University Lands: History, Opportunities, and Geoscience Vision*

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Abstract

University Lands have been an integral part of Texas history since they were instituted by President Lamar in the early days of the Republic. He envisioned that proceeds from the Lands would help support a university system second to none. Today that dream is realized through the Permanent University Fund that subsidizes the University of Texas (2/3) and the Texas A&M University (1/3) Systems. Initially the principal value of the Lands was seen in grazing, farming, and hunting. With the discovery of oil in 1923 in the Santa Rita well however, the focus of the Lands' potential shifted to oil and gas exploration and development. From early on, activity centered on conventional structural and stratigraphic traps that exploited the multiple petroleum systems in the Permian Basin from Ellenburger through Permian aged strata. University Lands has done an excellent job administering the asset over the years. Currently there are over 2.1 million acres situated in West Texas throughout the Midland, and Delaware Basins, the Central Basin Platform, and the Orogrande Basin to the west. With the recent creation of Drilling & Development Units (DDUs), operators enjoy the opportunity to produce oil and gas on large, contiguous tracts. In this era of long lateral wells, this is an exciting and welcome innovation. In 2015 a strategic shift in the UT System's approach to managing the Lands resulted in the formation of a “development team” in Houston consisting of Geologic and Engineering expertise. Their charge is to understand the value and the potential of the Lands, working alongside the Land and Surface people who have established a legacy of great management of the asset. Over the years, 20,000 wells have been drilled on the Lands. With the onset of the shale revolution in the Permian Basin, nearly 2000 horizontal wells have been drilled. In recent years, Spraberry through Lower Wolfcamp section has been the primary focus of drilling, although state of the art drilling and completion techniques are incorporated throughout the section: conventional and unconventional alike. In all 5–6 prospective horizontal benches have been identified over much of the Midland and Delaware Basinal areas. These are challenging times. In 2015, less than 300 wells were drilled throughout the 2.1 million acres. This compares to nearly 900 wells in the previous year. There is reason for optimism in the innovation and creativity demonstrated by our operating partners in cutting costs and increasing production. Although many of the largest companies operate on University Lands, we are proud to call over 200 companies our partners. Critical to the exploitation of hydrocarbon resources on the Lands is easy access to the voluminous well and log data stored in the University Lands library. Recently a well data web portal was rolled out that allows anyone with internet access to quickly view well, log, and production data. Other commercial ventures on the Lands include a wind farm, winery, grazing, and potable ground water production. Excellent potential exists for solar energy as well.

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University Lands
History, Opportunities & Geoscience Vision

Dave DeFelice, Director of Geoscience

Silurian Eurypterids (sea scorpions)

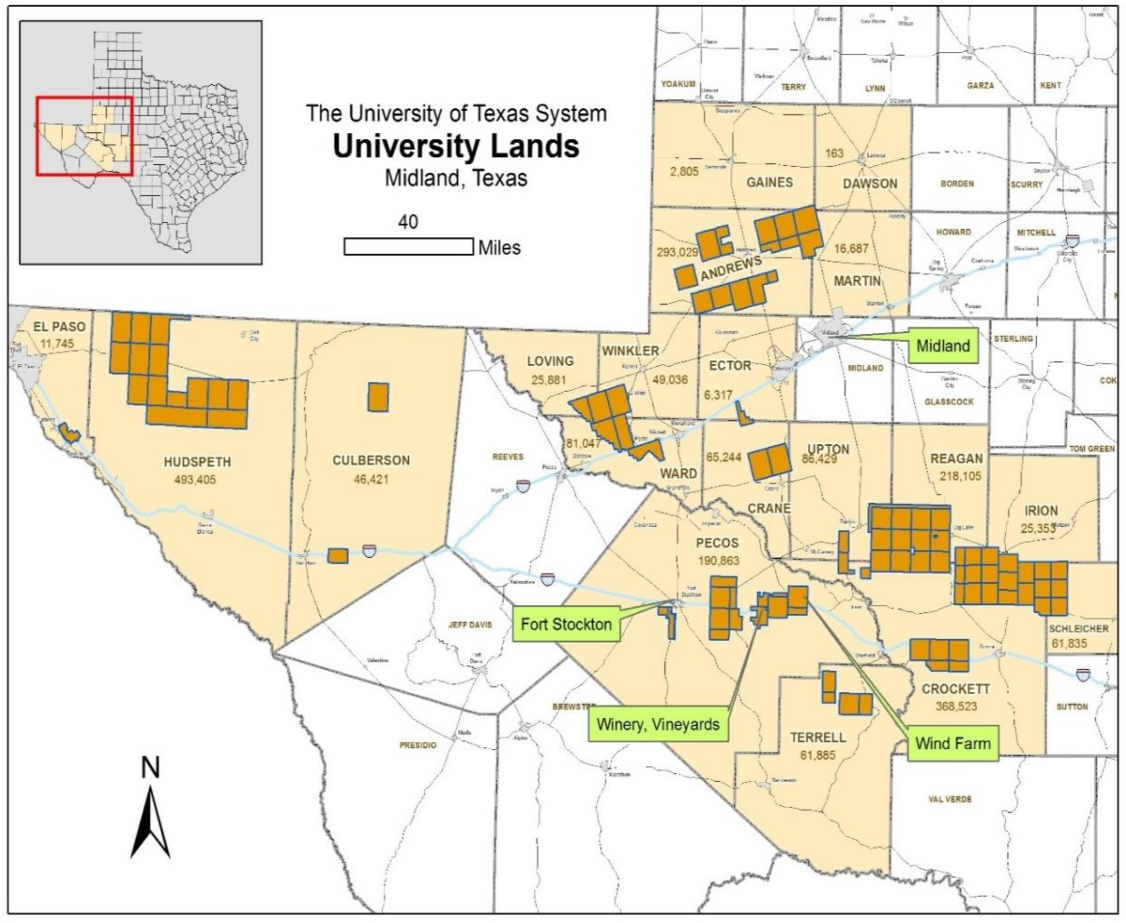
Mississippian Crinoid (Sea Lily)

