

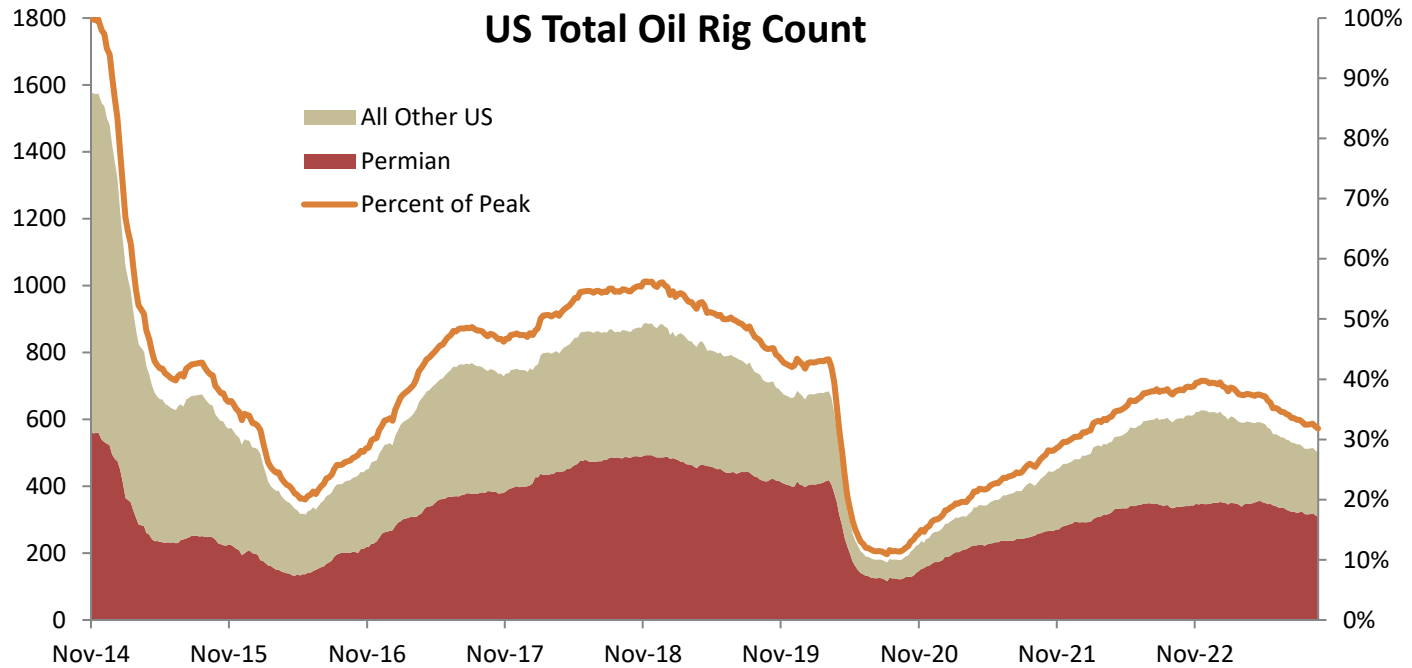
Baker Hughes Oil Rig and Primary Vision Frac Spread Counts

29 September 2023

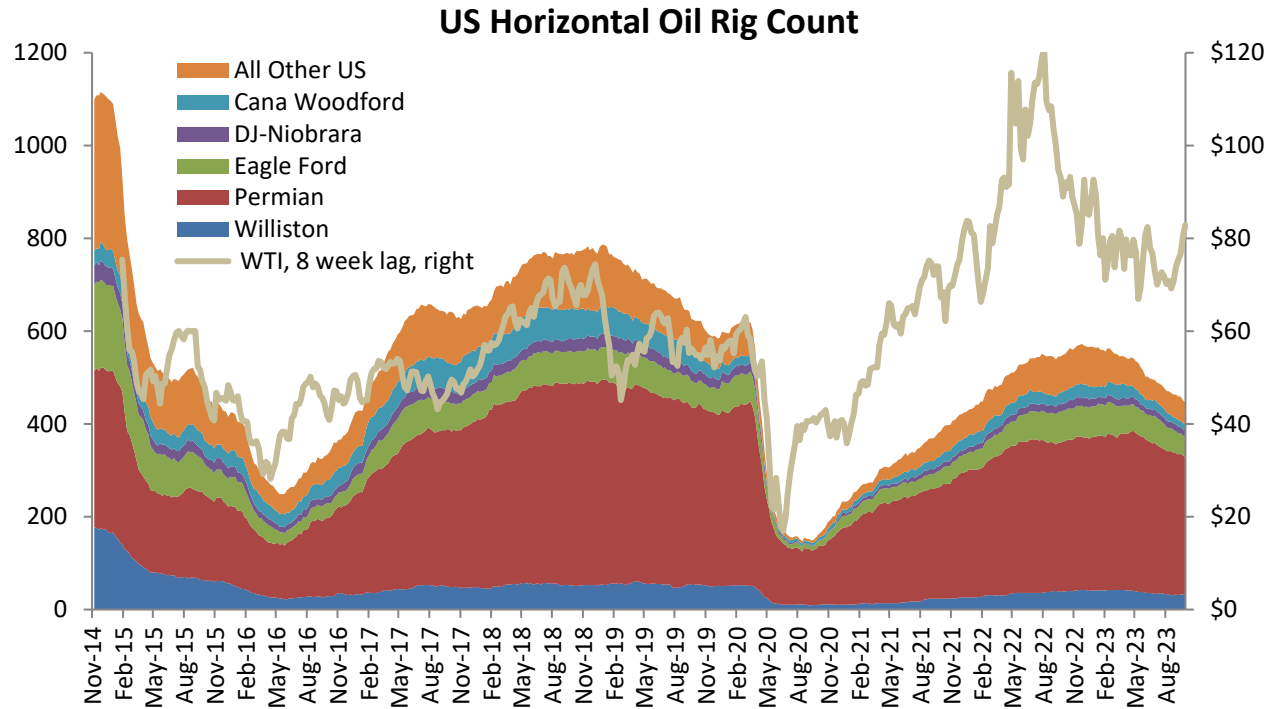
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- More of the same. Rigs and spreads continue to fall, high oil prices notwithstanding.
- Rig counts
 - Total oil rig counts: -5 to 502
 - Horizontal oil rig counts: -4 to 447
 - The Permian horizontal oil rig count: -4, again
 - The Canadian horizontal oil rig count remains essentially unchanged, down 23 from last year
- The US horizontal oil rig count is falling at a pace of -4.0 / week on a 4 wma basis.
 - This number has been negative for 43 of the last 44 weeks
- Frac spreads fell, -4 to 255
 - This is still too high for the current rig count, as DUCs continue to fall.
 - To hold DUCs steady, the spread count must fall by 20
 - It looks like the industry has settled on 16 weeks of DUC inventory, where it stood on Friday, as the new normal.
 - As a result, expect spreads to roll off pro rata with rigs from here on out -- beyond the 20-spread readjustment necessary to hold DUCs steady -- at a ratio of one spread for every two rigs.
- The Brent Spread – the difference between WTI and Brent – is also signaling the end of the shale revolution
 - Historically, WTI sold at a premium to Brent
 - Since the shale revolution, WTI has typically sold at a discount to Brent, generally in the range of \$4 / barrel in recent times.
 - This discount was necessary to place incremental US shale oil barrels in the market.
 - In the last two weeks, the Brent spread has collapsed to around \$1.50 / barrel, suggesting a tightening US market, which could be explained by low or no growth in US shale oil production.

