



 **GOODRICH**  
PETROLEUM CORPORATION

# Mississippi Tuscaloosa Marine Shale Summit

March 31, 2014

# FORWARD LOOKING STATEMENTS



Headquartered: Houston, Texas

( NYSE : GDP )

Certain statements in this presentation regarding future expectations and plans for future activities may be regarded as “forward-looking statements” within the meaning of the Private Securities Litigation Reform Act of 1995. They are subject to various risks, such as financial market conditions, operating hazards, drilling risks and the inherent uncertainties in interpreting engineering data relating to underground accumulations of oil and gas, as well as other risks discussed in detail in the Company’s Annual Report on Form 10-K and other filings with the Securities and Exchange Commission. Although the Company believes that the expectations reflected in such forward-looking statements are reasonable, it can give no assurance that such expectations will prove to be correct.

Proved reserves described in this presentation meet definitions and guidelines of the U.S. Securities and Exchange Commission (SEC) for such reserves. We have also included in this presentation internally generated estimates of non-proved or 3P (proved+probable+possible) reserves, resources and well locations, or potential non-proved or 3P reserves, resources and well locations. These estimates are inherently more speculative than our estimates of proved reserves and there is no assurance that we will drill these wells or recover these hydrocarbon quantities. Our probable and possible resource potential included herein is based on internal estimates and our ultimate recovery will be dependent upon numerous factors including actual geological conditions, the impact of future oil and gas pricing and exploration costs, and our future drilling decisions and budgets based upon our future evaluation of risk, returns and the availability of capital.

The SEC has generally permitted oil and gas companies in their filings with the SEC to disclose only reserves meeting SEC definitions and guidelines and only separately by reserve category.

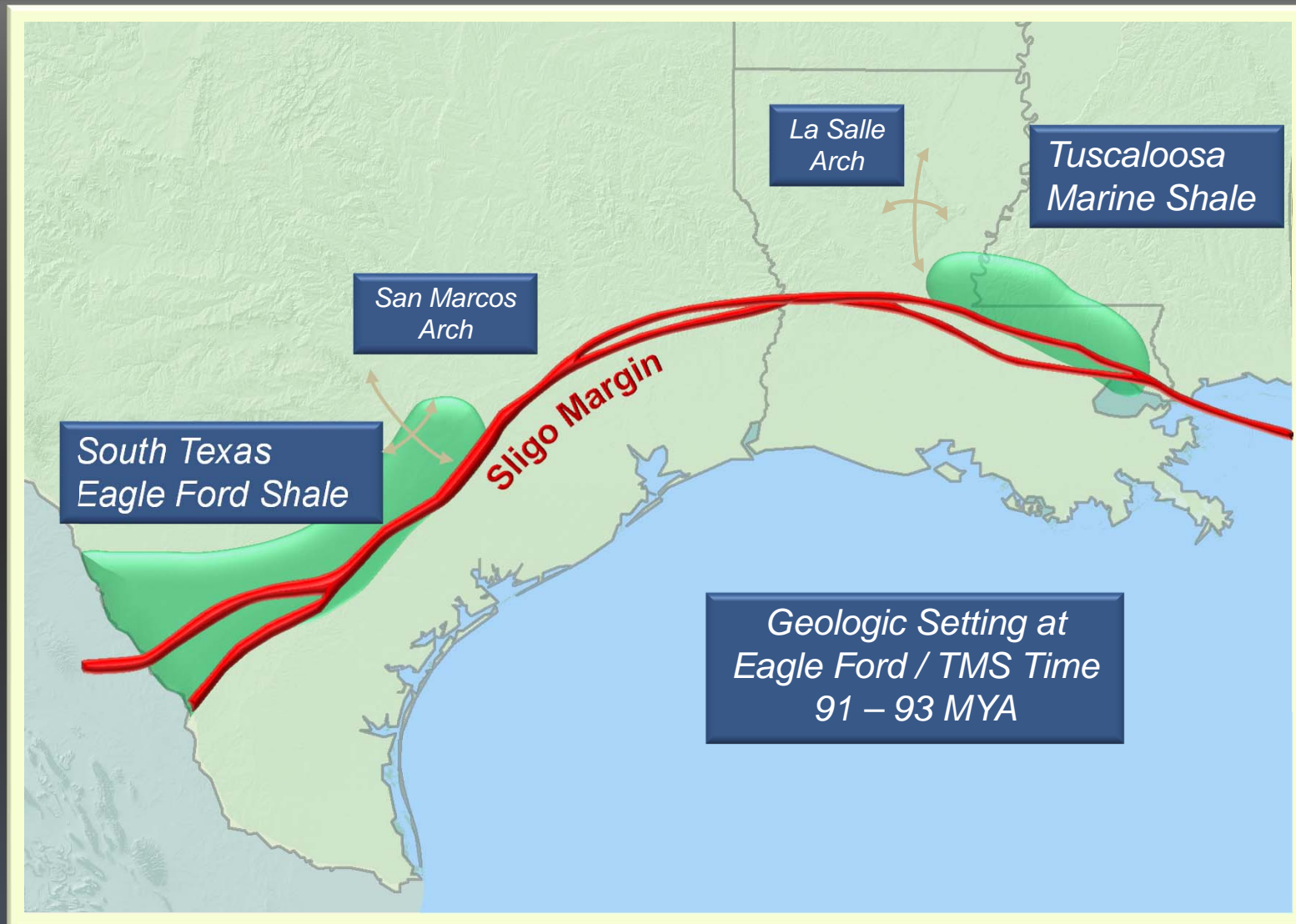
# TUSCALOOSA MARINE SHALE



- Emerging shale oil play covering approximately 2.5 million acres
- Low cost basis on 300,000+ net acres
- Vintage wells define oil saturation and rock quality
- Average depth 10,500' – 14,500' TVD
- Thickness 100' – 250'
- High quality crude (38 – 45 deg. API)
- 92 – 96% oil, High BTU gas

# TUSCALOOSA MARINE SHALE

## Geologic Setting





# BASE OF TMS STRUCTURE MAP

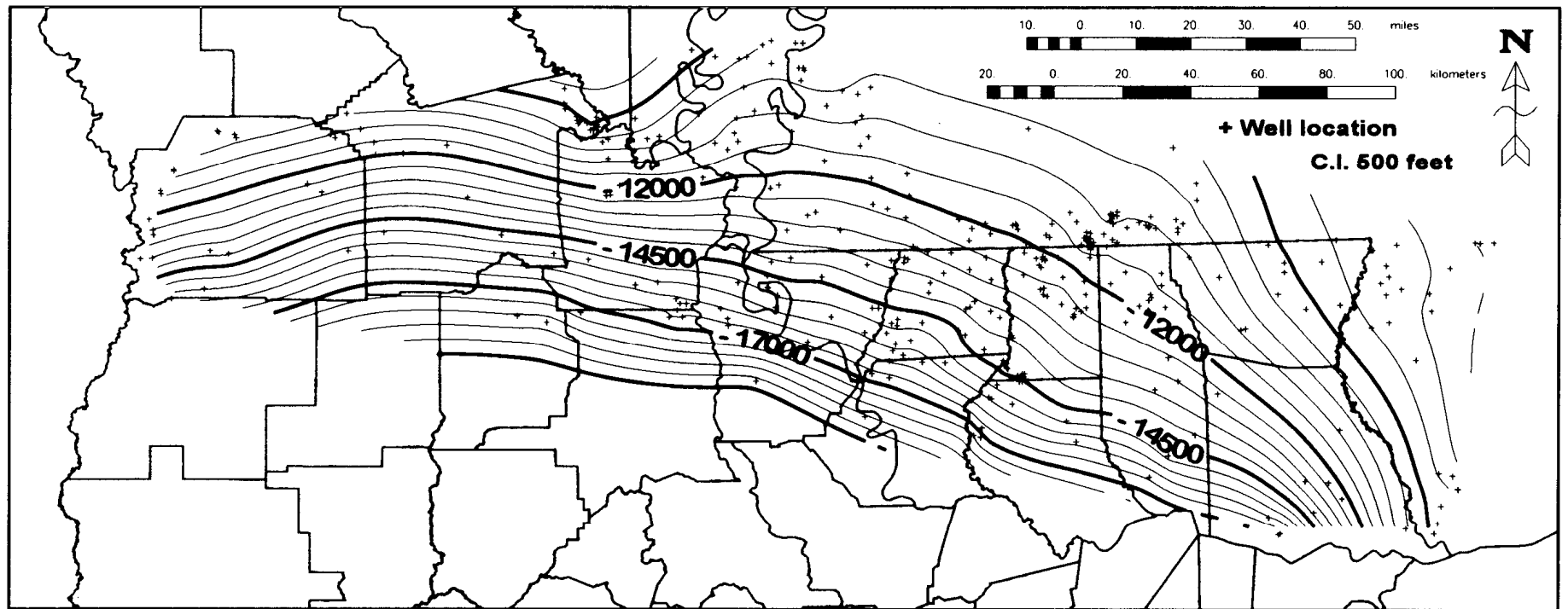


Figure 14. Structure map of the study area drawn at the base of the marine shale.

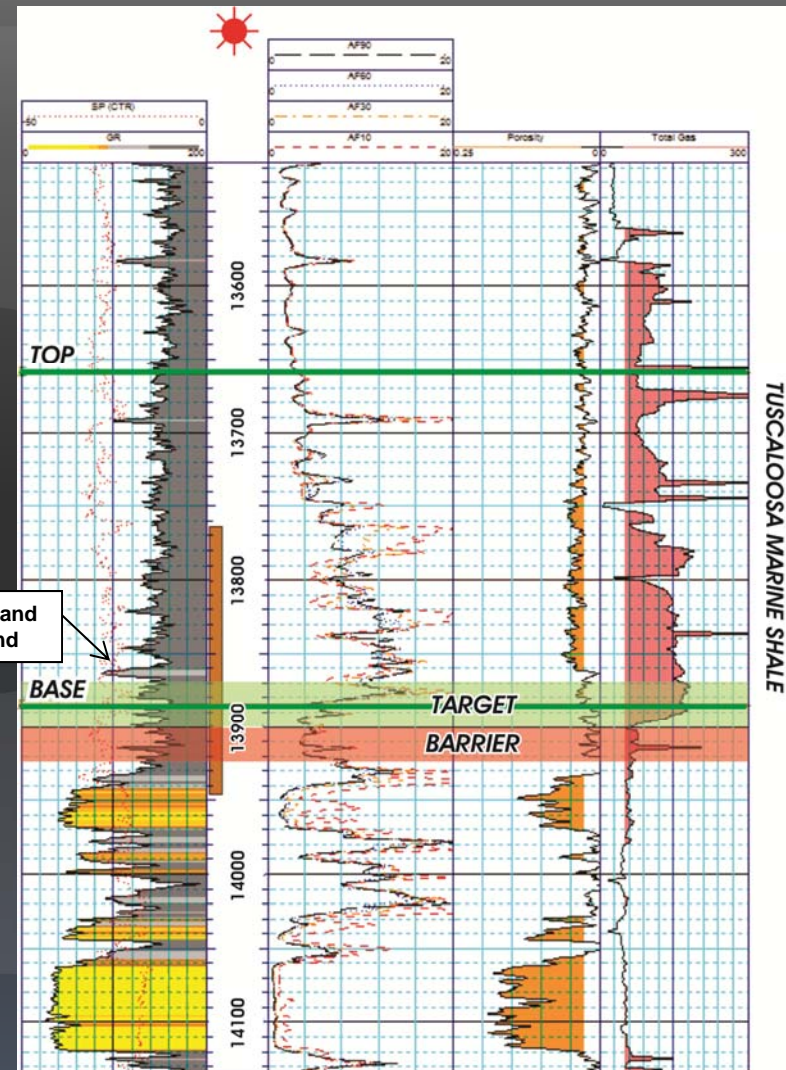
Source: Basin Research Institute.