UNIVERSITY LANDS

Timeline of University Lands, 1836-1931

March 2, 1836	Texas Declaration of Independence declared Mexican government had failed to establish any public system of education
June 20, 1839	Congress set aside fifty leagues of land to meet the educational needs of Texans by providing for the creation of institutions of primary, secondary and higher education
January 20, 1840	English common law adopted as the legal standard for Texas, reserving all mineral rights in Texas lands for the Republic of Texas
February 11, 1858	O.B. 102 signed into law providing for the establishment of an institution of learning to be called the University of Texas
April 17, 1871	The Texas Legislature established the Agricultural and Mechanical College of Texas as a branch of the University of Texas
1876	Constitution established the Permanent University Fund
April 1, 1881	Members of the Board of the University of Texas were nominated
September 6, 1881	The city of Austin was selected as the location for the University of Texas and Galveston was selected for the Medical Branch
November 15, 1881	Board of Regents held its first meeting, and Dr. Ashbel Smith was elected President of the Board
April 10, 1883	The Legislature added 1,000,000 acres of land in West Texas to the PUF
April 12, 1883	State Land Board created to sell and lease public lands. Another act on same date authorized the survey of another 1,000,000 acres for the University from the public domain
1895	The Legislature passed an act that allowed the Board of Regents to control and manage the University lands
May 28, 1923	Oil was found on University Lands
1929	SB 82 created a Board to begin dealing with the sale of oil and gas on University lands
1931	SB 280 gives Board of Regents authority to lease the University lands

University Lands Overview



- Owns and manages surface and mineral rights of 2.1+ million west Texas acres
- History dating back to 1838
- First oil discovery in 1923
  - ~20,000 wells drilled to date
  - 9,000 wells currently producing
  - >1,500 horizontal wells
  - >200 operators
- Surface activities include:
  - Pipelines and power line easements
  - Grazing, ranching and hunting
  - Wind farms
  - Winery
  - Airports
  - Public schools
  - Water sales
- Revenue Benefits the University of Texas and Texas A&M University System via the Permanent University Fund

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Diversity of University Lands

"Texas holds embedded in its earth rocks and minerals which now lie idle because unknown, resources of incalculable industrial utility, of wealth and power. Smite the earth, smite the rocks with the rod of knowledge and fountains of unstinted wealth will gush forth."

- Ashbel Smith, M.D., first Chairman of the U. T. Board of Regents at the dedication of the University of Texas, 1881

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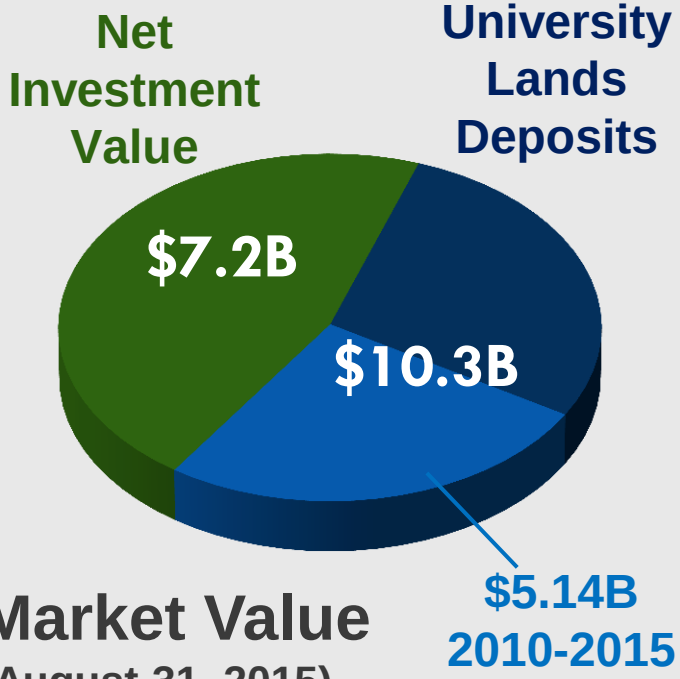
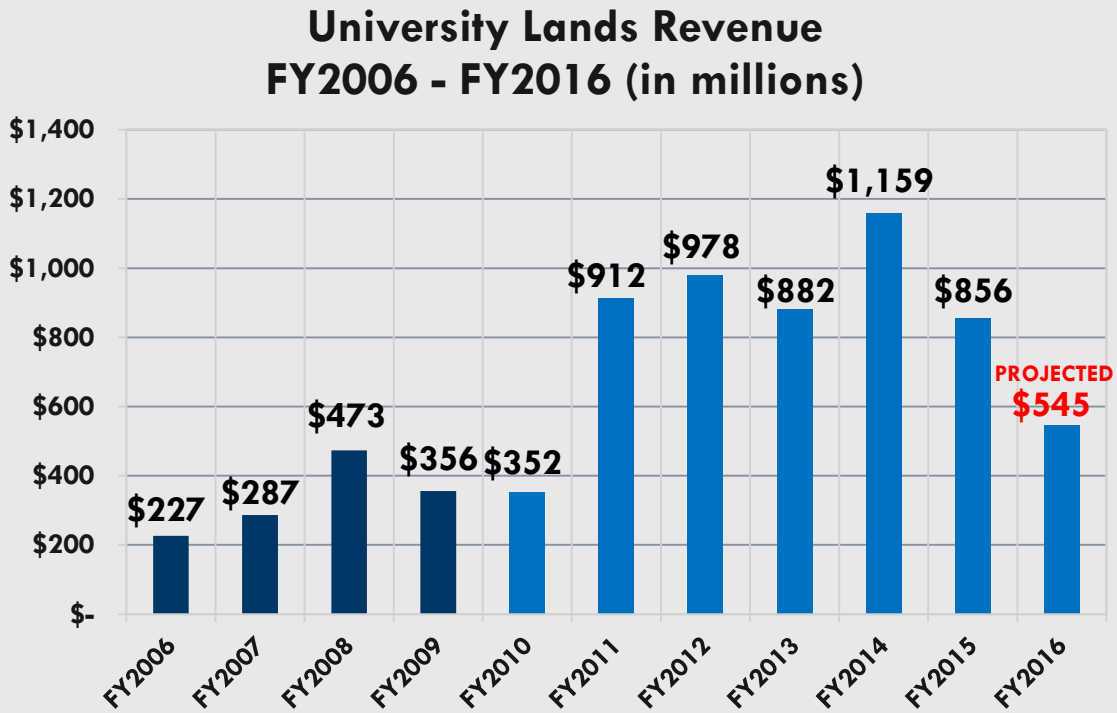
What is our mission?