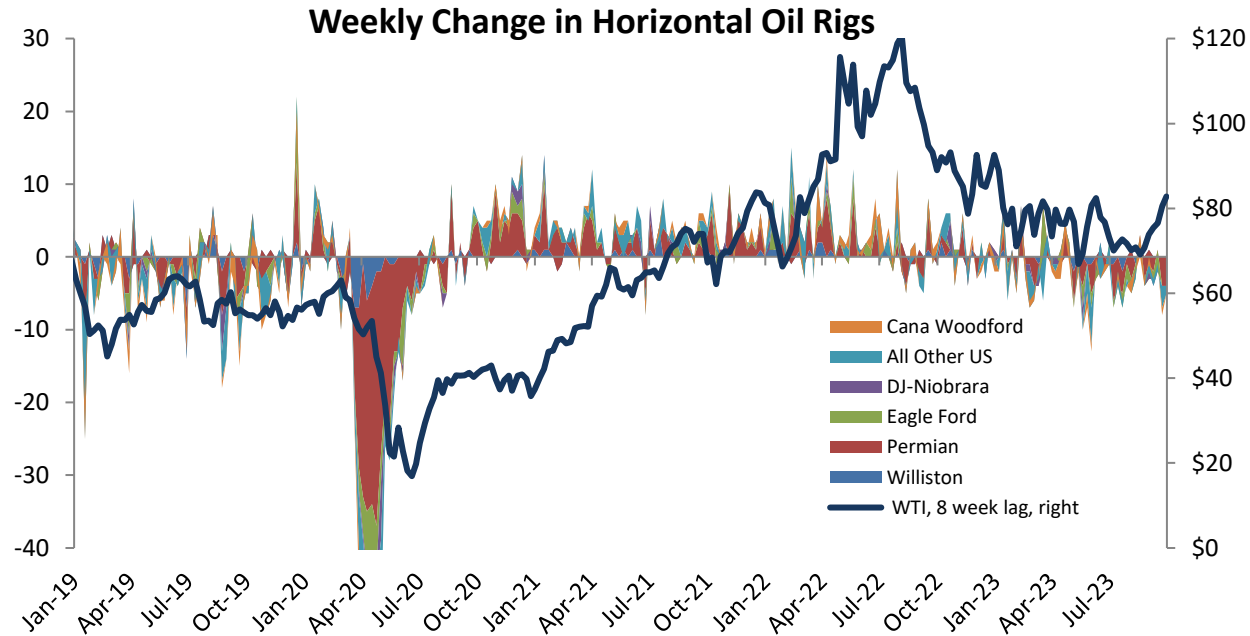


- Total oil rigs: -5 to 502
- Permian: -6
- All Other US: +1



- Horizontal oil rigs: -4 to 447
- Permian: -4
- All Other US: +0

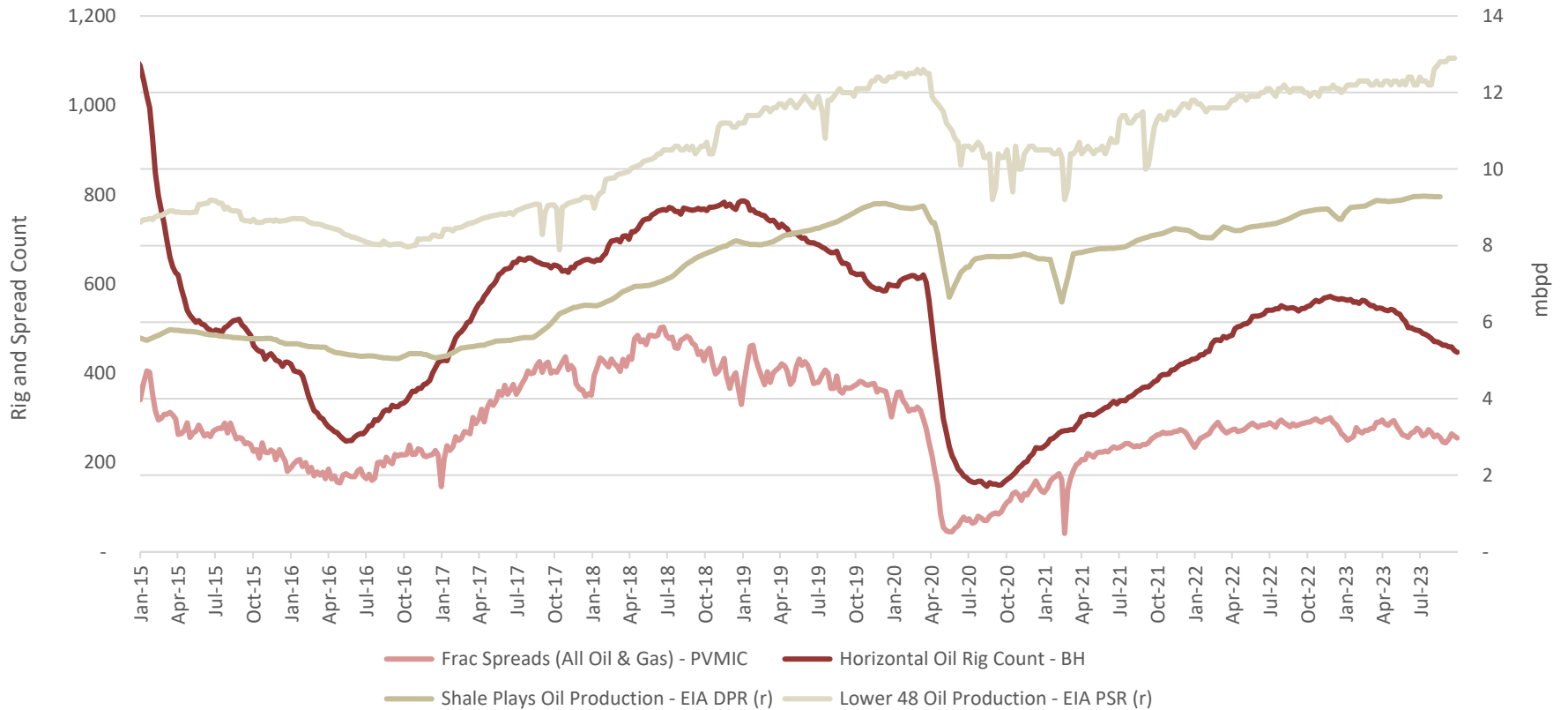
Weekly Change in Horizontal Oil Rig Count by Basin



• By Basin	Change	Count
- Williston	+1	33
- Permian	-4	296
- Eagle Ford	0	43
- DJ Niobrara	0	14
- Cana Wdford	0	13
- Other US	-1	48
- Total	-4	447

