

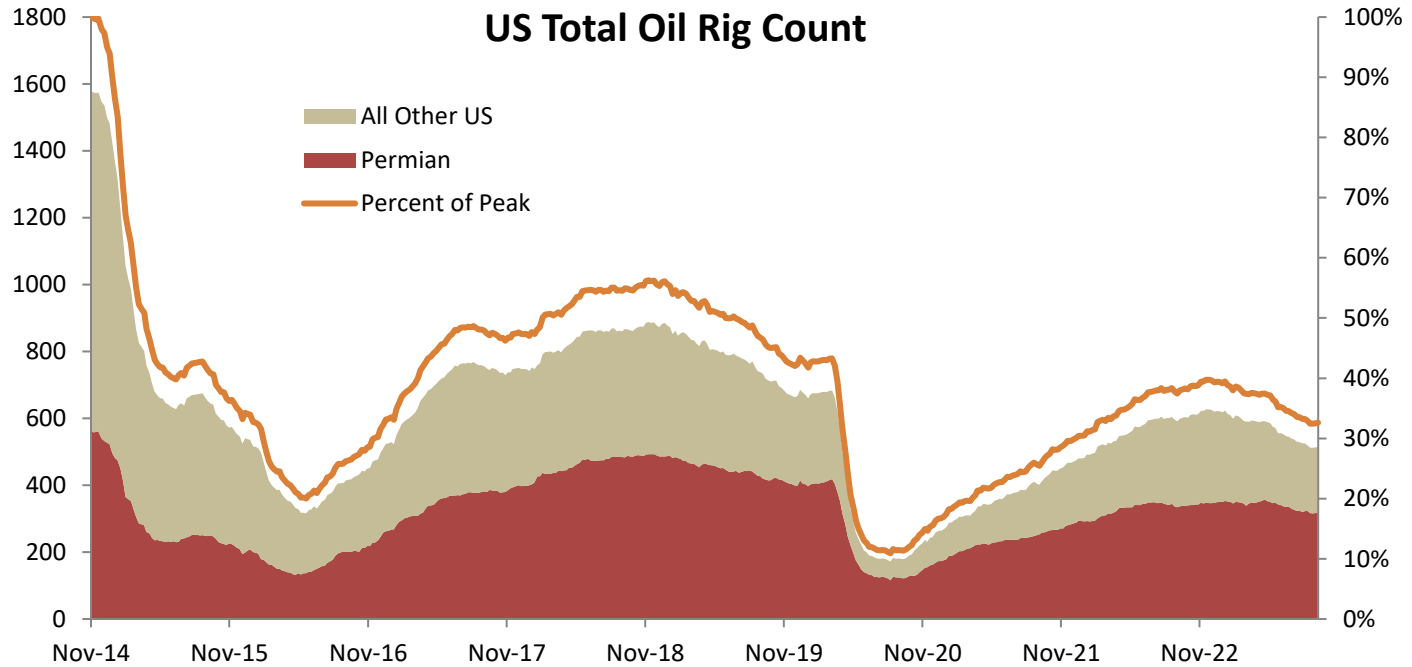
Baker Hughes Oil Rig and Primary Vision Frac Spread Counts