To maximize the revenue from the Permanent University Fund (PUF) lands by applying intensive management, accounting, conservation, and environmental programs which improve and sustain the productivity of PUF lands, protect the interests of The University of Texas System, and promote awareness and sensitivity for the environment.

The Permanent University Fund (PUF)



Market Value
(August 31, 2015)
$17.5B



4 - 7% of PUF Market Value Plus University Lands Revenue Annually to UT System (2/3) and A&M System (1/3)

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University Lands Operations

- University Lands holds mineral interest and typically a royalty interest
- >200 Oil & Gas Operators
- 3,466 Oil & Gas Leases
- 5,168 Easements
- 1,997 Commercial Surface Leases
- 112 Grazing Leases –> 36,000 Head of Livestock
- Miscellaneous Activities:
  - Antiquities Compliance
  - Wildlife Management
  - Geophysical Permitting
  - Environmental Management

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2015 Top Producers

OPERATOR	MMBOE
PIONEER NATURAL RESOURCES	8.83
APACHE CORPORATION	8.73
DEVON ENERGY	8.34
EP ENERGY E&P COMPANY	8.04
QEP ENERGY COMPANY	4.91
AMERICAN ENERGY-PERM BASIN	4.54
EOG RESOURCES	4.31
OXY USA	3.74
APPROACH OPERATING	3.53
XTO ENERGY	2.67
CONOCOPHILLIPS	2.16
SHERIDAN PRODUCTION COMPANY	1.74
ENERGEN RESOURCES CORPORATION	1.74
DIAMONDBACK	1.17
SHELL WESTERN	1.12
FORGE ENERGY	0.99
CALLON PETROLEUM	0.95
LEGACY RESERVES	0.91
ELEVATION RESOURCES	0.82
CLAYTON WILLIAMS	0.76
TOP 20 PRODUCERS 2015 PRODUCTION	*70 MMBOE*

Top 20 Producers → 85% of total production

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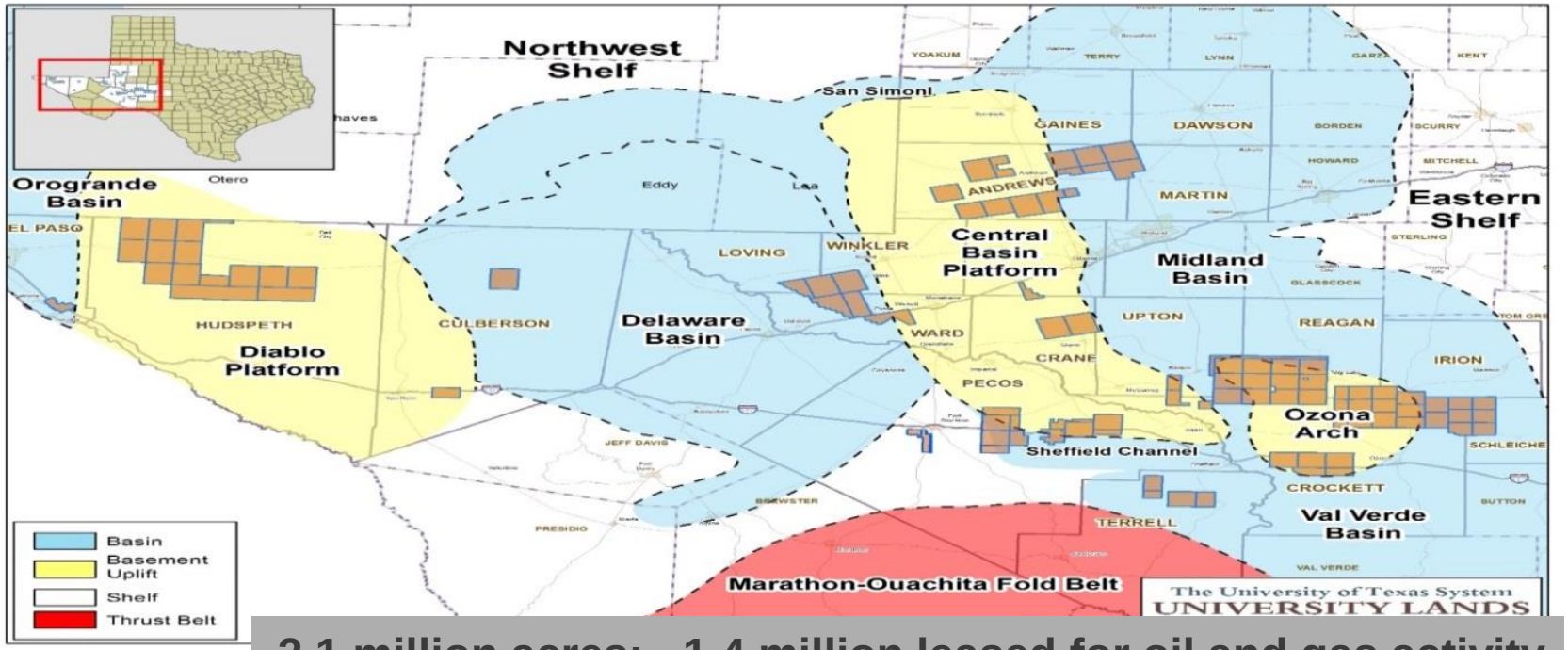
University Lands Assets



2.1 million acres: ~1.4 million leased for oil and gas activity

- Total Reserves (8/2015)
  - 1,126 million BOE
  - 13% Proved
- 2015 Gross Daily Production
  - ~220,000 BOE per day
  - 70% oil
- 2015 Net Daily Production
  - ~42,000 BOE per day
- 21,000 Identified "3P" Drilling Locations
- **Incredible potential database for oil and gas AND water resources**