# GEOLOGIC CHARACTERISTICS

## Tuscaloosa Type Log - Beech Grove 68H-1

- The TMS lies between the upper and lower Tuscaloosa Sand intervals
  - Marine outer shelf, highly laminated lithology
  - High resistivity target in lower 2/3 of the TMS contains higher sand/silt/quartz content
    - Thick pay interval, 100 to 250 feet gross
    - Consistent log characteristic throughout the play
- Frac barriers above and below target
- Formation depths of 10,000 to 15,000 feet
- Good reservoir quality shale
  - Low Sw of approximately 20%
  - Total core porosity from 5 to 10%, perm from 10 to 100 nD; Quartz: 15-25%, Calcite: 15-25% and Clay: 25-50%
  - Natural fractures present in cores and image logs
  - TOC from 1.5 to 3.5%
  - Overpressured; 0.6 to 0.7 psi/ft (6,000 – 10,500 psi BHT) will assist liquids lifting
- Good quality oil, area wells produce 38 to 45 degree API oil (Louisiana Light Sweet)
  - Initial GOR: 300 to 1,000; gas is 1,400 to 1,500 BTU, yielding 80 – 100 Bbls / MMcf of NGL

Richland Sand



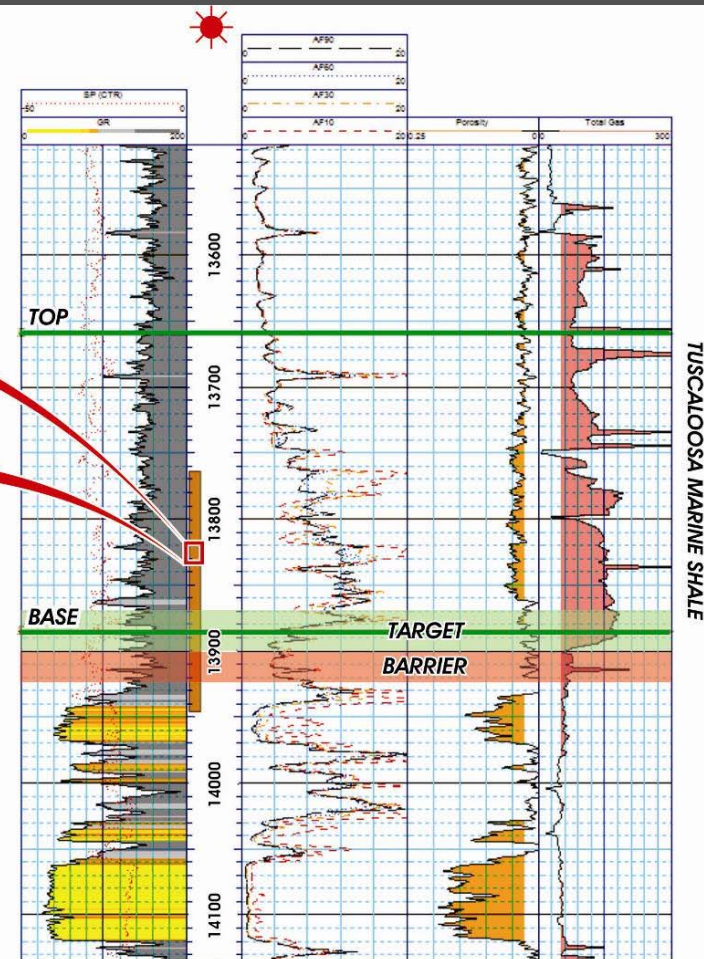
Source: Goodrich Petroleum Corporation & Scotiabank.

# NATURAL FRACTURES

Significant vertical and horizontal fracture system provides permeability and meaningful contribution to production and EURs

## Beech Grove 68H-1 - Core and Log Section

DEVON ENERGY Co.  
Beech Grove Land Co. 68H-1





# EARLY WELL HISTORY

**1962: Humble - Spears 1 (Amite County, MS). Dry hole but cored 3' of oil saturated TMS**

**1975: Callon-Cutrer #2 (Tangipahoa PH, LA). Vertical well produced 2,500 BO over 15 years. Core showed 5-7% porosity, vertical and horizontal fractures with live oil saturations**

**1977: Texas Pacific Oil Company – Blades No. 1 (Tangipahoa PH, LA) produced 24,000 barrels of oil over 30 years from an unstimulated vertical well**

**1980s: Exxon – Jackson #4 and Amerada Hess – Montrose Plantation #1 (Wilkinson County, MS) blow out while drilling the TMS**

**1998: UPRC – Richland Plantation #5 (East Feliciana, Parish, LA). Short lateral (1,100') well with IP of 117 BOPD that produced 4,000 barrels of oil. Killed with salt water for workover and never produced after treatment**

**2000: Petroquest – Lambert 1H (Amite County, MS). Not fracked, but had peak rates of 400 – 600 BOPD and has produced 11,600 barrels of oil in 11 years and still producing**

**2007: Encore – Joe Jackson #4. 1,650 foot lateral with 3 frac stages. Well has produced 28,800 barrels**

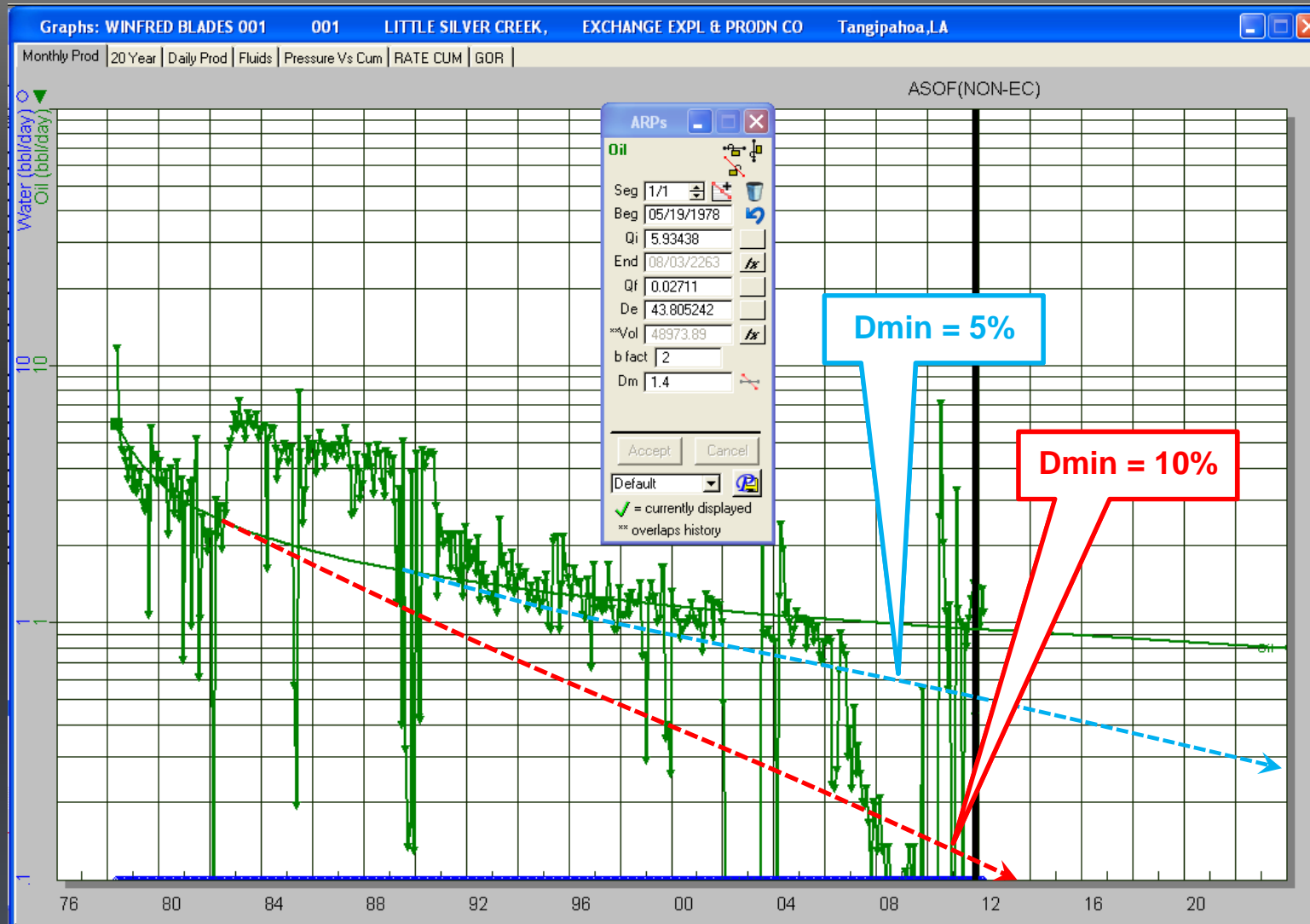
**2007: Encore – Richland Plantation #1. Lateral of 3,100 feet with 3 frac stages and IP of 200 BOPD. Cumulative production of 10,700 barrels**

**2008: Encore – Weyerhaeuser No. 1 (Sec 60, T1S, R4E, St Helena Parish, LA) – 4,100 foot lateral, 323 BOPD, 3 frac stages, cumulative production of 27,000 barrels**