15 September 2023

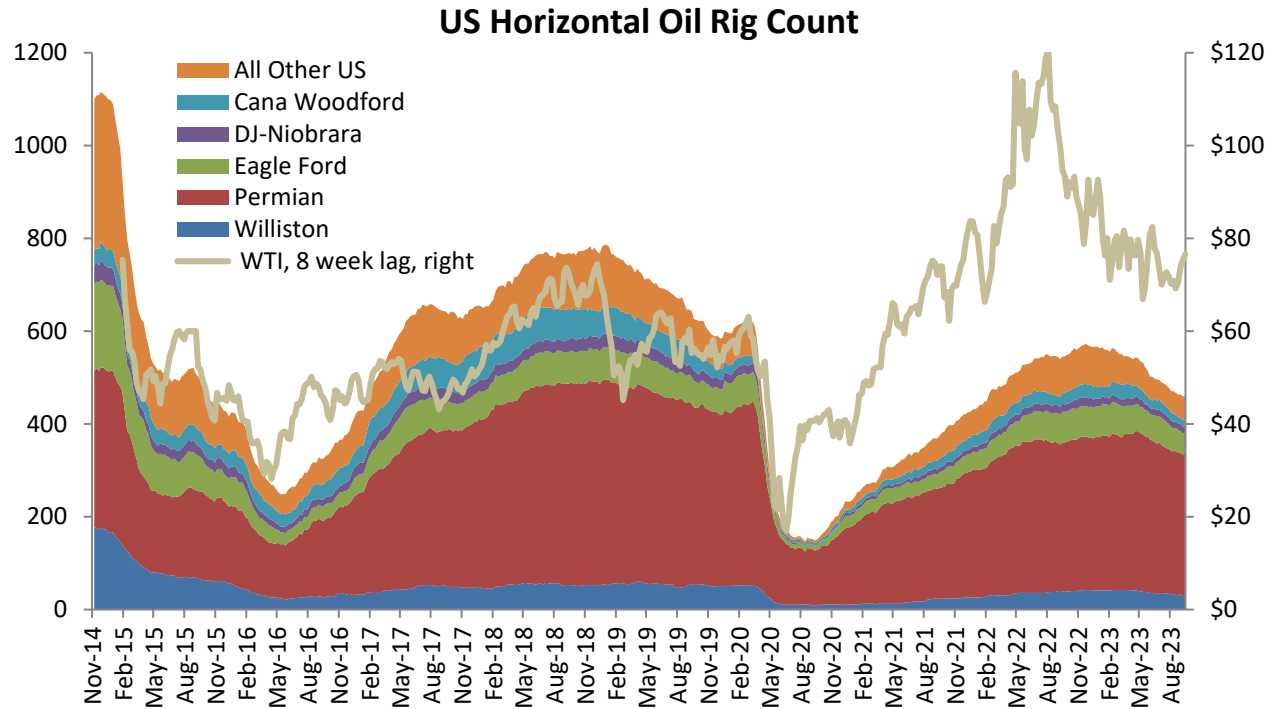
PRINCETON
ENERGY
ADVISORS



- Horizontal oil rigs stabilized this week
- Rig counts
 - Total oil rig counts were +2 to 515
 - Horizontal oil rig counts were +0 to 459
 - The Permian horizontal oil rig count was up 1
 - The Canadian horizontal oil rig count continues to lag, down 24 from last year.
- The US horizontal oil rig count is falling at a pace of -2.0 / week on a 4 wma basis.
 - This number has been negative for 41 of the last 42 weeks
- Frac spreads rose, +12 to 264. This is not sustainable without rigs additions.
- DUC inventory fell back to 16.4 weeks
- We are approaching the moment of truth for the shale industry
 - For the last several months, the breakeven to add rigs has averaged around \$77 WTI
 - At writing, WTI was \$91
 - Lagged oil prices for the next eight weeks are consistently above \$80 WTI, and at times well into the mid-\$80s
 - As a result, we should in theory see at least modest life in the horizontal oil rig count
 - If we do not, it will be further evidence that the underlying problem is a lack of drilling opportunities, not unfavorable economics

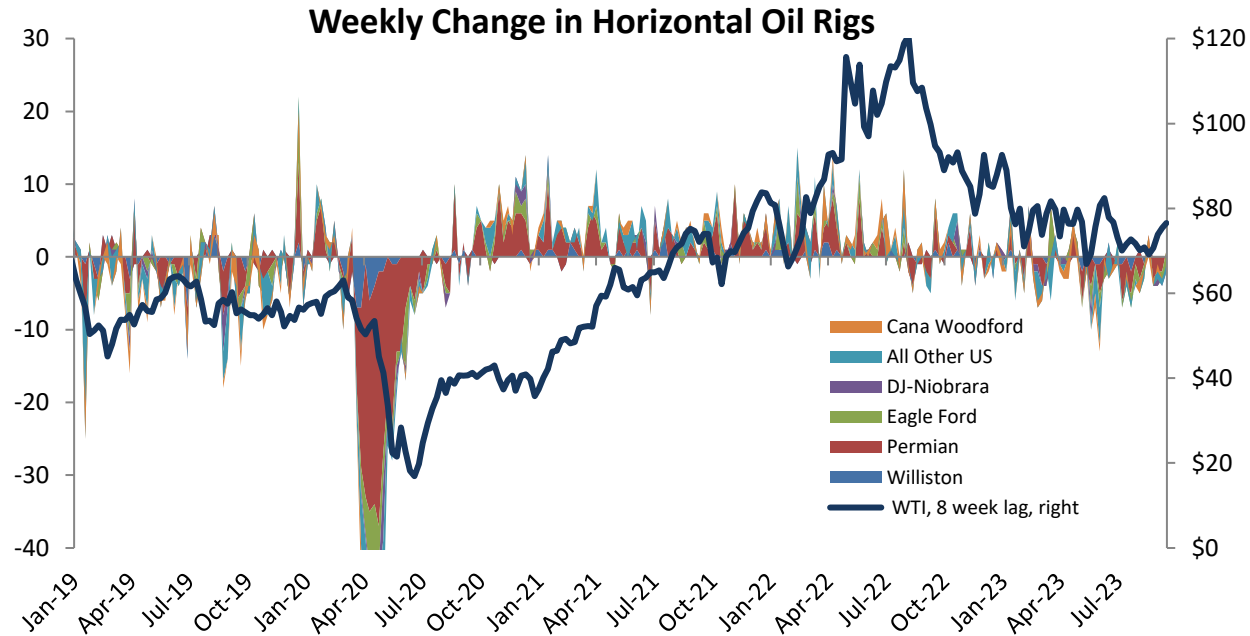


- Total oil rigs: +2 to 515
- Permian: +2
- All Other US: +0



- Horizontal oil rigs: +0 to 459
- Permian: +1
- All Other US: -1

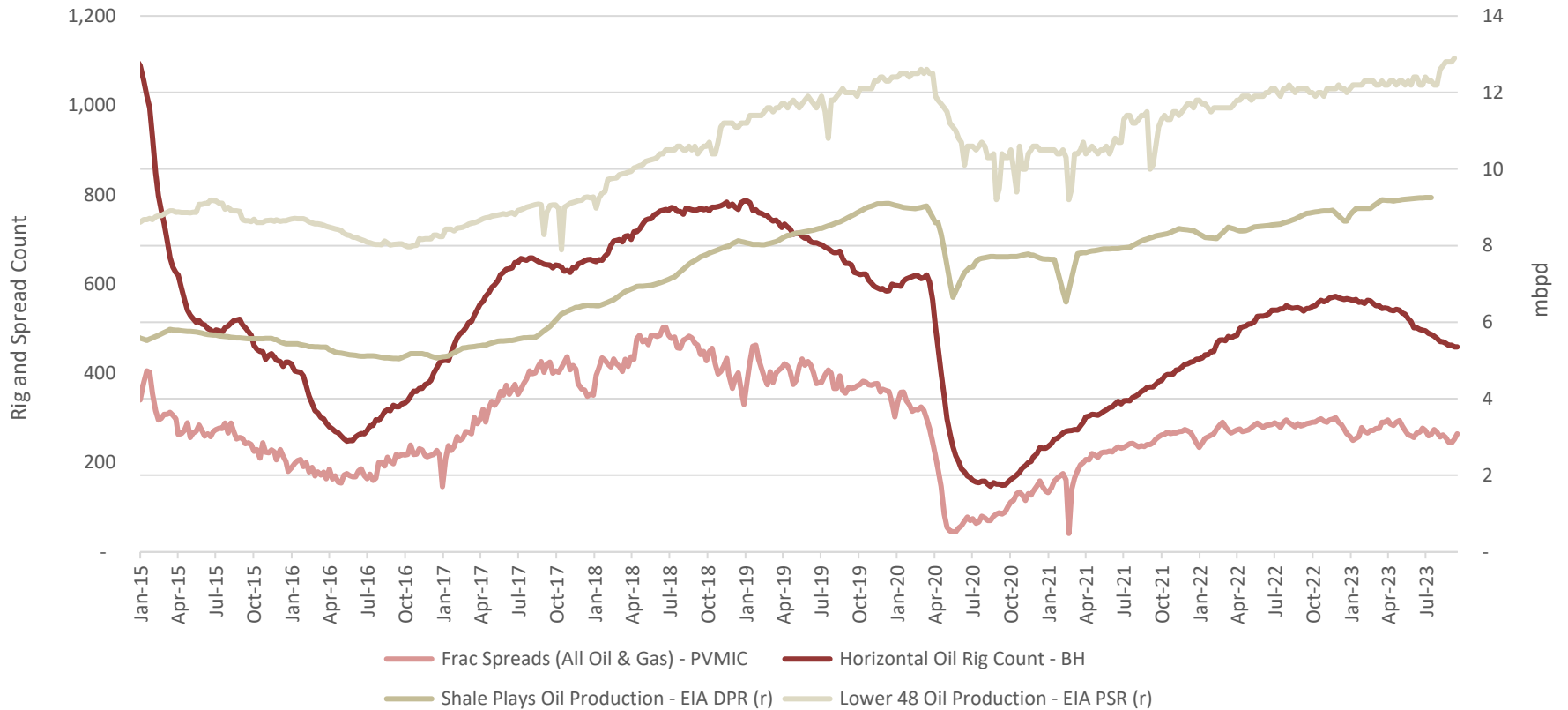
Weekly Change in Horizontal Oil Rig Count by Basin