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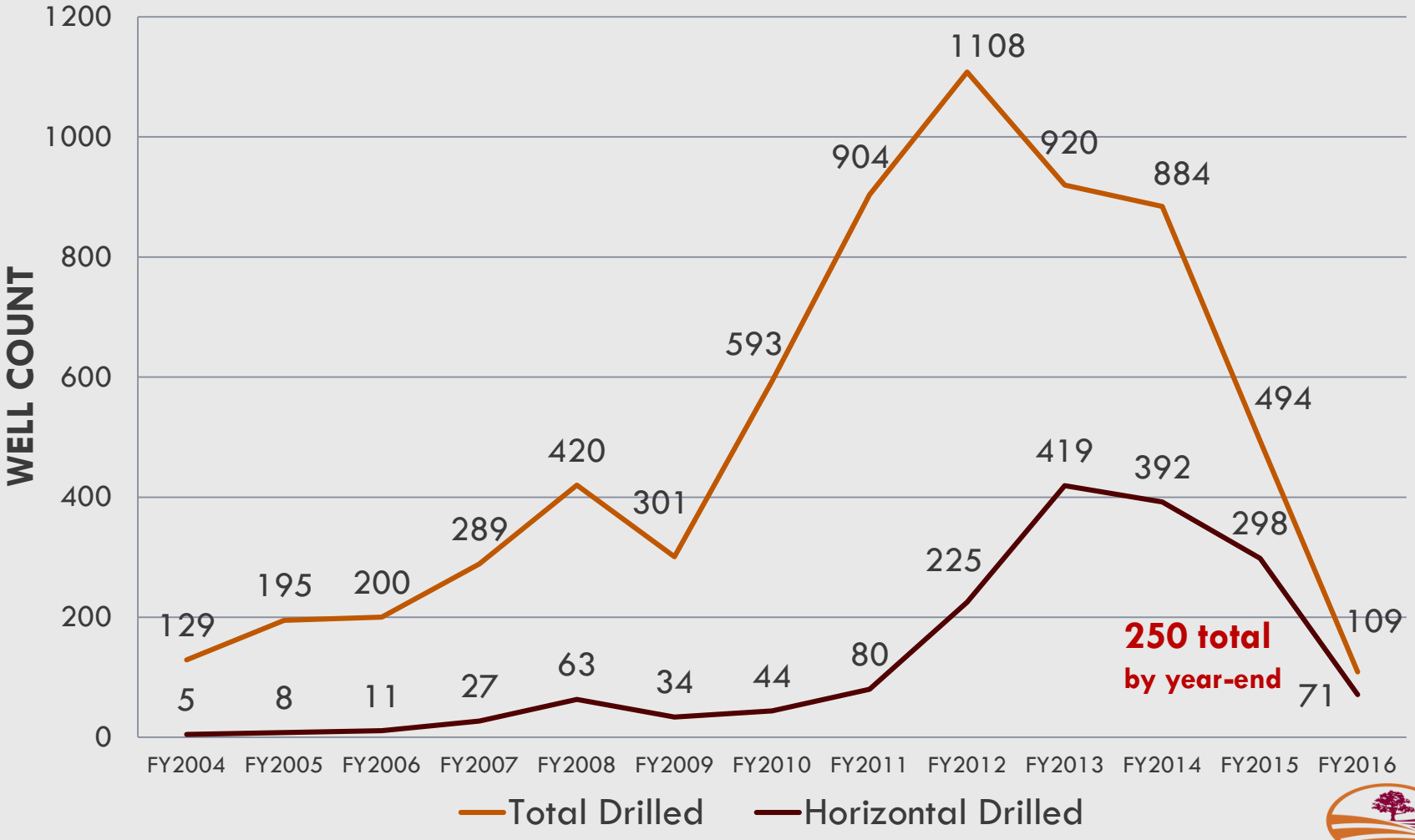
Wells Drilled by Fiscal Year



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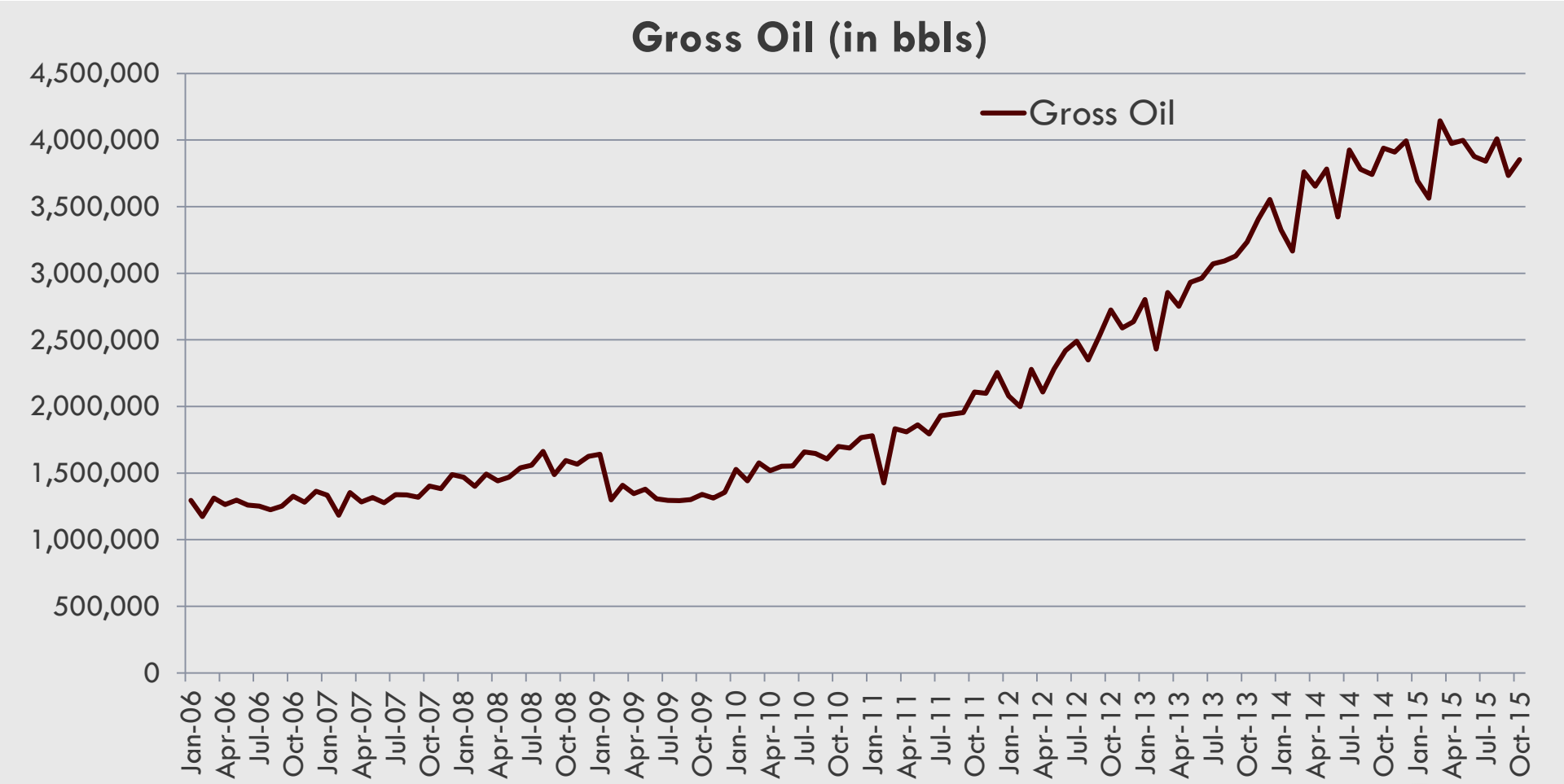
University Lands Historical Production



