**Petroleum system analysis of the Hunton Group in West Edmond field, Oklahoma Stephanie B. Gaswirth and Debra K. Higley**

The Hunton Group is a prolific oil- and gasproducing unit in the mid-continent -- it is critical to the USGS assessment of undiscovered petroleum resources in the Anadarko Basin province.

The main objectives of this study are to

(1) determine the reservoir facies of Hunton Group reservoirs in the West Edmond field;

(2) define the controls on hydrocarbon trapping; and

(3) understand the sources(s), generation, migration, and trapping of hydrocarbons into this major Hunton Group field.

The Hunton Group consists of sequences of dolomite, limestone, and calcareous shale and is divided into several formations

The overlying Devonian–Mississippian Woodford Shale is both a seal and petroleum source for the carbonates over most of the extent of the Hunton Group.

Porosity traps can be in the same unit in which secondary dissolution or diagenesis has enhanced or decreased porosity and permeability

Facies changes, as well as variable dolomitization, impact reservoir development.

Production is from the upper and lower Hunton and is concentrated in the northern part of the field, north of the incised channel

West Edmond is unique from other Hunton fields in Oklahoma in that production is primarily from limestone

other Hunton fields are mostly dolomitized, a process that increases reservoir quality through porosity enhancement in these fields

Dolomitization in West Edmond is sporadic, but does not have a substantial impact on the porosity development or the reservoir quality of the field

The Devonian–Mississippian Woodford Shale unconformably overlies the Hunton Group in the study area and is the major source for the West Edmond field

The Woodford Shale is the present-day primary source for Hunton Group accumulations, with approximately 83% of the petroleum

Because of the dissolution porosity, significant vertical and horizontal variability in the porosity over short distances is common, contributing to reservoir heterogeneity and the potential success of horizontal infill wells