Kansas Oil Production Drops Significantly in 2015

LAWRENCE — Oil production fell sharply in Kansas during 2015 as oil prices continued to drop, although natural gas production fell only a fraction of 1 percent despite noticeable gas price declines, according to estimates from the **Kansas Geological Survey** at the University of Kansas. Following a steady increase in oil production for the state as a whole from 2006 to 2014, production fell more than 8 percent to just below 45.5 million barrels in 2015 — down from 49.5 million barrels in 2014. At the same time, the number of oil and gas wells drilled in the state declined almost 64 percent, from 5,765 in 2014 to 2,080 in 2015.

"Kansas crude oil production began a dramatic downturn in October 2014 when monthly production was 4.4 million barrels," said KGS geologist Lynn Watney. "Production in February 2016 was down to just over 3 million barrels — a decline that rivals the fall in late 1998 and 1999. The current decline is another one for the record books, having impacted the industry, communities, states and countries alike," he said. The average monthly oil price fell to $39 per barrel in 2015 from $82 in 2014. As a result of the combined drop in production and price, the cumulative value of Kansas oil declined from $4 billion in 2014 to $1.8 billion in 2015.

Production in eight of the top-10 oil-producing counties fell. The two exceptions were Harper County, which led the state for the first time, and Finney County, which moved from fifth to third following a 6 percent rise in production. Harper County rose from the state's 33rd highest producer in 2010 to first in 2015 when annual production there rose to 3.4 million barrels. Most of the oil — and natural gas in the county is produced from the Mississippian limestone play using horizontal drilling with multistage hydraulic fracturing activities, popularly known as "fracking".

"About 1,100 horizontal wells have been drilled in Kansas over several decades," said KGS geologist David Newell. "However, 2010 marked the beginning of a new era in south-central Kansas where staged massive hydraulic fracturing was extensively used in long-reach horizontal wells." The focus of drilling in the play, colloquially known as the "Mississippi lime," shifted from Barber County into Harper County in 2014. Barber County dropped from fourth in 2014 to ninth in 2015.

Ellis County, which has led the state in oil production in all but two years since 1966, dropped to second place as production there fell more than 10 percent, from 3.35 million barrels in 2014 to 3 million in 2015. "Ellis County is a well-established producing area that now has many marginal wells," Watney said. "Falling production levels there parallel the rate of the state's production decline, which have brought production back to 2002 levels." Besides Harper, Ellis and Finney, the top-10 producing counties in 2015, in order, were Barton, Russell, Ness, Rooks, Haskell, Barber and Logan. Oil production was reported in 91 of the state's 105 counties, with about 44 percent from the top 10.

Even though natural gas production in Kansas declined less than 1 percent — from about 288 billion cubic feet (bcf) in 2014 to 285 bcf in 2015 — production declines continued at a brisker pace in the state's largest gas area, which is also one of the largest in the world. "The Hugoton Gas Area in western Kansas, which accounts for a vast majority of the state's gas production, has experienced a long-term, steady production decline of 7 percent a year since the late 1990s," Watney said. "However, natural gas production from the Mississippian limestone play in Harper County increased to more than 30 bcf in 2015, up from about 5 bcf in 2011 just after the drilling boom hit the area."

As Harper County moved up to first in the state in oil production, it also jumped from fifth to second in natural gas production, with an increase in natural gas production of 24 percent. Most of the wells in the Mississippian play produce both oil and gas. Stevens County continued to lead the state in production, with a nearly 1 percent increase in 2015 following an 11 percent decline in 2014. Most of the natural gas there is produced from the Hugoton Gas Area. Grant County, which had a 6 percent increase, was third. The other top-10 natural gas producing counties, in order, were Barber, Kearny, Haskell, Finney, Morton, Stanton and Seward. All had decreased production except Stanton, which had a slight increase. Gas production was reported in 55 of the state's 105 counties, and about 74 percent was in the top-10 producing counties.

Production in southeastern Kansas, where natural gas is produced mainly from shallow coal beds, continued to decline. Coal bed methane (CBM) accounted for 9.1 percent of natural gas production in Kansas in 2015. Peak CBM production, in 2008, was about 49 bcf compared with just under 26 bcf in 2015. The average monthly price of natural gas in 2015 was $2.63 per thousand cubic feet (mcf), and the cumulative value in Kansas was $755 million. In comparison, the average monthly price in 2014 was $3.92 per mcf, and the cumulative value in Kansas was $1.3 billion. "Although natural gas and oil production in Kansas are virtually equivalent with regard to their energy content, the income generated from natural gas is presently only a fraction of that from oil," Newell said.

Current and historical production data for the entire state,
as well as by county and field, are available at http://www.kgs.ku.edu/PRS/petroDB.html.