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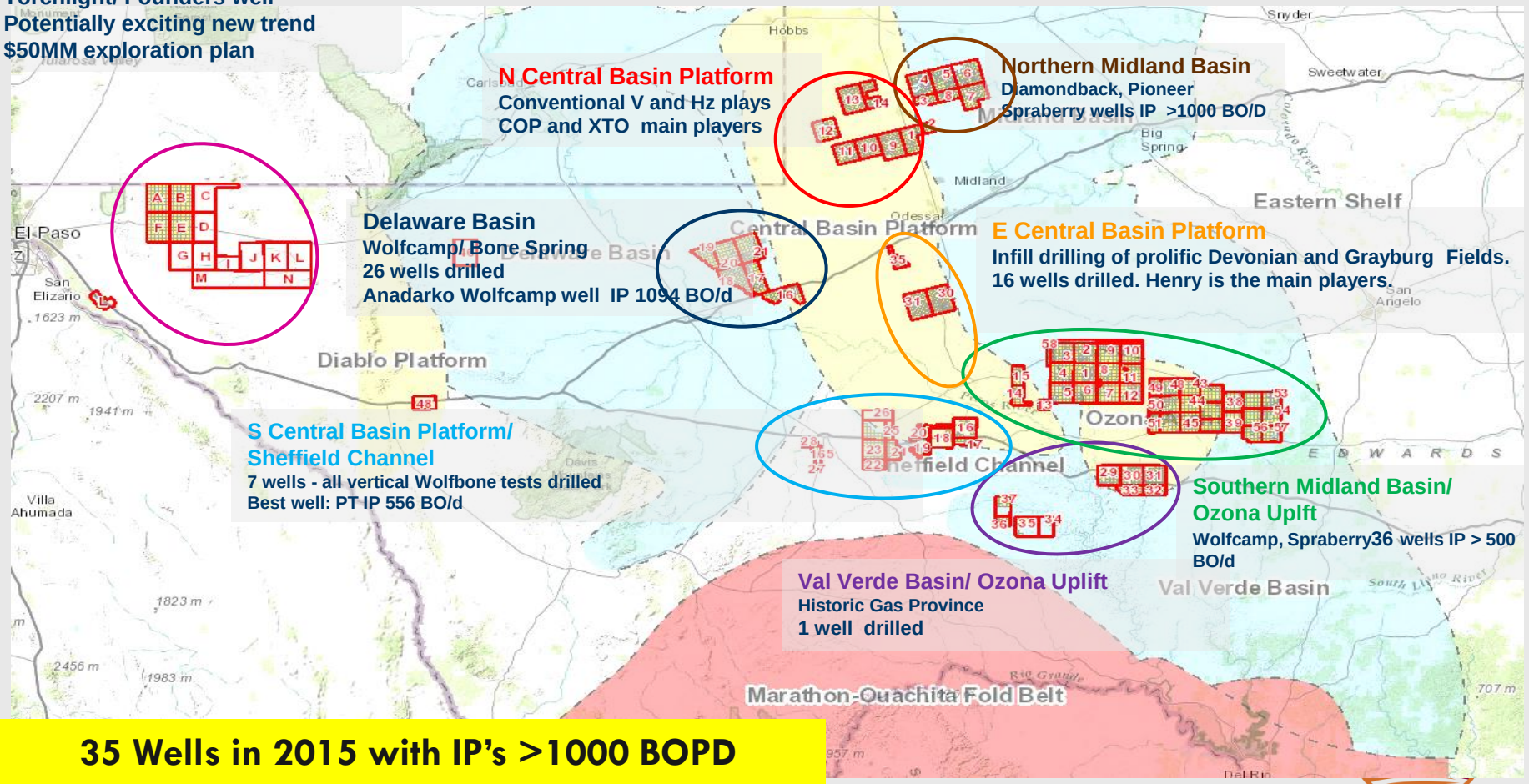
University Lands-2015 Activity Highlights

Orogrande Basin
Torchlight/ Founders well
Potentially exciting new trend
$50MM exploration plan



