forced LDC's and all other end users to buy gas directly from producers or other gas merchants, and then buy transportation services on the interstate pipelines to transport their gas to market.

Which brings us to where we are today. The role of the interstate pipelines has truly changed dramatically over the past 25 years. Prior to 1985, the interstate pipelines were the largest buyer and seller of natural gas. The interstate pipelines entered into long-term contracts with producers for supplies and long-term sales contracts with LDC's. These long-term contracts anchored the pipelines long-term obligation to provide safe and reliable natural gas service. Today, the interstate pipelines are no longer in

the merchant business. They do not buy or sell gas. The interstate pipelines provide a full menu of firm and interruptible transportation services, firm and interruptible storage services, and a variety of firm and interruptible load balancing services and all services continue to be at FERC-determined just and reasonable rates. Today, the majority of the contracts the interstate pipelines enter into to provide these services are for contract terms of less than 5 years and some for a year or less. These short-term contracts place additional financial risks on the interstate pipelines.

Nevertheless, regardless of the challenges, the interstate pipelines and particularly Williams are dedicated to providing safe, efficient, reliable and low-cost interstate pipeline services.

I appreciate the opportunity to address this committee today, and I welcome any questions you might have. Thank you.

SENATE COMMITTEE ON UTILITES

Wednesday, January 17, 2001

The Oil and Gas Industry

TESTIMONY OF
Robert E. Krehbiel, Exec V.P.
Kansas Independent Oil & Gas Association

Senate Utilities Committee
January 17, 2001
Attachment 3-1

INTRODUCTION

Chairman Clark and members of the Committee, my name is Robert E. Krehbiel and I am appearing on behalf of the Kansas Independent Oil and Gas Association. Our Association consists of over eight hundred oil and gas producers who explore for, drill and produce oil and gas in Kansas.

BASICS OF EXPLORATION AND PRODUCTION

The search for oil and gas normally begins with the gathering and interpretation of geological information. Information on wells already drilled in an area is obtained from files maintained by the Kansas Geological Survey in cooperation with the Conservation Division of the Kansas Corporation Commission. Formation samples, copies of well histories, electric logs, radioactivity logs, drilling time logs, and other geophysical data are collected by the Conservation division and are available for review at the Kansas Geological Survey's offices in Wichita, Kansas.

Geologists frequently employ seismic surveys as a primary source of information used in making exploration or development decisions. Seismic technology is utilized to give the geologist a picture of rock structures beneath the surface of the earth. Three-D seismic has been utilized in Southwest Kansas to effectively locate oil bearing channel sands situated more than five thousand feet beneath the surface. The number of active seismic crews is frequently utilized as a harbinger of future oil and gas drilling being contemplated by the industry. After a seismic survey has been made, the geologist attempts to incorporate all available data to construct a subsurface map to determine a location with potential suitable for drilling.

In 1895 the U.S. Supreme Court determined that oil and gas found in accumulations beneath the surface of the earth belongs to the owner of the land. Prior to conducting oil and gas exploration activities on a person's land the geologist or developer, or their agent, must reach an agreement with the mineral owner. Normally this agreement is in the form of an oil and gas lease wherein the mineral owner is promised a share of any production which might be found. The mineral owner's interest under an oil and gas lease is referred to as a royalty interest and generally consists of $1/8^{th}$ of the production free of the costs of operation. The developer agrees to pay 100 per cent

of the costs of drilling and producing in exchange for 7/8ths of the production. This is referred to as the working interest.

At this stage the developer determines the well location and projected costs. Depending upon how the developer plans to finance the well, he may need to seek support from other developers or private investors to raise the necessary drilling funds. This may require compliance with various state and federal securities laws. Typically small Kansas independent producers will form partnerships to share the high risks associated with exploratory drilling. As many as thirty two investors might each provide 1/32nd of the capital required to drill a well thereby diluting the risk to manageable levels. When this occurs one of the parties is designated as the operator for purposes of managing the venture. Once the developer obtains the funds to drill the well, he will begin contracting with third parties to conduct the drilling and related well services.

Oil and Gas Producers are not regulated as public utilities. The Kansas Corporation Commission, however, has exclusive jurisdiction and authority to regulate oil and gas activities. Prior to drilling, the operator must be licensed and he must apply to the Conservation Division of the Kansas Corporation Commission for a drilling permit. This is done by submitting a notice of intent to drill which includes the information and fees required by statute and administrative regulations. Operations must be conducted in accordance with applicable Kansas laws found in K.S.A. Chapter 55 and Regulations beginning at K.A.R. 82-3-100 through 82-3-804. These laws and regulations are designed to prevent waste, protect correlative rights, fresh water formations, the environment, and, to regulate the general operations of oil and gas producers. (A copy of the General Rules and Regulations for the Conservation of Crude Oil and Natural Gas will be provided at your request)

If a producing well is completed, the operator will construct the necessary surface fixtures to pump, collect, treat, store, and measure the oil and gas. The operator will usually sell the oil and gas to a purchaser who collects the oil by truck after it has been measured and valued according to its specific gravity, temperature, and basic sediment and water content. The oil's value may be effected by the transportation costs required to get it to an oil pipeline or refinery. If gas is produced, the operator will enter into a gas sales contract and a pipeline will be constructed to transport the gas.

When it becomes uneconomic to operate a well, the operator must properly abandon the well and well site by plugging the well and reclaiming the drill site. Prior to conducting plugging operations, the operator must file a notice of intent to abandon the well with the Conservation Division and comply with all statutory and regulatory requirements.

THE U.S. DOMESTIC OIL AND GAS INDUSTRY

Attachment A includes a series of 19 charts compiled by the Independent Petroleum Association of America. These charts reflect statistics primarily relating to the exploration and production component of the oil and gas industry in the United States from 1980 through 1999. Statistics for the year 2000 are not yet available in this format.

The charts of 1980-1999 reflect a serious decline in every indicator of exploration and production activity beginning in 1985, rapidly accelerating in 1986, and continuing through 1999. The number of seismic crews, drilling operators, exploratory wells drilled, active rotary rigs, well completions, footage drilled, new reserves added, proved reserves and industry employment are all dramatically lower in 1999 from 1980-84 levels. Likewise the production of crude oil began declining in 1986 and declined steadily through 1999 with only a brief reprieve in 1991.

The dramatic decline of the domestic U.S. oil and gas exploration and production industry is the clear result of the oil price collapse of late 1985 and early 1986. The domestic industry will not quickly recover from the loss of 3,300 rotary rigs and over 400,000 employees in just the production component of the oil and gas industry.

A declining domestic resource base coupled with low wellhead prices and other concerns caused the major oil companies to shift much of their exploration and development efforts to targets outside of the United States. Hundreds of Independent Producers were casualties of the price collapse but the Independents that survived became more important players in domestic U.S. exploration and production.

Today in America Independents drill 85% of all domestic wells, account for 43% of U.S. lower 48 oil production and proved reserves and 60% of gas production. The majors have moved offshore and overseas.

KANSAS PRODUCTION AND KANSAS PRODUCERS

There are approximately 2900 licensed oil and gas operators in Kansas. In 1999, 2,273 different operators reported oil production. Kansas oil production is dominated by small independent, largely family owned, producers. Like family farmers who sell their grain at the local elevator, Kansas crude oil producers sell their production at the wellhead. Kansas independents do not transport and refine crude oil nor market gasoline. They depend solely on the wellhead sale for revenue.

Crude oil is produced in 89 of Kansas' 105 Counties. A ten year history of Well Completions by County is attached as Attachment B to provide a picture of where recent oil and gas activity exists. A recent production report prepared by the Kansas Geological Survey reflects the fact that there are 37,462 producing oil wells in Kansas with an average production of only 2.4 barrels per well per day. A copy of this report is attached as Attachment C.

Discovered in 1915, wells in the giant El Dorado Field once flowed 20,000 barrels of oil per day. The El Dorado has produced over 300 million barrels of crude oil in 85 years and the City recently celebrated the 85th Anniversary of the Discovery Well drilled on the Stapleton Farm. But today Kansas is considered a mature producing province and while the El Dorado Field still produces 1500 barrels of oil per day major producers are no longer involved. A declining resource base and low prices have caused the major producers to move offshore and overseas where new giants might be discovered. An independent producer headquartered in Wichita, Kansas, recently purchased the El Dorado production once owned by Cities Service.

Today in Kansas, independents produce nearly 90 percent of Kansas' crude oil from low volume, price sensitive wells. Still thousands of these marginally economic wells provide an enormous national resource. These small wells across America, known as stripper wells, provide approximately 27% of total U. S. production. In Kansas wells making less than 15 barrels of oil per day provide over 75% of Kansas total production.

KANSAS PRODUCES NEARLY 34 MILLION BARRELS OF CRUDE OIL PER YEAR AND CONSUMES NEARLY 70 MILLION BARRELS. KANSAS IS A NET IMPORTER OF CRUDE OIL.

In 1999, 1015 different operators reported natural gas production. The giant Hugoton, Panoma and Greenwood gas fields which lie under 14 counties in southwest Kansas provide 75% of the State's total gas production. The Hugoton field has produced 27 trillion cubic feet of natural gas, enough gas to supply every household in Kansas for 364 years. Natural gas production from the Hugoton Field is dominated by major corporations such as Mobil, BP Amoco, and OXY, USA. But most of the gas from this area was dedicated to sale in interstate markets and was consumed in Michigan, Wisconsin, Illinois, Missouri and elsewhere at prices controlled by the Federal Power Commission and, in later years, the Federal Energy Regulatory Commission.

KANSAS PRODUCES APPROXIMATELY 550,000, 000 MCF OF GAS ANNUALLY WHILE CONSUMING APPROXIMATELY 300,000,000 MCF OF GAS. KANSAS IS A NET EXPORTER OF NATURAL GAS.

The Federal Power Commission created a pricing system for interstate sales of natural gas that kept wellhead prices extremely low. Federal regulation involved bureaucratic case procedures that delayed all decisions for unusually long periods. The effect was to encourage demand due to low prices for a clean burning fuel but to discourage exploration. Because of this independent producers had little involvement with inter state sales of natural gas until shortages in the interstate market resulted in the Natural Gas Policy Act of 1978. The price structure created by the Act and the dramatic price decline which followed created serious financial problems for many independent producers who ventured into the natural gas arena. Today, however, those independents who survived the experience of the late 1970's and early 1980's will be the most likely group to provide the exploration necessary to meet America's growing appetite for natural gas.

As the Hugoton Field declines the major producers of natural gas are expected to follow the major producers of crude oil to explore other areas of the world with greater remaining potential. Kansas independent producers will remain to explore and produce Kansas' remaining reserve potential.

The Kansas oil and gas industry has followed national trends. Attachment D provides a snapshot of the industry as it existed in Kansas in 1982. To provide a comparison Attachment E provides a snapshot of the industry as it existed sixteen years

later in 1998. The number of employees engaged in the extraction component of the oil and gas industry declined from 17,108 in 1982 to 5,953 in 1998. Active rotary rigs operating in Kansas declined from 157 in 1982 to an average of 13 in 1998. The price of crude oil declined from $30.79 per barrel in 1982 to $12.19 per barrel in 1998.

The 2000 Kansas Energy Report prepared by the Kansas Geological Survey, KU Energy Research Center, was delivered to the House Energy Committee last week. This excellent Report provides current information and analytical forecasts for energy production in Kansas. Rather than repeat that report here a copy of parts relevant to the production segment of the industry is attached with the permission of the authors, Dr. Tim Carr and Scott White of the KU Energy Research Center.

SUMMARY AND DISCUSSION OF ISSUES

1. The Exploration and Production segment of the Kansas oil and gas industry was decimated by rapid declines in wellhead prices in late 1985 and early 1986. Fifteen years of low energy prices followed. The basic infrastructure of the exploration and production component of the industry declined. Then in 1998 crude oil prices hit lows equivalent to 1930 depression era levels. Drilling Rigs have been scrapped or cannabalized and trained employees have left the industry for more stable income.

THE PETROLEUM INDUSTRY WILL REQUIRE A REBUILDING OF THE INFRASTRUCTURE OF BOTH CAPITAL AND PERSONNEL WHICH WAS LOST DURING THE DOWNTURN. A PERIOD OF HIGH PRICES IN A FREE MARKET UNTHREATENED BY GOVERNMENT INTERVENTION WILL BE CRITICAL TO ATTRACT BOTH CAPITAL AND PERSONNELL

2. Kansas has an average per well production of only 2.4 barrels of oil per well per day. Nevertheless over 37 thousand of these wells provide an enormous state resource creating jobs and associated economic activity. Each 2.4 barrel a day well provides enough crude oil to meet the needs of 35 Kansas consumers.

MARGINALLY ECONOMIC STRIPPER WELLS ARE COST AND PRICE SENSITIVE. THE STATE SHOULD MOVE TO REDUCE COSTS ASSOCIATED WITH MAINTAINANCE INCLUDING REMOVAL OF THE SALES TAX APPLIED TO OIL FIELD MACHINERY AND EQUIPMENT AND REPAIRS AND LABOR SERVICES IN MAINTAINING AND REWORKING EXISTING WELLS.

3. Kansas oil and gas production is a significant part of the Kansas economy. The wellhead value of oil and gas production is equivalent to the value of all of the crops produced in Kansas. But Kansas is a mature producing province with declining production. Major companies, "big oil", have moved offshore and overseas. Kansas is now a net importer of crude oil with future exploration and production left to small independent producers.

WITH CRUDE OIL BEING IMPORTED IT MAKES NO ECONOMIC SENSE TO TAX THE DOMESTIC PRODUCER. TO ATTRACT THE INVESTMENT CAPITAL NECESSARY TO PROMOTE EXPLORARTION IN KANSAS THE SEVERANCE TAX ON CRUDE OIL SHOULD BE REPEALED. THE INCREASE IN ECONOMIC ACTIVITY WILL GENERATE REPLACEMENT REVENUE FOR THE STATE.

4. Much of the crude oil contained in Kansas reservoirs cannot be recovered with primary methods. New technologies exist to enable the potential recovery of millions of barrels of otherwise unrecoverable Kansas crude oil.

A GOOD DEAL OF TECHNOLOGY WILL LEAVE KANSAS WITH THE MAJOR PRODUCERS. TECHNOLOGY AND TECHNOLOGICAL SUPPORT CAN BE MADE AVAILABLE TO THE INDEPENDENT PRODUCER. THE KANSAS GEOLOGICAL SURVEY IS A TREMENDOUS RESOURCE FOR KANSAS PRODUCERS AND TECHNOLOGY TRANSFERS SHOULD BE SUPPORTED AND EXPANDED.

ipaa
America's Oil and Gas Producers

State of the U.S. Oil and Natural Gas Industry

EMPLOYMENT: Preliminary employment data for the exploration and production sector of the oil and natural gas as of February 1999, stood at 288,400 employees, compared to 334,700 in the same month last year. In 1998, the U.S. averaged 325,900 employees, compared to 334,600 for 1997. Since the early 1980s, 520,000 jobs relating to the oil and natural gas industry have been lost.

CRUDE OIL IMPORTS: Imports of crude oil and petroleum products in 1998 averaged 10.3 million barrels per day, the highest level ever of imports. This represents a 220,000 b/d increase over 1997 levels of 10.16 MMb/d. Imports have continued to constitute over 53 percent of domestic supply of petroleum products. Five years ago, we depended on imports to supply 45 percent of our needs. Imports of refined products averaged 1.83 MMb/d in 1998 down from 1.93 MMb/d in 1997. Crude oil imports have increased to 8.55 MMb/d in 1998, up from 8.22 MMb/d in 1997. U.S. petroleum imports (crude & products) in January were 10.18 MMb/d; imports in the same month last year were 9.89 MMb/d.

NATURAL GAS IMPORTS: Natural gas imports for 1998 averaged 3.13 Trillion cubic feet (Tcf), a four- percent increase over 1997. They have been rising steadily and rapidly since 1986. Canada continued its role as the major supplier of gas imported into the U.S., supplying the United States with 3.02 Tcf in 1997.

CRUDE OIL PRODUCTION: Crude oil production in 1998 fell to an average 6.24 MMb/d, compared to 6.45 MMb/d in 1997, representing a 209,000 b/d decrease. Crude oil production in the lower 48 states fell to 5.06 MMb/d, while Alaskan production continued its decline to 1.17 MMb/d. U.S. crude oil production in February averaged 5.94 MMb/d, its lowest level in nearly fifty years; compared to 6.38 MMb/d during the same month last year.

NATURAL GAS PRODUCTION: Total dry natural gas production in 1998 averaged 18.97 Tcf, up from 18.90 Tcf for 1997. This was attributed to a significant increase in production in the Gulf of Mexico as well as from Arkansas and Colorado. In 1998, gross withdrawals of natural gas reached an all time high of 24.5 Tcf, topping the 1973 level of 24.0 Bcf. U.S. dry gas production in January was 1.61 Tcf; production in the same month last year was 1.61 Tcf.

ROTARY RIG ACTIVITY: In 1998, the rotary rig count averaged 827 rigs for the United States, a decrease of 116 over one year ago. The rotary rig count has dropped to an all time low of 502 through March 26, 1999. Twenty-two percent of the rigs were drilling for oil, while seventy-eight percent were drilling for gas.

WELL COMPLETIONS: In 1998, total well completions showed a decline of 13 percent to 24,884 over 1997. There were 10,711 gas well completions; 8,720 oil well completions and 5,453 dry holes.

