Illinois Basin Consortium
Cross Section Project

South
North
UNOCAL #1 Cisne Comm.
T1S-R7E-Sec 3 SW NE NE
Wayne Co., IL
PURE #18-B Montgomery
T3N-R9E-Sec 4 C NE NW
Richland Co., IL
ATHENE DEVELOPMENT #1 Pence
T10N-R13W-Sec 31 NW NE SW
Clark Co., IL
SCHICK #1 Van Tuyle
T13N-R14W-Sec 6 SW NW SW
Coles Co., IL
PEOPLES GAS LIGHT & COKE #D-1 Grafton
T16N-R14W-Sec 24 NE NE SE
Edgar Co., IL
ALLIED CHEMICAL #1 Allied Chemical
T19N-R11W-Sec 12 SE SW NW
Vermilion Co., IL
MCBRIDE #1 Lee
T23N-R13W-Sec 1 SE NE SE
Vermilion Co., IL
NORTHERN ILLINOIS GAS #10 Taden
T26N-R13W-Sec 11 NE SE NE
Iroquois Co., IL
IL|IN
NO. INDIANA PUB. SVC. #1 Boezman
T31N-R7W-Sec 6 NW NW NW
Jasper Co., IN
INLAND STEEL #2 Inland Steel
T37N-R9W-Sec 14 NW NE SW
Lake Co., IN
TAMARACK #1 Brach
T1S-R7E-Sec 3
NW NE NW
Elevation (feet)
Clay City Anticline
La Salle Anticlinorium
Martinsville Dome
Westfield Dome
Brocton Dome
Hume Dome
Marshall-Sidell Syncline
Crescent City Dome
Kankakee Arch
SYSTEM
SERIES
SEQUENCE
MEGAGROUP*
OIL PRODUCTIVE ZONES†
QUATERNARY
PENNSYLVANIAN
Virgilian
Missourian
Desmoinesian
Atokan
ABSAROKA
MISSISSIPPIAN
Chesterian
Valmeyeran
Kinderhookian
KASKASKIA
POPE
MAMMOTH CAVE
KNOBS
DEVONIAN
SILURIAN
Cayugan
Niagaran
Alexandrian
HUNTON
ORDOVICIAN
Cincinnatian
Champlainian
Canadian
TIPPECANOE
OTTAWA
shows
CAMBRIAN
St. Croixan
SAUK
KNOX
POTSDAM
PRECAM.
no production
base of Pleistocene
Herrin Coal
Colchester Coal
Colchester Coal horizon
base of Pennsylvanian
top of Menard Ls
top of Beech Creek Ls
(top of Karnak)
Ste. Genevieve Ls
St. Louis Ls
Salem Ls
Ullin Ls
Ft. Payne Fm
Borden Slst
Springville Sh & Chouteau Ls
Chouteau Ls
New Albany Gp
Middle Devonian (undif)
Lower Devonian (undif)
Bailey Ls
Moccasin Springs Fm (basin facies)
Moccasin Springs Fm (bank facies)
Wabash Fm (IN)
Pleasant Mills Fm (IN)
Racine Fm
Burlington Ls and Fern Glen Fm
Joliet Fm & Kankakee Fm
St. Clair Ls & Sexton Creek Ls
Salamonie Dol & Sexton Creek Ls
Maquoketa Gp
Galena Gp
Trenton Ls
Black River Gp
Platteville Gp
Joachim Dol
Joachim Dol (IN)/Glenwood Fm (IL)
Dutchtown Fm
St. Peter Ss
Everton Dol
Shakopee Dol
top of Oneota Dol
top of Potosi Dol
Davis Mbr of Franconia Fm
Davis Mbr of Franconia Fm (IL)
Ironton Ss & Galesville Ss
Eau Claire Fm (IL)
Eau Claire Fm (IN)
Eau Claire Fm (IL, IN)
Mt. Simon Ss
Precambrian basement
Gamma Ray
Resistivity
SP
Density
Neutron
Conductivity
PROPOSED CROSS SECTION NETWORK
1 O'CLOCK
IL
IN
MO
KY
TN
0 30 60 mi
0 50 100 km