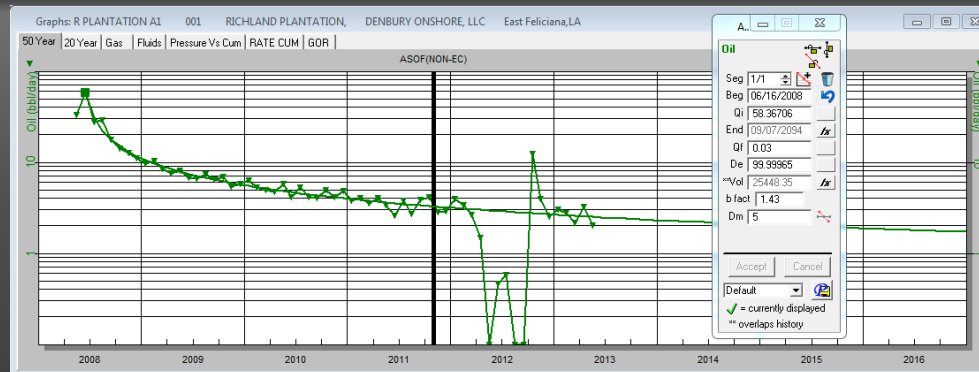
# TMS VERTICAL WELL ANALOGY

Long life, flat decline with  $b=2.0$  and terminal decline  $< 2\%$

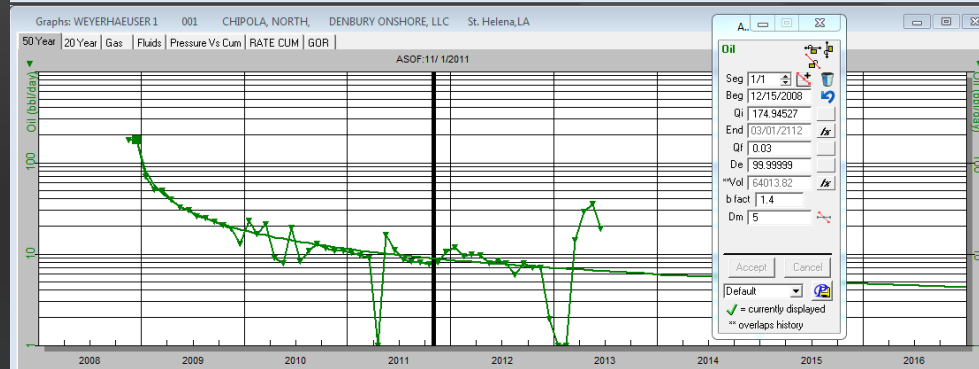


# TMS DECLINE CURVE ANALYSIS

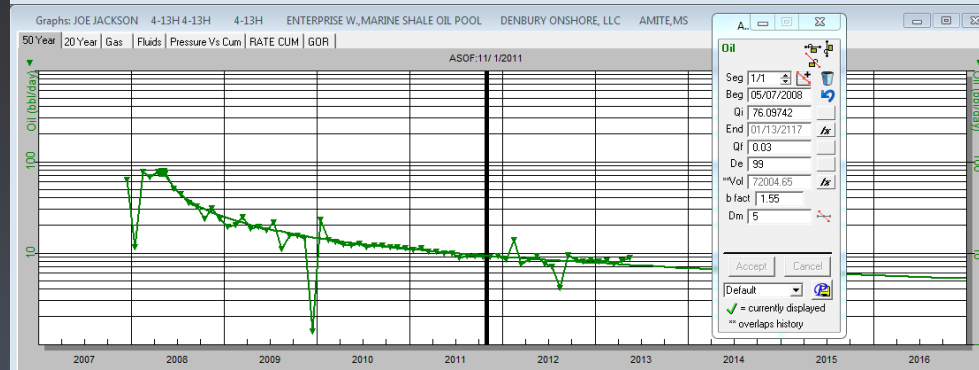
## *Initial Encore Wells*



**3,100' Lateral**  
**3 Frac Stages (1,033' spacing)**  
**46 MBO EUR**  
**15 MBO/Stage**

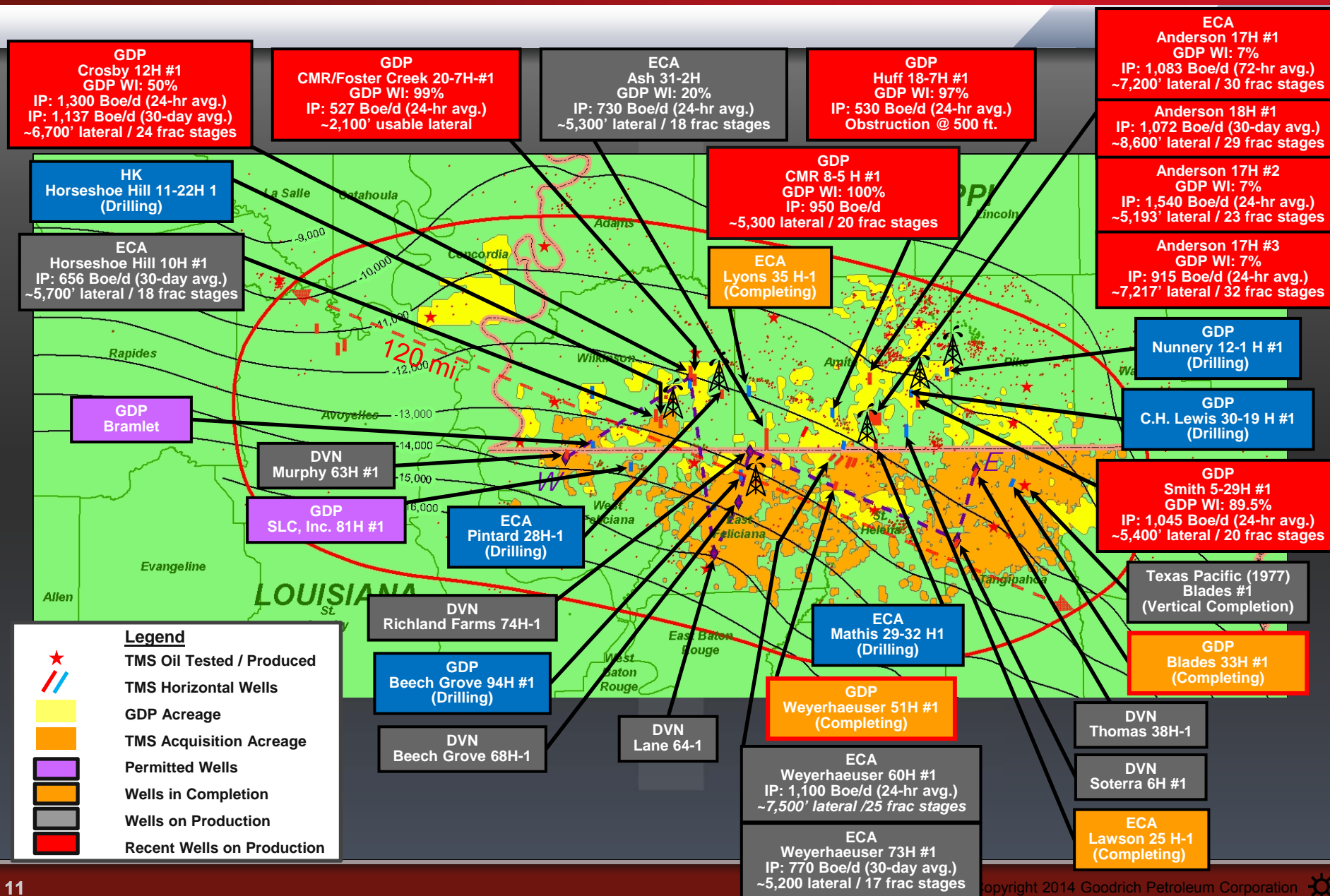


**2,050' Lateral**  
**3 Frac Stages (683' spacing)**  
**63 MBO EUR**  
**21 MBO/Stage**



**1,650' Lateral**  
**3 Frac Stages (550' spacing)**  
**1.55 b-factor**  
**85 MBO EUR**  
**28 MBO/Stage**

# TUSCALOOSA MARINE SHALE

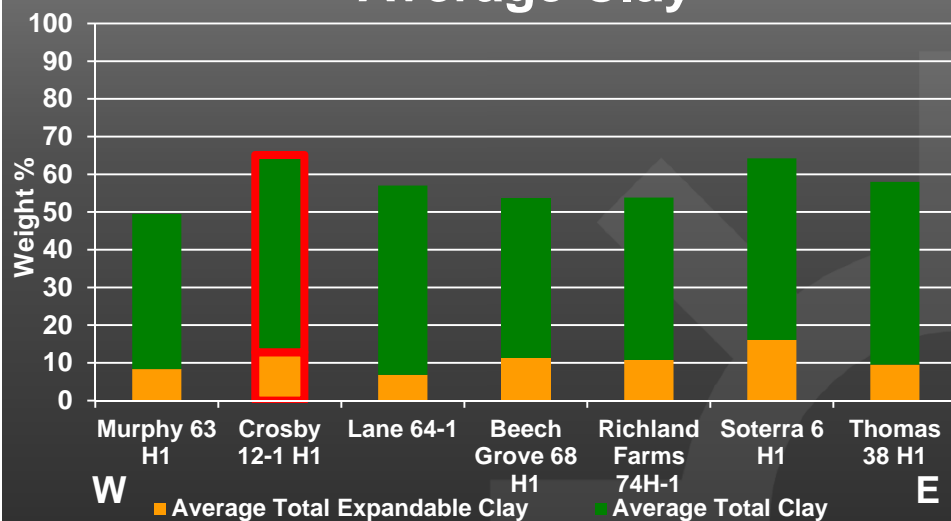




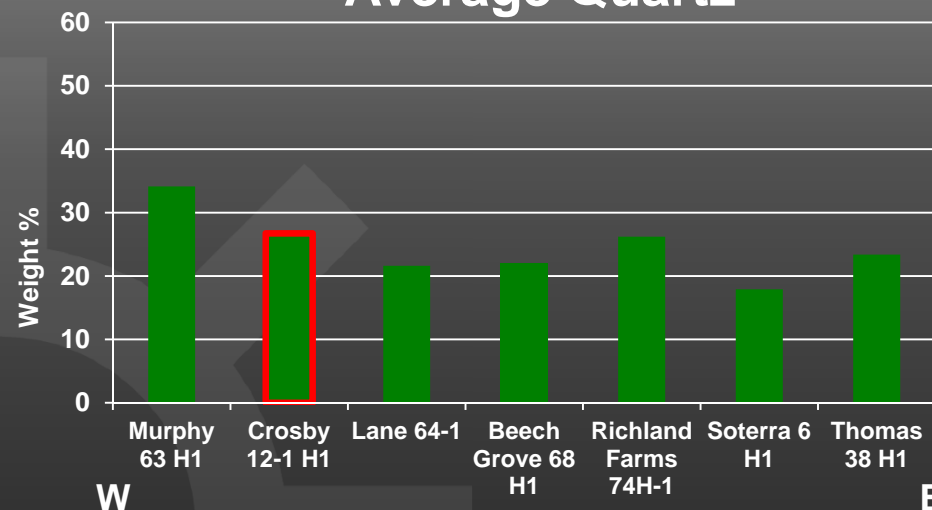
# TMS CORE DATA

From West to East

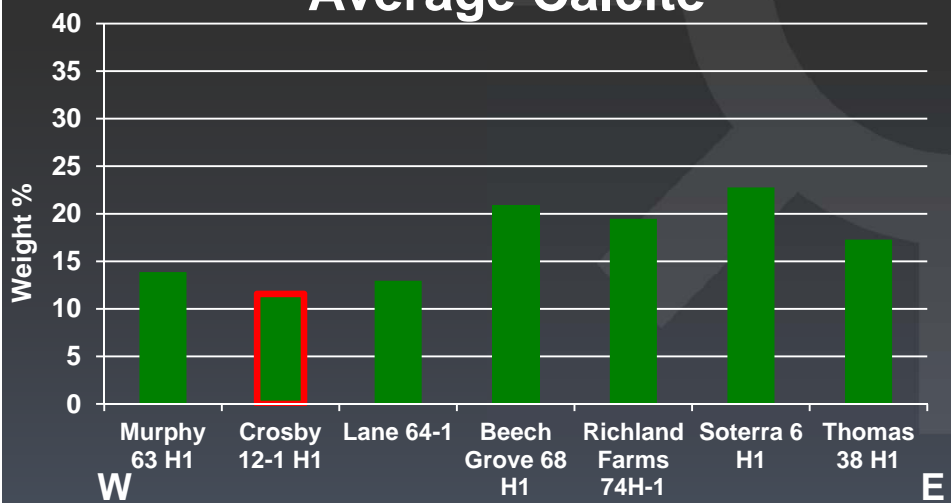
## Average Clay



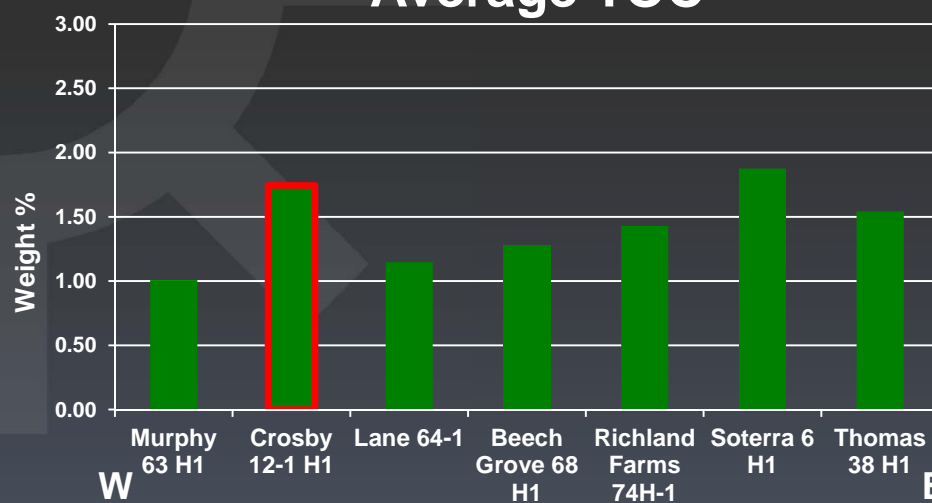
## Average Quartz



## Average Calcite



## Average TOC



Source: Goodrich Petroleum Corporation.

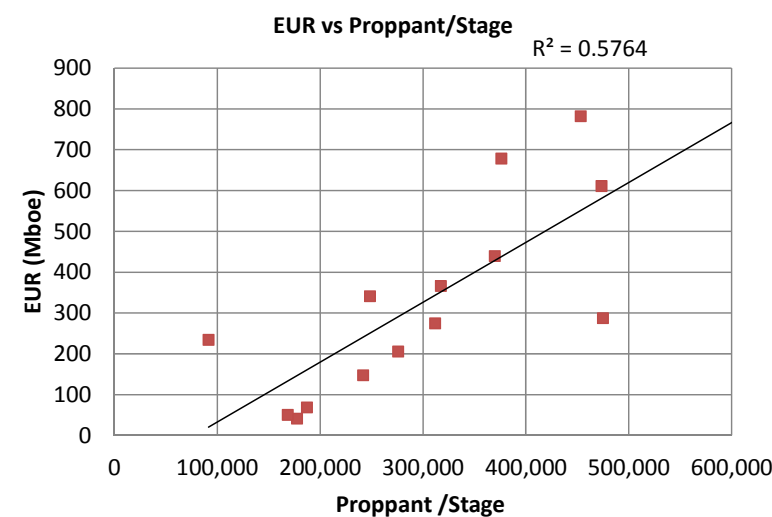
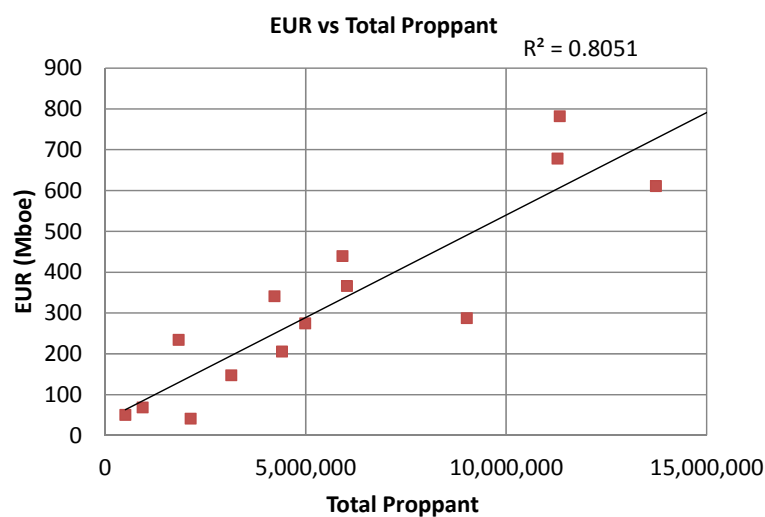
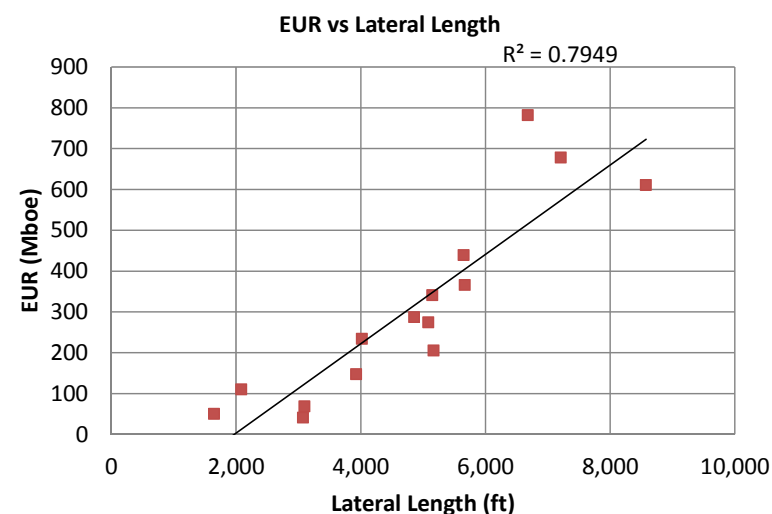
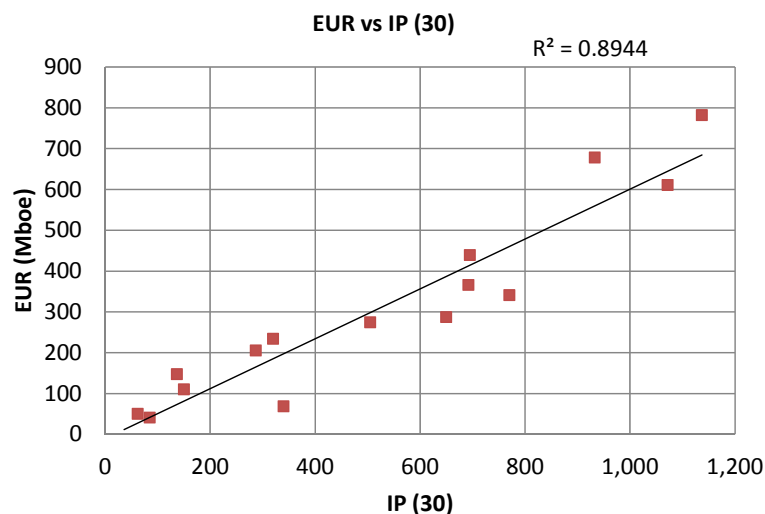
# TMS – RECENT WELLS

(Data: Public Sources)

Operator	Well Name	Spud Date	TVD	Lateral Length	Target	Frac Stages	Proppant Per Stage	IP	IP(30)