RESERVES: In 1997, crude oil reserves increased 2.4 percent to 22,546 million barrels. Naturals gas liquids 1.9 percent to 7,973 million barrels. Dry natural gas reserves increased 0.4 percent to 167.2 Tcf. The 1997 reserve/production ratios stood at 9.6 for crude oil and 8.8 for natural gas.

Sources: DOE, API, Baker Hughes, BLS

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Last revised: 12/14/99

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ATTACHMENT "A"

1. EXPLORATION ACTIVITY

Year	Seismic Crew Count	Exploratory Wells Drilled					Total New-Field Wildcat Wells
		Oil	Gas	Dry	Total	% Dry	
1980	5,915	1,777	2,085	9,008	12,870	70.0	7,332
1981	8,172	2,661	2,522	12,247	17,430	70.3	9,151
1982	7,060	2,481	2,172	11,229	15,882	70.7	7,386
1983	5,681	2,129	1,654	10,062	13,845	72.7	6,057
1984	5,931	2,334	1,588	11,216	15,138	74.1	6,528
1985	4,539	1,724	1,283	9,201	12,208	75.4	5,630
1986	2,355	993	749	5,414	7,156	75.7	3,484
1987	2,113	894	708	5,301	6,903	76.8	3,515
1988	2,161	817	704	4,788	6,350	75.4	3,271
1989	1,587	604	707	4,024	5,336	75.4	2,644
1990	1,493	649	684	3,813	5,146	74.1	2,685
1991	1,251	602	543	3,312	4,457	74.3	2,195
1992	847	504	429	2,541	3,474	73.1	1,762
1993	952	509	554	2,524	3,587	70.4	1,683
1994	1,087	576	740	2,445	3,761	65.0	1,613
1995	1,253	560	578	2,246	3,384	66.4	1,605
1996	1,307	511	590	2,206	3,307	66.7	1,676
1997	1,336	467	536	2,202	3,205	68.7	1,757
1998	1,566	330	546	1,762	2,638	66.8	1,444
1999	1,125	186	636	1,215	2,037	59.6	1,102

2. DRILLING

Year	Rotary Rigs Active	Total Well Completions				Total Footage Drilled (Mill. Ft.)
		Oil	Gas	Dry	Total Excl. Service	
1980	2,912	32,120	17,132	20,234	69,486	311.4
1981	3,970	42,520	19,742	26,972	89,234	406.5
1982	3,105	39,252	18,810	25,827	83,889	375.4
1983	2,229	37,396	14,505	23,837	75,738	316.7
1984	2,429	44,472	14,962	25,549	84,983	368.8
1985	1,980	36,458	12,917	21,431	70,806	316.8
1986	964	18,598	8,055	12,362	39,015	177.6
1987	936	16,441	8,114	11,698	36,253	163.9
1988	936	13,503	8,434	10,291	32,228	154.9
1989	869	10,424	9,493	8,475	28,392	135.0
1990	1,010	12,342	11,006	8,604	31,952	153.8
1991	860	12,044	9,564	7,743	29,351	143.2
1992	722	9,140	8,288	6,279	23,707	121.6
1993	754	9,009	10,169	6,544	25,722	136.9
1994	755	7,446	9,885	5,499	22,830	128.6
1995	723	8,459	8,738	5,374	22,571	122.8
1996	779	9,490	9,787	5,583	24,860	134.8
1997	943	11,698	11,454	6,111	29,263	159.8
1998	827	7,962	11,422	5,141	24,525	138.2
1999	625	5,031	10,213	3,750	18,994	104.6

3. OPERATORS & PRODUCING WELLS

Year	Drilling Operators of Record	Crude Oil		Natural Gas		Total Producing Wells
		Producing Wells	% of Total	Producing Wells	% of Total	
1980	10,059	543,510	75.6	175,213	24.4	718,723
1981	12,381	557,009	74.6	189,609	25.4	746,618
1982	13,014	580,142	74.0	203,663	26.0	783,805
1983	12,951	603,290	73.8	214,354	26.2	817,644
1984	12,815	620,807	73.3	226,077	26.7	846,884
1985	11,370	646,626	72.5	245,765	27.5	892,391
1986	8,335	628,690	71.5	250,510	28.5	879,200
1987	7,048	620,181	71.0	253,856	29.0	874,037
1988	6,095	623,587	70.9	256,004	29.1	879,591
1989	5,231	606,881	69.9	261,225	30.1	868,106
1990	5,361	602,439	69.2	267,891	30.8	870,330
1991	5,138	610,204	69.1	273,299	30.9	883,503
1992	4,337	594,189	67.9	280,899	32.1	875,088
1993	4,172	583,879	67.1	286,161	32.9	870,040
1994	3,612	581,657	66.9	287,845	33.1	869,502
1995	3,404	574,483	66.1	294,229	33.9	868,712
1996	3,398	574,419	65.4	303,601	34.6	878,020
1997	3,453	573,070	65.4	303,597	34.6	876,667
1998	2,918	562,148	64.5	309,005	35.5	871,153
1999	2,087	554,385	64.4	305,978	35.6	860,363

4. STRIPPER WELLS

Year	Producing Wells		Production		Avg. Output per Well (b/d)	Abandon-ments	Re-serves (Bill. Bbls.)
	Stripper Wells	% U.S. Wells	Thous. b/d	% U.S. Output			
1980	395,176	72.7	1,096	12.7	2.8	6,614	5.2
1981	409,539	73.5	1,168	13.1	2.9	7,215	4.4
1982	416,493	71.8	1,211	14.0	2.9	9,426	4.5
1983	441,501	73.2	1,266	14.6	2.9	11,032	4.6
1984	452,543	72.9	1,266	14.3	2.8	14,170	4.5
1985	458,447	70.9	1,249	14.0	2.7	16,024	4.2
1986	460,429	73.2	1,231	14.0	2.7	19,233	4.0
1987	451,787	72.8	1,224	14.7	2.7	18,241	3.9
1988	454,150	72.8	1,210	14.9	2.7	17,423	3.8
1989	452,589	74.6	1,060	13.9	2.3	16,107	3.7
1990	463,854	77.0	1,050	14.3	2.3	17,235	3.6
1991	462,823	75.8	1,034	13.9	2.2	17,584	3.4
1992	453,277	76.3	1,009	14.7	2.2	16,211	3.3
1993	452,248	77.5	975	14.2	2.2	16,914	3.0
1994	442,500	76.1	931	14.2	2.1	17,896	2.9
1995	433,048	75.4	910	14.0	2.1	16,389	2.8
1996	428,842	74.7	886	15.0	2.1	16,674	2.5
1997	431,552	75.3	884	15.0	2.1	15,037	2.5
1998	419,280	74.6	866	13.9	2.1	13,912	2.4
1999	422,730	76.3	859	13.8	2.0	11,227	2.3

5. NEW RESERVES ADDED

Year	Liquid Hydrocarbons (Mill. Bbls.)			Natural Gas (Tcf)	Crude Oil Reserves Per New Oil Well (Bbls.)	Nat. Gas Reserves Per New Gas Well (MMcf)
	Crude Oil	NGL	Total			
1980	2,970	844	3,814	16.7	92,466	975
1981	2,570	1,081	3,651	21.5	60,442	1,089
1982	1,382	874	2,256	17.3	35,208	920
1983	2,897	1,405	4,302	14.5	77,468	1,000
1984	3,748	518	4,266	14.4	84,278	962
1985	3,022	1,054	4,076	11.9	82,890	921
1986	1,446	959	2,405	13.8	77,750	1,713
1987	3,240	729	3,969	11.7	197,068	1,442
1988	2,380	845	3,225	-2.5	176,257	-296
1989	2,262	288	2,550	16.1	216,999	1,696
1990	2,258	553	2,811	19.5	182,953	1,772
1991	940	634	1,574	14.9	78,047	1,558
1992	1,509	760	2,269	15.4	165,098	1,858
1993	1,551	559	2,110	15.2	172,161	1,495
1994	1,768	739	2,507	19.7	237,443	1,993
1995	2,107	1,020	3,127	19.3	249,084	2,206
1996	1,839	1,274	3,113	20.1	193,783	2,054
1997	2,667	1,013	3,680	19.9	227,988	1,737
1998	479	384	863	15.5	60,191	1,357
1999	2,683	1,278	3,961	22.3	533,294	2,183

6. PROVED RESERVES

As of Dec. 31st	Liquid Hydrocarbons (Mill. Bbls.)			Natural Gas-Dry (Tcf)	Reserve/Production Ratio		
	Crude Oil	NGL	Total Liquid		Crude Oil	Total Liquid	Natural Gas
1980	29,805	6,728	36,533	199.0	10.0	9.9	10.6
1981	29,426	7,068	36,494	201.7	10.0	9.9	10.8
1982	27,858	7,221	35,079	201.5	9.4	9.6	11.5
1983	27,735	7,901	35,636	200.3	9.2	9.5	12.7
1984	28,446	7,643	36,089	197.5	9.4	9.5	11.5
1985	28,416	7,944	36,360	193.4	9.3	9.6	12.1
1986	26,889	8,165	35,054	191.6	9.0	9.4	12.3
1987	27,256	8,147	35,403	187.2	9.5	9.8	11.6
1988	26,825	8,238	35,063	168.0	9.5	9.8	10.1
1989	26,501	7,769	34,270	167.1	10.2	10.3	9.8
1990	26,254	7,586	33,840	169.3	10.5	10.5	9.8
1991	24,682	7,464	32,146	167.1	9.8	9.8	9.7
1992	23,745	7,451	31,196	165.0	9.7	9.7	9.5
1993	22,957	7,222	30,179	162.4	9.8	9.6	9.1
1994	22,457	7,170	29,627	163.8	9.2	11.4	8.7
1995	22,351	7,399	29,750	165.1	9.3	11.5	8.9
1996	22,017	7,823	29,840	166.4	9.3	11.7	8.9
1997	22,546	7,973	30,519	167.2	9.6	12.0	8.8
1998	21,034	7,524	28,558	164.0	9.2	11.7	8.8
1999	21,765	7,906	29,671	167.4	10.1	11.7	9.0

7. PETROLEUM PRODUCTION

Year	Crude Oil	NGL	Total Production	Average Crude Oil Per Well	% of U.S. Energy Production		
	(Thous. b/d)			(b/d)	Petroleum	Natural Gas	Total
1980	8,597	1,573	10,170	15.8	28.2	34.2	62.4
1981	8,572	1,609	10,181	15.4	28.2	34.2	62.4
1982	8,649	1,550	10,199	14.9	28.7	32.0	60.7
1983	8,688	1,559	10,247	14.4	30.0	30.6	60.6
1984	8,879	1,630	10,509	14.3	28.6	30.7	59.3
1985	8,971	1,609	10,580	13.9	29.2	29.6	58.8
1986	8,680	1,551	10,231	13.8	28.6	29.0	57.6
1987	8,349	1,595	9,944	13.5	27.2	29.8	57.0
1988	8,151	1,625	9,776	13.1	26.1	30.0	56.1
1989	7,613	1,546	9,159	12.5	24.4	30.3	54.7
1990	7,355	1,559	8,914	12.2	23.0	30.3	53.3
1991	7,417	1,659	9,076	12.2	23.2	30.7	53.9
1992	7,171	1,697	8,868	12.1	22.8	30.9	53.7
1993	6,847	1,736	8,583	11.7	22.1	32.5	54.6
1994	6,662	1,727	8,389	11.5	20.9	32.3	53.2
1995	6,560	1,762	8,322	11.4	20.4	32.0	52.4
1996	6,465	1,830	8,295	11.3	20.0	32.0	52.0
1997	6,452	1,817	8,269	11.3	20.0	32.0	52.0
1998	6,252	1,759	8,011	11.1	19.0	31.0	50.0
1999	5,881	1,850	7,731	10.6	18.0	32.0	50.0

8. PETROLEUM CONSUMPTION

Year	Petroleum Demand (Thous. b/d)			% of U.S. Energy Consumption		Energy/GDP Ratio
	Domestic	Export	Total	Petroleum	Natural Gas	(Thous. Btu Per 1996 $)
1980	17,056	544	17,600	45.0	26.9	15.6
1981	16,058	595	16,653	43.2	26.9	14.8
1982	15,296	815	16,111	42.7	26.1	14.5
1983	15,231	739	15,970	42.6	24.6	13.8
1984	15,726	722	16,448	41.9	25.0	13.7
1985	15,726	781	16,507	41.8	24.1	13.0
1986	16,281	785	17,066	43.3	22.5	12.6
1987	16,665	764	17,429	42.7	23.1	12.6
1988	17,283	815	18,098	42.7	23.1	12.6
1989	17,325	859	18,184	42.0	23.8	12.4
1990	16,988	857	17,845	41.3	23.7	12.2
1991	16,714	1,001	17,715	40.5	24.2	12.2
1992	17,033	950	17,983	40.7	24.4	12.0
1993	17,237	1,003	18,240	40.2	24.7	11.9
1994	17,718	942	18,660	40.4	24.8	11.7
1995	17,725	949	18,674	39.6	25.3	11.6
1996	18,309	981	19,290	39.7	24.9	11.6
1997	18,620	1,003	19,623	40.0	24.8	11.1
1998	18,917	945	19,862	40.5	24.0	10.7
1999	19,519	940	20,459	40.9	23.7	10.5

9. PETROLEUM SUPPLY

Year	Imports			Other Supply	Total Supply	Imports as % of Demand
	Crude Oil	Refined Products	Total (excl. SPR)			
	(Thous. b/d)					
1980	5,263	1,646	6,909	616	17,695	40.5
1981	4,396	1,599	5,996	391	16,568	37.3
1982	3,488	1,625	5,113	478	15,790	33.4
1983	3,329	1,722	5,051	503	15,801	33.2
1984	3,426	2,011	5,437	587	16,533	34.6
1985	3,201	1,866	5,067	640	16,287	32.2
1986	4,178	2,045	6,224	763	17,218	38.2
1987	4,674	2,004	6,678	768	17,390	40.1
1988	5,107	2,295	7,402	840	18,018	42.8
1989	5,843	2,217	8,061	865	18,085	46.5
1990	5,894	2,123	8,018	1,004	17,936	47.2
1991	5,782	1,844	7,627	1,046	17,749	45.6
1992	6,083	1,805	7,888	1,114	17,870	46.3
1993	6,787	1,833	8,620	1,152	18,355	50.0
1994	7,063	1,933	8,996	1,291	18,676	50.8
1995	7,230	1,605	8,835	1,517	18,674	49.8
1996	7,508	1,971	9,479	1,516	19,290	51.8
1997	8,225	1,936	10,161	1,193	19,623	54.6
1998	8,706	2,002	10,708	1,143	19,862	56.6
1999	8,731	2,121	10,852	1,876	20,459	55.6

10. PETROLEUM IMPORTS BY ORIGIN

Year	OPEC Sources		Arab OPEC		Persian Gulf		Total
	Thous. b/d	% Total Imports	Thous. b/d	% Total Imports	Thous. b/d	% Total Imports	Thous. b/d (incl. SPR)
1980	4,300	62.2	2,007	29.0	1,519	22.0	6,909
1981	3,323	55.4	1,530	25.5	1,219	20.3	5,996
1982	2,146	42.0	866	16.9	696	13.6	5,113
1983	1,832	36.3	682	13.5	442	8.8	5,051
1984	2,049	37.7	829	15.2	506	9.3	5,437
1985	1,830	36.1	498	9.8	311	6.1	5,067
1986	2,837	45.6	1,183	19.0	912	14.7	6,224
1987	3,060	45.8	1,372	20.2	1,077	16.1	6,678
1988	3,520	47.6	1,841	24.9	1,541	20.8	7,402
1989	4,140	51.4	2,130	26.4	1,861	23.1	8,061
1990	4,296	53.6	2,244	28.0	1,966	24.5	8,018
1991	4,092	53.7	2,098	27.5	1,845	24.2	7,627
1992	4,092	51.9	1,984	25.2	1,778	22.5	7,888
1993	4,273	49.6	2,002	23.2	1,782	20.7	8,620
1994	4,247	47.2	1,971	21.9	1,728	19.2	8,996
1995	4,002	45.3	1,807	20.5	1,573	17.8	8,835
1996	4,211	44.4	1,860	19.6	1,604	16.9	9,479
1997	4,569	45.0	2,040	20.1	1,755	17.3	10,162
1998	4,905	45.8	2,426	22.7	2,136	19.9	10,708
1999	4,953	45.6	2,723	25.1	2,464	22.7	10,852

11. NATURAL GAS

Year	Marketed Production (Wet)	Dry Gas Production	Imports	Exports	Total Supply	Consumption
	(Bcf)					
1980	20,180	19,403	985	49	21,875	19,877
1981	19,956	19,181	904	59	21,691	19,404
1982	18,582	17,820	933	52	20,525	18,001
1983	16,884	16,094	918	55	18,712	16,835
1984	18,304	17,466	843	55	20,300	17,951
1985	17,270	16,454	950	55	19,499	17,281
1986	16,859	16,059	750	61	18,266	16,221
1987	17,433	16,621	993	54	19,176	17,211
1988	17,918	17,103	1,294	74	20,315	18,030
1989	18,095	17,311	1,382	107	21,435	18,801
1990	18,594	17,810	1,532	86	21,302	18,716
1991	18,532	17,698	1,773	129	21,836	19,035
1992	18,712	17,840	2,138	216	22,360	19,544
1993	18,982	18,095	2,350	140	23,253	20,279
1994	19,710	18,821	2,624	162	23,666	20,708
1995	19,506	18,599	2,841	154	24,301	21,581
1996	19,751	18,793	2,937	153	25,031	21,967
1997	19,866	18,902	2,994	157	24,916	21,959
1998	19,646	18,708	3,152	159	24,326	21,262
1999	19,611	18,660	3,586	163	24,079	21,361