35 Wells in 2015 with IP's >1000 BOPD
6 in past 2 months!

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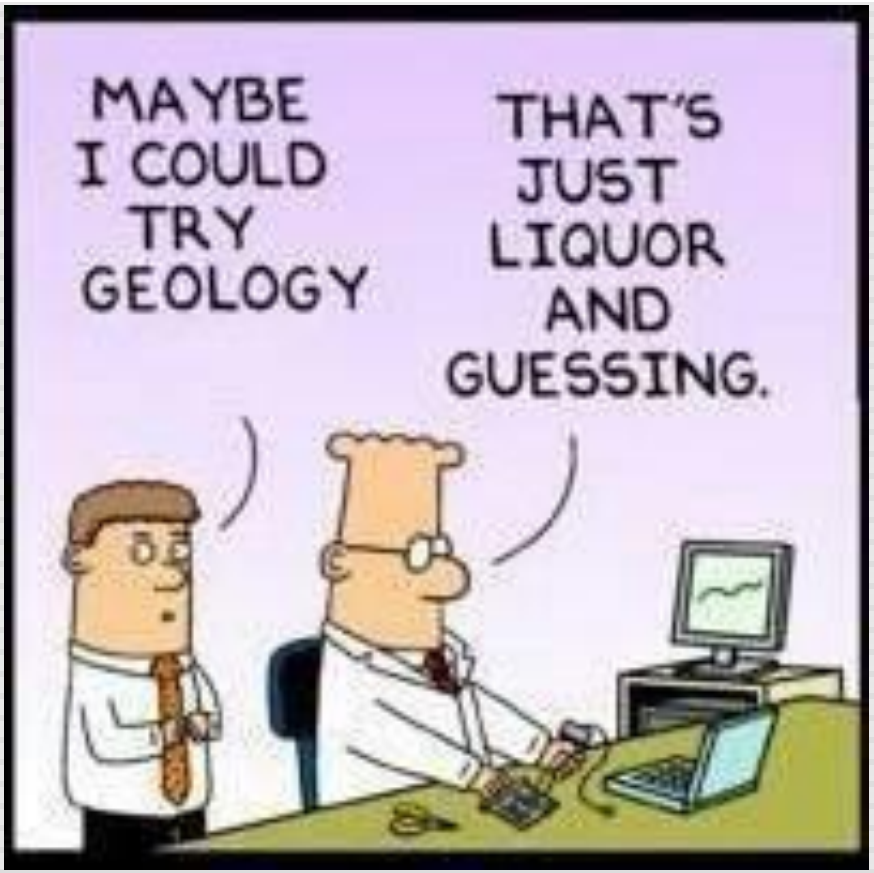
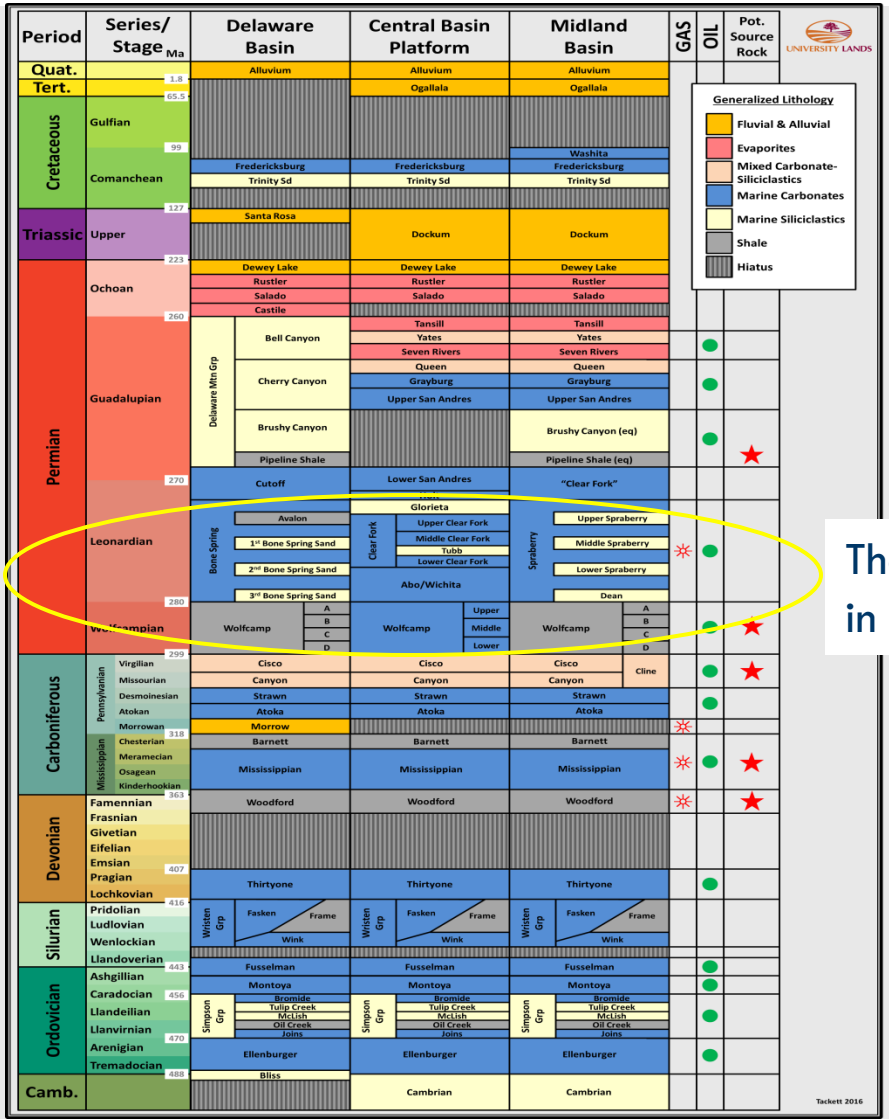
But this talk is about Geology