DVN	Richland Farms 74 H-1	01/19/12	12,900	4,020	Lower	20	99,000	380	320
DVN	Weyerhaeuser 14H-1	03/24/12	13,000	5,670	Lower	19	319,000	1,053	692
DVN	Murphy 63 H-1	04/01/12	13,800	5,170	Lower	16	275,869	460	506
DVN	Thomas 38 H-1	05/23/12	11,809	5,086	Lower	16	316,000	655	505
ECA	Weyerhaeuser 73 H-1	08/03/11	12,533	5,150	Lower	17	248,529	1,040	770
ECA	Horseshoe Hill 10 H-1	11/09/11	13,138	5,650	Lower	18	370,000	830	656
ECA	Anderson 17 H-1	12/08/11	11,984	7,210	Lower	30	376,233	1,083	933
ECA	Anderson 18 H-1	01/15/12	11,914	8,575	Lower	29	473,678	1,178	1,072
ECA	Weyerhaeuser 60 H-1	09/21/12	12,713	7,500	Lower	25	750,000	1,100	600
ECA	Weyerhaeuser 60 H-2	5/28/12	12,713	5,000	Lower	15	750,000	302	226
ECA	Ash 31 H-2	11/12/12	12,750	5,309	Upper	18	1,000,000	730	556
ECA	Anderson 17 H-2	01/20/13	11,906	5,193	Lower	23	586,881	1,540	942
ECA	Anderson 17 H-3	03/22/13	11,851	7,217	Upper	32	554,723	915	530
GDP	Crosby Minerals 12 H-1	10/04/12	12,159	6,681	Lower	24	453,556	1,300	1,137
GDP	Smith 5 H-1	04/30/13	11,497	5,400	Upper	20	443,019	1,045	925
GDP	Foster Creek 20 H-1	07/01/13	12,000	2,100	Upper	8	450,000	527	350
GDP	Huff 18 H-1 *	08/29/13	11,467	4,500	Upper	17	450,000	530	N/A
GDP	Weyerhaeuser 51 H-1 *	11/03/13	12,759	6,200	Lower	23	450,000	N/A	N/A
GDP	CMR 8-5 H-1	11/27/13	12,247	5,300	Lower	20	450,000	950	N/A