12. NATURAL GAS PRICES

Year	Wellhead		City Gate	End Use			
	Current $	Current 1999		Residential	Commercial	Industrial	Utilities
	($/Mcf)						
1980	1.59	2.90	N/A	3.68	3.39	2.56	2.27
1981	1.98	3.31	N/A	4.29	4.00	3.14	2.89
1982	2.46	3.88	N/A	5.17	4.82	3.87	3.48
1983	2.59	3.92	N/A	6.06	5.59	4.18	3.58
1984	2.66	3.88	3.95	6.12	5.55	4.22	3.70
1985	2.51	3.55	3.75	6.12	5.50	3.95	3.55
1986	1.94	2.69	3.22	5.83	5.08	3.23	2.43
1987	1.67	2.25	2.87	5.54	4.77	2.94	2.32
1988	1.69	2.20	2.92	5.47	4.63	2.95	2.34
1989	1.69	2.12	3.01	5.64	4.74	2.96	2.43
1990	1.71	2.06	3.03	5.80	4.83	2.93	2.38
1991	1.64	1.91	2.90	5.82	4.81	2.69	2.18
1992	1.74	1.99	3.01	5.89	4.88	2.84	2.36
1993	2.04	2.27	3.21	6.16	5.22	3.07	2.61
1994	1.85	2.02	3.07	6.41	5.44	3.05	2.28
1995	1.55	1.65	2.78	6.06	5.05	2.71	2.02
1996	2.17	2.27	3.34	6.34	5.40	3.42	2.69
1997	2.32	2.38	3.66	6.94	5.80	3.59	2.78
1998	1.94	1.97	3.07	6.82	5.48	3.14	2.40
1999	2.08	2.08	3.11	6.62	5.27	3.04	2.62

13. OIL & COMPOSITE PRICES

Year	Crude Wellhead		Refiner Acquisition Cost			Oil/Gas Composite	
	Current $	Constant 1999 $	U.S.	Import	Composite	Current $	Constant 1999 $
	($/Bbl.)						
1980	21.59	39.42	24.23	33.89	28.07	14.52	26.51
1981	31.77	53.08	34.33	37.05	35.24	20.36	34.01
1982	28.52	44.93	31.22	33.55	31.87	20.57	32.41
1983	26.19	39.64	28.87	29.30	28.99	20.13	30.47
1984	25.88	37.77	28.53	28.88	28.63	19.99	29.18
1985	24.09	34.09	26.66	26.99	26.75	18.88	26.72
1986	12.51	17.33	14.82	14.00	14.55	11.50	15.93
1987	15.40	20.73	17.76	18.13	17.90	12.12	16.31
1988	12.58	16.38	14.74	14.56	14.67	10.76	14.01
1989	15.86	19.89	17.87	18.08	17.97	12.18	15.27
1990	20.03	24.17	22.59	21.76	22.22	13.96	16.85
1991	16.54	19.31	19.33	18.70	19.06	12.24	14.29
1992	15.99	18.27	18.63	18.20	18.43	12.23	13.98
1993	14.25	15.86	16.67	16.14	16.41	12.36	13.75
1994	13.19	14.38	15.67	15.51	15.59	11.27	12.28
1995	14.62	15.60	17.33	17.14	17.23	10.86	11.59
1996	18.46	19.34	20.77	20.64	20.71	14.36	15.05
1997	17.23	17.71	19.61	18.53	19.04	14.36	14.76
1998	10.87	11.03	13.18	12.04	12.52	10.63	10.79
1999	15.56	15.56	17.82	17.25	17.47	12.84	12.84

14. PETROLEUM PRODUCT PRICES

Year	Wholesale Prices						Retail Gasoline	
	Gasoline	Kerosene	Distillate	Resid. Fuel	Average 4 Products		Excl. Taxes	Incl. Taxes
	($/Gal.)					($/Bbl.)	($/Gal.)	
1980	0.87	0.80	0.78	0.44	0.73	30.56	1.08	1.19
1981	1.02	1.01	0.97	0.61	0.89	37.28	1.20	1.33
1982	0.95	0.97	0.92	0.58	0.83	34.97	1.12	1.26
1983	0.87	0.85	0.80	0.57	0.77	32.31	1.03	1.22
1984	0.81	0.85	0.80	0.59	0.74	31.29	1.00	1.21
1985	0.81	0.82	0.77	0.56	0.73	30.69	0.95	1.16
1986	0.48	0.50	0.45	0.36	0.44	18.47	0.70	0.92
1987	0.53	0.57	0.52	0.45	0.51	21.37	0.72	0.95
1988	0.50	0.51	0.46	0.39	0.46	19.41	0.71	0.95
1989	0.59	0.61	0.56	0.41	0.53	22.38	0.77	1.01
1990	0.72	0.73	0.68	0.51	0.65	27.38	0.88	1.14
1991	0.64	0.65	0.60	0.41	0.57	23.78	0.84	1.15
1992	0.61	0.63	0.58	0.42	0.55	23.02	0.78	1.11
1993	0.55	0.60	0.55	0.40	0.51	21.35	0.77	1.11
1994	0.53	0.58	0.53	0.43	0.50	21.04	0.74	1.11
1995	0.56	0.58	0.54	0.47	0.53	22.33	0.77	1.14
1996	0.63	0.73	0.70	0.58	0.66	27.72	0.85	1.23
1997	0.66	0.66	0.62	0.54	0.62	26.12	0.83	1.22
1998	N/A	N/A	N/A	N/A	N/A	N/A	0.66	1.06
1999	N/A	N/A	N/A	N/A	N/A	N/A	0.76	1.16

15. WELLHEAD REVENUES & TAXES

Year	Wellhead Revenues (Mill. $)					Severance and Production Taxes Paid (Mill. $)
	Crude Oil	% of Total	Natural Gas	% of Total	Total	
1980	67,747	67.9	32,086	32.1	99,834	3,865
1981	99,401	71.6	39,513	28.4	138,914	6,418
1982	90,034	66.3	45,712	33.7	135,746	7,464
1983	83,052	65.5	43,730	34.5	126,781	7,265
1984	83,873	63.3	48,689	36.7	132,561	7,192
1985	78,881	64.5	43,348	35.5	122,228	7,002
1986	39,634	54.8	32,706	45.2	72,341	5,360
1987	46,930	61.7	29,113	38.3	76,043	3,998
1988	37,427	55.3	30,281	44.7	67,708	4,002
1989	44,071	59.0	30,581	41.0	74,651	3,821
1990	53,772	62.8	31,796	37.2	85,568	4,621
1991	44,777	59.6	30,392	40.4	75,170	4,625
1992	41,852	56.2	32,559	43.8	74,411	4,083
1993	35,613	47.9	38,723	52.1	74,336	4,153
1994	32,073	46.8	36,464	53.2	68,537	3,404
1995	35,006	53.7	30,234	46.3	65,240	3,177
1996	43,561	50.4	42,860	49.6	86,420	3,271
1997	40,576	46.8	46,089	53.2	86,665	3,781
1998	24,805	39.4	38,113	60.6	62,918	2,719
1999	33,401	45.0	40,791	55.0	74,191	2,373

16. FINANCIAL STATISTICS

Year	Rate of Return %		Exploration & Development Outlays (Mill. $)			Wages ($/Hour)	
	Oil & Gas	All Mfg.	Larger Firms	Independents	Total	Oil & Gas	All Mfg.
1980	21.7	12.2	26,235	14,175	40,410	9.70	7.27
1981	17.8	12.9	31,992	23,698	55,690	10.78	7.99
1982	12.5	9.7	30,330	23,387	53,717	11.81	8.50
1983	12.4	12.3	24,201	22,047	46,248	12.38	8.84
1984	11.0	13.9	25,698	22,356	48,054	12.77	9.18
1985	10.3	11.0	23,097	20,538	43,635	13.31	9.52
1986	3.7	11.1	12,168	11,754	23,922	13.75	9.73
1987	6.2	14.7	10,555	9,208	19,763	14.02	9.91
1988	15.0	16.6	13,198	10,759	23,957	14.47	10.18
1989	11.6	14.9	11,557	9,795	21,352	12.29	10.49
1990	12.6	12.0	11,316	9,642	20,958	12.72	10.83
1991	9.7	7.9	10,599	10,863	21,462	13.52	11.18
1992	N/A	N/A	N/A	N/A	N/A	13.97	11.46
1993	N/A	N/A	N/A	N/A	N/A	14.13	11.74
1994	N/A	N/A	N/A	N/A	N/A	14.10	12.06
1995	N/A	N/A	N/A	N/A	N/A	14.52	12.37
1996	N/A	N/A	N/A	N/A	N/A	14.87	12.77
1997	N/A	N/A	N/A	N/A	N/A	15.66	13.17
1998	N/A	N/A	N/A	N/A	N/A	16.83	13.49
1999	N/A	N/A	N/A	N/A	N/A	16.86	13.91

17. DRILLING COSTS & INDICES

Year	Drilling Costs			Producer Price Index	Crude Price Index	Oil Machinery Index
	Total (Mill. $)	Per Well ($)	Per Ft. ($)	1982=100		
1980	22,800	367,682	77.03	88.0	75.9	76.3
1981	36,666	453,691	94.30	96.1	109.6	91.1
1982	39,428	514,378	108.73	100.0	100.0	100.0
1983	25,105	371,721	83.34	101.6	92.9	97.4
1984	25,206	326,463	71.90	103.7	91.3	96.6
1985	23,697	349,399	75.35	104.7	84.5	96.8
1986	13,552	364,577	76.88	103.2	46.9	94.3
1987	9,239	279,615	58.71	105.4	55.5	93.3
1988	10,550	354,713	70.23	108.0	46.2	97.0
1989	9,669	362,243	75.08	113.6	56.3	99.1
1990	10,937	383,596	76.07	119.2	71.0	102.4
1991	11,461	421,453	82.64	121.7	61.9	108.6
1992	8,556	382,607	70.27	123.2	58.0	107.8
1993	9,824	426,793	75.30	124.7	51.4	108.2
1994	9,676	483,237	79.49	125.5	47.1	110.8
1995	10,539	513,415	87.23	127.9	51.1	114.1
1996	10,919	496,105	88.92	131.3	62.6	117.8
1997	16,042	603,918	107.83	131.8	57.5	122.8
1998	17,586	778,480	133.64	130.7	35.7	125.9
1999	N/A	N/A	N/A	133.0	50.3	126.5

18. OIL & GAS EMPLOYMENT

Year	Extraction	Refining	Transportation	Wholesale	Retail	Total Industry
	(Thous.)					
1980	559.7	167.0	189.3	223.9	560.8	1,700.7
1981	692.1	185.1	195.8	231.5	562.2	1,866.7
1982	708.3	175.8	198.2	222.6	559.0	1,863.9
1983	597.8	169.2	193.6	210.9	556.2	1,727.7
1984	606.5	162.2	192.3	208.3	574.7	1,744.0
1985	582.9	152.5	193.5	205.9	588.5	1,723.3
1986	450.5	140.7	185.6	200.5	596.0	1,573.3
1987	401.8	133.5	183.8	197.9	608.0	1,525.0
1988	400.3	120.8	182.6	203.2	625.4	1,532.3
1989	381.0	117.3	181.8	206.9	641.4	1,528.4
1990	394.7	117.8	183.2	195.6	647.1	1,538.4
1991	392.9	121.5	185.4	185.6	626.4	1,511.8
1992	352.6	119.2	182.6	172.7	615.7	1,442.8
1993	349.8	112.2	179.4	162.8	617.2	1,421.4
1994	336.5	108.9	176.4	161.1	633.9	1,416.8
1995	320.1	104.5	168.6	158.8	648.9	1,400.9
1996	322.0	100.2	161.5	155.5	668.9	1,408.1
1997	339.0	98.0	155.6	154.9	675.9	1,423.4
1998	339.2	96.0	150.3	155.0	689.4	1,429.9
1999	293.1	92.1	145.0	153.5	701.5	1,385.2

19. GENERAL ECONOMIC DATA

Year	Cost of Oil Imports	Gross Domestic Product			Consumer Price Index	Industrial Production Index
		Current $	Constant 1996 $	Price Deflator		
	(Bill. $)			1996=100	1982-84=100	1992=100
1980	78.6	2,545.6	4,872.3	57.4	82.4	79.7
1981	76.7	3,131.4	4,993.9	62.7	90.9	81.0
1982	60.5	3,259.2	4,900.3	66.5	96.5	76.7
1983	53.2	3,535.0	5,105.6	69.2	99.6	79.5
1984	56.9	3,932.8	5,402.8	71.8	103.9	86.6
1985	50.5	4,213.0	5,689.8	74.0	107.6	88.0
1986	35.1	4,452.9	5,885.7	75.7	109.7	89.0
1987	42.3	4,742.5	6,092.6	77.8	113.7	93.2
1988	38.8	5,108.3	6,349.0	80.5	118.4	97.4
1989	49.7	5,489.1	6,568.7	83.6	124.0	99.1
1990	61.6	5,803.3	6,683.5	86.8	130.8	98.9
1991	51.4	5,986.2	6,669.1	89.8	136.3	97.0
1992	51.2	6,319.0	6,891.1	91.7	140.4	100.0
1993	51.0	6,642.3	7,054.2	94.2	144.6	103.4
1994	50.8	7,054.3	7,337.8	96.1	148.3	109.1
1995	54.4	7,400.6	7,537.8	98.2	152.5	114.3
1996	72.0	7,813.2	7,813.2	100.0	157.0	119.4
1997	71.2	8,318.4	8,159.5	101.9	160.6	127.0
1998	50.3	8,790.2	8,515.6	103.2	163.1	132.4
1999	67.2	9,299.2	8,875.7	104.8	166.7	137.0

PEAK YEAR MILESTONES

Operators of Record	1982	12,955	
Seismic Crew Count	1981	8,172	
Rotary Rigs Active	1981	3,970	
Exploratory Wells Drilled	1981	17,430	
Oil Wells Drilled	1984	44,472	
Gas Wells Drilled	1981	19,742	
Dry Holes Drilled	1981	26,972	
Total Wells Drilled	1981	89,234	
Producing Oil Wells	1985	646,626	
Producing Gas Wells	1998	309,005	
Drilling Costs	1982	$39.4	Bill.
Crude Oil Production	1970	9,637	Thous. b/d
Stripper Well Production	1961	1,622	Thous. b/d
Petroleum Imports	1999	10,852	Thous. b/d
Petroleum Demand	1999	19,519	Thous. b/d
Natural Gas Production	1973	22,648	Bcf
Natural Gas Consumption	1972	22,049	Bcf
Natural Gas Imports	1999	3,547	Bcf
Oil Wellhead Price	1981	$31.77	per Bbl.
Gas Wellhead Price	1984	$2.66	per Mcf
Total Industry Employment	1981	1.9	Mill.

SOURCES:

1. Seismic Crews: IHS Energy Group: Wells: American Petroleum Institute (API)
2. Rotary Rigs: Baker Hughes; Wells and Footage: API (estimated completion basis)
3. Operators: IHS Energy Group; Producing Wells: *World Oil*
4. Stripper Wells: Interstate Oil & Gas Compact Commision (IOGCC)

5.-6. Energy Information Administration (EIA); API; American Gas Association

7.-13. EIA and IPAA

14. Wholesale Prices: IPAA; Retail Gasoline Prices: *Oil & Gas Journal*
15. Wellhead Value: EIA; Taxes: IPAA
16. Rate of Return: API (20 Largest Companies) and Standard and Poor's Compustat; Wages: Bureau of Labor Statistics; Other Data: API
17. Drilling Costs: *Joint Association Survey;* Oil Field Wage Index: IPAA; Other Indices: Dept. of Commerce
18. Bureau of Labor Statistics
19. Department of Commerce

NOTES:

A. Crude oil production and imports include lease condensate. Other petroleum supply includes refinery processing gain and other hydrocarbons.
B. Producing wells and reserves are shown as of December 31st each year.
C. Alaskan natural gas reserves incurred a significant downward revision in 1988.
D. Imports for the Strategic Petroleum Reserve are included only in Table #10, "Imports by Origin."
E. Marketed natural gas (wet) includes natural gas liquids. Total natural gas supply includes withdrawals from storage and supplemental gaseous fuels.
F. Gasoline wholesale prices are for unleaded fuel after 1981. Retail prices are for unleaded fuel after 1984.
G. All GDP statistics are in 1996 "chain weighted" dollars, unless noted otherwise.