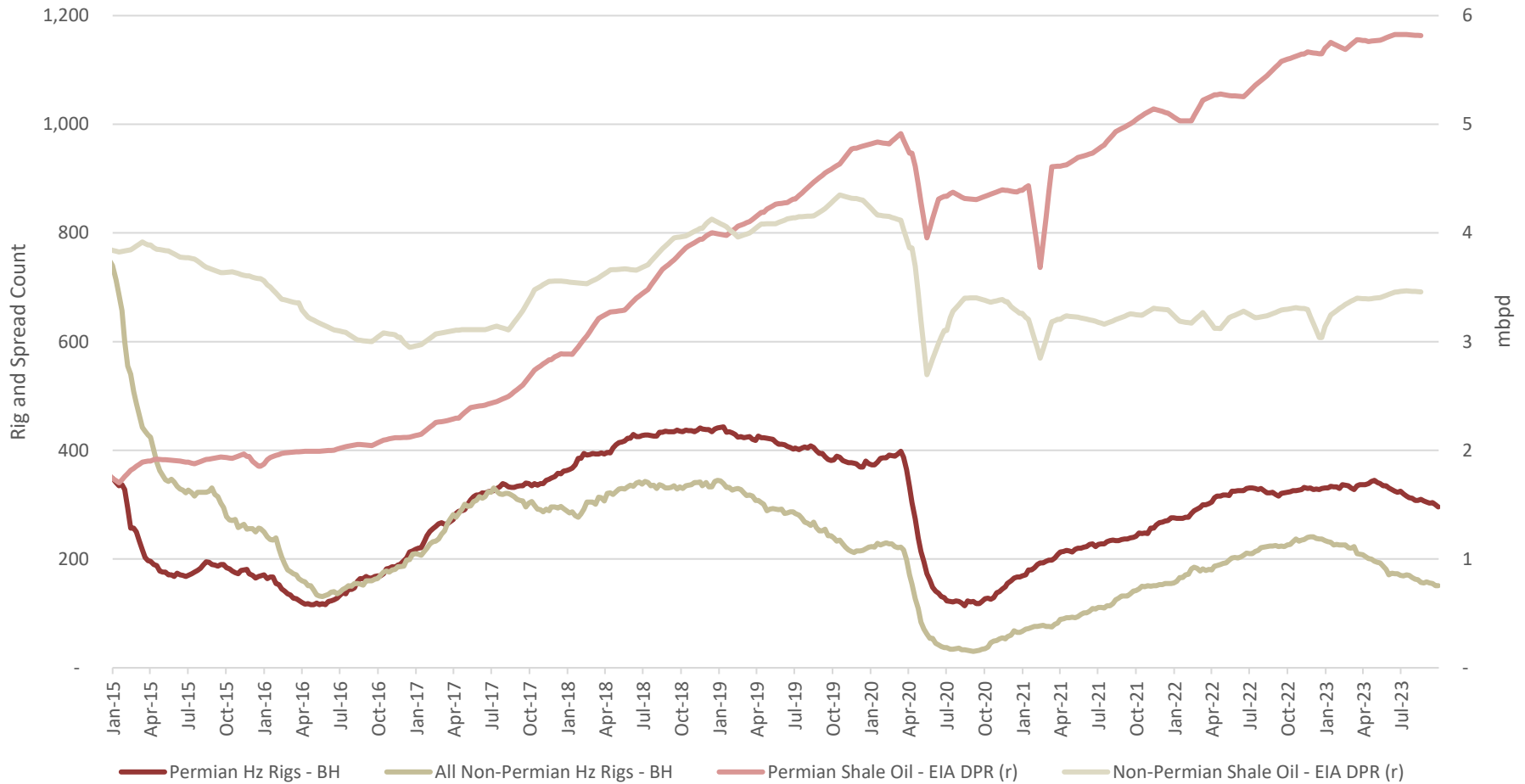
Rigs, Spreads and US Oil Production

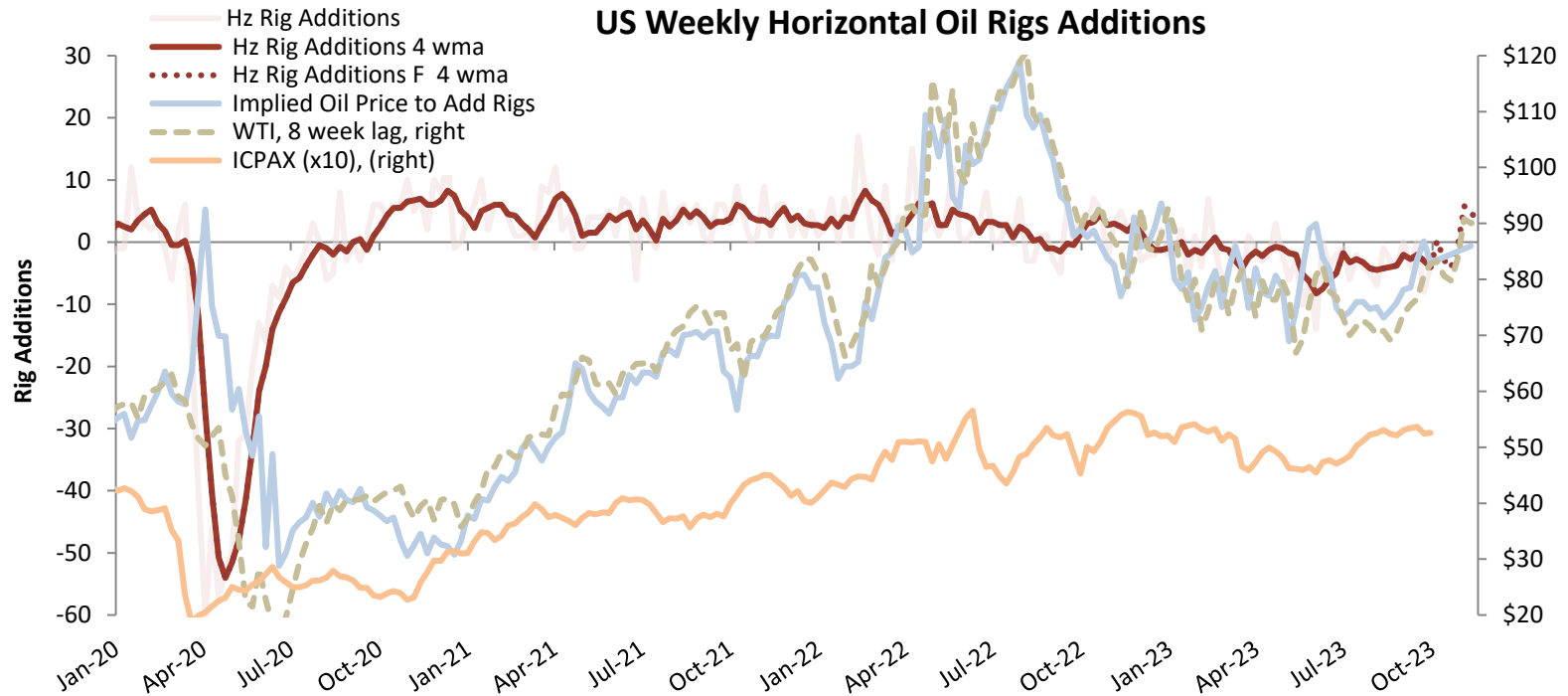
Rigs, Spreads and US Crude and Condensate Production