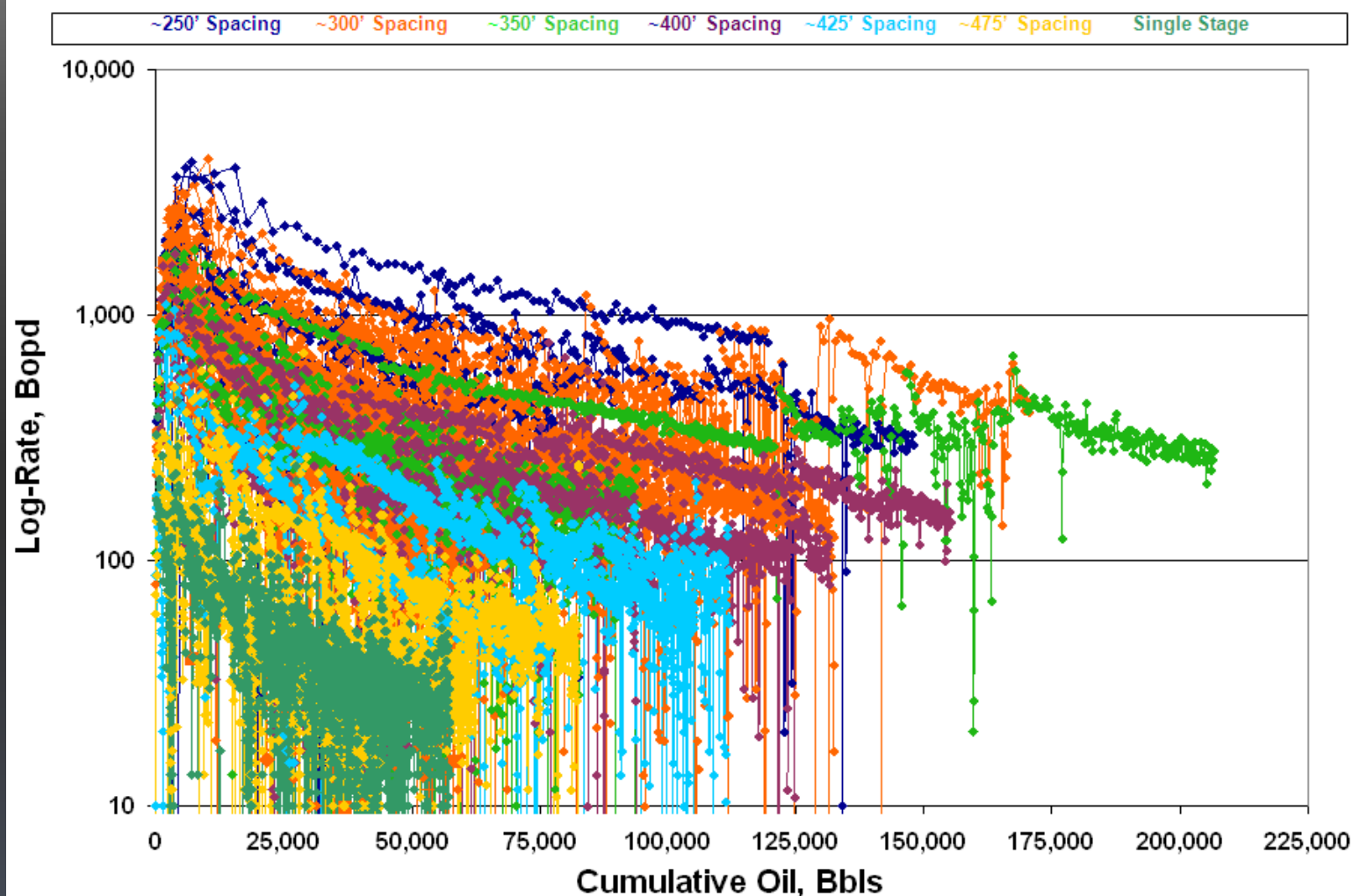
\* Short usable laterals

# TMS COMPLETION ANALYSIS





# FRAC STAGE LENGTH VS. PERFORMANCE

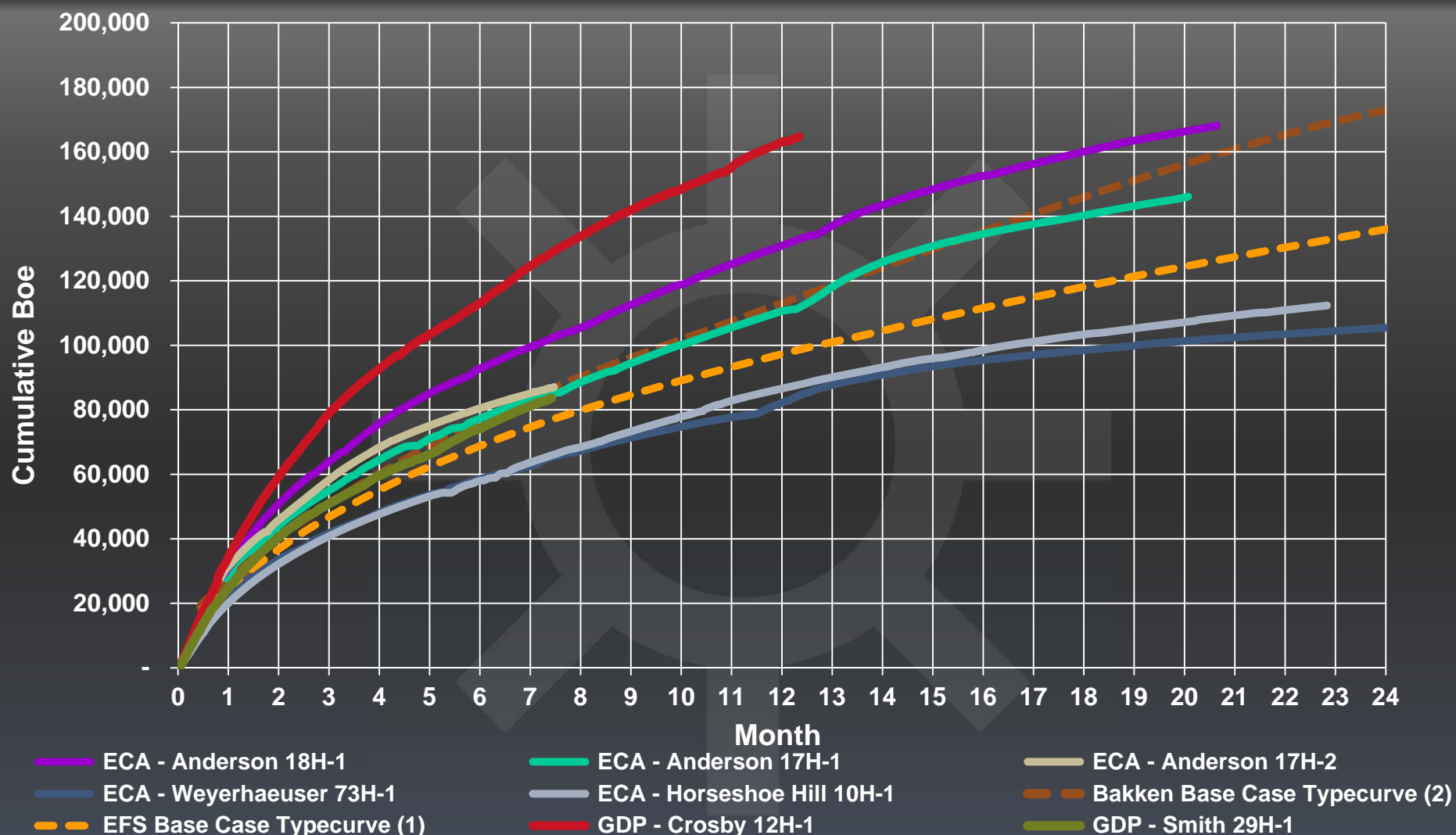


Source: Brigham Exploration Corporate Presentation.

# WELL COMPLETION COMPARISON

	<b>GDP Crosby 12H #1</b>	<b>DVN Soterra 6 H1</b>	<b>DVN Richland Farms 74 H1</b>	<b>DVN Weyerhaeuser 14 H1</b>	<b>DVN Murphy 63 H1</b>	<b>DVN Thomas 38 H1</b>	<b>DVN Beech Grove 68 H1</b>
<b>IP</b>	1,300	340	383	1,053	460	655	137
<b>IP (30)</b>	1,137	176	320	692	506	505	85
<b>Lateral Length</b>	6,681	3,929	4,020	5,670	5,170	5,086	3,073
<b># of Stages</b>	24	13	20	19	16	16	12
<b>Length per Stage (ft)</b>	270	300	225	300	300	300	225
<b>Clusters per Stage</b>	5	4	3	4	4	4	3
<b>Holes per Stage</b>	35	32	27	28	28	28	54
<b>% Slickwater</b>	65	9	9	0	0	0	41
<b>Pump Rate (BPM)</b>	75	56	40	54	42	53	49
<b>Proppant Volume</b>	454,000	242,000	99,000	319,000	276,000	316,000	178,000
<b>Clay Stabilizer</b>	CC	AY80BX	AY80BX	AY80BX	AY80BX	AY80BX	AY80BX

# TMS CUMULATIVE PRODUCTION



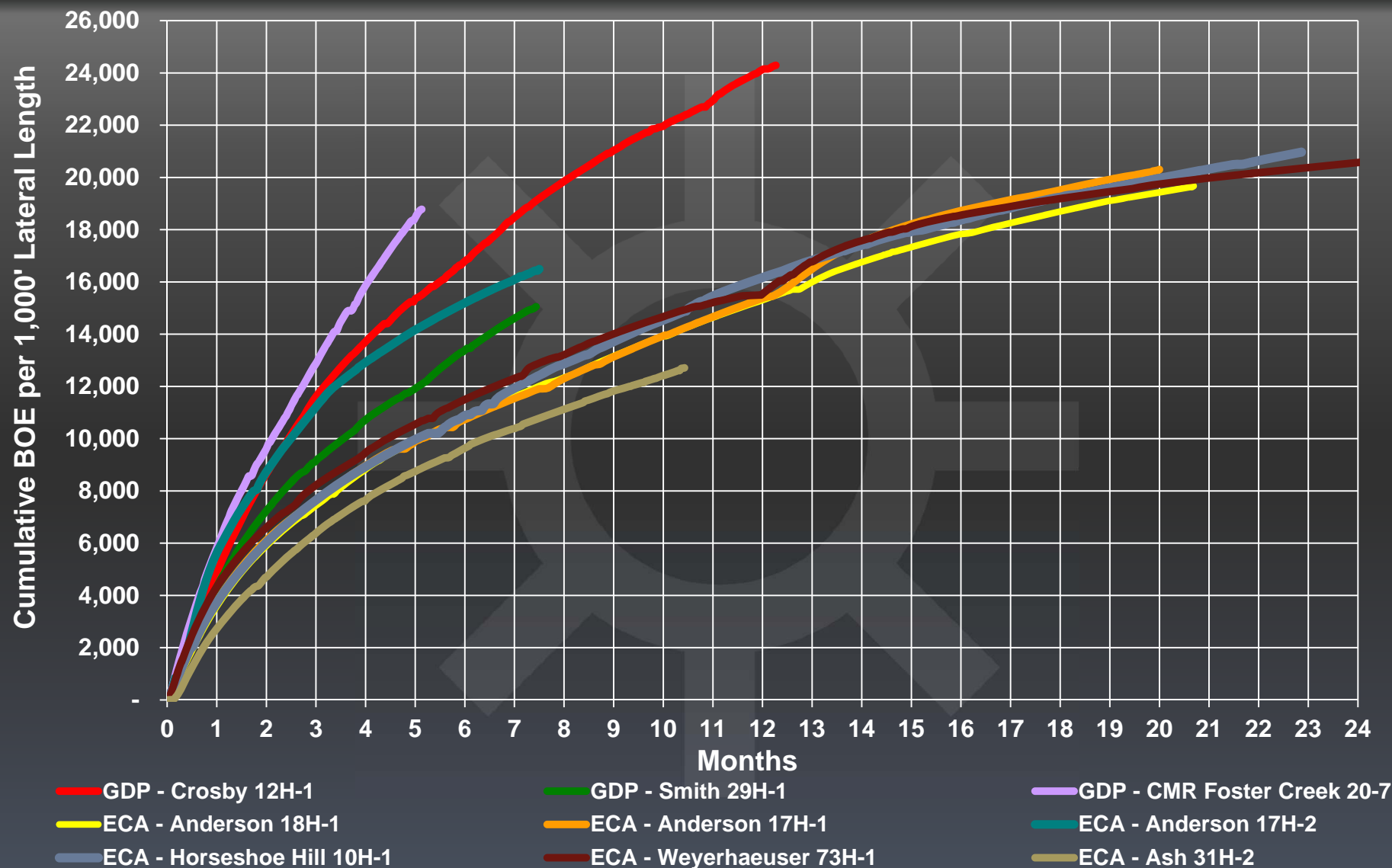
(1) EFS Base Case Type Curve utilizes a 425,000 BOE EUR