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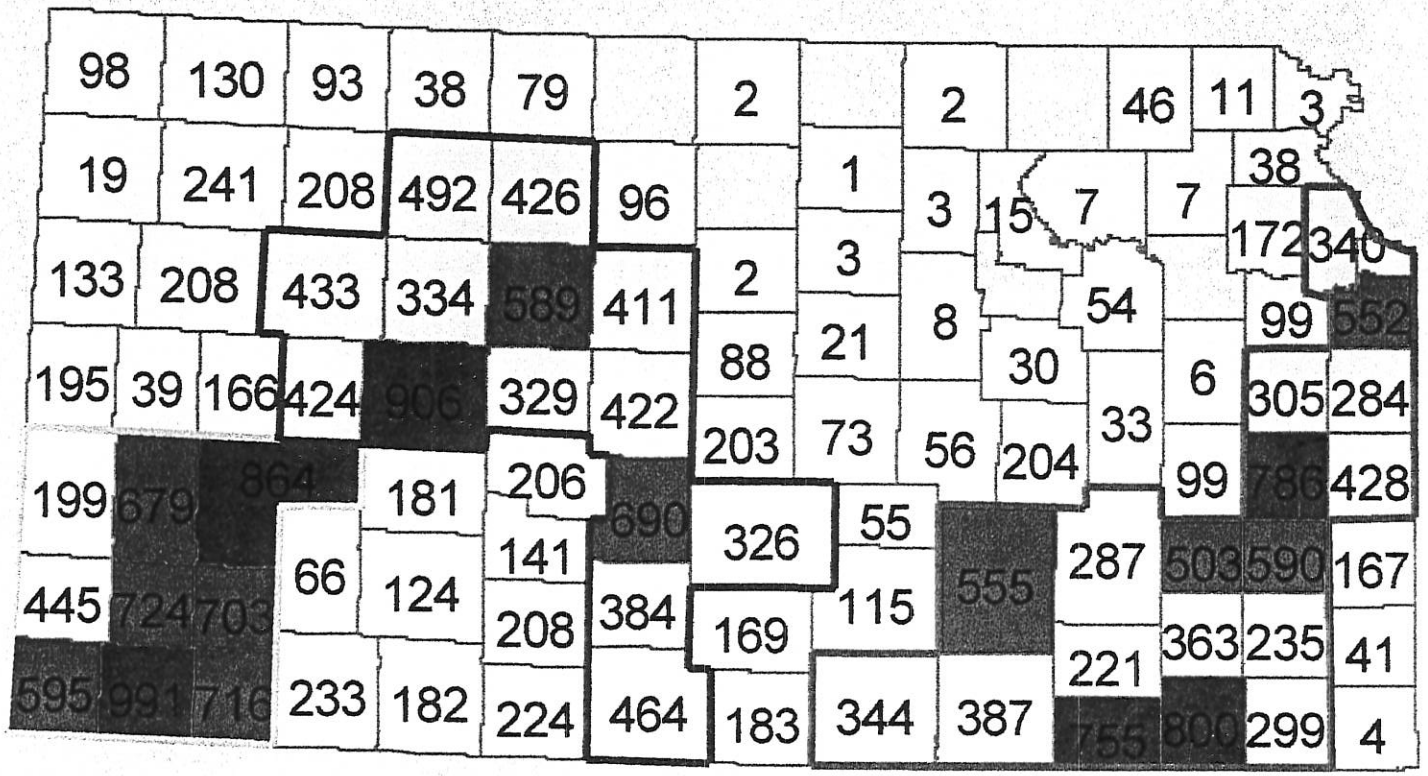
Kansas Oil and Gas Exploration - 10 Year History & Future Strategies

Exploration Activity

1987 to 1996 Well Completions by County

(All Wells)



WC & SC Kansas

Eastern Kansas

ATTACHMENT "B"

The number of oil wells grouped by production rate shows that over 98% of the oil wells in Kansas average less than 15 BOPD (Table 1a). Approximately 36,885 wells producing 74.8% of the state's oil would be considered as stripper production. This represents a very large number of well bores that are at significant risk to abandonment.

Table 1a -- Kansas Oil Production from January through May 1999

	Producing Leases			Producing Wells			Oil Production		
BOPD/Well	Number	% of Total	Cum %	Number	% of Total	Cum %	Barrels	% of Total	Cum %
< 5	10118	79.5%	79.5%	33104	88.4%	88.4%	6,259,179	46.1%	46.1%
5.01-10	1723	13.5%	93.0%	3236	8.6%	97.0%	2,968,203	21.8%	67.9%
10.01-15	388	3.0%	96.1%	545	1.5%	98.5%	932,147	6.9%	74.8%
15.01-20	159	1.2%	97.3%	194	0.5%	99.0%	485,937	3.6%	78.3%
20.01-30	140	1.1%	98.4%	159	0.4%	99.4%	564,519	4.2%	82.5%
30.01-40	77	0.6%	99.0%	95	0.3%	99.7%	488,941	3.6%	86.1%
40.01-50	40	0.3%	99.4%	45	0.1%	99.8%	299,419	2.2%	88.3%
50.01-75	43	0.3%	99.7%	45	0.1%	99.9%	393,475	2.9%	91.2%
75.01-100	16	0.1%	99.8%	16	0.0%	99.9%	200,742	1.5%	92.7%
100.01	23	0.2%	100.0%	23	0.1%	100.0%	998,334	7.3%	100.0%
Totals	12,727	100.0%		37,462	100.0%		13,590,896	100.0%	

Data Source: Kansas Department of Revenue

Results: Gas Production

Gas production in the first five months of 1999 was reported from 15,468 leases with 17,146 wells (Table 2a). Total production was 218.7 billion cubic feet. This is an average monthly production of 43.7 billion cubic feet. Average daily per well production would be 85 MCF. The reported 1999 gas production represents a 8% decline compared to the first five months of 1998, and reflects production declines in the gas fields of southwest Kansas.

The number of gas wells grouped by production rate shows that 63% of the gas wells in Kansas average less than 90 MCFPD (Table 2a). Approximately 10,772 wells producing 24.1% of the state's gas would be considered as stripper production.

1999 Kansas Oil and Gas Production:

An Examination of the Importance of Stripper Production

Kansas Geological Survey Open-File Report 2000-16

Timothy R. Carr

Introduction

This Open-File report builds on Carr and Gerlach (1997, 1998) in an attempt to develop a perspective on the trends in the relative importance of stripper well production to Kansas oil and gas production. Stripper wells are economically marginal oil and gas wells that produce at relatively low rates. The definition of stripper wells varies. For oil, stripper production is usually defined as production rates of between 5 and 15 barrels of oil per day (BOPD). Stripper gas production would generally be anything less than 90 thousand cubic feet per day (MCFPD).

Wells that are producing at stripper well rates make up a significant portion of Kansas oil and gas production, and more importantly represent a very large portion of existing well bores. These well bores represent a very large capital investment that is at risk of being plugged and abandoned.

Procedure

We examined the most recent available production data from the Kansas Department of Revenue from the period of January through May 1999. This provides a five-month period to average production and to capture leases reporting production only on an intermittent basis. All leases that produced any oil or gas during the five-month period were extracted from the oil and gas production database. Lease production was divided by the number of wells listed for each lease and then by 150 days to obtain an estimated average daily production per well.

Results: Oil Production

Oil production in the first five months of 1998 was reported from 12,727 leases with 37,462 wells (Table 1a). The number of producing leases and wells have decreased significantly from 1998 (13,998 leases and 41,520 wells as reported by Carr and Gerlach, 1998). For the comparable five month period producing wells and leases decreased by more than 9%, while production decreased 10.1%. The majority of decreased production is from stripper wells making less than 5 BOPD. In fact these stripper wells account for over 100% of the decrease in both producing wells and leases, and 72% of the decrease in the oil production from 1998 to 1999. This decrease in both producing leases and wells can be attributed to the extremely low well head price during the first half of 1999. The average posted price for Kansas crude was $11.72 during the first five months of 1999.

Total oil production in the first five months of 1999 was 13,590,896 barrels of oil (Table 1a). This is an average monthly production of 2,718,179 barrels of oil. Average daily per well production would be 2.4 barrels of oil. The reported 1999 production represents a 10.1% decline compared to the first five months of 1998.

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ATTACHMENT "C"

Table 2a -- Kansas Gas Production from January through May 1999

	Producing Leases			Producing Wells			Gas Production		
MCFPD/Well	Number	% of Total	Cum %	Number	% of Total	Cum %	MCF	% of Total	Cum %
0.1-40	5210	33.7%	33.7%	6780	39.5%	39.5%	14,949,983	6.8%	6.8%
40.01-60	1786	11.5%	45.2%	1833	10.7%	50.2%	13,742,572	6.3%	13.1%
60.1-90	2123	13.7%	59.0%	2159	12.6%	62.8%	24,011,095	11.0%	24.1%
90.01-120	1854	12.0%	70.9%	1867	10.9%	73.7%	29,408,431	13.4%	37.5%
120.01-150	1365	8.8%	79.8%	1367	8.0%	81.7%	27,732,643	12.7%	50.2%
150.1-300	2747	17.8%	97.5%	2755	16.1%	97.8%	82,913,492	37.9%	88.1%
300.1-450	281	1.8%	99.3%	283	1.7%	99.4%	14,913,812	6.8%	94.9%
450.1-600	56	0.4%	99.7%	56	0.3%	99.7%	4,310,961	2.0%	96.9%
600.01	46	0.3%	100.0%	46	0.3%	100.0%	6,753,745	3.1%	100.0%
Totals	15,468	100.0%		17,146	100.0%		218,736,734	100.0%	

Data Source: Kansas Department of Revenue

References Cited

Carr, Timothy R. and Paul M. Gerlach, 1997, Kansas oil and gas production: An examination of the importance of stripper production: Kansas Geological Survey Open-File Report 97-64, 4p.

Carr, Timothy R. and Paul M. Gerlach, 1998, Kansas oil and gas production: An examination of the importance of stripper production: Kansas Geological Survey Open-File Report 98-50, 5p.

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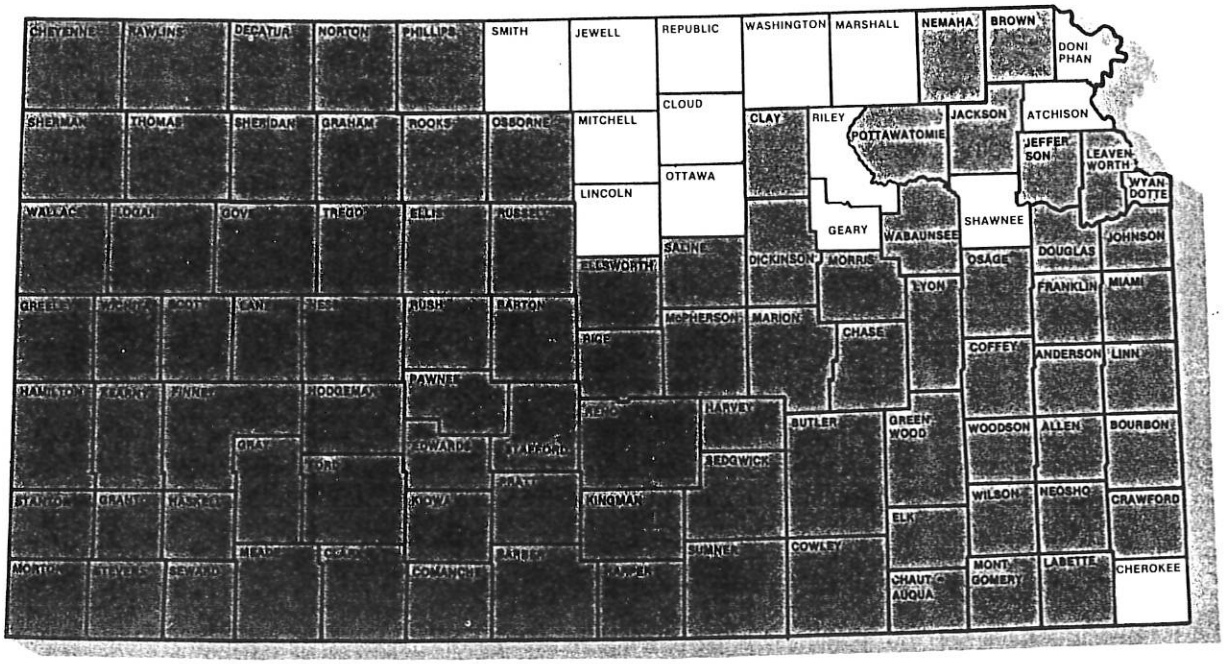
KANSAS



Counties with crude oil and/or natural gas production

EXTENT AND ECONOMIC VALUE OF OIL AND GAS INDUSTRY

1. Number of counties	105
2. Number of counties with crude oil and/or gas production	90
3. Total land area (acres)	52,343,680
4. Area proved productive of crude oil and/or gas (acres)	7,600,000
5. Estimated nonproductive area leased Jan. 1, 1983 (acres)	9,400,000
6. Percent of total land area productive or leased	32.5%
7. Wellhead value of crude oil produced all time to Jan. 1, 1983 (thous.)	$20,974,133
8. Average field price of crude oil per barrel in 1982	$30.79
9. Wellhead value of crude oil produced in 1982 (thous.)	$2,171,465
10. Wellhead value of natural gas produced in 1982 (thous.)	$645,655
11. Total wellhead value of oil and gas in 1982 (thous.)	$2,817,120
12. Percent of petroleum value to total all minerals	78.6%
13. Principal mineral products in order of value:	
1st . . . . . Crude oil	
2nd . . . . . Natural gas	
3rd . . . . . Portland cement	
14. Number of employees engaged in oil and gas production	17,108
15. First year of crude oil production	1889
First year of natural gas production	1882
16. First recorded production of:	
Crude oil (barrels) . . . . . in 1889	500
Natural gas (Mcf) . . . . . in 1906	69,323
17. Geophysical activity — crew months worked in 1982	98

PRODUCTION AND RESERVES

18. Year of peak crude oil production: 1956
19. Crude oil produced in peak year (barrels): 124,204,000
20. Percent of crude oil produced by stripper wells: 68.3%
21. Number of producing wells at end of 1982:

Crude oil	46,189
Gas and gas distillate	11,254
Total	57,443

22. Average daily production of crude oil per well at end of 1982: 4.2 b/d
23. Percent of wells on artificial lift ...: 97.6%
24. Average production (barrels per day):

	Crude Oil	*NGL*	*Total Petroleum Liquids*
1979	156,151	87,397*	243,548
1980	164,347	78,500*	242,847
1981	180,301	76,500*	256,801
1982	193,219	75,000*	268,219

*Estimated

25. Production and new reserves found in 1982:

	Crude Oil (million bbls.)	*NGL* (million bbls.)	*Total Petroleum Liquids* (million bbls.)	*Natural Gas* (billion cu. ft.)
New reserves found	70	−93	−23	144
Estimated production	63	14	77	459
Net change in reserves	7	−107	−100	−315

26. Production and new reserves found all time to Dec. 31, 1982:

	Crude Oil (million bbls.)	*NGL* (million bbls.)	*Total Petroleum Liquids* (million bbls.)	*Natural Gas* (billion cu. ft.)
Total reserves found	5,454	982	6,436	37,701
Total production	5,076	680	5,756	27,573
Proved reserves, Dec. 31, 1982	378	302	680	10,128

EXPLORATION AND DEVELOPMENT

27. Rotary drilling rigs active in 1982 (average): 157
28. Deepest producing well drilled to Jan. 1, 1983 (feet)... Natural gas: 6,774
29. Deepest well drilled to Jan. 1, 1983 (feet) .... Dry hole: 8,713
30. Wells and footage drilled in 1982:

	Number	*Percent*
Wildcat Wells		
Oil wells	358	17.0
Gas wells	81	3.8
Dry holes	1,671	79.2
Total wells	2,110	100.0
Average depth per well (feet)		3,770
Total footage		7,954,245
Development Wells		
Oil wells	3,750	53.1
Gas wells	729	10.3
Dry holes	2,354	33.4
Service wells	223	3.2
Total wells	7,056	100.0
Average depth per well (feet)		3,057
Total footage		21,567,448
Total Wells		
Oil wells	4,108	44.8
Gas wells	810	8.8
Dry holes	4,025	43.9
Service wells	223	2.5
Total wells	9,166	100.0
Average depth per well (feet)		3,221
Total footage		29,521,693

31. Total wells drilled all time to Jan. 1, 1983 (excluding service wells):

	Number	*Percent*
Oil wells	109,070	51.6
Gas wells	20,735	9.8
Dry holes	81,714	38.6
Total wells	211,519	100.0

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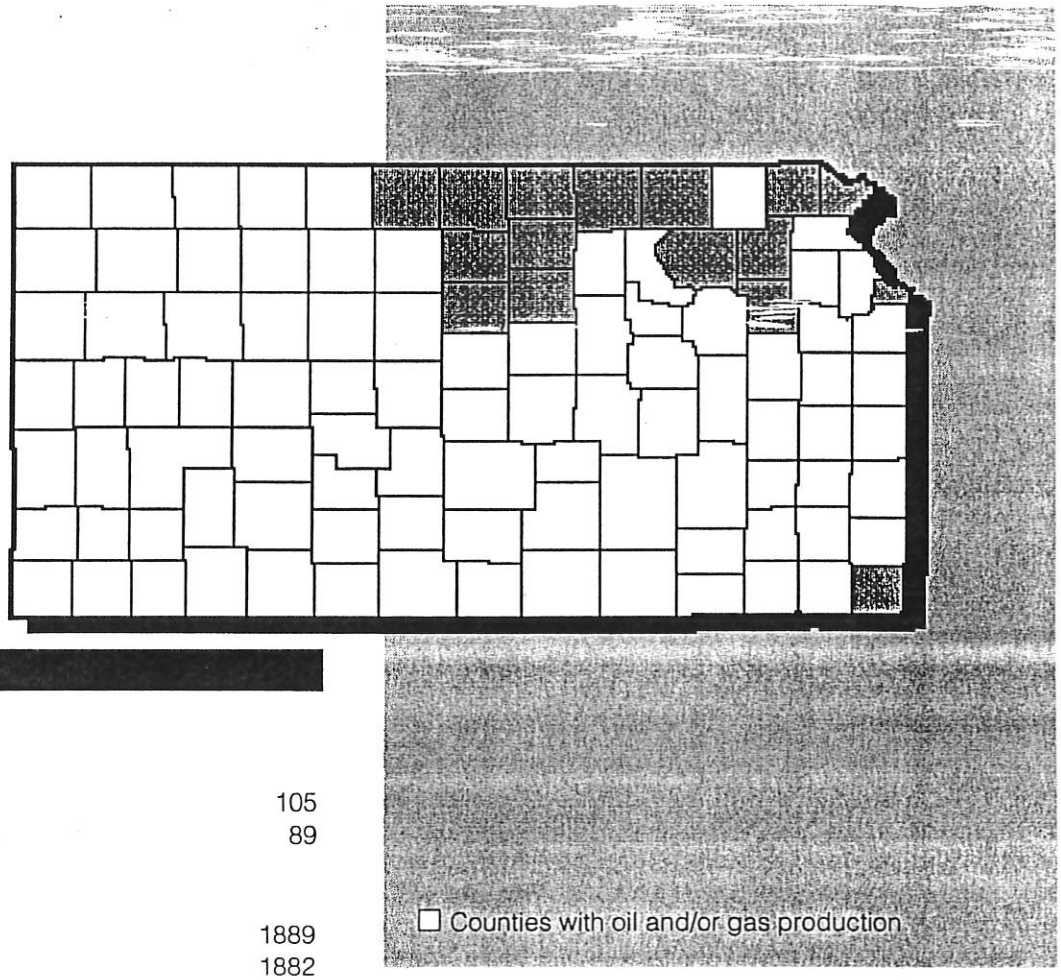
Kansas



Background Information

Counties

Number of counties	105
With oil and/or gas production	89

First year of production

Crude oil	1889
Natural gas	1882

Year and amount of peak production

Crude oil — 124,204 thous. bbls.	1956
Natural gas — 899,955 MMcf	1970

Deepest producing well (ft.)