• By Basin	Change	Count
- Williston	+1	32
- Permian	+1	304
- Eagle Ford	-3	43
- DJ Niobrara	0	14
- Cana Wdford	0	14
- Other US	+1	52
- Total	0	459

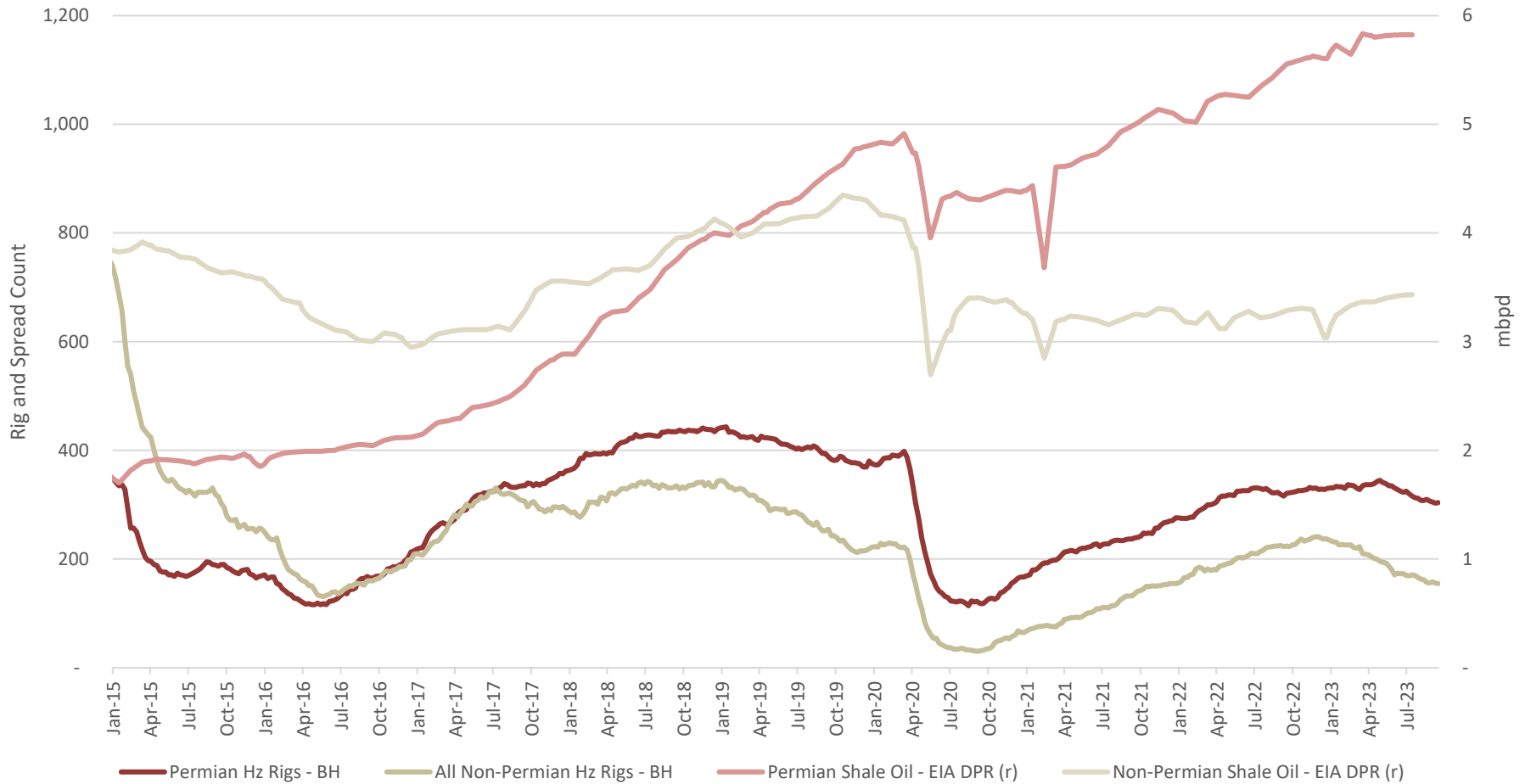
Rigs, Spreads and US Oil Production

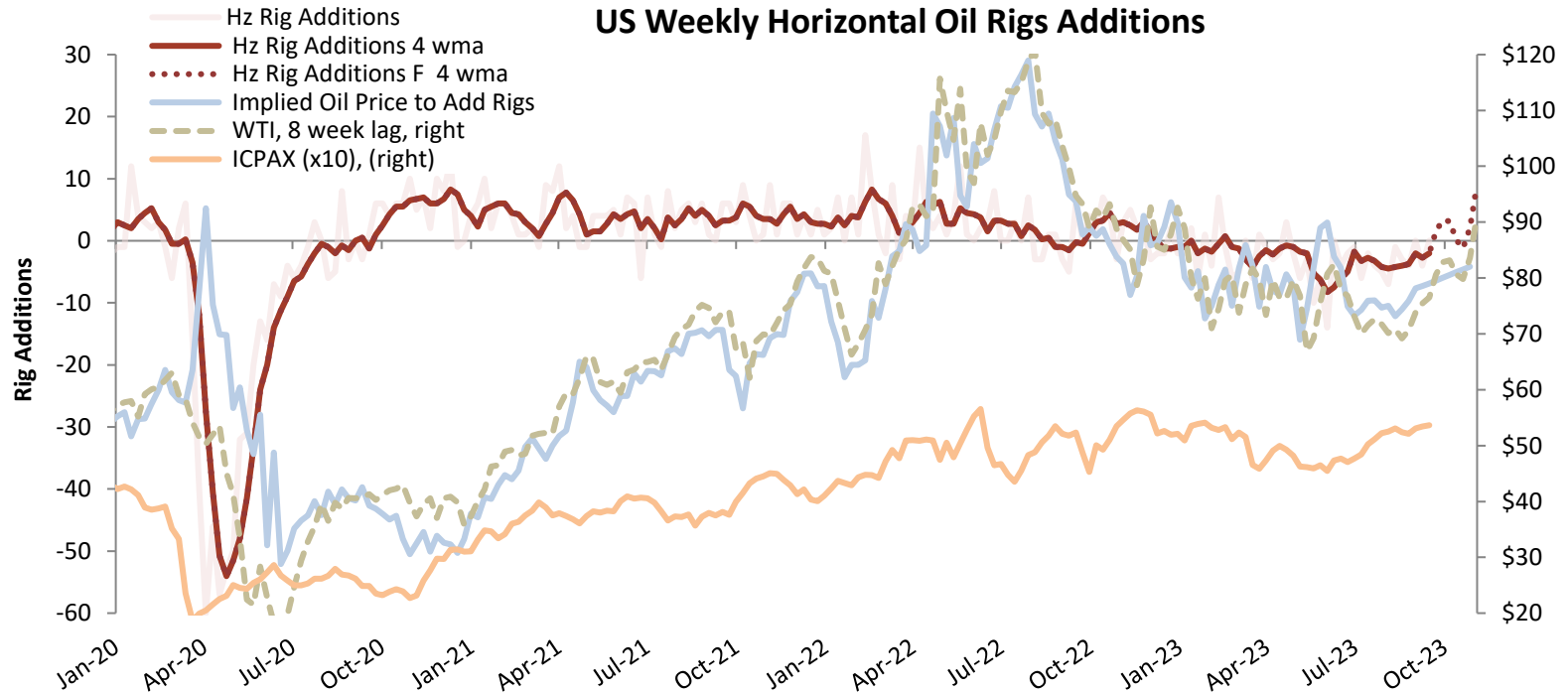