(2) Middle Bakken utilizes a 600,000 BOE EUR; industry sources

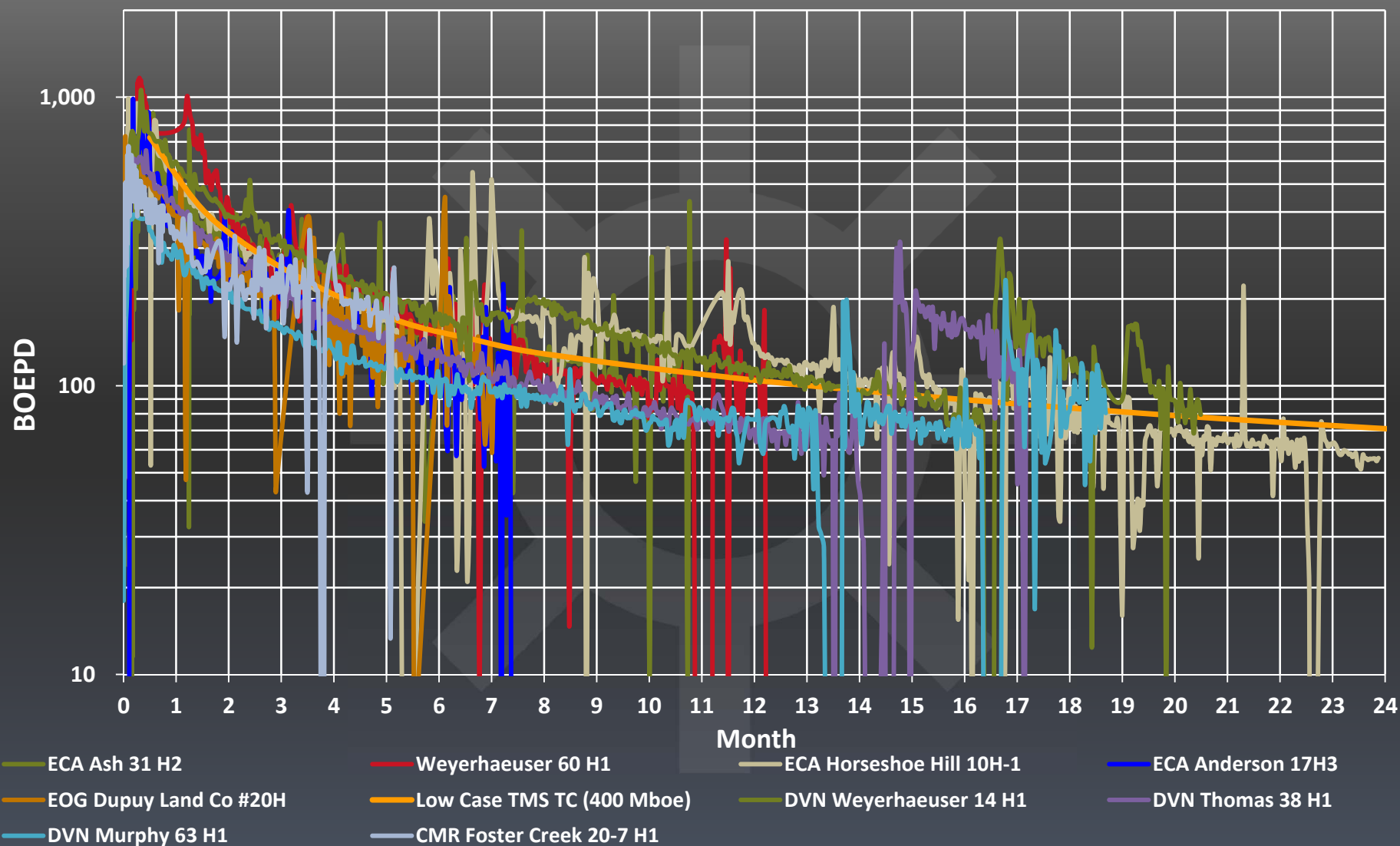


# TMS CUMULATIVE PRODUCTION

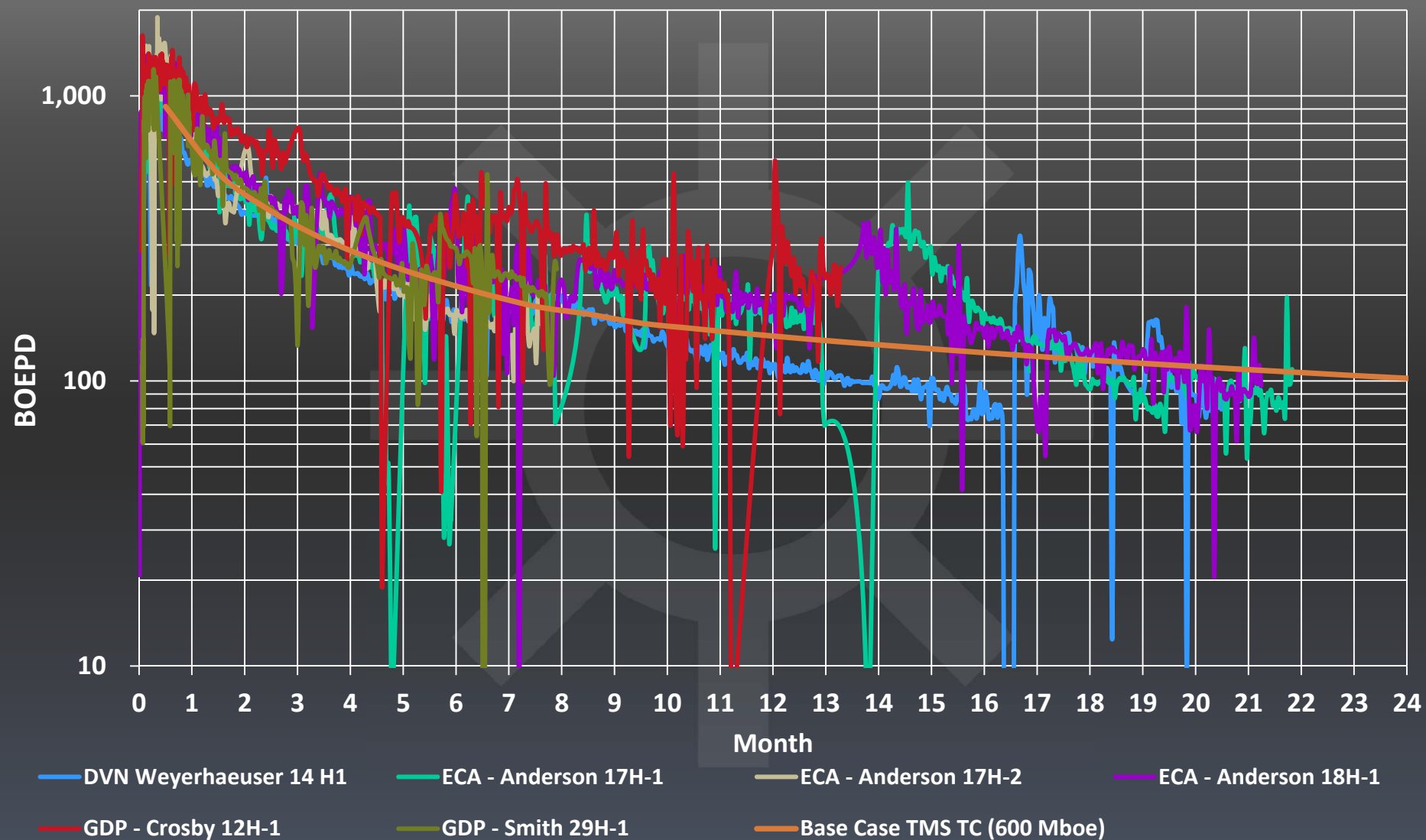
*Cumulative production per 1,000 ft. of horizontal lateral length*