Crude oil	7,400
Natural gas	6,774

Year and depth of deepest well drilled (ft.)

1984	11,300

Cumulative number of total wells drilled
as of 12/31/98 (excluding service wells)

Oil wells	128,056	50%
Gas wells	27,881	11%
Dry holes	101,284	39%
Total	**257,221**	**100%**

Cumulative crude oil wellhead value $39,483,553
as of 12/31/98 (thous. $)

Cumulative production & new reserves
production as of 12/31/98, reserves as of 12/31/96

	Crude Oil	NGL (mill. bbls)	Total	Natural Gas (Bcf)
Reserves	6,100	1,308	7,408	43,188
Production	5,862	1,037	6,899	36,199

Value of Oil and Gas

Average wellhead price
(1998)

Crude oil ($/bbl.)	$12.19
Natural gas ($Mcf)	$1.96

Wellhead value of production
(1998, in thous. $)

Crude oil	$433,245
Natural gas	$1,124,099
Total	$1,557,344

Average natural gas price
(1998, $/Mcf)

Residential consumers	$6.00
Commercial consumers	$4.98
Industrial consumers	$3.17
Electric utilities	$2.14
City Gate	$2.96

Severance taxes paid $51,686
(1998, in thous. $)

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1998 Industry Statistics

Number of wells drilled

	Exploratory	Development	Total
Oil	15	194	209
Gas	15	285	300
Dry	135	216	351
Service	--	26	26
Total	165	721	886

Total footage drilled
(thous. ft.)

	Exploratory	Development	Total
Oil	75.0	710.4	785.4
Gas	78.6	963.1	1,041.7
Dry	592.8	787.3	1,380.1
Service	--	49.1	49.1
Total	746.3	2,509.9	3,256.3

(Note: Totals may not add due to rounding.)

New-field wildcats drilled	118
Footage (thous. ft.)	524.8
Average rotary rigs active	13

State-wide rank

	Crude Oil	Natural Gas
Wells drilled	5th	9th
Production	10th	8th
Reserves (1997)	10th	8th

Number of producing wells
(12/31/98)

Crude oil	41,520
Flowing	0
Artificial lift	41,520
Natural gas	17,786
Total	59,306

Average production

	thous. bbls.	thous. b/d
Crude oil	35,541	97
NGL (est.)	29,113	80
Total	64,654	177

Natural gas marketed production (MMcf)	573,520

Average output per producing well

Crude oil (bbls.)	856
Natural gas (Mcf)	45,346

Average number of employees

Oil and natural gas extraction	5,953
Refining	1,453
Transportation	2,904
Wholesale	4,225
Retail	8,393
Total petroleum industry	22,928

1997 Latest Available Data

Petroleum reserves
as of 12/31/97 (mill. bbls.)

	Crude Oil	NGL	Total
New reserves	10	-42	-32
Production	38	25	63
Net annual change	-28	-67	-95
Proved reserves	238	271	509

Natural gas reserves
as of 12/31/97 (Bcf)

	Associated Dissolved	Non-Associated	Dry Gas
New reserves	-18	-139	-76
Production	13	647	629
Net annual change	-31	-786	-705
Proved reserves	51	7,277	6,989

Cost of drilling and equipping wells

	Cost/ft. ($)	Cost/ well ($)	Total Cost (thous. $)
Oil	43.84	136,985	74,383
Gas	52.10	178,337	87,385
Dry	22.91	87,005	48,375
Total	38.30	132,249	210,143

Stripper wells

Producing stripper wells	40,504
Stripper well abandonments	1,765
Crude oil production in bbls.	30,675,301
Crude oil production b/d	83,812
Percentage of oil production	77.0%

Stripper oil reserves
as of 1/1/98 (thous. bbls.)

Primary	72,873
Secondary	65,933
Total	138,806

Federal Onshore Mineral Lease Royalties

Oil	$648,379
Gas	$5,002,033
Total Royalties	$5,860,379

Federal Onshore and Indian Oil and Gas Leases

Number of leases	450
Acres leased	123,734

For more information please contact: Information Services Department, Independent Petroleum Association of America, 1101 16th Street, N.W., Washington, D.C. 20036, 202-857-4722, FAX: 202-857-4799

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Energy Production

Overview

Natural gas and petroleum are the most important energy resources in Kansas, accounting for nearly all primary energy produced in the state. Energy production in Kansas peaked in 1967 at 1573 trillion BTU. In 1999, primary energy production had declined to approximately 912 trillion BTU (Figure 13). Natural gas production peaked in 1970 at 904 billion cubic feet (bcf)[10]. Petroleum production peaked in 1956 at 124 million barrels (bbls). Of the U.S. states, Kansas is ranked 7th in natural gas production and 8th in oil production[11].

In 1999, a total of 912 trillion BTU of energy were produced in Kansas with 63% from natural gas (566 bcf), 22.0% from petroleum (34 million bbls), 11 % from natural gas liquids (NGL; 34.4 million bbls), and less than 1% from coal (414,000 short tons). The break down of Kansas energy production for 1999 is shown in Figure 14. Since 1960, total energy production in Kansas has dropped by 30%. The majority of this decrease in energy production can be attributed to decreased oil production. Oil's share of the total energy produced in the state has dropped from nearly half of energy production to 22% in 1999 (Figure 13).

Estimates from the Kansas Corporation Commission and the Kansas Geological Survey put 2000 Kansas production at over 34.3 million barrels of oil and at 550 billion cubic feet of gas (Figure 15). Estimated 2000 production is a conservative extrapolation of reported production for the first eight months of the year. The final reported production numbers are expected to be slightly higher. From 1999 to 2000 oil production shows an estimated marginal increase, and gas production remains flat or decreases slightly. Using estimated 2000 average monthly wellhead prices for oil and gas in Kansas, the value of the oil and gas produced in the state is approximately $3.046 billion. Wellhead value in 2000 is an increase of over $1.4 billion dollars from 1999. The increase in total wellhead value is a result of increased prices, especially for natural gas. In 2000, the value of natural gas production ($2.052 billion) is more than twice the value of oil production ($0.924 billion). The significance of the value of Kansas' oil and gas production relative to other parts of the Kansas economy is illustrated by a comparison to agriculture. Over the past 40 years, the value of Kansas oil and gas production is comparable to the value of total statewide crop production as measured by the cash receipts for all the crops produced in the state (Figure 16). In 2000, the wellhead value of Kansas oil and gas production may exceed the value of Kansas crop production.

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[10] Unless otherwise noted all oil and gas production figures are from the databases of the Kansas Geological Survey.

[11] Independent Petroleum Association of America, Oil & Natural Gas Producing in Your State http://www.ipaa.org/departments/information_services/state_information.htm.

3-24

ATTACHMENT "F"

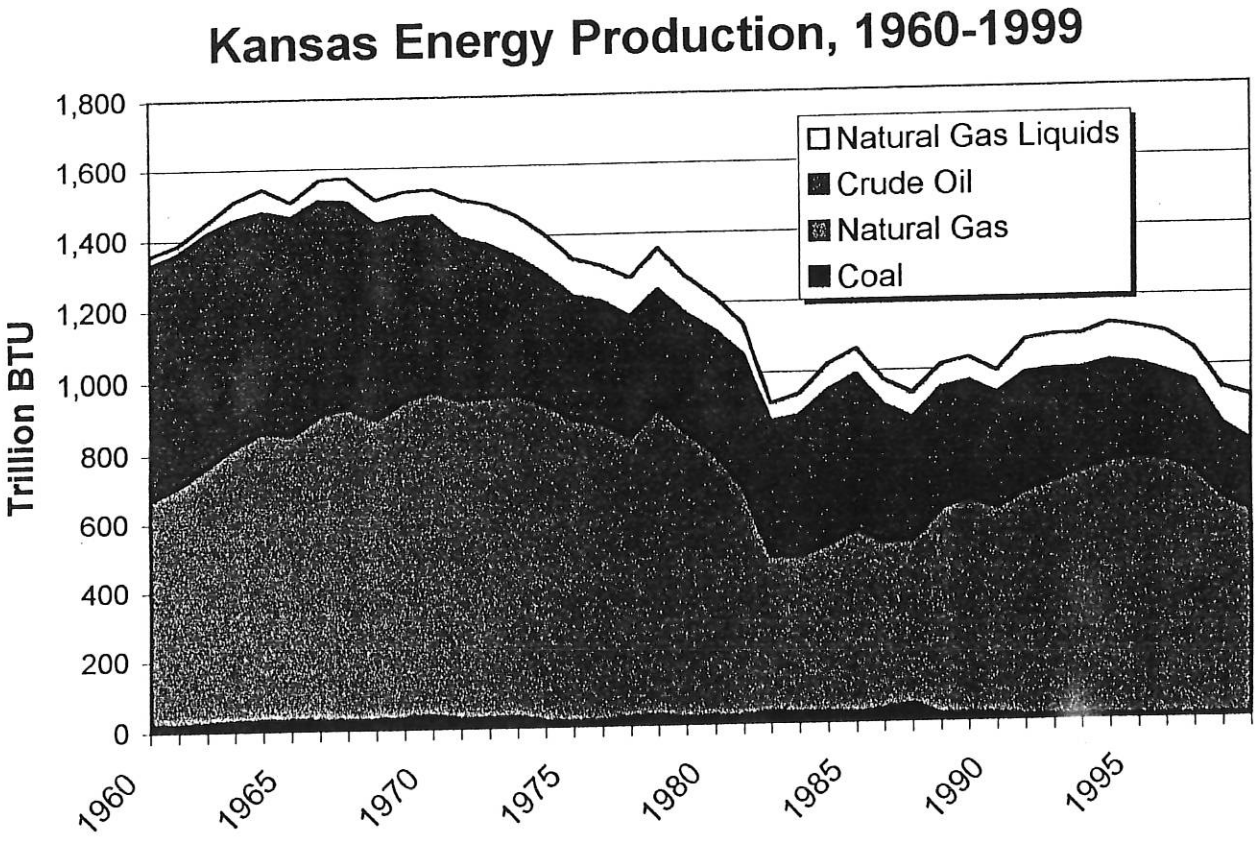

Figure 13 - Kansas total energy production peaked in 1967. The biggest decline in energy production has been in crude oil.

3-25

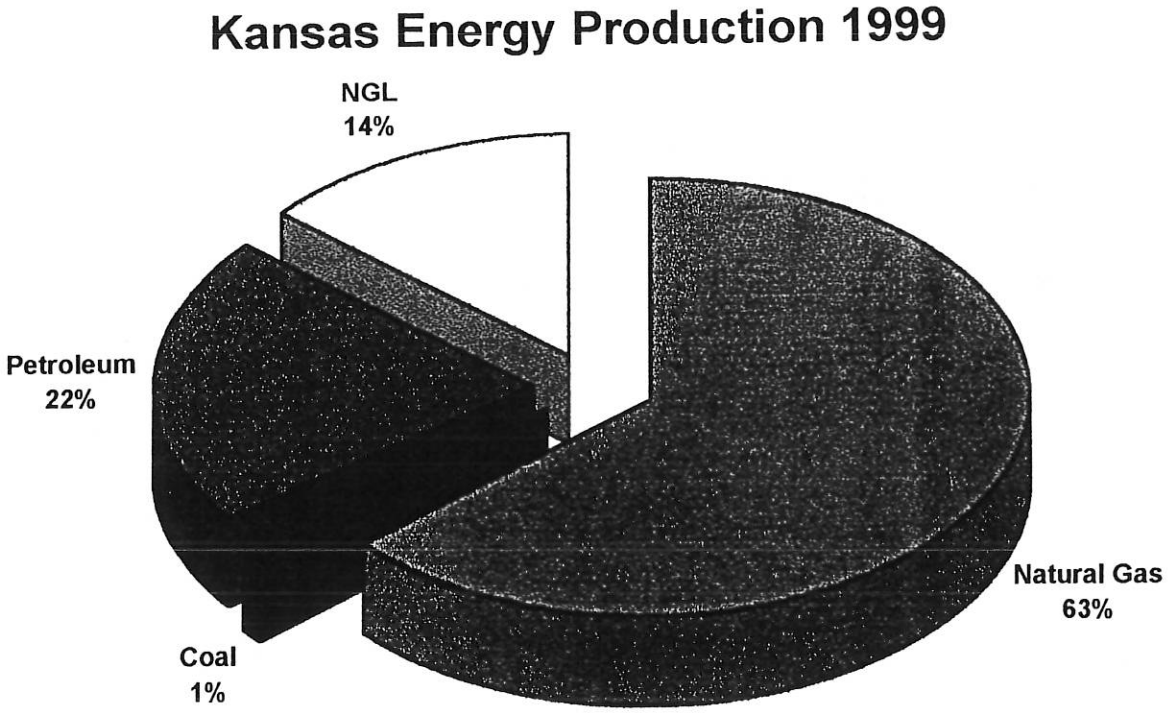

Figure 14 - In 1999, natural gas accounted for approximately two-thirds of Kansas primary energy production. Total primary energy production was 912 trillion BTU.

3-26

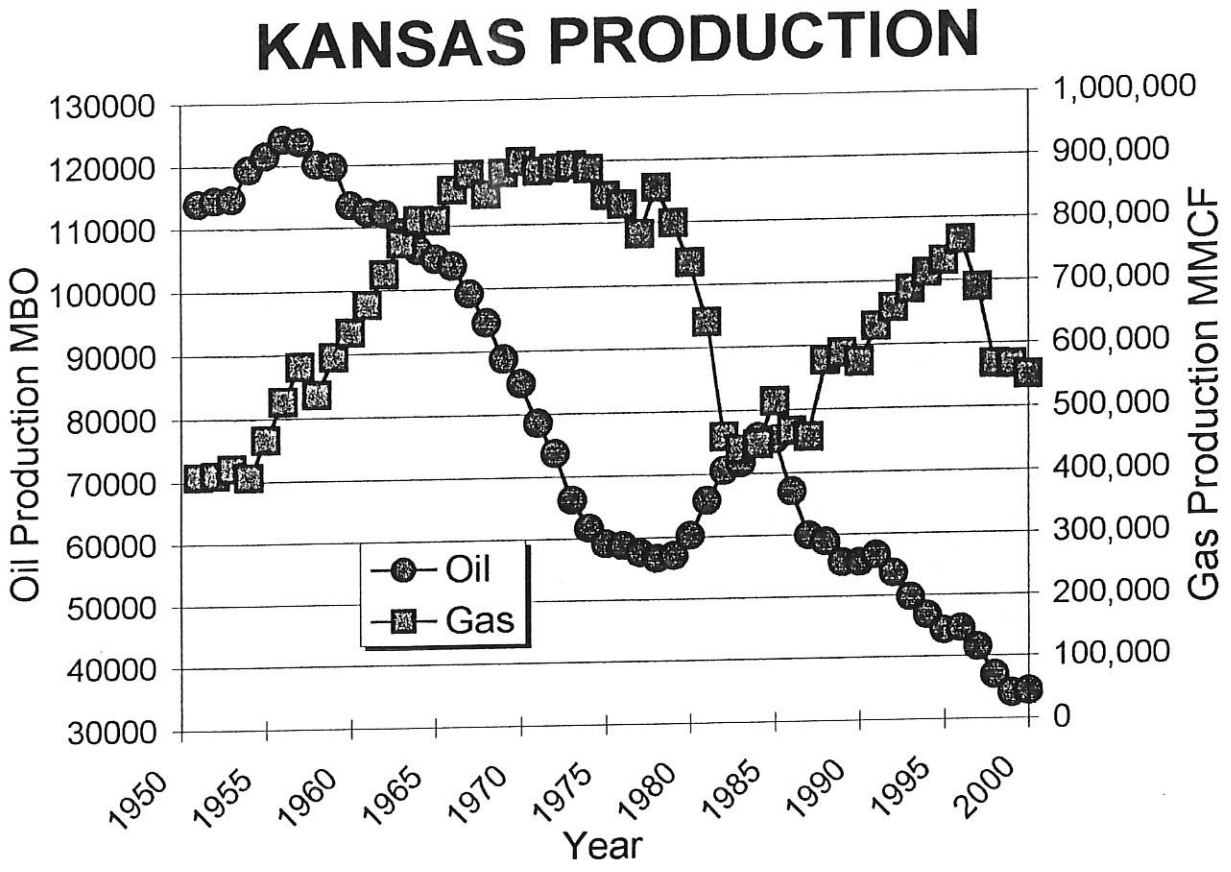

Figure 15 - Kansas oil and gas production from 1951 until 2000. In 1956, oil production peaked at 124 million barrels of oil (mmbo). A second peak in oil production occurred in 1984 at 76 mmbo. Gas production peaked in 1970 at 900 billion cubic feet (bcf). A second peak in gas production of 764 bcf was recorded in 1996. A conservative estimate of production in 2000 is 34 mmbo of oil and 550 bcf of gas.