Rigs, Spreads and US Crude and Condensate Production



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

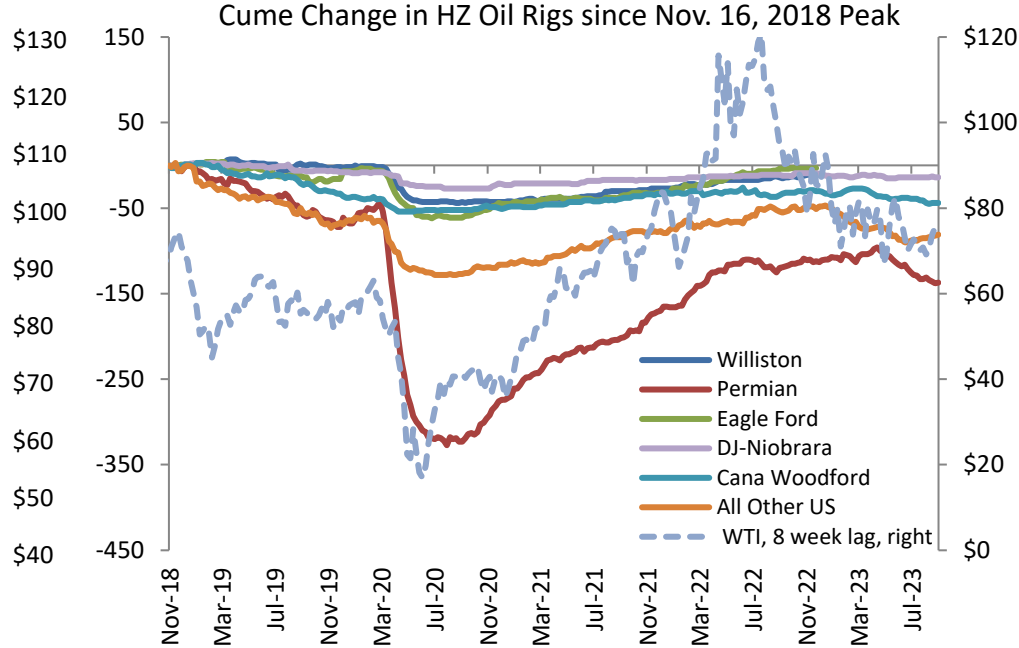
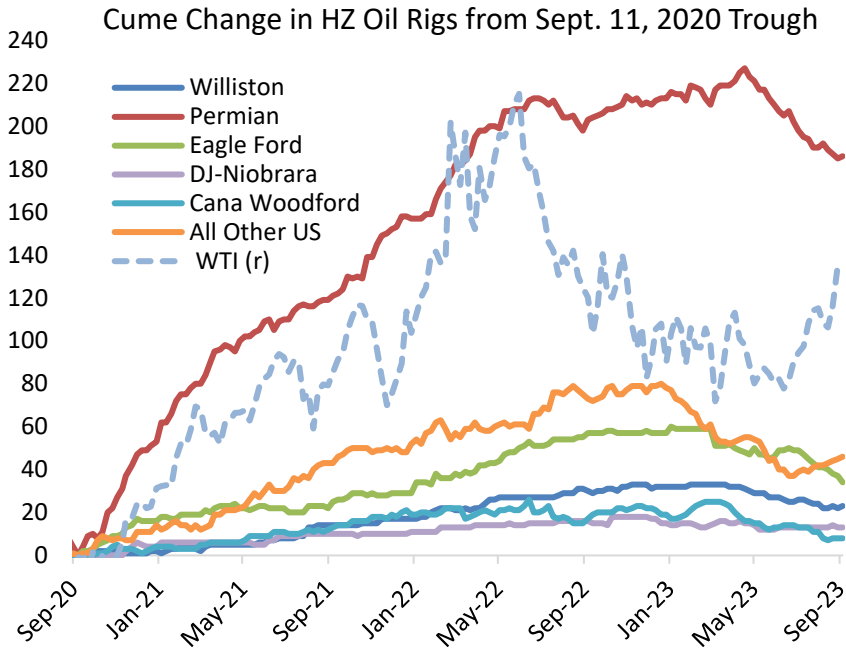
Permian and Non-Permian Shale Oil Production and Horizontal Rigs





