Drilling and Oil and Gas Production History at the Ames Feature, Major County, Oklahoma

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ABSTRACT.—The discovery of oil and gas production from Arbuckle (Cambrian–Ordovician) rocks in the area of Ames, Oklahoma, during 1990 and 1991 caused an active exploration effort that resulted in the development of significant oil and gas reserves below the previously established productive reservoirs. This newly developed area is located in four townships within the Ringwood field and Sooner Trend in Major County, a mature producing area. The Ames structural feature, or Ames hole as it soon became known, has now been found to be oil and gas productive from sedimentary rocks correlative with the Simpson and Arbuckle Groups and from brecciated Precambrian igneous rocks.

INTRODUCTION

The Ames feature, in southeastern Major County, Oklahoma, is located on the Anadarko shelf in northwestern Oklahoma. This structural feature covers an area of 57 sq mi in a four-township area and is believed by most to be a meteorite-impact crater. Figure 1 shows the location of the Ames feature and its relationship to the Ringwood field and Sooner Trend. The Sooner Trend is a group of combined fields in a designated geographic area that produce from many separate units or reservoirs.

DRILLING AND COMPLETION HISTORY

The first well completed to produce oil and gas from the Arbuckle in the Ames feature was the J. L. Thomas Energy no. 1-4 Ott. This well is located in the S½SW¼SE¼ sec. 4, T. 21 N., R. 9 W., and was completed on July 7, 1990. The no. 1-4 Ott was the only well completed from the Arbuckle in 1990. The next Arbuckle oil well was completed June 15, 1991, also by J. L. Thomas Energy. Figure 2 is a well-location map of the four-township area that includes the Ames feature. Shown on this map is the approximate location of the rim anticline that delineates the location of the Ames feature. The location of the discovery well is also shown on the map. Previously drilled wells in the area (small symbols) and wells drilled to test the Arbuckle (large symbols) are shown.

There were 95 wells drilled and completed between July 1, 1990, and August 1, 1994, that tested the Arbuckle at depths ranging from 8,500 to 9,500 ft in the four-township area of the Ames feature (Fig. 2). Table 1 lists these wells in chronological order of their completion and identifies the operator, well name and number, location, completion date, and result. These data were obtained from the Well History File in the Natural Resources Information System (NRIS) at the University of Oklahoma, and, in some instances, from the well-completion records of Petroleum Information Corporation.

OIL PRODUCTION AT THE AMES FEATURE

The fast-paced drilling activity at the Ames feature resulted in rapid development of leases and a dramatic increase in oil production in this mature

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