3-27

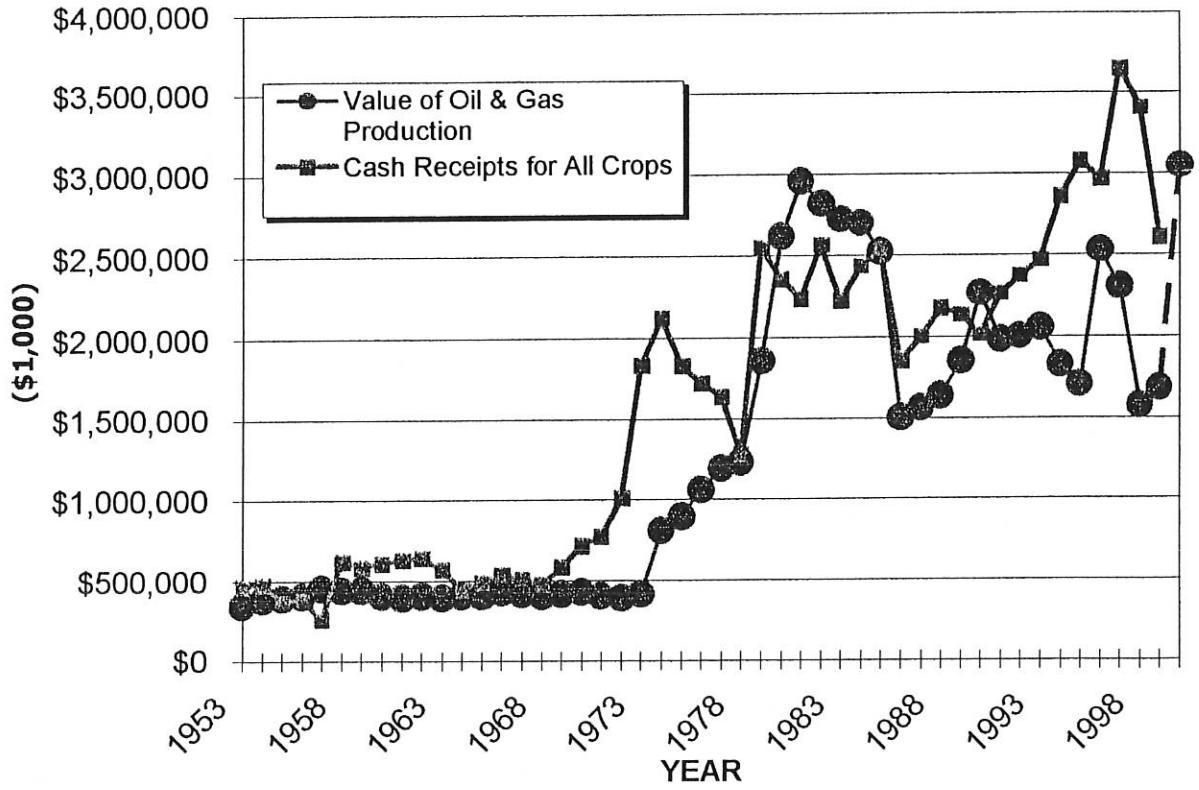

Figure 16 - Wellhead value of Kansas hydrocarbon production compared to cash receipts for all crops. Estimated wellhead value for 2000 is $3.046 billion and represents an increase of $1.4 billion from 1999. Over the past 40 years, the value of Kansas oil and gas production is comparable to the value of total statewide crop production as measured by the cash receipts for all the crops produced in the state.

3-28

Oil

Oil currently provides 22% of the energy produced in the State (by BTU), a smaller share than in the past. In 1960 it accounted for 48% of the total production (by BTU). However, Kansas remains as one of the top 10 oil-producing states for many decades with a current ranking of 8th. In 1999, oil production in Kansas was valued at $547 million at the wellhead with production in 2000 estimated to be worth approximately $1 billion due to higher average wellhead prices.

Until the 1973 Arab Oil Embargo, Kansas produced more oil than it consumed (Figure 17). Production peaked at 124.5 million barrels (bbls) in 1956 and was followed by a steady decline to 56 million bbls in 1979. The regulation of oil prices in the early 1970's resulted in a significant increase in consumption. Coupled with a continued decrease in production, Kansas became a net importer of oil for the first time. Deregulation of oil prices in the early 1980's temporarily reversed the downward trend in production and also decreased consumption. Increased drilling produced another production peak of 75 million bbls in 1985. As energy prices collapsed after 1985, production continued to decrease and Kansas became a net importer of oil for the second time (Figure 17). With exception for the period during the Kuwait-Iraq war, oil production has declined as oil prices have continued to decline (in both real and nominal dollars) until early 1999 (Figures 17, 18). Since 1980, production and consumption have decreased, though the gap between consumption and production has widened. In 1998, Kansas' crude oil production was approximately 35 million bbls, while consumption was around 60 million bbls. The significant increase in oil prices since early 2000 has resulted in a slow increase in oil production (Figure 18).

Kansas' oil production is dominated by stripper well production operated by small independent companies. Stripper wells are economically marginal oil and gas wells that produce at relatively low rates. As a result, stripper production is sensitive to changes in the wellhead oil price and well operating costs (e.g., electricity, taxes, and wages). The definition of stripper wells varies. For oil, stripper production is usually defined as production rates of between 5 and 15 barrels of oil per day (BOPD). In 1998, a total of 36,885 wells representing over 98% of the producing oil wells in Kansas averaged less than 15 BOPD and would classified as stripper production[12]. These stripper wells produce approximately 75% of total Kansas' oil production. Each of these well bores represents a very large capital investment that is at risk of being plugged and abandoned. Each existing stripper well represents a resource that is put back into production when prices rise sufficiently to make production economic. Monthly changes in production over the last decade have shown a strong positive correlation to current wellhead prices (Figure 18).

In 1999, 2,273 different operators reported oil production. The average Kansas independent produced just over 15,000 barrels of oil in 1999. The top ten producing companies produced

[12] Producing well numbers are for 1999 Kansas Geological Survey Open-File Report 2000-16, 1999 Kansas Oil and Gas Production: An Examination of the Importance of Stripper Production. http://www.kgs.ukans.edu/PRS/publication/2000/ofr2000-16/index.html

approximately 25% of the oil in 1999[13]. All ten top producing companies are independents. Five of the top ten producing companies are headquartered and primarily operate in Kansas (Oklahoma 2, Texas 3). Independent operators dominate Kansas' oil production. It is estimated that large integrated petroleum companies control less than 5% of Kansas' oil production (e.g., BP Exxon-Mobil or Texaco).

Forecast – During the winter of 2000-01 we can expect relatively high and volatile prices for both crude oil and refined products. Of special concern are distillate fuels (heating oil and diesel fuel), which are in short supply (Figure 19). A cold winter in the Northeast and Midwest could result in spot shortages of diesel fuel in Kansas during the early spring of 2001. An over compensation by refiners to winter shortages could result in underproduction of gasoline required for the coming driving season.

It is expected and already observed that the higher oil prices during the year 2000 will increase industry activity and petroleum production in Kansas (Figures 18, 20). In the short-term higher prices will make marginal stripper production economically viable and extend the life of many fields. However, Kansas' oil production is at a very mature stage and has displayed a substantial long-term decline. Maintaining and even increasing petroleum supply over the long term depends on the introduction of new technologies, such as horizontal drilling, 3-D seismic, improved access to digital information, and capital-intensive enhanced oil recovery methods such as CO2 flooding.

In 1999, there were only 20,770 oil and gas well completions in the U.S., down from a peak of 70,000-85,000 wells per year in the period 1980-1985. The average drilling rig count was only 623 per week in 1999, the lowest since the 1940's[14]. Since 1940 the highest weekly US rig count was 4,530 recorded on December 28, 1981. The lowest rig count of 488 was recorded on April 23, 1999. With the recent rise in prices the number of active rigs has increased to just over 1,100 (1,114 on 12/29/00). This is probably near the maximum that our present energy infrastructure of rigs and trained crews can support.

In Kansas average drilling activity reached a historical low of 3 per week in 1999 (Figure 20). In 1982 over 200 deep rigs worked in Kansas. In 2000 with the increase in oil and gas prices, the active deep rig count has increased to approximately 25-30 (25 on 12/29/00). Workover rigs increased from 60 to 80 rigs at work to 150 to 170 rigs at work (Workover rigs are smaller rigs that perform maintenance work on producing wells). Again the infrastructure and trained personnel in Kansas oil and gas industry have been decimated. Our current activity is probably

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[13] In 1999, the top ten oil producing companies are in descending order: 1) BEREXCO Inc.; 2) Oxy USA Inc.; 3) Vess Oil Corp; 4) Murfin Drilling Co.; 5) PetroSantander Inc.; 6) Anadarko Petroleum Inc.; 7) Helmerich & Payne, Inc.; 8) Chesapeake Operating, Inc.; 9) McCoy Petroleum Corp.; 10) American Warrior, Inc.

[14] For Kansas, the Baker Hughes Rotary Rig Count was 25 on 12/29/00 and the average rotary rig count in December 2000 was 25. During 1999, the rig count reached a low of 3 in June. Source - Baker Hughes at: http://www.bakerhughes.com/investor/rig/rig_na.htm

the maximum activity that can be supported without a major increase in equipment and personnel.

Over the past two decades economic incentives have not been adequate to attract capital to increase drilling activity and maintain our personnel and capital infrastructure. To rebuild our material and human infrastructure will require a sustained period of stable oil and gas prices. The Kansas industry is dominated by smaller independents operating in mature producing areas within a global market. To substantially increase petroleum production will require attracting technical talent, increased application of technology, and improved access to high risk capital. Risk capital is an essential prerequisite to application of new innovative technologies to increase energy production. Large integrated international companies have relatively easy access to capital markets and significant internal cash flows that can be accessed for innovation capital. Banks, small investors, internal cash flow, and other traditional sources of capital for the Kansas independent cannot meet the capital needed for high-risk projects that represent early or first application of new technologies. If Kansas operators cannot access new technology and high-risk innovation capital, production will continue to decline.

In addition, the continued threat of federal government interference in the market negatively affects the ability of the Kansas industry to attract long-term investment dollars.

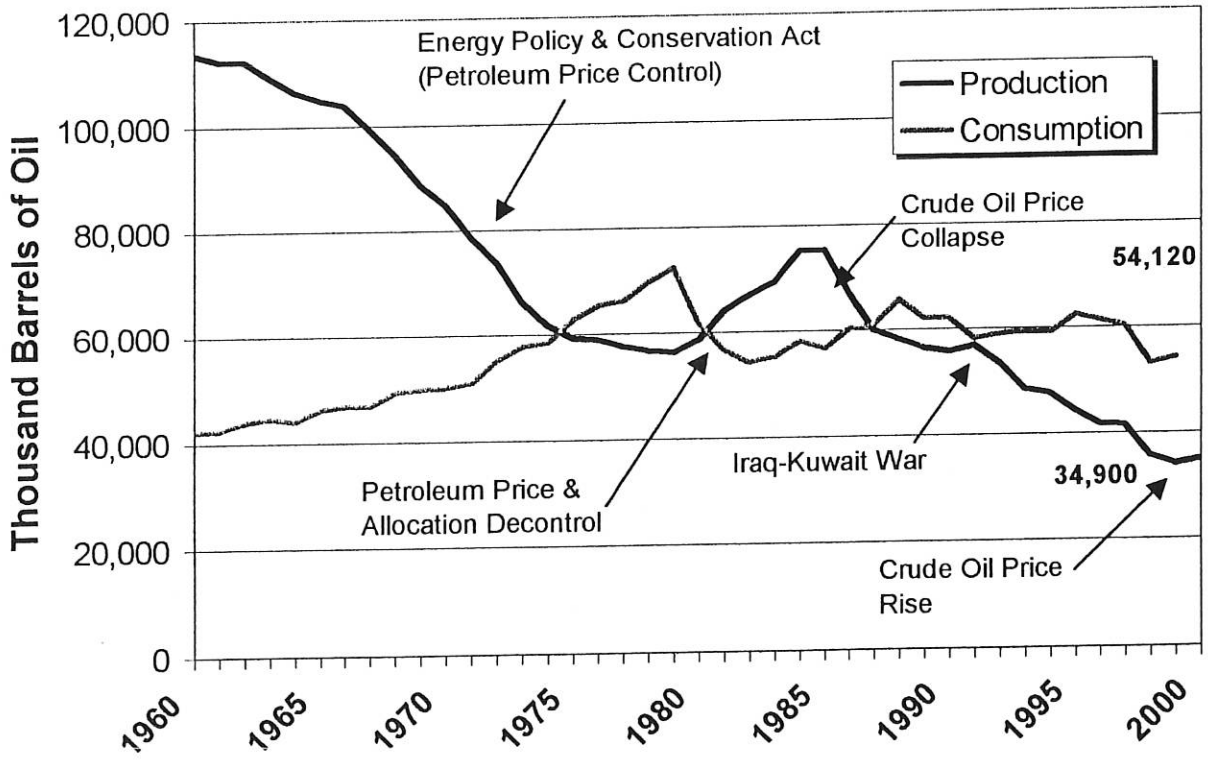

Figure 17 - Kansas oil production and consumption, 1960-2000 with major national and international events that affected both production and consumption.

3-31

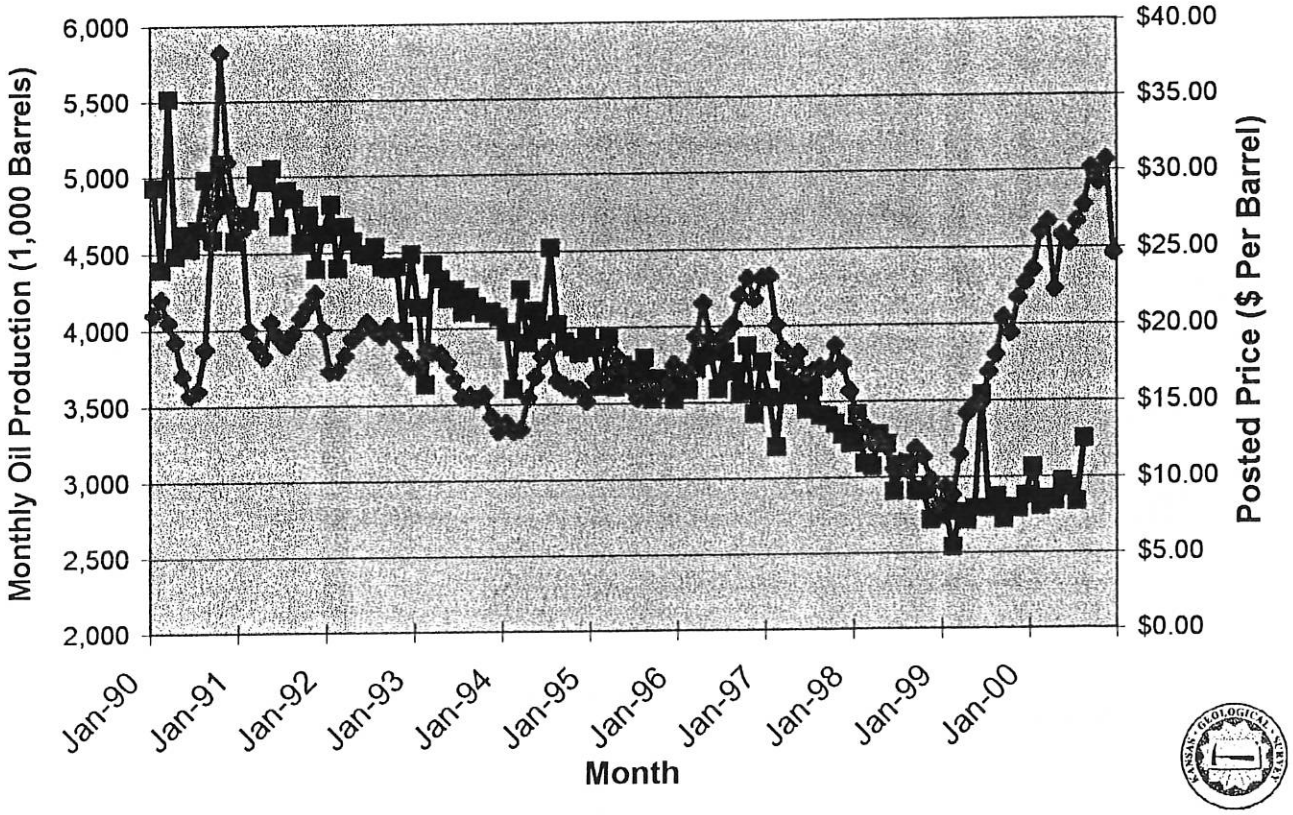

Figure 18 - Monthly Kansas oil production and average monthly wellhead price 1990-2000. Kansas production shows a positive correlation to wellhead price and the effect of rising prices during 2000. Production is through August and prices are the average daily-posted wellhead price through December. Prices are in nominal dollars. Prices are average monthly-posted prices from Koch Petroleum Group for Central Kansas Crude. Prices available at http://www.kochoil.com/.