# TMS LOW CASE TYPE CURVE (400 MBOE)

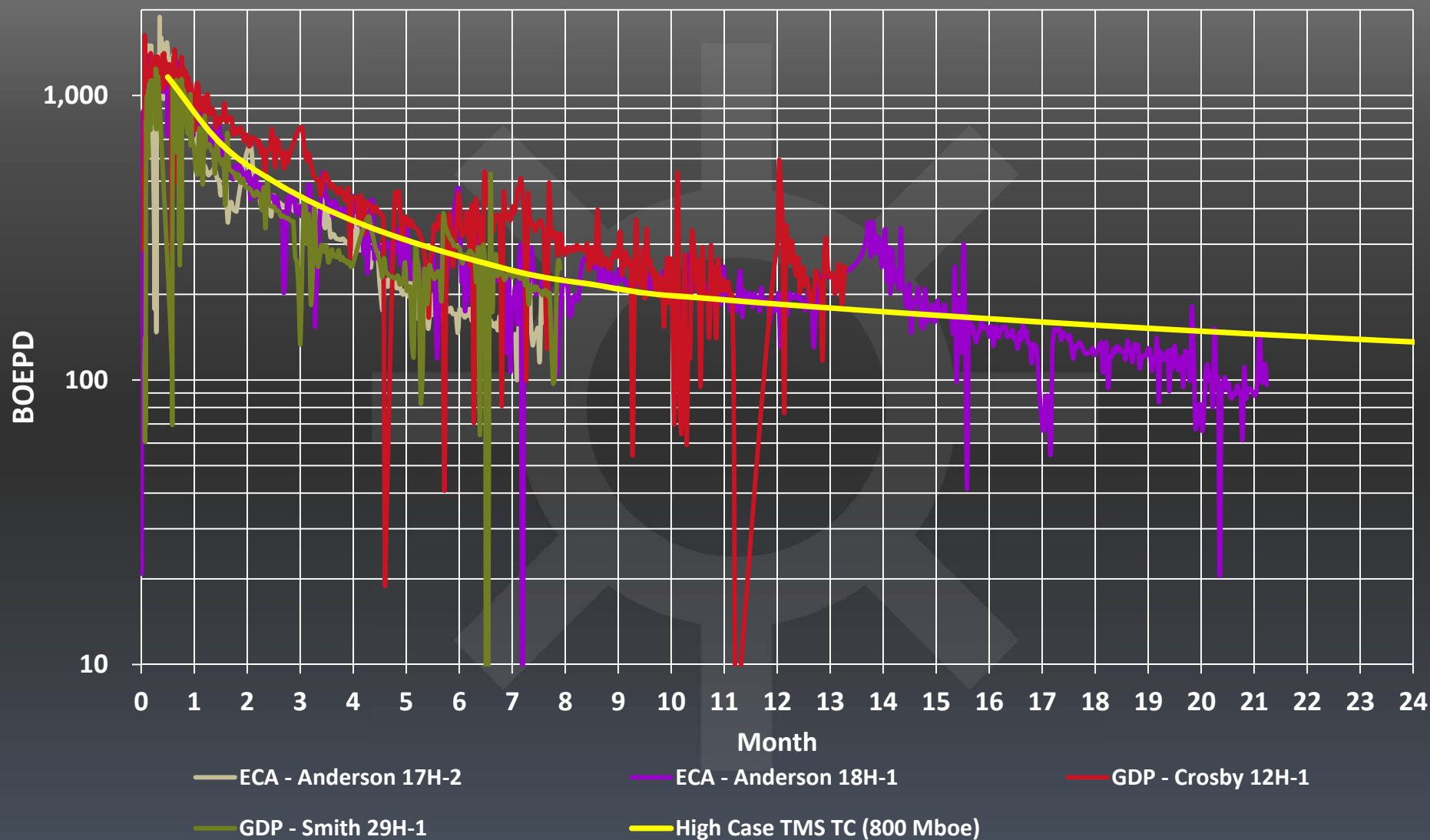


# TMS BASE CASE TYPE CURVE (600 MBOE)



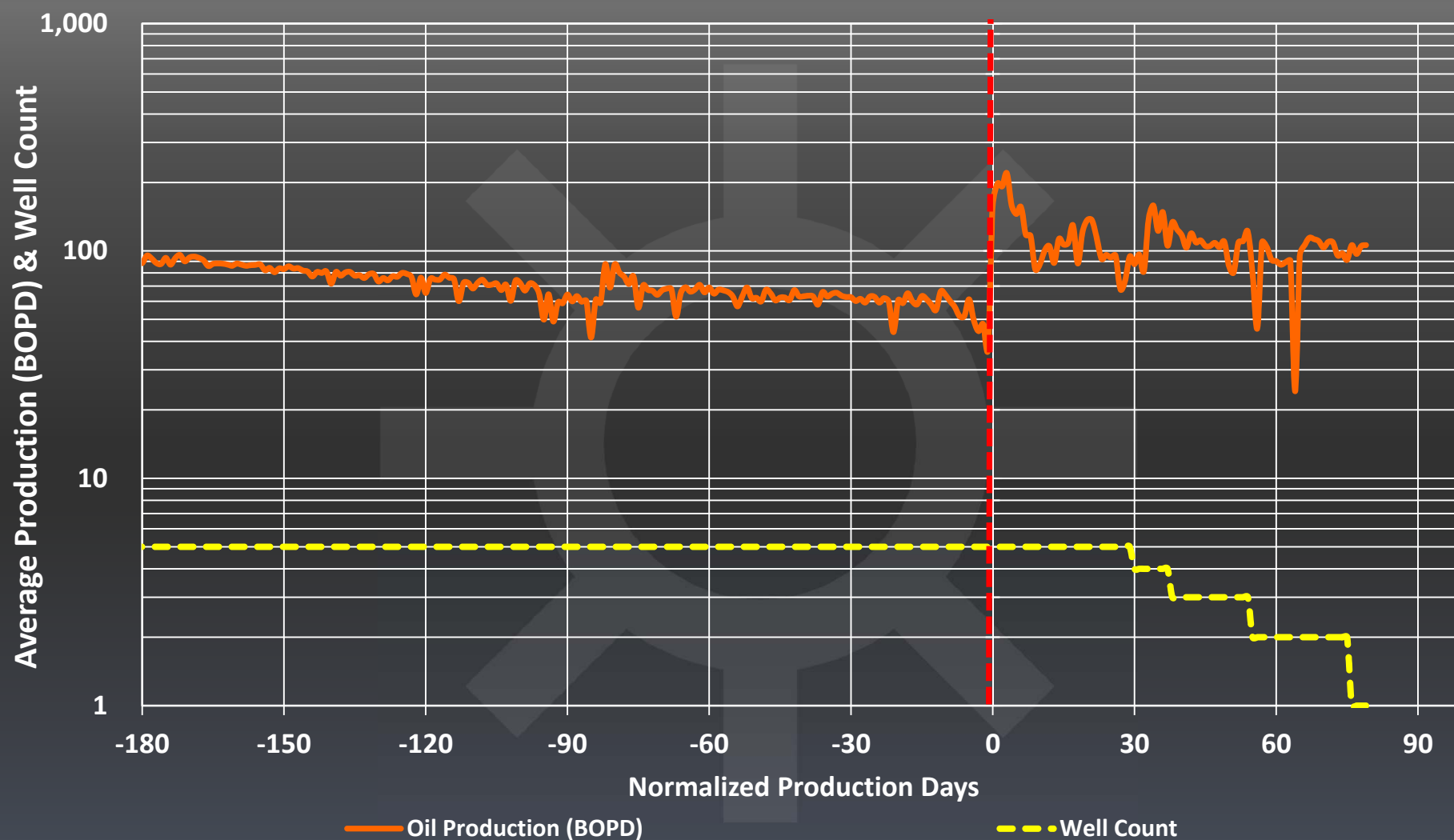


# TMS HIGH CASE TYPE CURVE (800 MBOE)



# RECENT TMS WORKOVER RESULTS

## *Artificial Lift Impact on Acquired Wells*



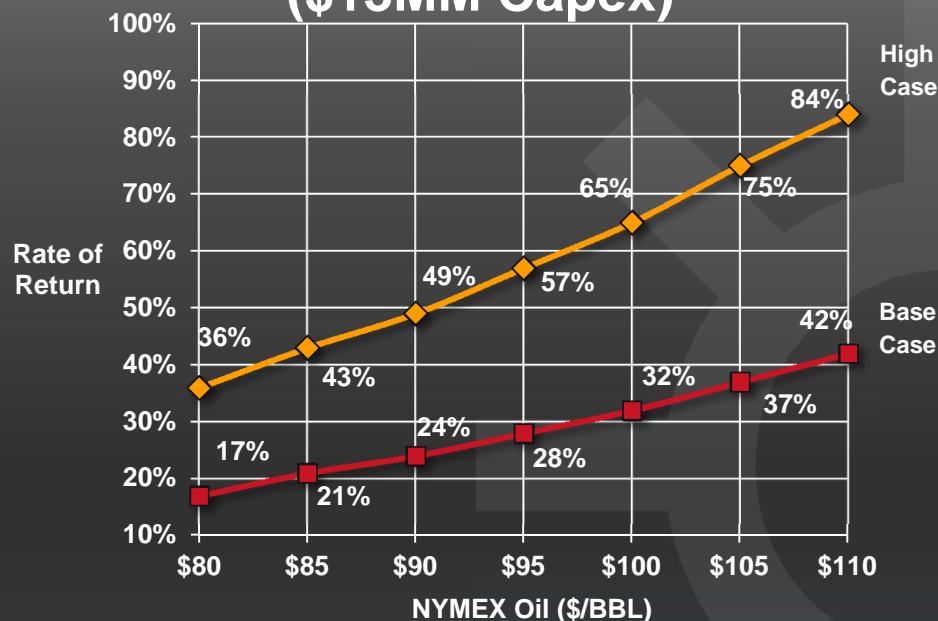
*Note: Includes the following wells: Richland Farms 74 H1, Weyerhaeuser 14 H1, Murphy 63 H1, Thomas 38 H1, Weyerhaeuser 72 H1*

# TMS WELL ECONOMIC SUMMARY

	Single Well	Development Well
Well Cost:	\$13.0 MM	\$10.0 MM
Lateral Length:	6,000'	6,000'
Frac Stages:	22	22
Royalty Burden:	18.5%	18.5%
Severance Tax:	0% until Payout 12.5% after Payout	0% until Payout 12.5% after Payout
Reserves (Gross):	600 MBOE / 800 MBOE	600 MBOE / 800 MBOE
Reserves (Net):	489 MBOE / 652 MBOE	489 MBOE / 652 MBOE
F&D Cost (\$/BOE):	\$26.58 / \$19.94	\$20.45 / \$15.34
IRR: (@ \$95 NYMEX)	28% / 57%	57% / 115%
NPV:	\$6.0 MM / \$12.6 MM	\$8.9 MM / \$15.5 MM
Undiscounted Payback (Years): (@ \$95 NYMEX)	2.5 / 1.7	1.7 / 1.0

# TMS WELL ECONOMICS

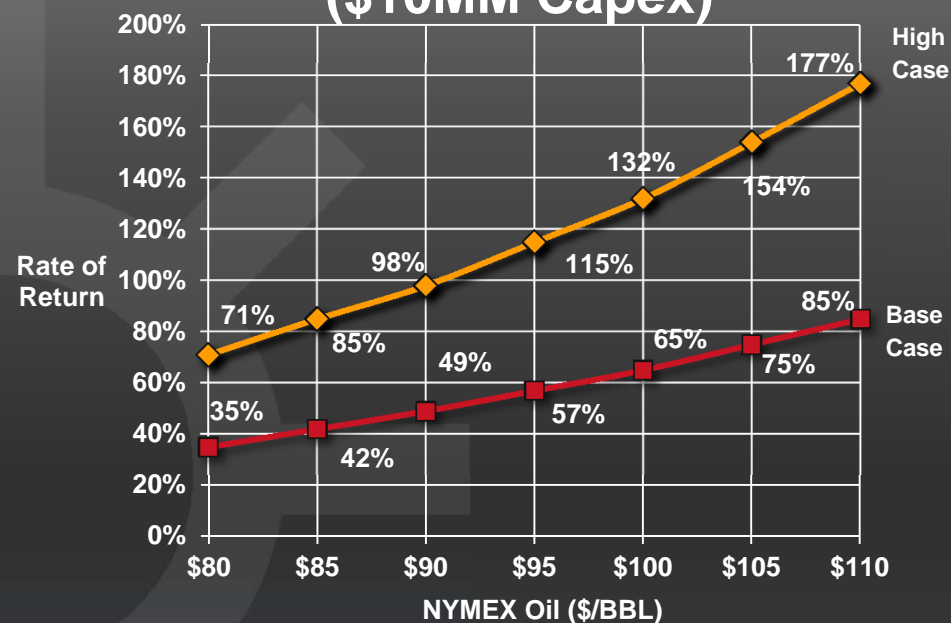
## Single Well (\$13MM Capex)



■ Base Case EUR: 600 MBOE

■ High Case EUR: 800 MBOE

## Development Well (\$10MM Capex)



### Breakeven Economics

EUR		\$10 MM	\$13 MM
		\$54/Bbl	\$68/Bbl
	600 MBoe		
	800 MBoe	\$41/Bbl	\$51/Bbl

Note: Internally estimated type curves. IRR assumes an 81.6% NRI, 2-year tax abatement and a premium to NYMEX of \$5/Bbl. Breakeven economics assumes WTI oil price to generate a 10% internal rate of return.