Permian & Non-Permian Shale Oil Production and Hz Oil Rigs

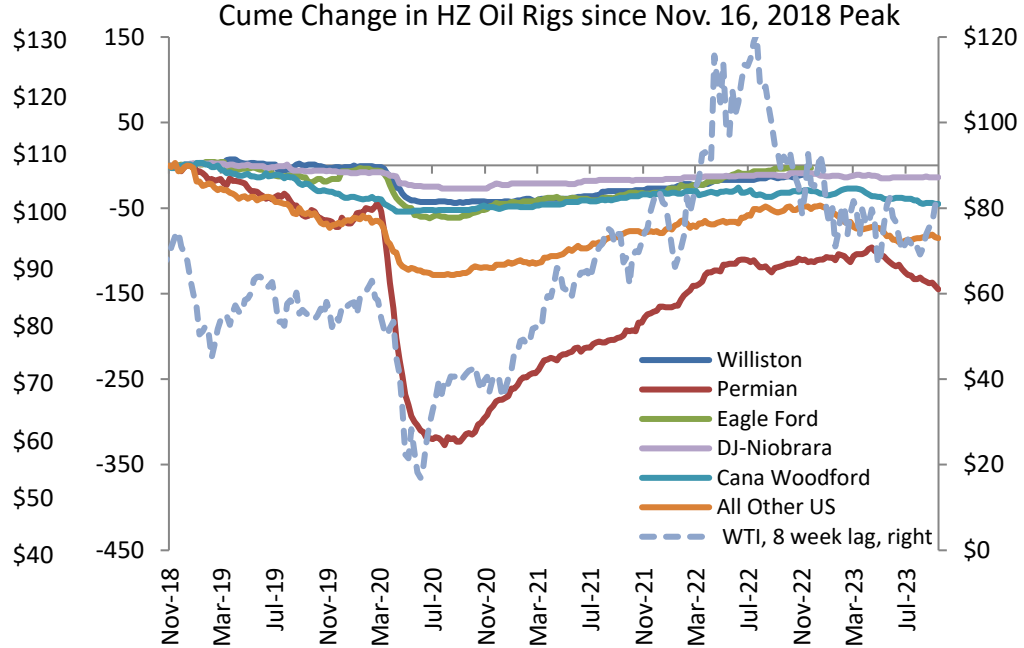
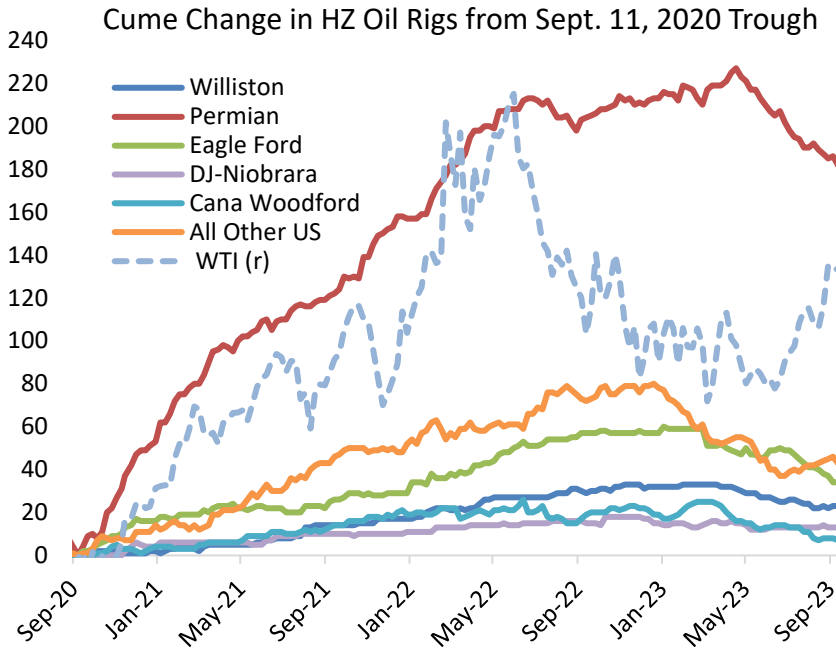
Permian and Non-Permian Shale Oil Production and Horizontal Rigs





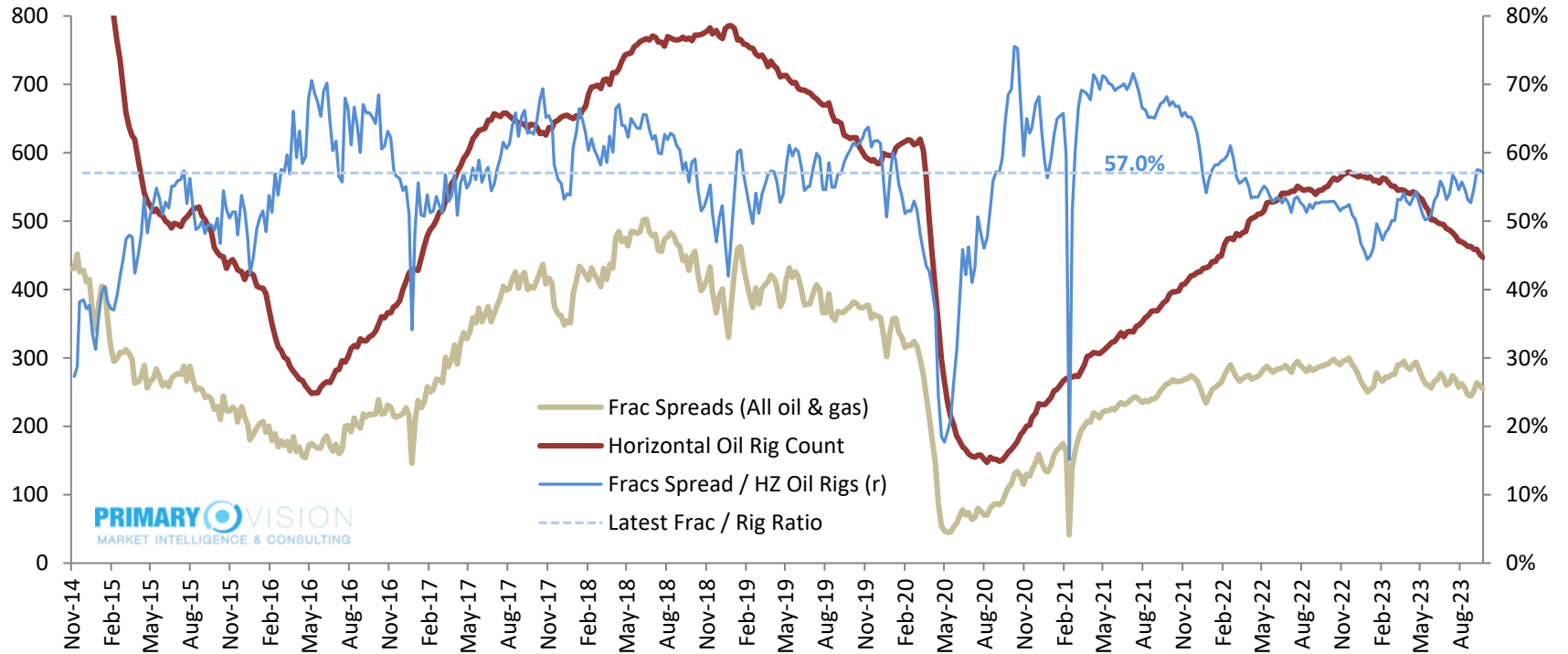
- The 4 wma pace of horizontal rig additions fell to -4.0 / week, negative for the 43rd time in the last 44 weeks
- With an eight-week lag, the breakeven to add horizontal oil rigs rose to \$86 / barrel on a WTI basis with \$90 on the screen
- Given strength in oil prices, rig count roll-offs look grim