3-32

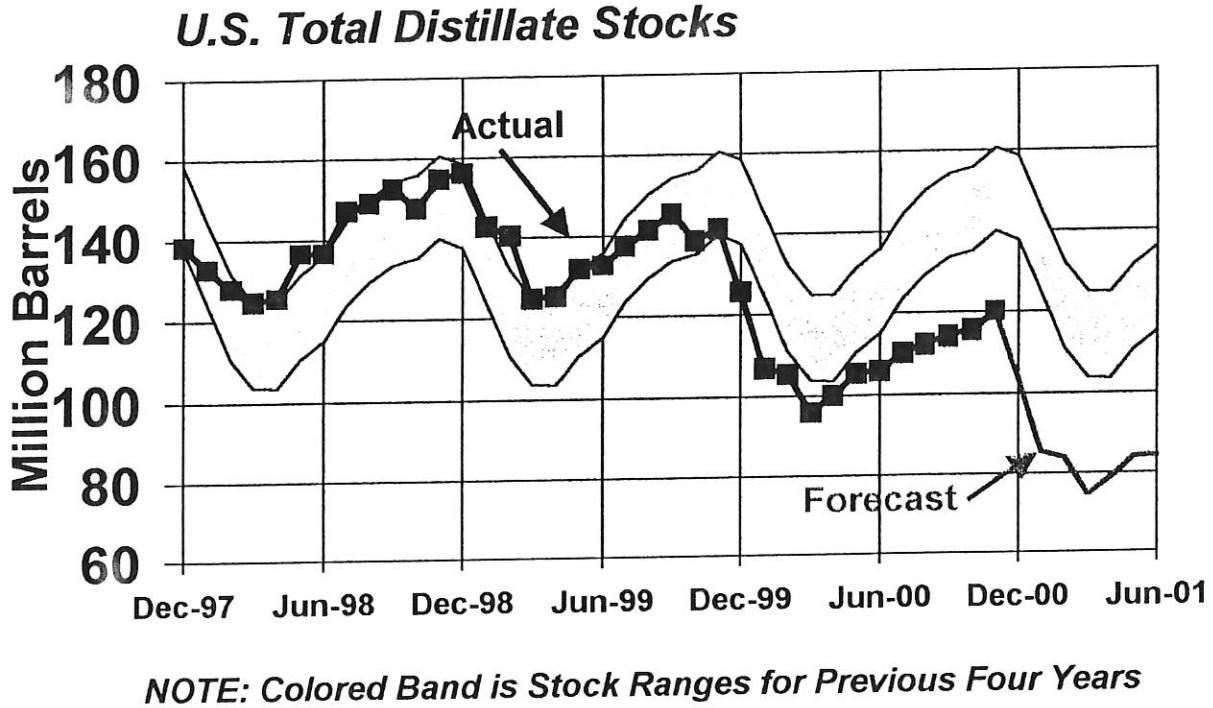

Figure 19 - Monthly U.S. distillate stocks from December 1997 with forecast until June 2001. Sources: U.S. Department of Energy and American Petroleum Institute. Stocks through 12/22/00 total 114.7 million barrels. Forecasted projections follow average monthly storage changes for previous year. Distillates are heating oil and diesel fuel. Kansas, a big consumer of diesel fuel, could be facing spot shortages during the spring of 2001.

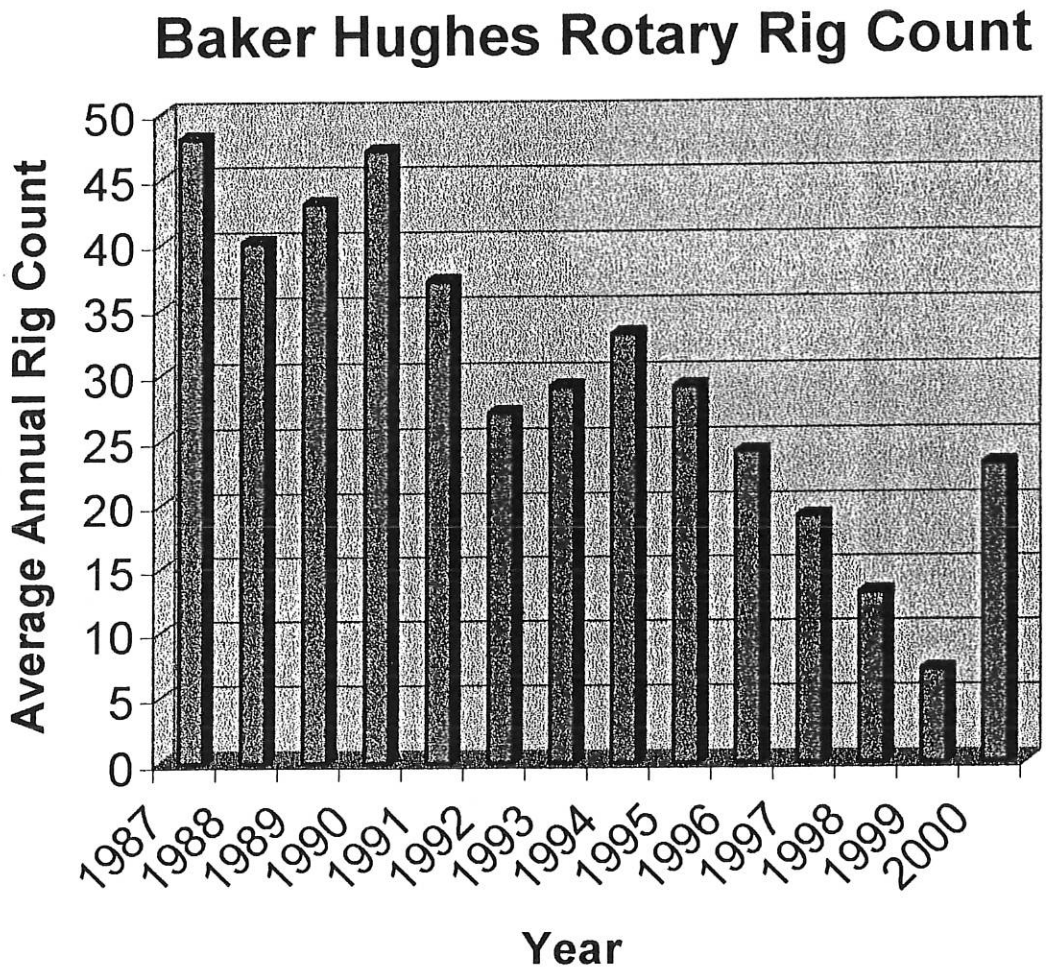

Figure 20 - Average annual Kansas rotary rig count from Baker Hughes. The rotary rig count is a good measure of industry activity and capital investment. Data source: http://www.bakerhughes.com/investor/rig/rig_na.htm.

3-34

Natural Gas

Natural gas accounts for approximately two-thirds of Kansas' current energy production. Annual gas production peaked in 1970 at 900 billion cubic feet (bcf) and consumption peaked two years later at 600 bcf (Figure 21). Kansas is one of the top gas-producing states and remains a net exporter of natural gas primarily to the upper midwestern states. In the current year, Kansas should produce approximately 250 bcf more gas than it consumes. Gas production in Kansas is concentrated in southwest Kansas. The fields in this area of the state, including the Hugoton Field, produced 90% of the gas in Kansas (Figure 22). In 1999, gas production of 566 bcf in Kansas was valued at $1.174 billion at the wellhead. Production in 2000 is estimated at over 550 bcf and valued at approximately $2.052 billion. The increased value is attributed to significantly higher average wellhead prices during 2000 (Figure 23).

Economic conditions and government policies have affected Kansas gas production (e.g., the Energy Petroleum Allocation Act of 1973, the Energy Policy and Conservation Act of 1975, the Power plant and Industrial Fuel Use Act of 1978, and the Price and Allocation Decontrol in 1981). The dramatic decrease in gas production during the 1970's from 900 BCF per year to less than 450 BCF per year appears to be related to market distortions resulting from federal government policies (Figure 21). Subsequent decontrol in 1981 of prices, allocations, and uses of fuels, and the 1986 Kansas Corporation Commission's (KCC) modified spacing rules in the Hugoton Field contributed to a second production peak of just over 700 bcf in 1996 (Figures 15, 21). Production has declined since 1996, but appears to have stabilized at approximately 500 bcf. The production decline is attributed to decreased average reservoir pressure in the Hugoton area from over 400 pounds per square inch (psi) to under 60 psi today[15]. As reservoir pressures continue to decline, intelligent energy policies, significant investment capital, and new technologies must be developed to assure continued production.

Kansas gas production is dominated by the large fields of southwest Kansas (e.g., Hugoton, Panoma, Byerly, Bradshaw, and Greenwood). However, stripper gas production in Kansas is significant. Stripper gas production would generally be anything less than 90 thousand cubic feet per day (MCFPD). In Kansas, 63% of the 17,146 producing gas wells averaged less than 90 MCFPD and produced 24.1% of the gas[16]. As with oil, stripper gas production is sensitive to changes in the wellhead oil price and well operating costs (e.g., electricity, taxes, and wages).

In 1999, 1,015 different operators reported natural gas production. The average Kansas independent produced just less than 550,000 mcf of gas in 1999. The top ten producing

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[15] Personal Communication from David P. Williams, Kansas Corporation Commission. The 1999 average well head shut-in pressure for the field was 52.5 psig. The original estimated reservoir pressure for the entire Hugoton Field (Chase Group) was 435 psig.

[16] Producing well numbers are for 1999 Kansas Geological Survey Open-File Report 2000-16, 1999 Kansas Oil and Gas Production: An Examination of the Importance of Stripper Production. http://www.kgs.ukans.edu/PRS/publication/2000/ofr2000-16/index.html

companies produced approximately 78% of the gas in 1999. Seven of the top ten producing companies are independents. Kansas' gas production is a mix of the largest integrated companies (e.g., Exxon-Mobil and BP-America) and independent companies (e.g., Anadarko and Helmrich & Payne).[17]

The seasonal nature of natural gas production has changed significantly after the mid-1990's. Prior the mid-1990's natural gas displayed a seasonal pattern with peak production during the winter heating season (Figure 23). This variation in production was also reflected in seasonal price fluctuations. With the construction of underground gas storage, the development of futures markets, and the increased use of natural gas in electric power generation, seasonal variations in production and price have disappeared. As a result, during the summer there is no longer a cheap and plentiful supply of natural gas to power irrigation pumps in southwest Kansas.

Forecast - Demands on natural gas for electric power generation are absorbing all the excess natural gas supply during warm months, gas that traditionally was put into storage for use as a home heating fuel during the winter. As a result entered the winter of 2000-01 with very low natural gas storage levels and extremely high prices (Figures 23, 24).

The last few winters have had above-normal temperatures, masking the increased demand for natural gas resulting from the strong economic growth and the increased electrification. The winter of 1999-2000 had 3,404 Heating Degree Days (HDD). The normal winter is 3,958 HDD. As this winter appears more seasonable, wellhead prices are exceeding $9-10/MCF for periods of time. As storage levels approach historically low levels, the ability of underground natural gas storage facilities to meet peak demand will be significantly degraded[18]. By using natural gas to solve an electric supply problem, we have creating a gas supply problem.

Agriculture in western Kansas depends on natural gas to run irrigation pumps and is particularly vulnerable to high gas prices. Utility companies have a percentage of winter demand covered by longer-term contracts for natural gas. This will partially buffer utilities (and residential consumers) from short-term price increases or at least delay the onset of them. Agricultural interests generally do not have such contracts, buying gas on the spot market. Farmers could be hit with an immediate doubling or tripling of energy costs to irrigate fields. Also, the highest prices may coincide with the end of the heating season and the onset of irrigation as storage levels reach their lowest levels (i.e., April-May-June, Figure 20). Similar negative impacts could be felt in the chemicals industry (e.g., ammonia production).

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[17] In 1999, the top ten natural gas producing companies are in descending order: 1) Exxon Mobil; 2) BP America; 3) Oxy USA, Inc.; 4) Anadarko Petroleum Co., 5) Pioneer (Mesa); 6) Helmrich & Payne Co., 7) Chesapeake; 8) Kansas Natural Gas Co.; 9) Osborn Heirs Co.; 10) Texaco.

[18] Storage deliverability is a function of remaining working gas levels. As working gas volumes decline, the maximum rate that gas can be delivered declines. Working gas levels below 700 bcf can result in late season deliverability below demand requirements. See: J. A. Dieter and David A. Pursell, Underground Natural Gas Storage, Simmons and Company International Energy Industry Research Paper, June 28, 2000. http://www.simmonsco-intl.com/research

If we limp out of the winter 2000-01 with less than 500 Bcf of gas in storage, we will barely get storage back to even half-full before newly installed summer gas-fired electricity plants are cranked up. If summer weather is hot, particularly in the population areas of the eastern U.S., gas storage withdrawals may occur in the summer. If this does not happen in summer 2001, it will almost certainly occur a year later. Once gas withdrawals begin in the summer, the U.S. has one winter left before our storage system runs dry. These demand-side pressures begin to raise questions such as:

- How can enough gas be produced to meet demand at affordable prices?
- Can we increase gas production fast enough to keep up with a demand increasing from 21 trillion cubic feet (tcf) in 1999 to 30 tcf in 2020 or sooner?[19]

The recent low price for natural gas over the last few years has depressed exploration and development efforts in the U.S. and Kansas. In addition, restrictive or prohibited access to federal lands has limited access to many prospective areas for new gas discoveries[20]. With the recent price increases, industrial activity and gas production have increased. However, the U.S. and Kansas industry has been decimated. It will take significant time, increased investment capital, and application of advanced technologies to increase natural gas production. Present rig activity in the U.S. and Kansas needs to increase approximately six-fold in order to sufficiently increase natural gas supply to catch up with the rapidly increasing demand[21]. It will require significant effort and cooperation to increase Kansas rig activity from 25 to 150 along with all the related geologic, geophysical, and engineering activity.

Last year (1999) the value of natural gas production at the wellhead in Kansas was $1.034 billion. This year, we project that figure will reach $2.052 billion. This will certainly have a positive impact on state tax revenues. Severance tax revenues will probably double to over $100 million. Additional Kansas ad valorum and income tax revenues from increased economic activity will be even greater.

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[19] Statement on oil and gas supply and demand by Department of Energy EIA Administrator Jay Hawkes before the Subcommittee on Energy and Power of the Commerce Committee, U.S. House of Representatives on May 24, 2000. http://www.eia.doe.gov/neic/speeches/hrtest524/TestimonyMay242000Final.htm.

[20] 1999, Meeting the Challenges of the Nation's Growing Natural Gas Demand, Report from the National Petroleum Council. Available at http://www.npc.org/.

[21] *Outlook for Natural Gas: Is a Train Wreck Pending?* Presentation by Matthew R. Simmons at U.S. Department Of Energy, Strategic Initiatives Workshop, December 6 - 9, 2000 available at: http://www.simmonsco-intl.com/research/default.asp?viewnews=true&newstype=1#Industry_group_speeches.

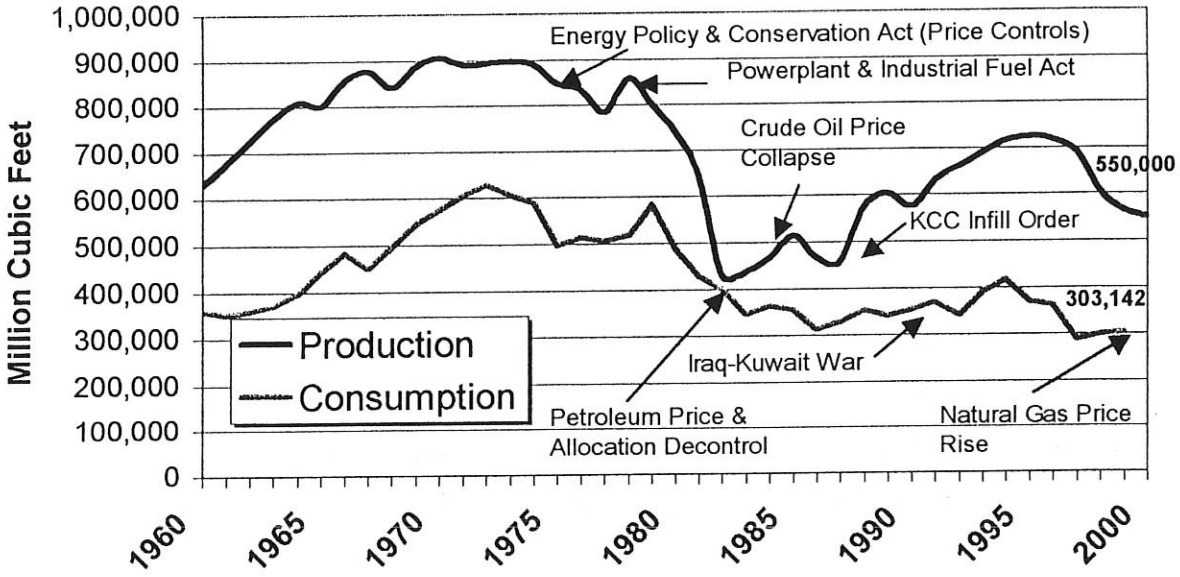

Figure 21 - Kansas natural gas production and consumption, 1960-2000, with major national and international events that affected both production and consumption.

