

## **ARBUCKLE OIL PRODUCTION AT AMES IMPACT CRATER APPROACHES 11 MILLION BARRELS**

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~ 2 Miles

NHK image

**Subsurface view of the Ames astrobleme showing major structural features and well positions. Imaging is based on area well control and 3-D seismic coverage.**

Cumulative production figures through the end of 2006 show that Arbuckle oil production at the Ames impact structure (astrobleme) in Major County, Oklahoma is approaching 11 million barrels. The Ames feature was discovered in 1991, and ~ 60 wells have been completed in the Arbuckle formation, which includes granite breccia (referred to as “Arbuckle siliceous” by the Oklahoma Corporation Commission). Cumulative production for Arbuckle wells is ~10.9 million barrels of oil (MMBO) and ~11.9 billion cubic feet of gas (BCFG). Most of the oil production is from fractured and brecciated granite of the central uplift. Three active wells in Sec. 20-21N-9W continue the outstanding performance: the Gregory 1-20, James 1-20, and Wayne 1-20. These are reported on the same lease and have produced a combined total of over 4.21 MMBO and 1.55 BCFG. Approximately 30 Arbuckle producers remain active. Oil and gas production for the Gregory, James, and Wayne over the past 15 years is given on the following page.

Lease No. 093-69491: Gregory, James, Wayne

<b>Year</b>	<b>Oil (BBLS)</b>	<b>Gas (MCF)</b>
1991	16,682	2,188
1992	174,869	53,946
1993	487,123	176,247
1994	733,486	264,637
1995	573,267	200,897
1996	368,834	131,473
1997	345,177	116,625
1998	343,607	117,948
1999	282,690	106,380
2000	312,620	133,842
2001	223,123	92,648
2002	122,933	47,499
2003	71,601	30,660
2004	53,531	25,069
2005	52,399	22,631
2006	<u>49,424</u>	<u>22,972</u>
<b>Totals:</b>	<b>4,211,366</b>	<b>1,545,662</b>

Production peaked in 1994 when the combined flow from the three wells averaged over 2000 barrels of oil per day (BOPD) and 730,000 cubic feet of gas per day (730 MCFD). At the close of 2006, the rate averaged ~135 BOPD and 63 MCFD. Gross production value of these particular wells since 1991 appears to have exceeded \$120 million.

Primary proved reserves at Ames were previously and conservatively estimated by the University of Oklahoma's Exploration and Production Geosciences (EDGe) to be ~18 MMBO and ~13 BCFG. EDGe also estimated that ~ 1 billion barrels of water are in place and that the "reservoir efficiency" of Ames is less than 5% (a significant 5% none-the-less). Stated another way, less than 5% of the fractured and brecciated target rock is occupied by hydrocarbons, while the remaining 95% is filled with water. A relatively strong water drive is present at Ames.

The core photo on the next page shows the large pore spaces in the lithified granite debris from the central uplift area at a depth of ~ 9,000 ft. During field development this particular type of basement rock was the primary drilling objective at Ames. Although classified as (Cambro-Ordovician) Arbuckle siliceous, it is actually of Precambrian age. Continental Resources, Inc. supplied the Wayne 1-20 core to EDGe.



**Core segment from the Wayne 1-20 well, Sec. 20-21N-9W  
Major County, Oklahoma.**

The OU Core Library has ~ 70 ft. of Ames core from the Nicor No. 18-4 Chestnut well, Sec. 18-21N-9W. The core has been thoroughly slabbed and is available for further study (file # 3319 at Core Library; contact Gene Kullmann at 405-360-2886).

A detailed discussion of the Ames crater titled *Ames Structure in Northwest Oklahoma and Similar Features: Origin and Petroleum Production (1995 Symposium)* can be found in Circular 100 (edited by Kenneth Johnson and Jock Campbell, published in 1997). This 396-page hardcover is available from the Oklahoma Geological Survey Publications office (405) 360-2886, fax (405) 366-2882.

Also, the Ames Astrobleme Museum located in Ames, is nearing completion. Funding for this educational walk-through display is provided by Harold Hamm, President of Continental Resources, Enid, OK. The museum will feature numerous image panels and a video showing the formation of the Ames crater and its discovery as a significant geological and economic resource. Dedication is set for summer 2007.

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Production figures were provided to Parwest Land Exploration courtesy of IHS Energy and the Oklahoma Corporation Commission. Parwest will continue to update Ames and other impact articles for online readers.

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