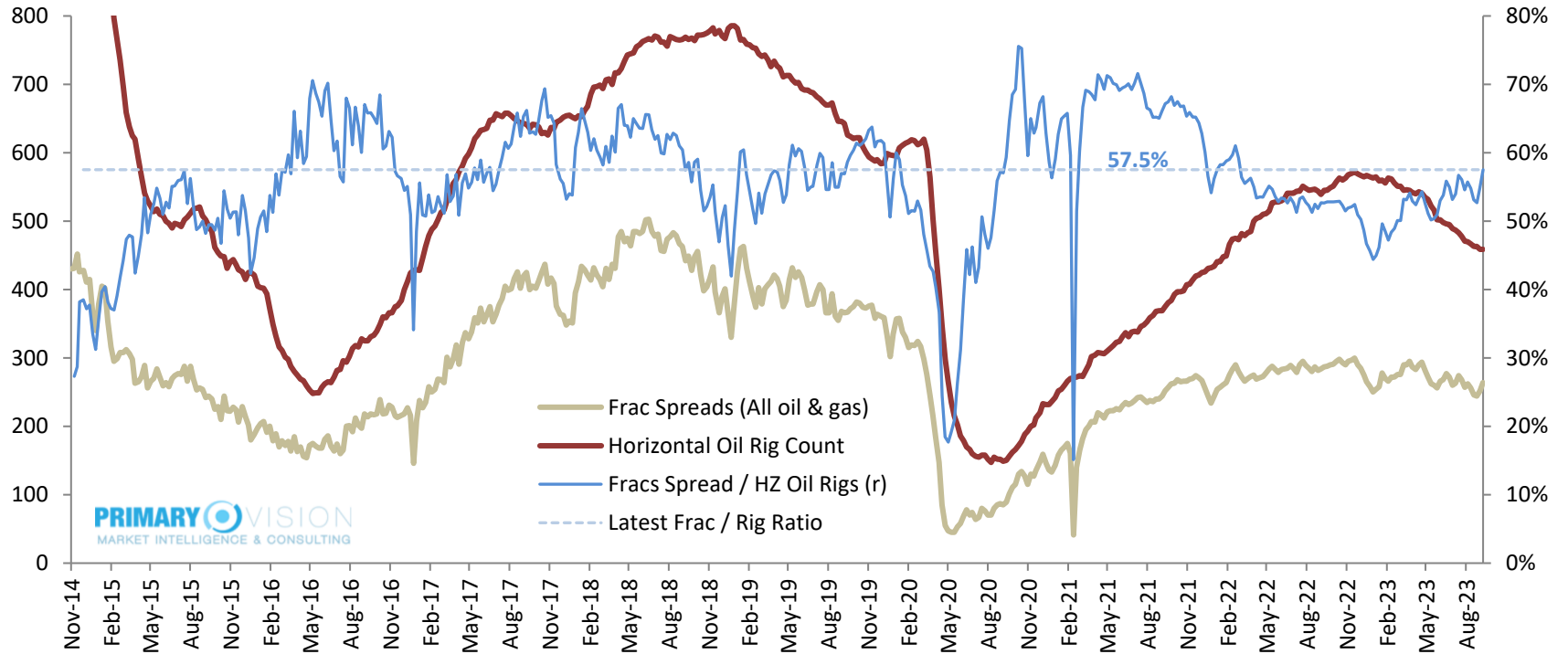
- The 4 wma pace of horizontal rig additions rose to -2.0 / week, negative for the 41st time in the last 42 weeks
- With an eight-week lag, the breakeven to add horizontal oil rigs rose to \$79 / barrel on a WTI basis with \$91 on the screen
- As before, we should see at least modest rig additions in coming weeks