Strat Column



The Shale revolution in the Permian Basin

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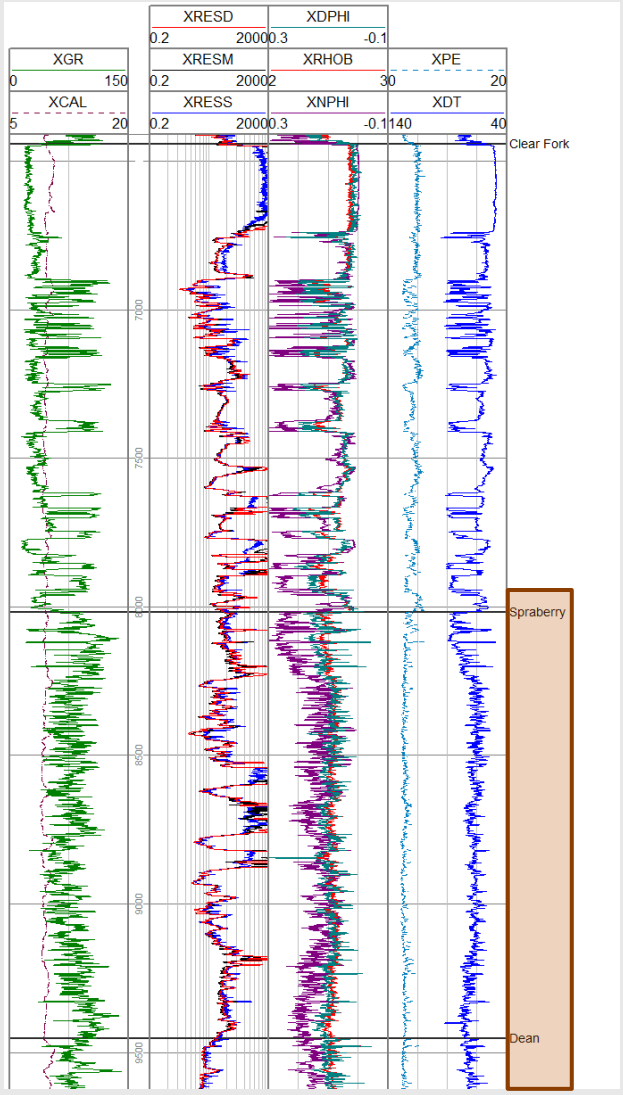
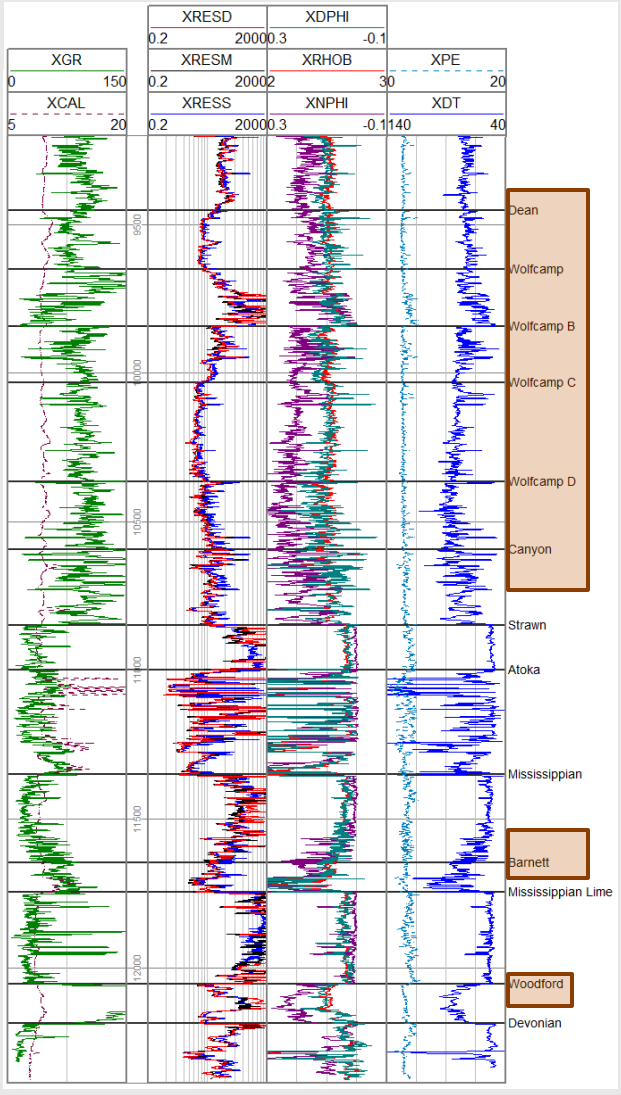
Stacked pays in the prolific Midland Basin





Type Log showing benches

Andrews Co reservoirs:

Upper and Lower Spraberry
Wolfcamp A, B, C, D
Atoka
Devonian

Unconventionals

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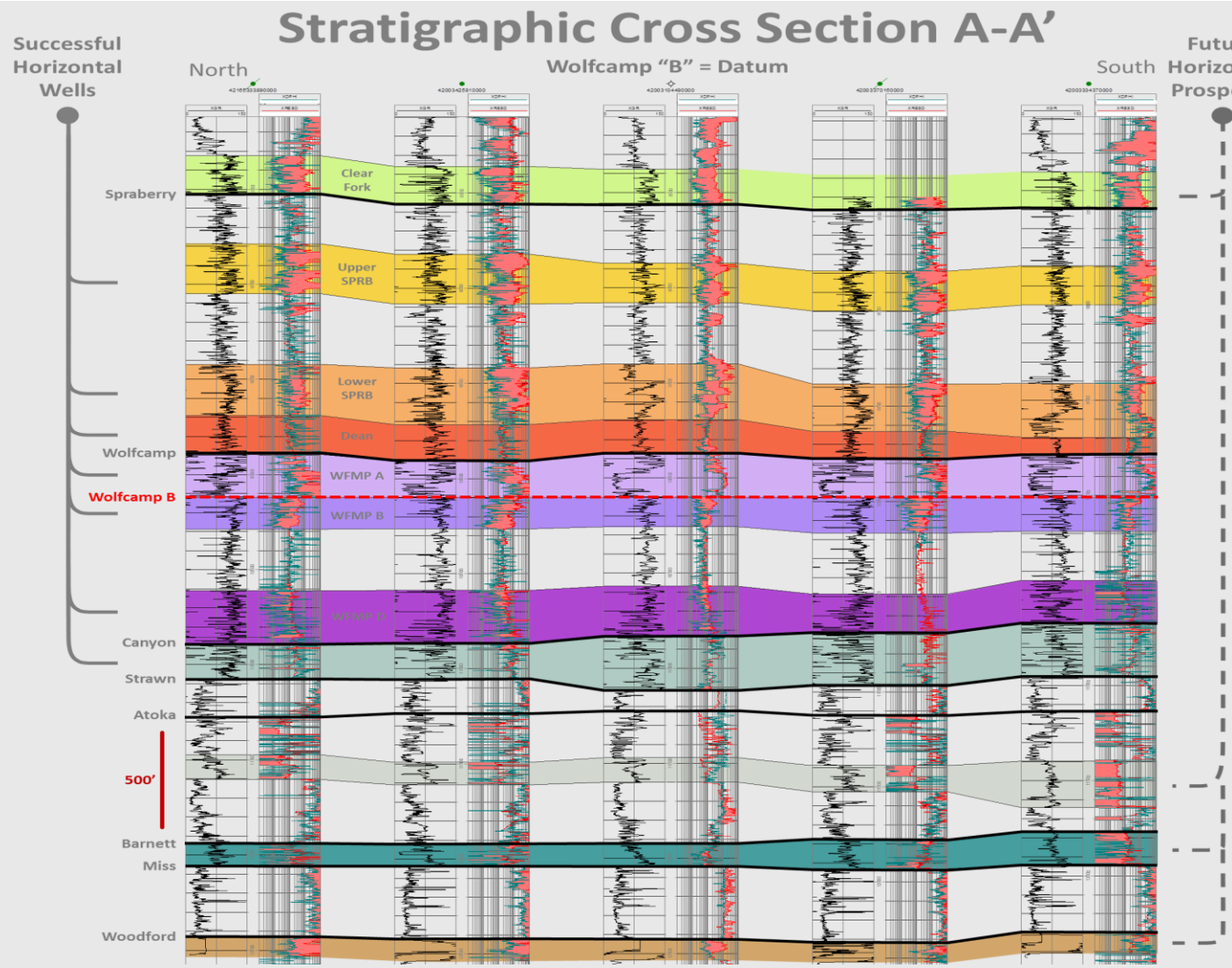
Stacked pays in a prolific basin (X-Sec)



Type Section showing benches

Andrews Co reservoirs:

Upper and Lower Spraberry
Wolfcamp A, B, C, D
Atoka
Devonian

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Geoscience Program Initiatives: Growth

University Lands Geoscience strives to gain a better understanding of our asset and to better cooperate with partners that explore and develop that asset.