US Horizontal Oil Rig Change from Peak and Trough



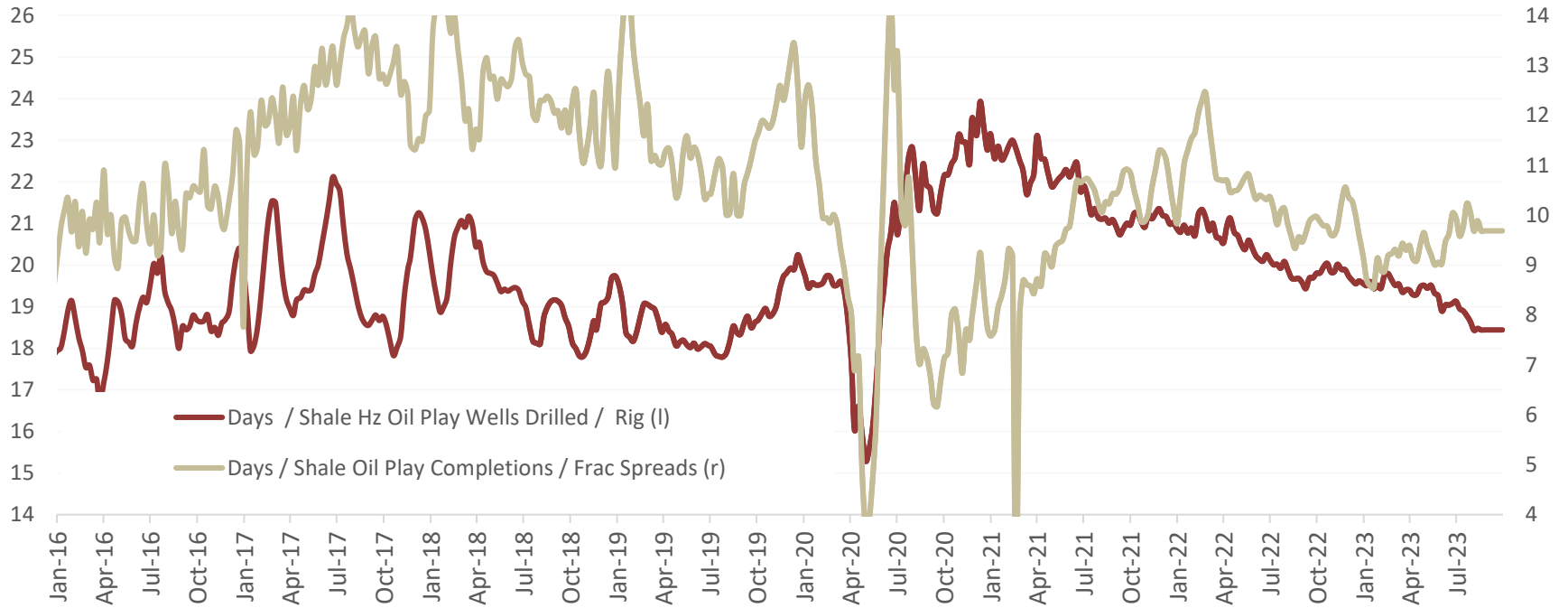
	Latest HZ Rig Count	Trough August 14, 2020				Prior Peak Nov. 16, 2018			
		Trough Count	Rig Change	Percent Change	Pct of Rig Gained	Peak Count	Rig Change	Percent Change	Pct of Rigs Lost
- Williston	33	11	22	200%	7%	53	(20)	-38%	6%
- Permian	296	114	182	160%	61%	441	(145)	-33%	43%
- Eagle Ford	43	10	33	330%	11%	70	(27)	-39%	8%
- DJ Niobrara	14	1	13	1300%	4%	28	(14)	-50%	4%
- Cana Wdford	13	6	7	117%	2%	58	(45)	-78%	13%
- Other US	48	5	43	860%	14%	133	(85)	-64%	25%
- Total	447	147	300	204%	100%	783	(336)	-43%	100%
		05/22/20							
- Frac Spreads	255	45	210	467%		433	(178)	-41%	
<i>Spread Ratio</i>	<i>57.0%</i>	<i>30.6%</i>				<i>55.3%</i>			

Frac Spreads and Horizontal Oil Rigs



- Frac spreads were -4 to 255

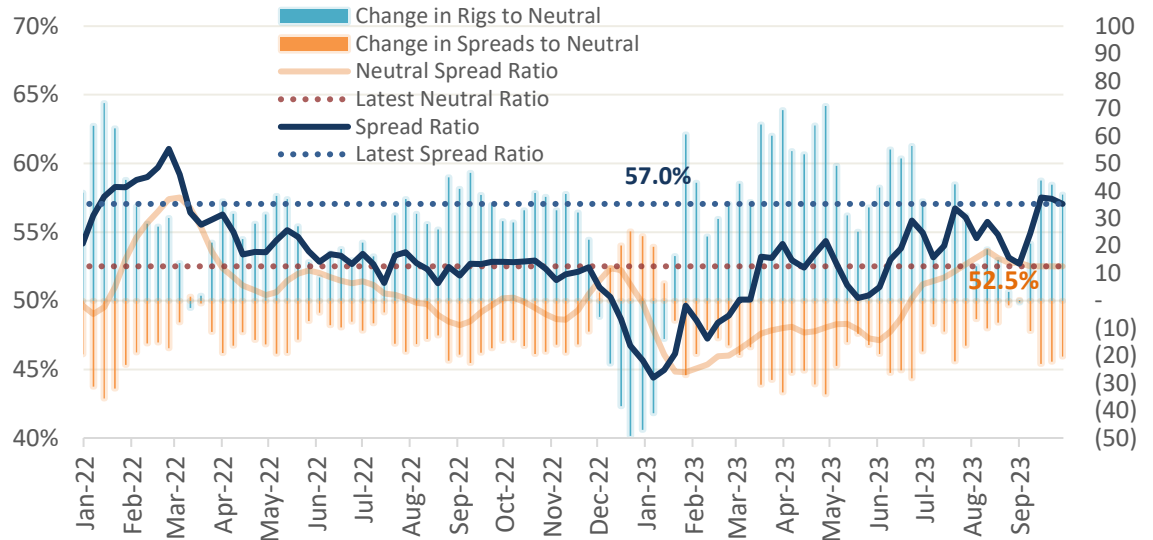
Productivity of Rigs and Spreads: Days per Well



Rig and Spread Productivity

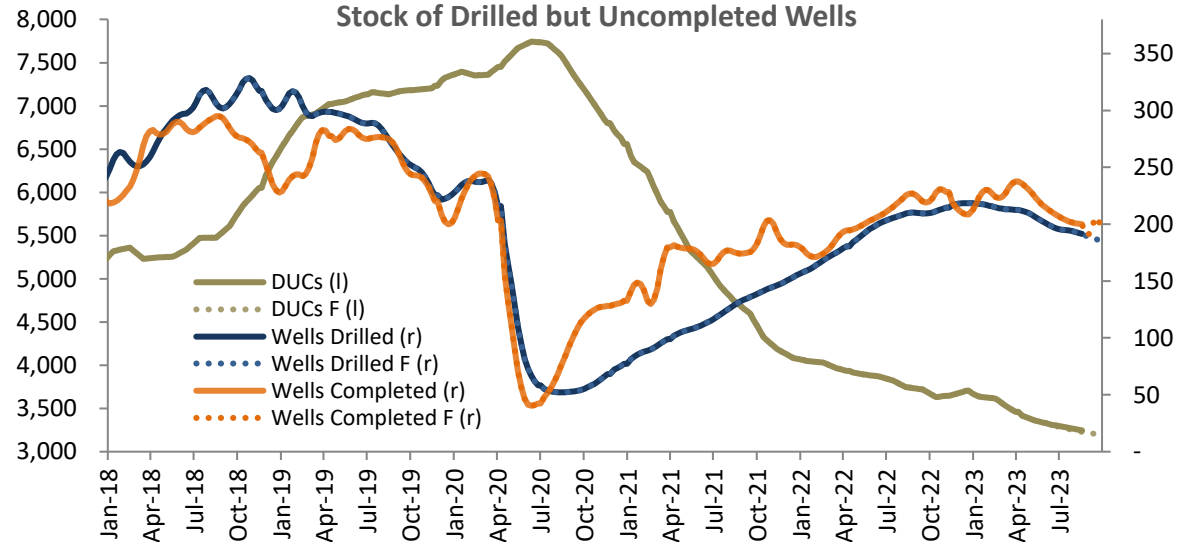
- At estimated productivity levels and current rig and spread counts, the DUC inventory is declining