## ■ Drilling Efficiencies

- Well costs come down as best practices are implemented
- Proper bit, motor and fluid selection
- Enhanced directional drilling techniques
- Continuity among experienced, incentivized rig crews

## ■ Multi-well Pad Drilling

- Utilize rigs with skid packages to minimize rig-up, rig-down and move time
- Single change-over from water based to oil based mud
- Zipper fracs save time and money on stand-by equipment
- Single surface production facility can be amortized over multiple wells

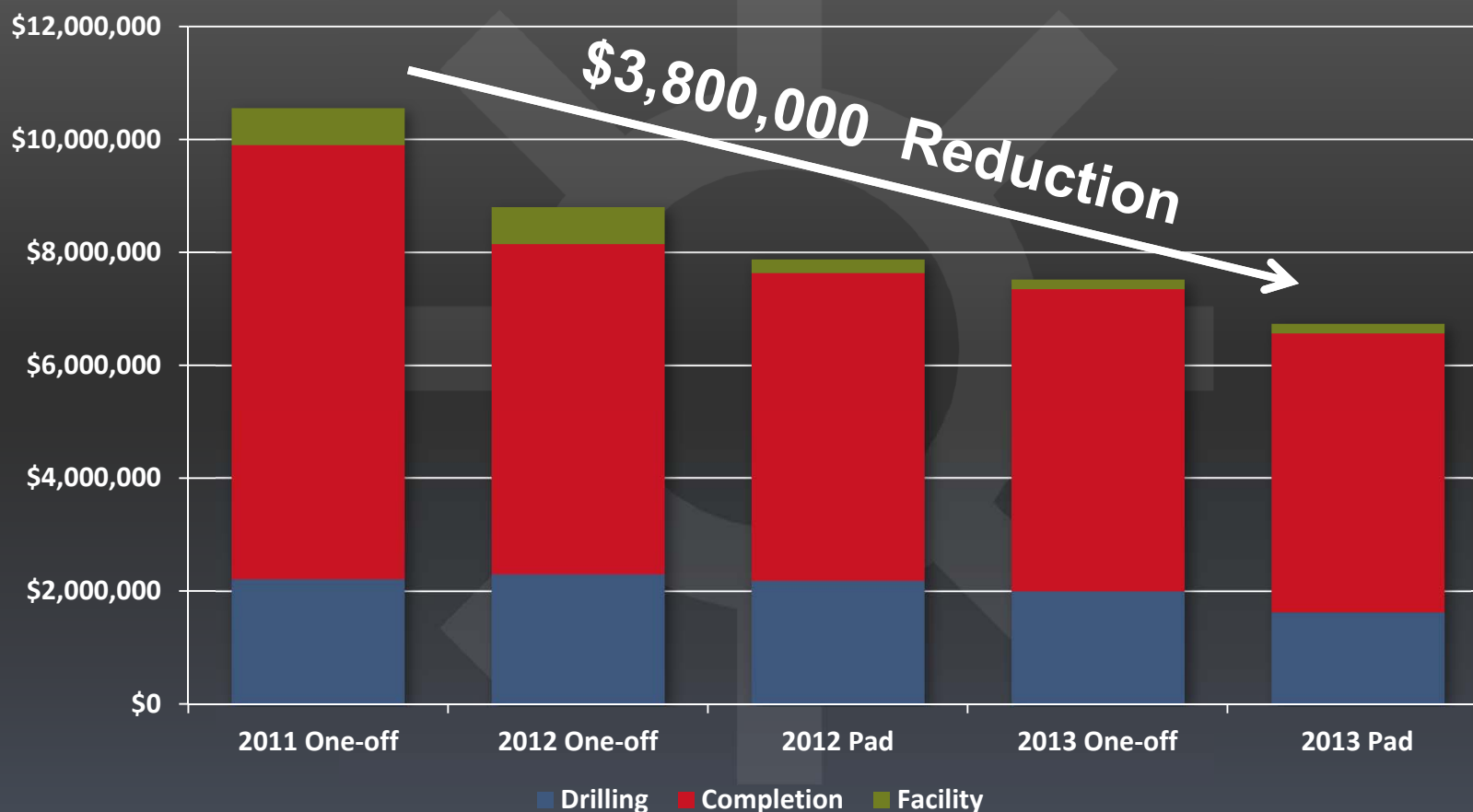
## ■ Service Company Competition

- Limited service company capacity necessitates sourcing equipment and services from Haynesville, Eagle Ford, etc.
- Continued success in the play will attract competition within the fracture stimulation market and likely drive down costs as evidenced by the Eagle Ford Shale



# EAGLE FORD EXPERIENCE

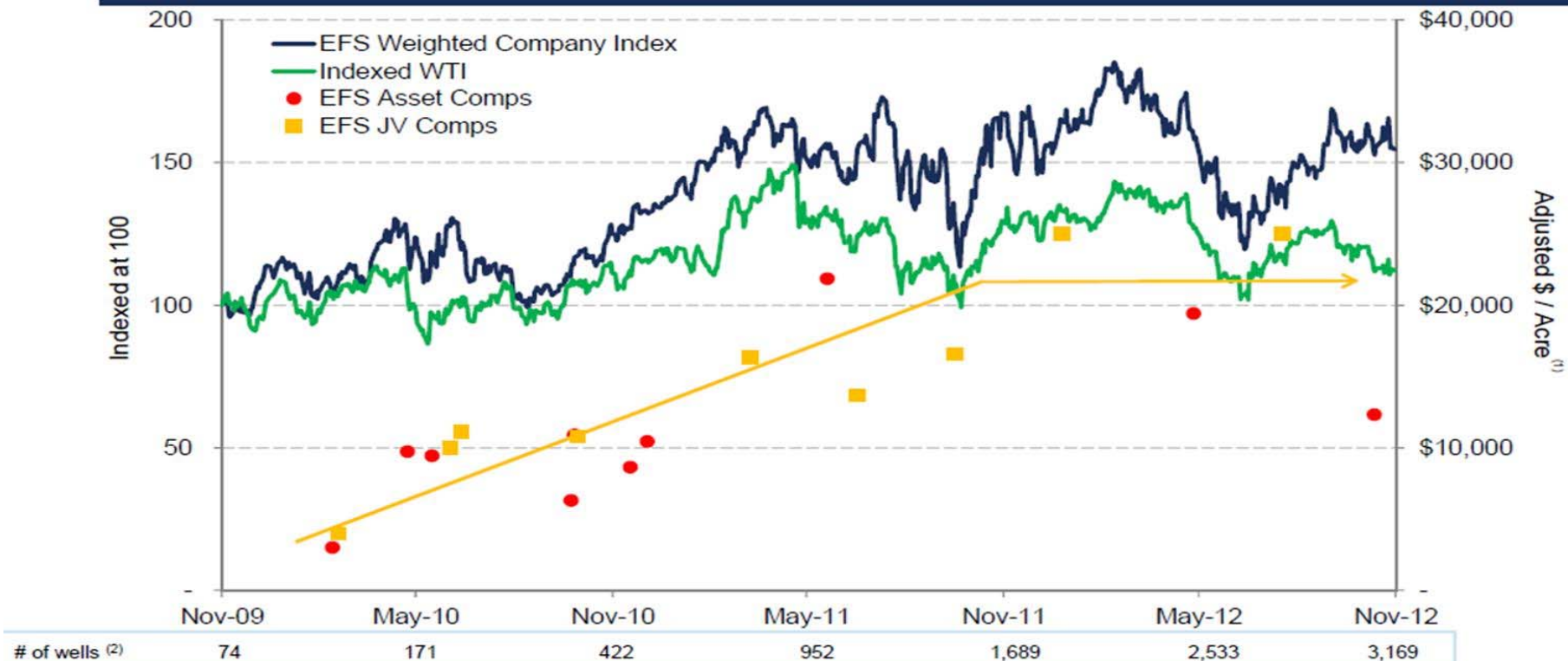
- Drilling efficiencies, multi-well pad drilling and service company competition resulted in a 36% reduction in D&C costs in just two years



# EAGLE FORD – TMS CORRELATION?

## Eagle Ford Valuation Evolution

Eagle Ford Valuation Evolution



Source: Bloomberg and IHS. Note: EFS Company index includes Petrohawk, ROSE, SM, EOG, SFY, CRK and PXD. Transaction set does not include all Eagle Ford shale transactions

(1) Adjusted value based on \$60,000 Boe/d for production

(2) Producing wells per HPDI

Significant value enhancement as play is de-risked

- **Establishing Best Drilling Practices:**
  - **Vertical Wellbore**
    - Challenges: gumbo; depleted zones; building the curve
    - Solutions: chemicals; bit program; intermediate casing depth
  - **Horizontal Wellbore**
    - Challenges: wellbore instability – “sloughing”
    - Solutions: improved bits and bottom hole assembly; steeper angle through the “rubble zone”
- **Identifying Best Completion Practices:**
  - Challenges: Upper target – casing deformation; drilling out frac plugs
  - Solutions: Lower target – no casing deformation; no trouble drilling out vast majority of frac plugs; Future utility – permanent frac plugs, but down the road
- **Access to competitive prices for services & labor**
- **Infrastructure issues**
- **Pad drilling – acreage capture and material cost reductions**

# CONCLUSIONS

- Initial production results are very positive and improving
- Economics potentially superior to the Eagle Ford Shale
- Completion / Frac design, technique and recipe have been proven critical to success
- Well costs coming down as best practices are implemented. Service costs will decline with success of the play as additional capacity moves into the field
- Favorable regulatory environment, with very supportive state administrations (severance tax relief)
- Cooperative landowners receptive to development activities
- Ready market for the crude oil, priced at LLS. Agreement in place to strip the liquids from the rich natural gas (1,400 – 1,500 Btu, 80 – 100 Bbl / MMcf NGL yield)
- Large acreage owner in the core of the TMS with substantial leverage to the play's success



NYSE: GDP