US Horizontal Oil Rig Change from Peak and Trough



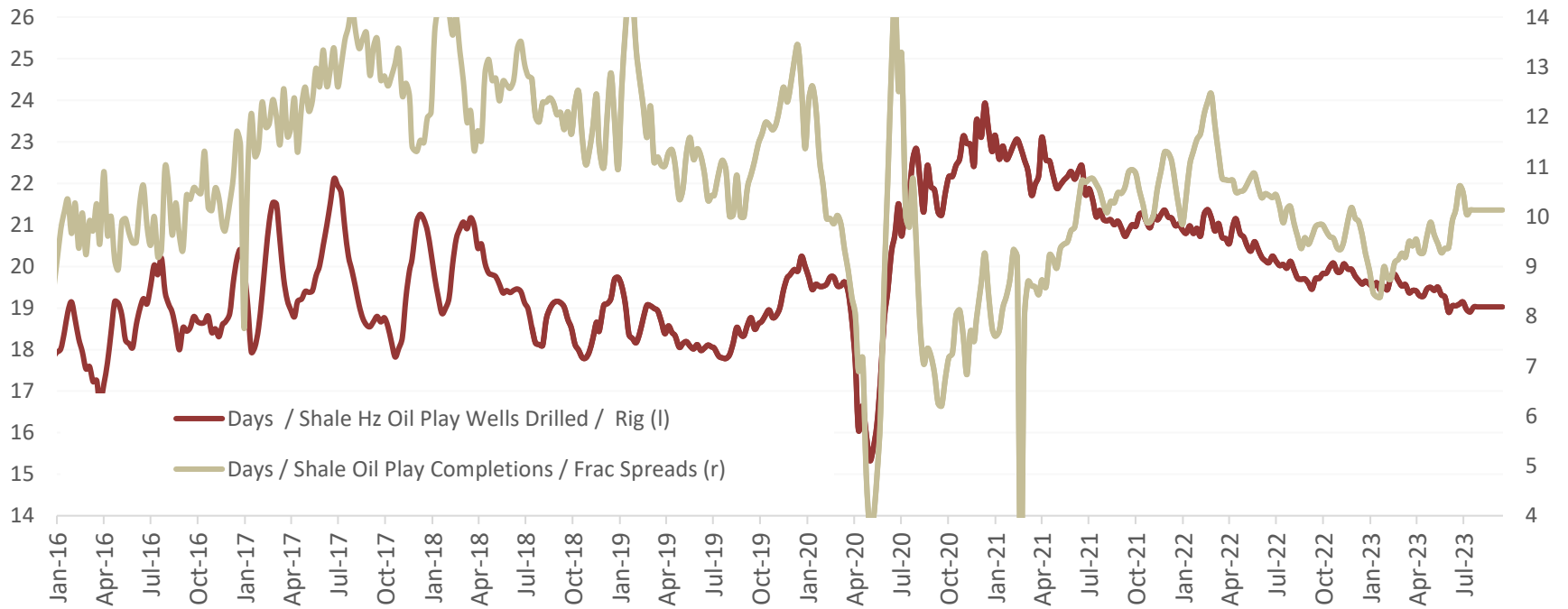
	Latest HZ Rig Count	Trough August 14, 2020				Prior Peak Nov. 16, 2018			
		Trough Count	Rig Change	Percent Change	Pct of Rig Gained	Peak Count	Rig Change	Percent Change	Pct of Rigs Lost
- Williston	32	11	21	191%	7%	53	(21)	-40%	6%
- Permian	304	114	190	167%	61%	441	(137)	-31%	42%
- Eagle Ford	43	10	33	330%	11%	70	(27)	-39%	8%
- DJ Niobrara	14	1	13	1300%	4%	28	(14)	-50%	4%
- Cana Wdford	14	6	8	133%	3%	58	(44)	-76%	14%
- Other US	52	5	47	940%	15%	133	(81)	-61%	25%
- Total	459	147	312	212%	100%	783	(324)	-41%	100%
		<i>05/22/20</i>							
- Frac Spreads	264	45	219	487%		433	(169)	-39%	
<i>Spread Ratio</i>	<i>57.5%</i>	<i>30.6%</i>				<i>55.3%</i>			

Frac Spreads and Horizontal Oil Rigs



- Frac spreads were +12 to 264

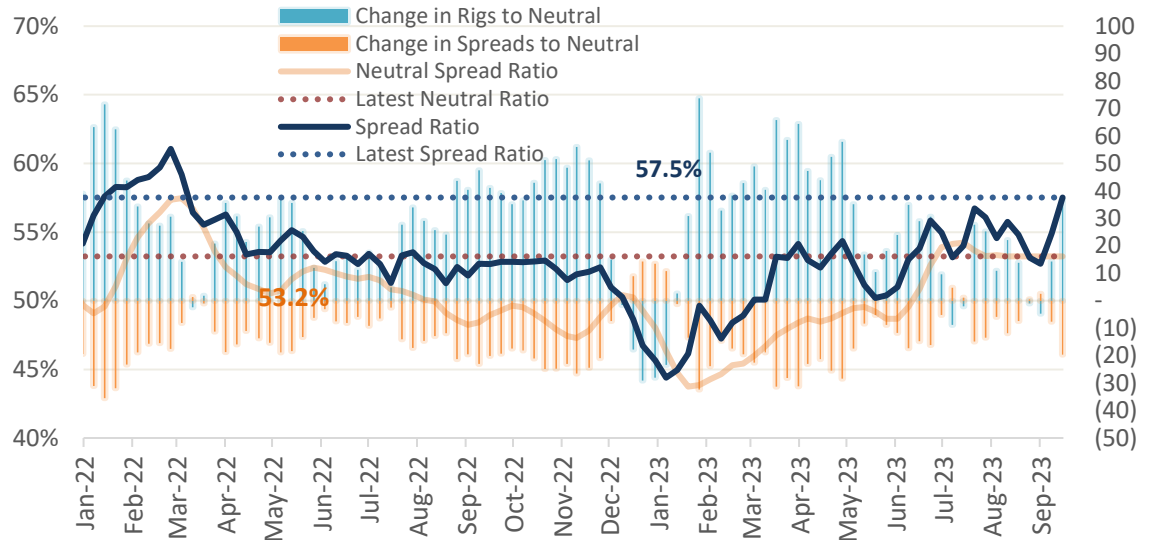
Productivity of Rigs and Spreads: Days per Well