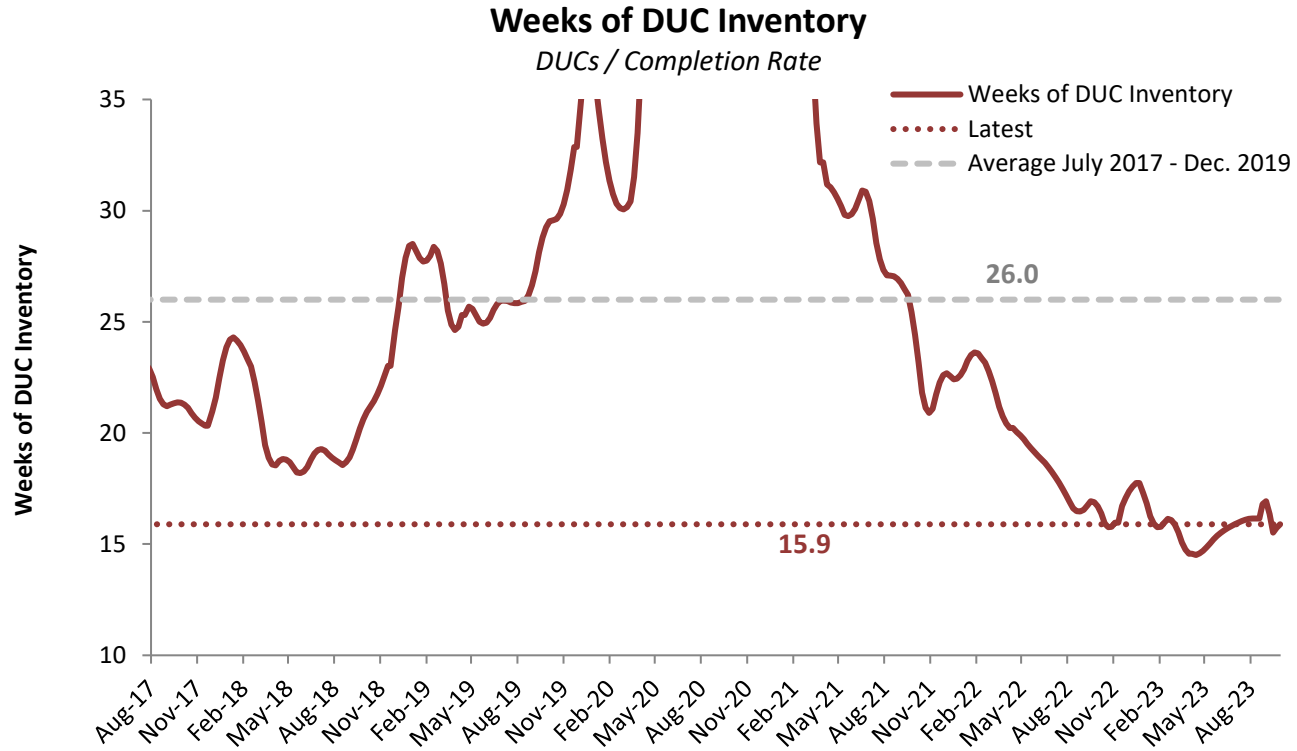
The Spread Ratio and Rigs and Spreads for DUC Neutrality



Horizontal Oil Wells Drilled and Completed per Week

Stock of Drilled but Uncompleted Wells

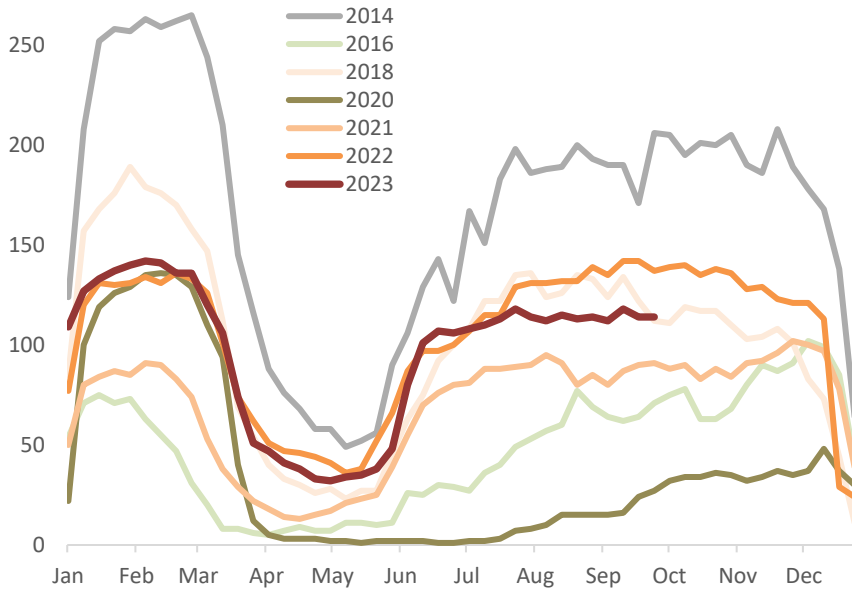




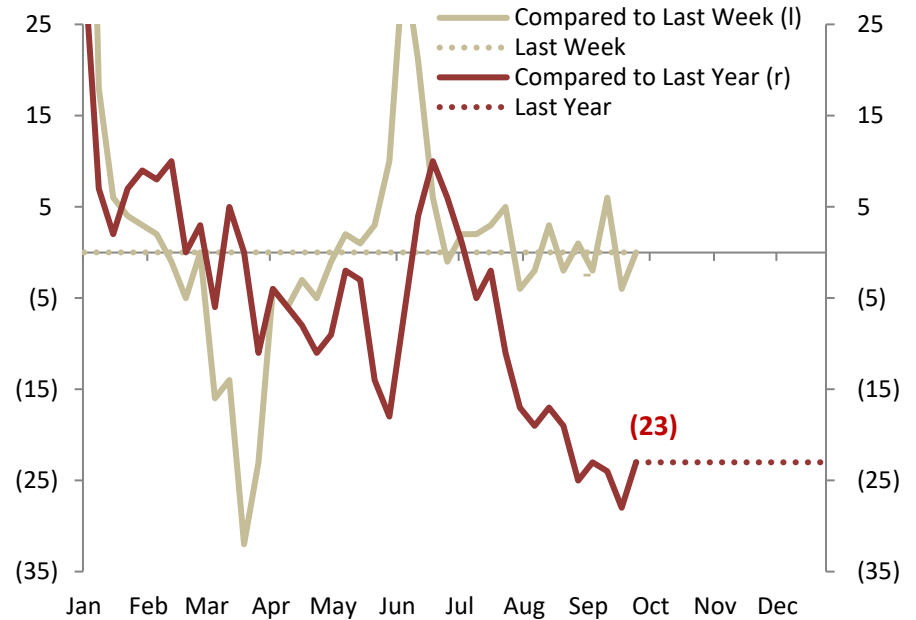
- DUC inventories have fallen back to below 16 weeks