Ways to facilitate growth include:

- Provide a **more user friendly / accessible geoscience database**
- **Build strong technical relationships with our partners**
- Establish a **technical role** with our own interpretation and ideas
- Encourage **Full Field Development** of our assets

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Geoscience Strategy Staff and Path Forward

Small Geoscience Group:

- Senior Geoscience Tech
- Senior Geologist
- 2 Geoscience Interns for Summer 2016

Principle Team Functions Include:

- Regional and Subregional mapping and cross sections - (20% of UL in year #1)
- Networking and liaising with operating partners
- Coordinating and cooperating with TOGI (Geomodeling and Basin Modeling)
- The BEG: 6 consortia including ***new*** Permian Tight Oil Resource Assessment and Spraberry studies
- Evaluating Lease Sales - understanding the value of the acreage
- Working closely with UL Reservoir team

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Geoscience Program Initiatives: The Plan

Data, Technical Work, and Partner Relationships

- **Understanding our Data, Improving Access & Enhancing It:**
  - Well Data
    - Our own substantial database
    - Regional Permian Data Access: IHS, Drilling Info, WoodMac, Railroad Commission
  - Production
    - Monthly production ***by well*** from operators (to be held confidential)
    - Lease production (public information)
  - Seismic data - getting our arms around the seismic permits
- **Mapping: ARCGIS, Subsurface Geological Mapping**
  - ARCGIS UL Data Web Portal- Demo to follow
  - Landmark's OpenWorks DecisionSpace for subsurface mapping
- **Partner Relationships: Technical Meetings & Informal Chats**

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Geoscience Strategy Initiatives: Data

ARCGIS External Web Portal

- More user friendly, regional, and interactive
- Enhanced sort and search capability
- More surgical access to UL data
- Companies can add their own proprietary data
- BEG and other digital regional maps can be added
- **GREAT DATA ACCESS VEHICLE**

Solution is in our ARCGIS Data Web Portal to be rolled out now

http://gis.utlands.utsystem.edu/welldataapp/

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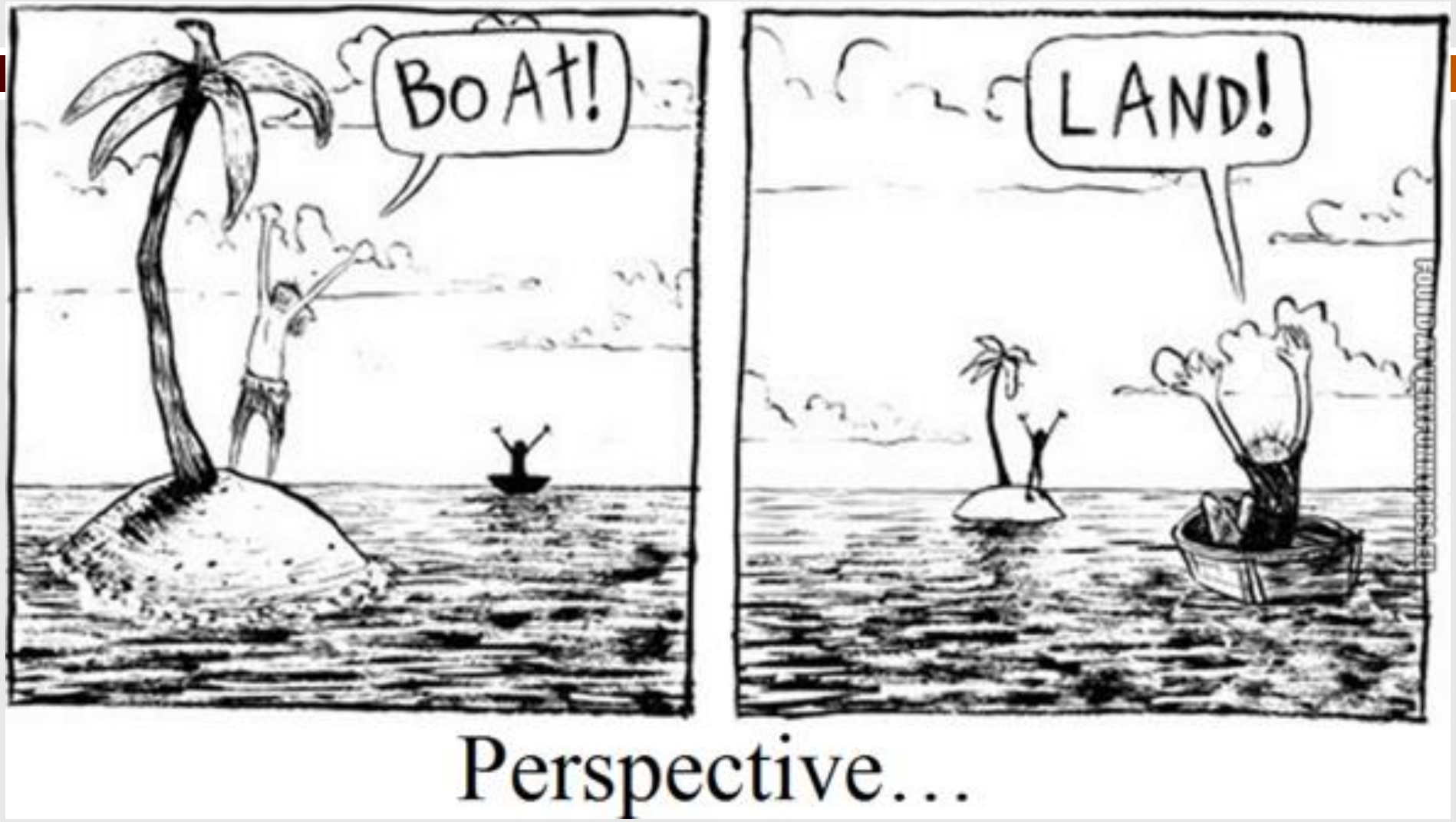

Perspective…

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