Rig and Spread Productivity

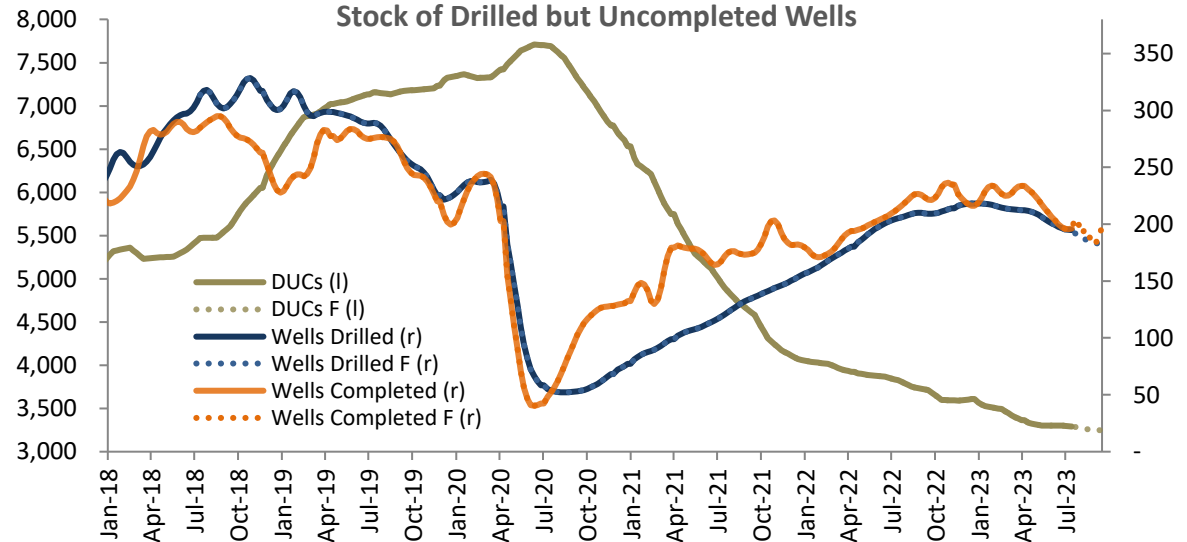
- At estimated productivity levels and current rig and spread counts, the DUC inventory is likely declining again

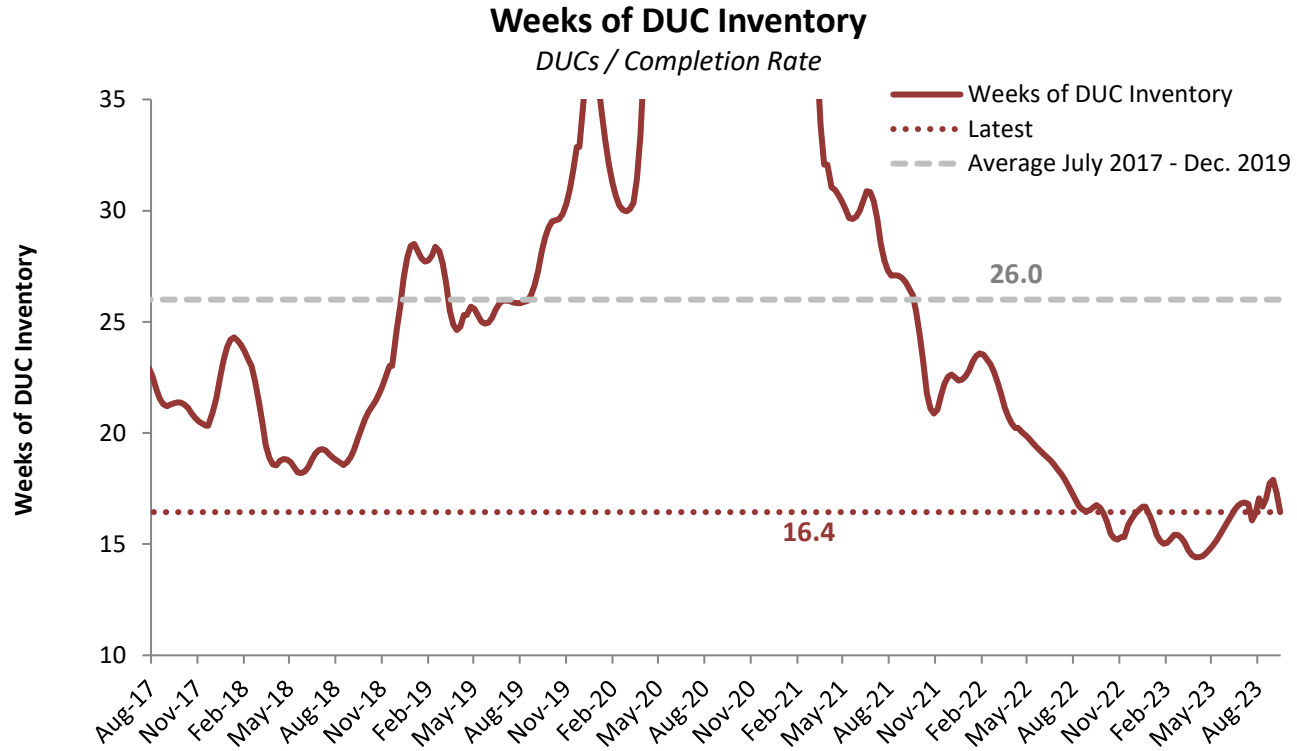
The Spread Ratio and Rigs and Spreads for DUC Neutrality