Canada Horizontal Oil Rig Count

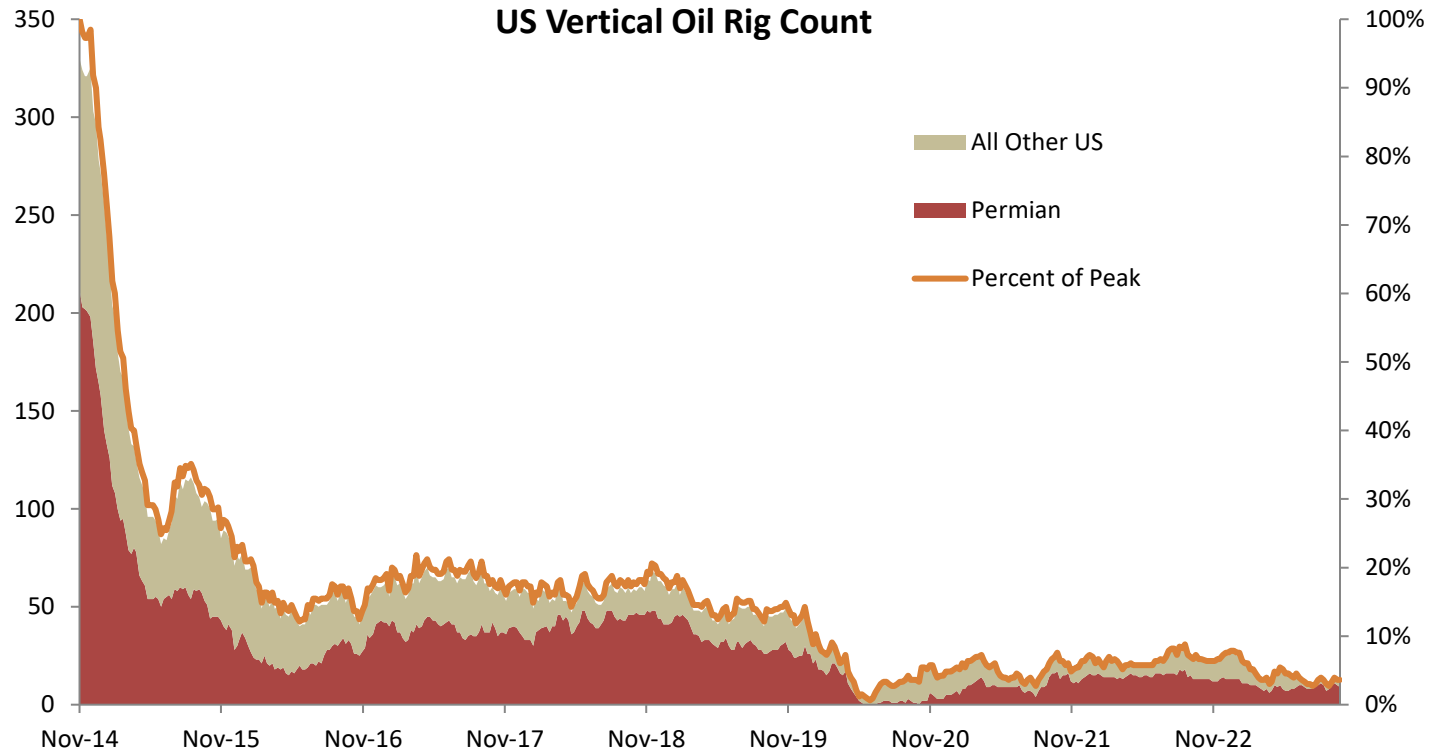
Canada Horizontal Oil Rigs



Compared to Previous Week, Previous Year

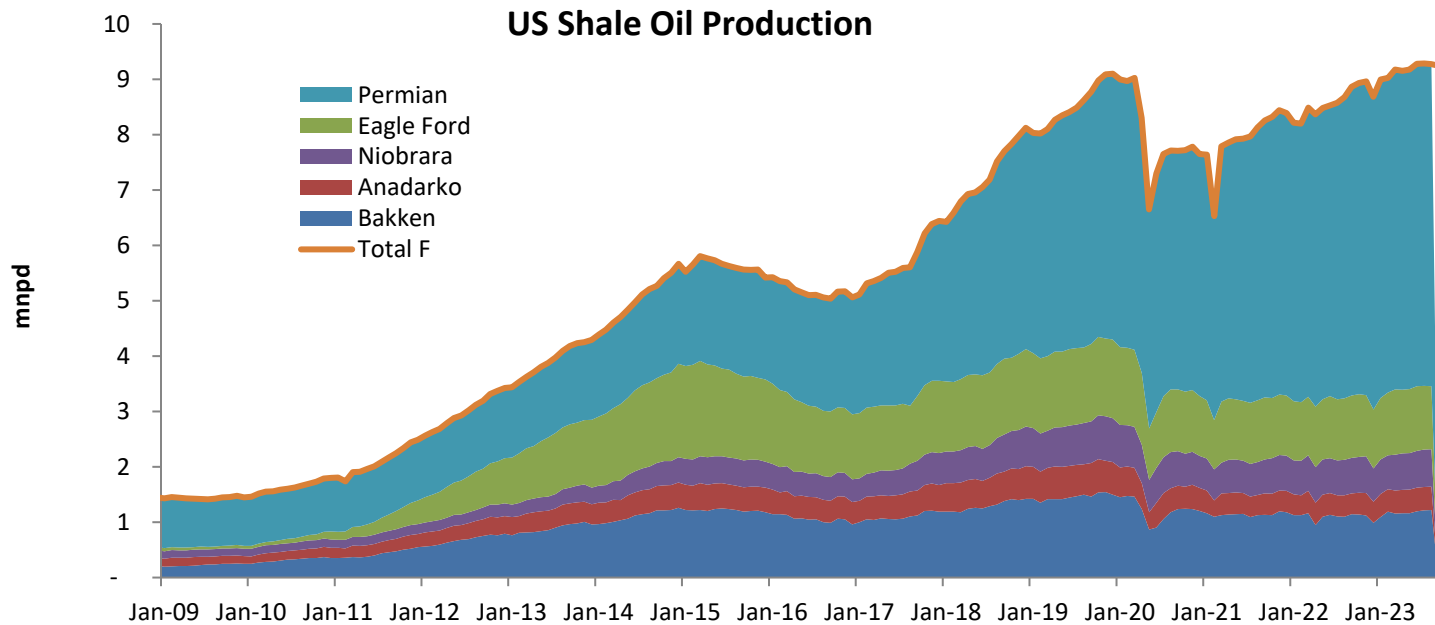


- Canada horizontal oil rigs were +0 to 114 last week
- Rigs counts were -23 compared to the same week last year



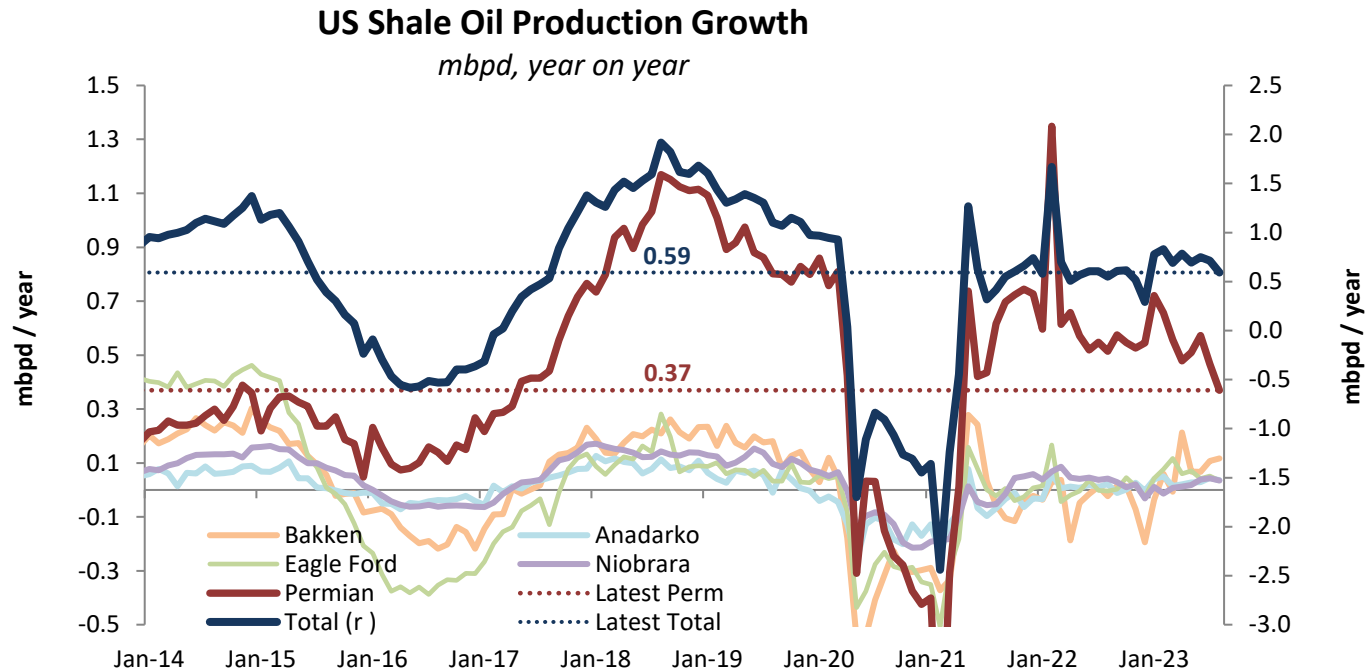
- Vertical oil rigs: -1 to 12
- Permian: -1
- All Other US: +0

US Shale Production Growth (Sept. DPR)