*Megagroup terminology is commonly used in the Illinois Basin, but is not accepted by the American Stratigraphic Code

† Oil-productive zones in the central part of the basin

† Oil-productive zones in the northern part of the basin

Oil and gas fields in the Illinois Basin

1 O'CLOCK CROSS SECTION IN THE ILLINOIS BASIN

WAYNE COUNTY, ILLINOIS, TO LAKE COUNTY, INDIANA

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1:250,000
vertical exaggeration 52x
log depths are in feet

The authors gratefully acknowledge the assistance of Robert R. Pool, Andrew K. Finley, Kathryn L. Desulis, Mark W. Longman, Colin G. Treworgy and Jacquelyn L. Hannah.

NOTES:

- Stratigraphic nomenclature is based primarily on the COSUNA chart.
- Structural terminology in Illinois follows Nelson, W. John, in prep., Structural Features in Illinois: Illinois State Geological Survey Bulletin.
- Datum for this cross section is mean sea level. Structural control used within the cross section for the sub-Pennsylvanian strata is the base of the New Albany Group. Where the New Albany Group is absent, the top of the Galena Group/Trenton Limestone was used. Structural control for the Pennsylvanian strata included the base of the Pennsylvanian and the top of the Herrin Coal. Various isopach and lithofacies maps were used for further control. Surface topography was mapped from U.S. Geological Survey 1° x 2° sheets.

LITHOLOGIES

clsgvl	clay, silt, sand, gravel
ss	sandstone
isshls	interbedded sandstone-siltstone with shale and/or carbonate
ishsls	thinly interbedded siltstone-shale-sandstone-limestone; includes coal in Pennsylvanian
slst	siltstone
sh	shale
csh	calcareous shale
ls	limestone
sdyls	sandy limestone
lsdol	dolomitic limestone or calcareous dolomite
dol	dolomite
sdydol	sandy dolomite
	reef
△ △	cherty
	shaly
//	anhydritic
xlna	crystalline rock - acidic
xlnb	crystalline rock - basic

EXAMPLES OF POSSIBLE HYDROCARBON PLAYS

STRUCTURAL

① Anticlinal traps caused by tectonic folding
② Fault entrapment
③ Fracturing of organic-rich shales such as the New Albany
④ Fracturing of carbonate rocks such as the Galena (Trenton)

STRATIGRAPHIC

⑤ Pinchouts of porous clastic rocks
⑥ Sand bars within incised paleovalley network; influence of the paleovalley network commonly results in stacked sandstones
⑦ Sub-Absaroka unconformity: truncation of reservoir rocks, especially by shale-filled paleovalleys; also, potential for reservoir development at or below unconformity caused by localized diagenesis
⑧ Isolated porous oolite or other carbonate shoals in Paleozoic rocks
⑨ Isolated turbidities in Borden Siltstone
⑩ Onlap and pinchout of reservoir rocks on sub-Kaskaskia unconformity
⑪ Sub-Kaskaskia unconformity: local enhancement of carbonate porosity at unconformity due to diagenesis; truncation of reservoir rocks
⑫ Possible local traps in Joachim Dolomite caused by updip anhydrite seals
⑬ Sub-Tippecanoe unconformity: possible local reservoir development caused by diagenesis of Knox carbonates
⑭ Possible local traps in lower Paleozoic rocks depending on presence of suitable source rocks

ILLINOIS BASIN CONSORTIUM CROSS SECTION PROJECT

The structural and stratigraphic framework of the Illinois Basin is portrayed in a network of regional cross sections prepared by the Illinois Basin Consortium (Illinois, Indiana, and Kentucky Geological Surveys). Most of the sections radiate from the UNOCAL #1 Cisne well in Wayne County, Illinois, the approximate center of the basin. Additional sections are oriented to traverse significant geological features in Indiana and Kentucky. As each cross section is completed, it will be available in open-file format from the state geological surveys.