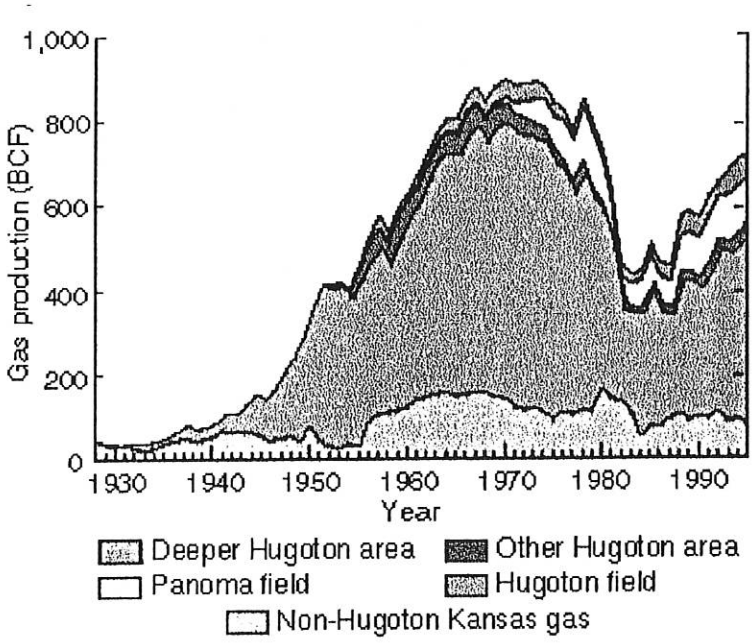

Figure 22 - Gas production in Kansas showing the importance of production from gas fields in the Hugoton area. (BCF = billion cubic feet of gas). Chart from Kansas Geological Survey, Public Information Circular 5, http://www.kgs.ukans.edu/Publications/pic5/pic5_1.html.

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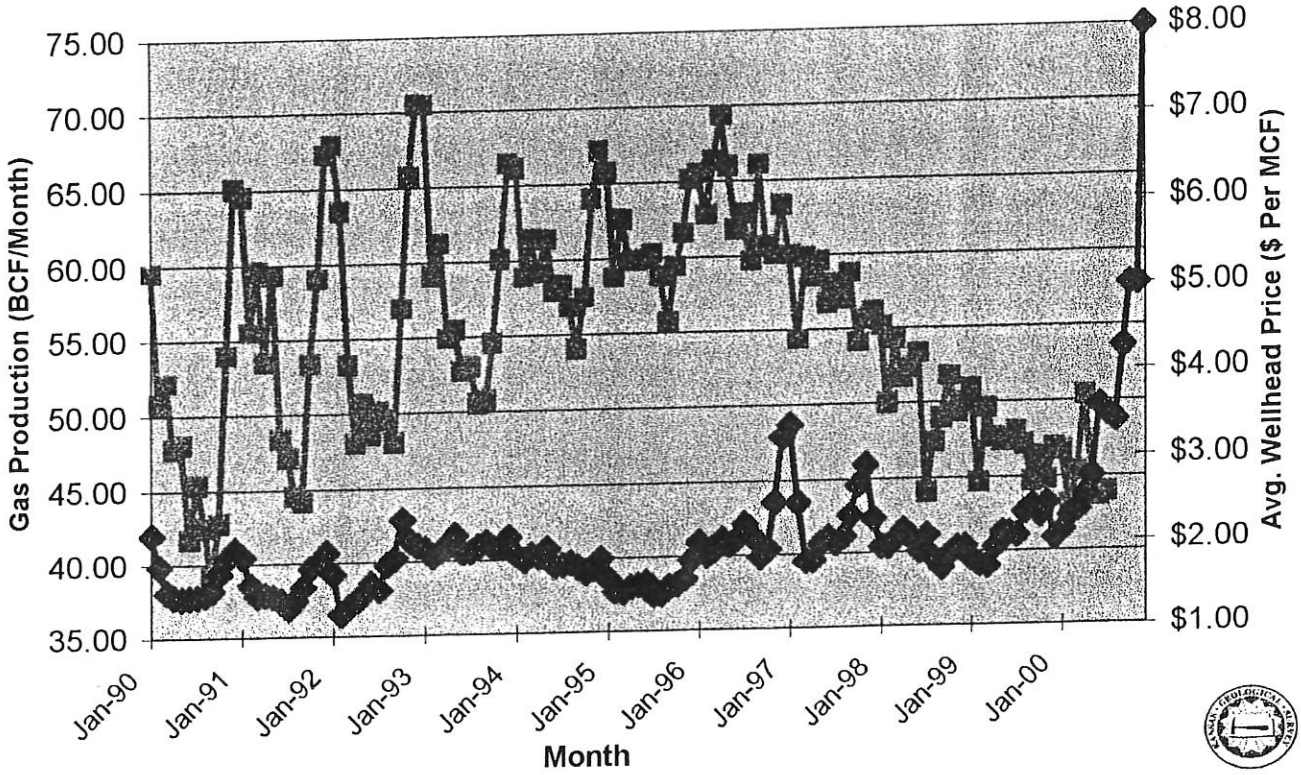

Figure 23 - Monthly Kansas natural gas production and average monthly wellhead price 1990-2000. Kansas production shows significant changes in production patterns. The seasonal production pattern of the first part of the decade disappeared. The steady decline from early 1997 is attributed to declining pressures in the major gas fields of southwest Kansas. However, the decline has slowed and monthly production may be increasing during 2000. Production is through August 2000 and prices are the average daily-posted wellhead price through December 2000.

3-39

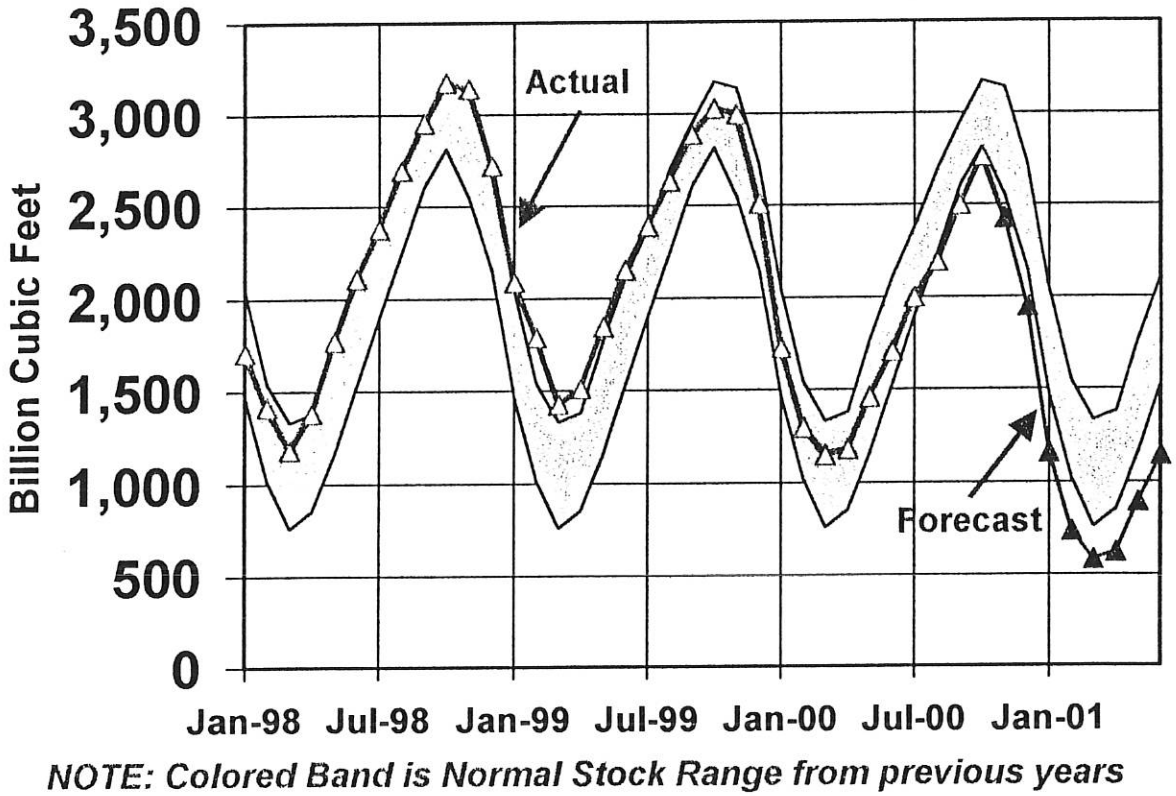

Figure 24 - Monthly U.S. natural gas stocks from January 1998 with forecast until June 2001. Sources: U.S. Department of Energy and American Gas Association. Stocks through 12/22/00 total 1,938 bcf. Forecasted projections follow average monthly storage changes for previous year. Kansas along with the rest of the U.S. could face spot shortages during the spring of 2001.

Comments to:

The Kansas Senate Committee on Utilities

on

Hearings on Natural Gas

January 17, 2001
Topeka, Kansas

Submitted by:

Dick Brewster
bp

Mr. Chairman, Members of the Committee, for the record, my name is Dick Brewster, and I am Director of Government Affairs for bp.

As I understand my role today, it is to address you from the perspective of a major gas producer. Actually, we search for, develop, produce and market gas in the same way as a smaller, independent producer. Geologists look for areas likely to be productive, seismic activity is done and analyzed. If the area looks promising, we negotiate with mineral owners for the right to drill and produce. Once wells are drilled and brought into production, gathering lines are laid. The gas runs through these gathering lines, generally to a gas processing plant. At the tailgate of the plant, the gas generally goes into transmission lines, which, as you've already heard, take the gas to local distribution utilities.

I brought a booklet published by the NGSA (Natural Gas Supply Association), entitled "Building America with Natural Gas." This booklet outlines the process in a concise and clear manner, and should be a fairly quick read. I offer it to you as a way to save time today. The NGSA is an association made up of natural gas producers. Many are integrated corporations like bp, and many are independent gas producers of vastly different sizes.

Natural gas is an abundant resource. Finding and producing natural gas is a competitive business. It is a very risky business. And it is extremely capital intense.

Current U. S. gas consumption is around 22 trillion cubic feet per year, and that number is expected to reach 30 tcf by 2015. To meet this demand, producers will invest an estimated $658 billion by 2015, an annual average upstream capital expenditure of $39 billion. This represents a 44 percent increase over the annual average of $27 billion between 1991 and 1998. The good news is that there are estimated to be total recoverable reserves in North America of more than 2,400 tcf, a supply for over a century.

There are more than 8,000 producers of natural gas in the U. S. They range in size from large international companies, to small family-owned operations. Independent producers supply about 65 percent of the total U. S. production. The top five producers supply less than 25 percent, so no one dominates the marketplace. Natural gas is a commodity, traded, bought and sold on commodity markets. Gas producers can no more establish the price of natural gas, than a farmer can establish the price of wheat.

The Federal Government regulated the price of natural gas at the wellhead until the enactment of the NGPA in the mid-'80's. This phased decontrol brought lower prices to the market, benefiting natural gas users. Full decontrol happened in 1993. And, in most of the last half of the 1990's, prices remained below $3.00 per Mcf.

This low-price environment resulted in fewer wells being drilled, fewer drilling rigs being used, fewer field hands and service companies to drill for natural gas, and ultimately, the supply crunch which is partially driving the price up today.

Gas producers are responding, however. As of September, 2000, there were 816 rigs drilling for natural gas in the U. S., compared to 371 in April, 1999. But bringing more production on line takes time; it simply cannot be accomplished overnight.

The natural gas is there. It will be brought to market. Prices will once again become more stable. And supplies will be adequate to meet the needs of the growing domestic economy.

What can/should this legislature try to do, in order to help assure adequate gas supplies, reasonable prices, and a long-term stable marketplace?

Frankly, there is not a lot. Natural gas production in Kansas is mature and growth in Kansas gas and oil production will be limited. And, unfortunately, the jurisdiction of this Legislature ends at the state line. But, gas producers in Kansas, are fighting hard to reduce the rate of declining production in the state, and to develop new production as well. And I believe there are things you can do to help.

I would like to ask the committee to consider introducing a bill to make three changes in a statute put into place three years ago. The existing law is designed to provide incentives, in the form of a severance tax holiday, for certain types of incremental production. On the handout, there are three changes proposed in KSA 79-4217. The first is intended to make more workable the way to determine the base production of a natural gas well, against which increased, or "incremental" production is measured. I have been told the existing language for determining base production for natural gas is problematic.

The second proposed change adds horizontally drilled wells, and coal bed gas production to the list of the types of activities to be granted the incentives.

The third part of this proposal removes the so-called "price caps" in current law. Under the law, all the incentives go away for the fiscal year following a calendar year in which the average price of Kansas crude is over $20.00 a barrel, or in the case of gas, if the average price paid for gas at the wellhead in Kansas is over $2.50 per Mcf. Obviously, we're over the price caps on both crude and natural gas.

We recommend removing these caps because Kansas needs to compete with other producing states for its share of the upstream capital investments which I discussed earlier. Let me give you an example of how these incentives benefit the State of Kansas:

Because of the incentive for wells drilled with 3-Dimensional seismic data, Oxy, a major player in natural gas production in Southwest Kansas, over the past two years, has spent some $30 million shooting 3-D seismic, over $12 million drilling about 30 wells. The resulting production, if it were subject to the severance tax, would have paid about $600,000 per year in severance tax. That tax was not paid. But the value of those wells will result in Oxy paying about $1.25 million per year in additional property taxes to local taxing subdivisions. It seems the state's investment has paid off well, even before one factors in the additional payroll and the resultant sales and income tax paid. And, once the incentive period is over, this gas production will pay severance and property taxes. I am told that Oxy will be drilling another 100 or so wells, and perhaps shooting additional 3-D seismic, if the incentives can continue to be used.

Many other producing states have various types of incentives on the books. As I indicated, is not a question of whether the industry will spend some $39 billion a year in upstream capital. But it is a question as to where it will be spent. Removing the price caps on the incentives will help Kansas compete for its share of these investment dollars. And, it is a solid investment for Kansas. And, of course, if no one uses the incentives, the State has lost nothing.

Mr. Chairman, members of the Committee, I believe this proposal can have a positive effect on Kansas gas and oil production. It can attract and keep investment money in the state. I know today is not the place for full hearings on this proposal. Once introduced, those of us who support the bill will have the burden of providing substantially more information and background. I would ask this committee to consider introducing the bill, however, as it seeks to do what it can to encourage the maintenance of production of gas and oil in Kansas.

I appreciate very much the chance to appear today, and will be happy to answer any questions.

Respectfully Submitted,

Dick Brewster
Government Affairs
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Proposed Changes to Incentives for "Incremental Severance and Production"

(K.S.A. 79-4217(b)(6)

Amend KSA 79-4217 (b)(6)(A)(2*)* to read as follows:

> "Base production" for a gas well means the average extrapolated monthly production determined from the standard backflow equation utilizing the decline rate, the last state supervised well test and gas in place from historical shut-in pressure vs. cumulative production plot. "Base production" for an oil well means the average monthly amount of production for the twelve-month period immediately prior to the production enhancement project beginning date, minus the monthly rate of production decline for the well or project for each month beginning 180 days prior to the project beginning date. The monthly rate of production decline shall be equal to the average extrapolated monthly decline rate for the well or project for the twelve-month period immediately prior to the production enhancement project beginning date, except that in the case of either oil or gas production, the monthly rate of production decline shall be equal to zero in the case where the well or project has experienced no monthly decline during the twelve-month period immediately prior to the production enhancement project beginning date. Such monthly rate of production decline shall be continued as the decline that would have occurred except for the enhancement project. Any well or project which may have produced during the twelve-month period immediately prior to the production enhancement project beginning date but is no capable of production on the project beginning date shall have a base production equal to zero. The calculation of the base production amount shall be evidenced by an affidavit and supporting documentation filed by the applying taxpayer with the state corporation commission.

After KSA 79-4217 (b)(6)(A)(4)(vii) add the following:

> (vii) production from a horizontally drilled well drilled and completed in a manner which encounters and produces oil or gas from a geological formation at an angle in excess of seventy (70) degrees from the vertical and which laterally penetrates a minimum of one hundred and fifty (150) feet into the pay zone of the formation;
>
> (viii) production of natural gas or oil from a coal bed.

Amend KSA 79-4217 (b)(6)(D) as follows:

> ~~The exemptions provided for in this paragraph (6) shall not apply for 12 months beginning July 1 of the year subsequent to any calendar year during which: (1) In the case of oil, the secretary of revenue determines that the weighted average price of Kansas oil at the wellhead has exceeded $20.00 per barrel; or (2) in the case of natural gas the secretary of revenue determines that the weighted average price of Kansas gas at the wellhead has exceeded $2.50 per Mcf.~~