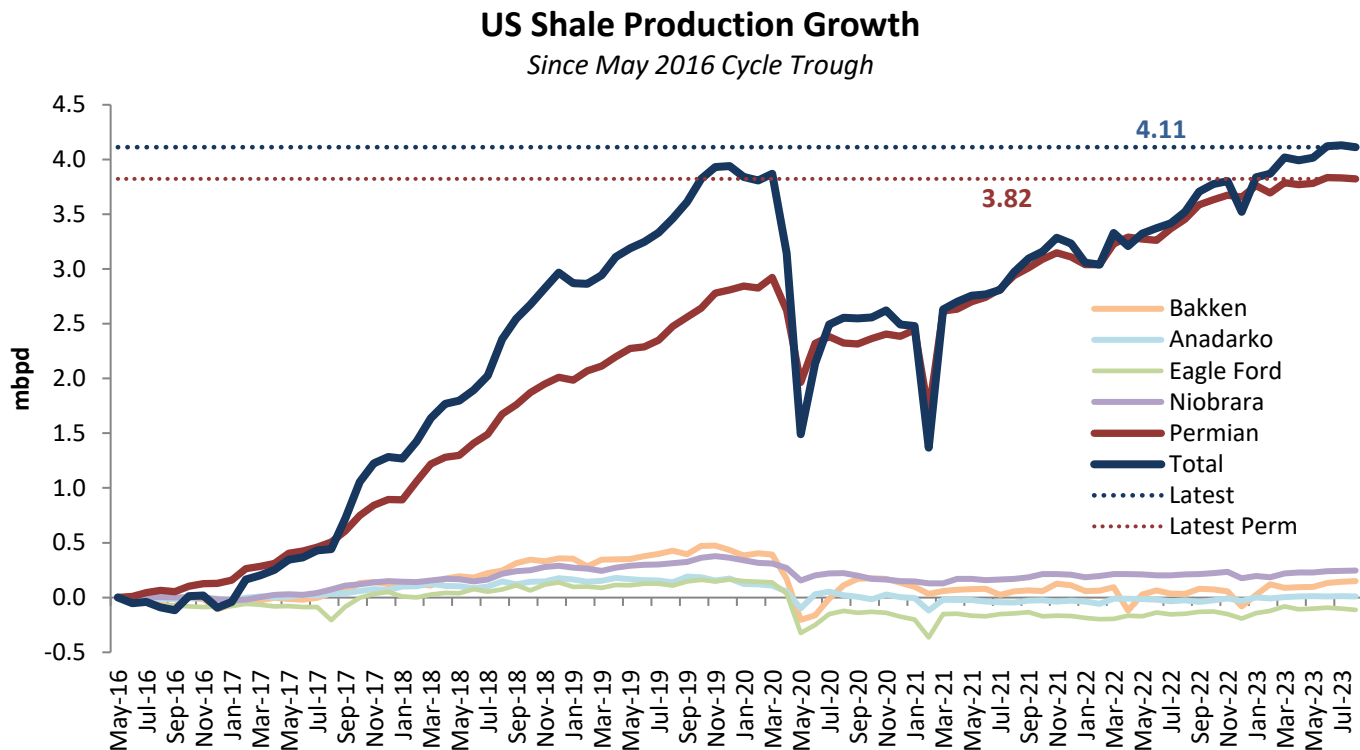
- In the September DPR report, August crude and condensate production from key shale plays rose to 9.73 mbpd, down 17 kbpd from July. However, total July C+C production was revised up 36 kbpd from 9.25 mbpd
- Permian production again fell in August, down a 9 kbpd over July
- The minor plays are down marginally over the period
- The EIA is forecasting Oct. C+C production down 82 kbpd from its July peak for the key US shale plays

US Shale Production Growth (Sept. DPR)



- Compared to last year, total shale oil production is up 0.6 mbpd
- The Permian is up 0.4 mbpd
- Annual Permian growth is rapidly decelerating

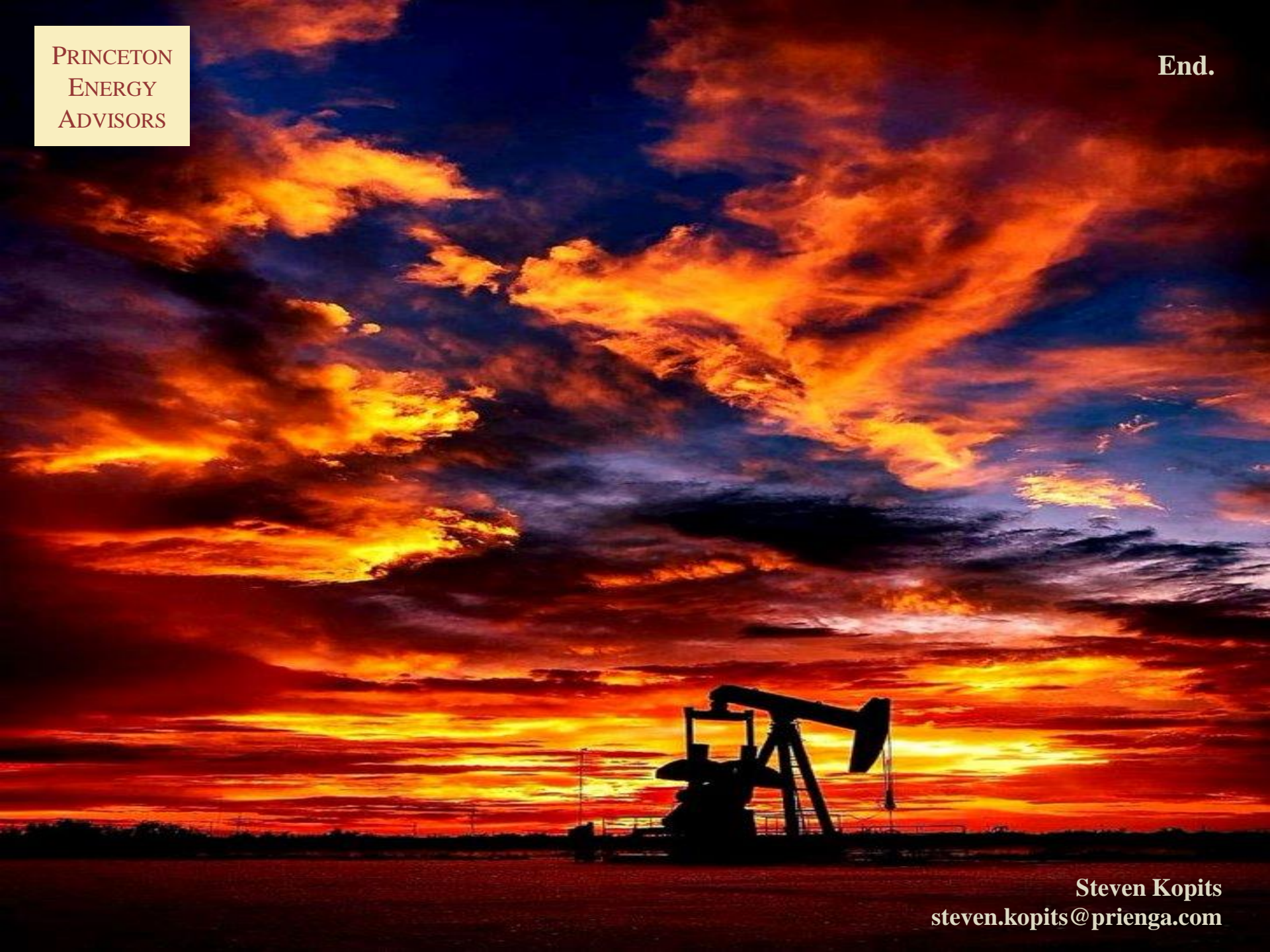
US Shale Production Growth from May '16 (Sept. DPR)



- Since the prior cyclical trough in May 2016, total shale oil production from the key plays is up 4.1 mbpd
- All but 290,000 bpd of this growth comes from the Permian basin

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