Horizontal Oil Wells Drilled and Completed per Week

Stock of Drilled but Uncompleted Wells

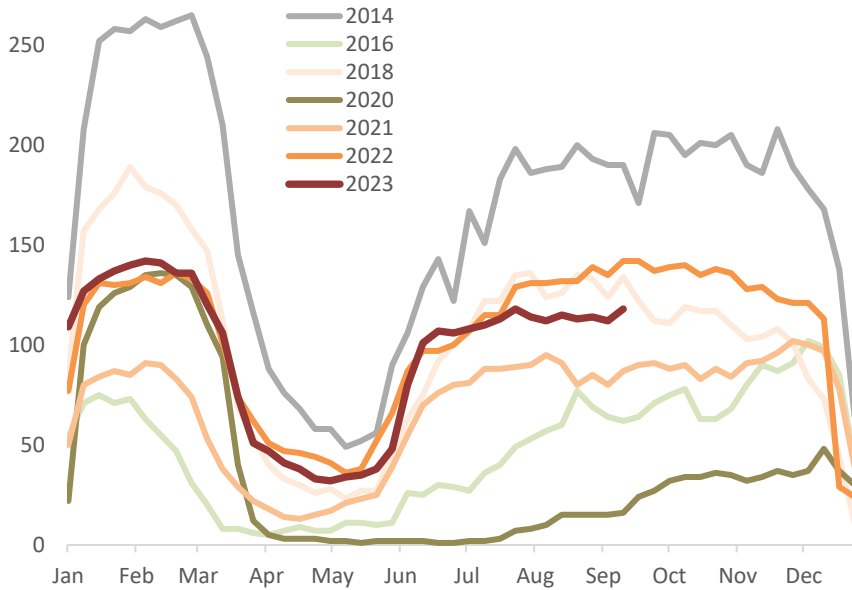




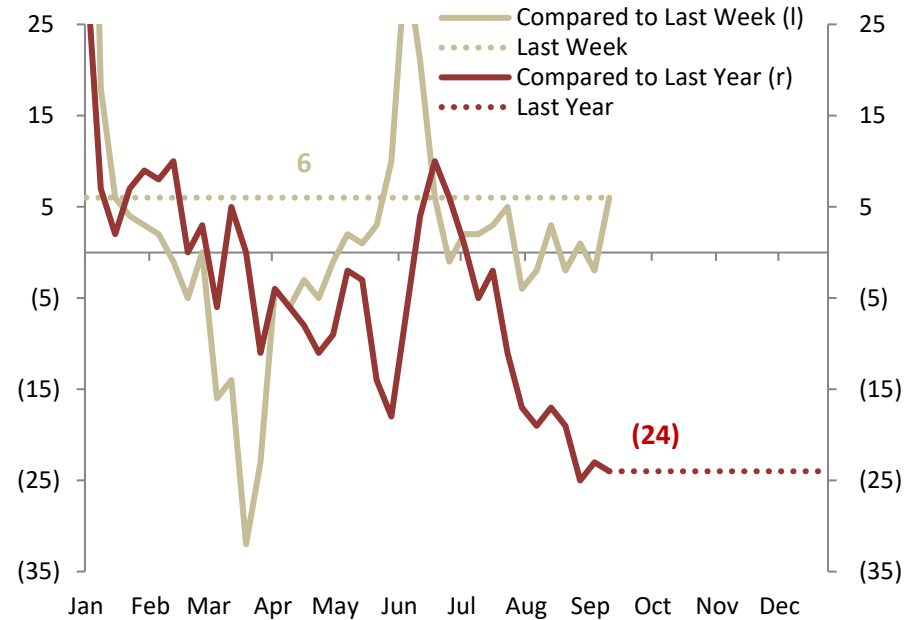
- DUC inventories have fallen back to near 16 weeks

Canada Horizontal Oil Rig Count

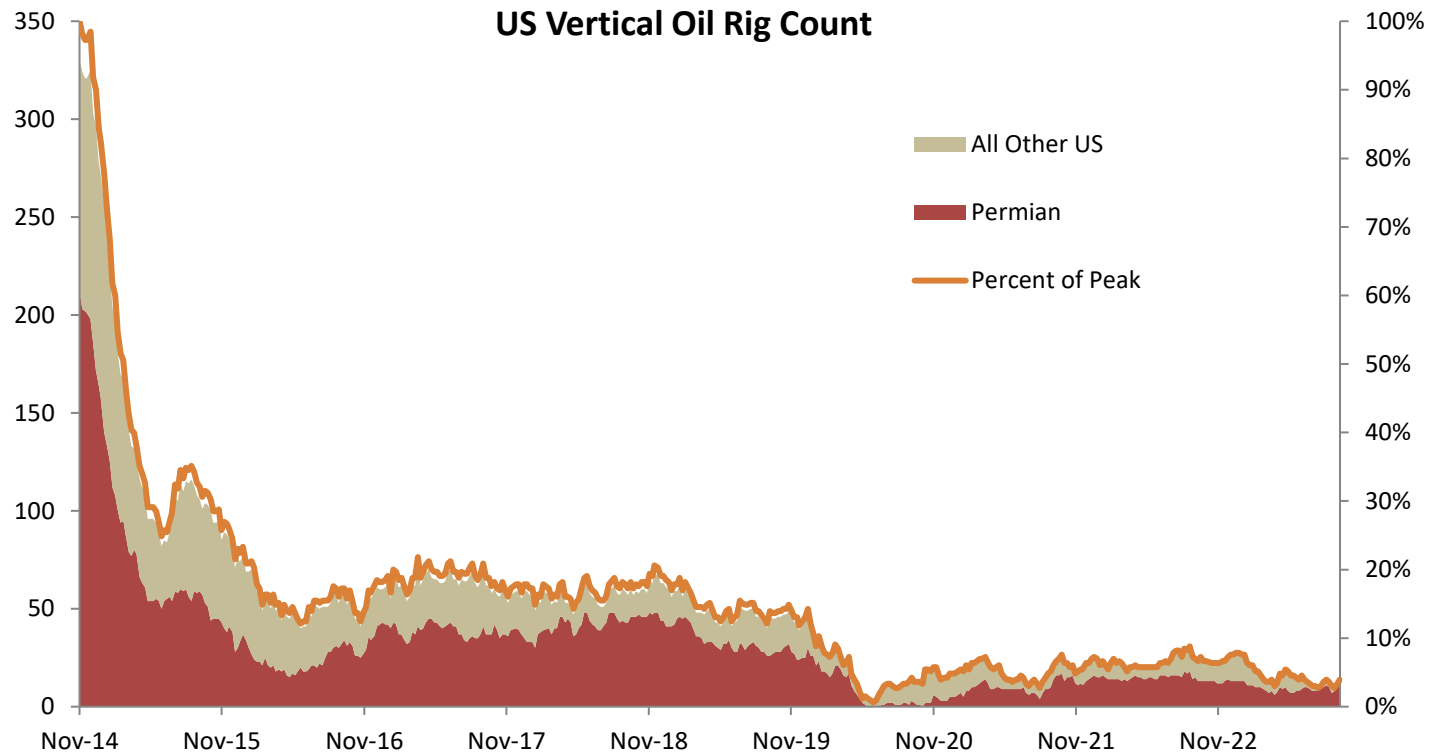
Canada Horizontal Oil Rigs



Compared to Previous Week, Previous Year

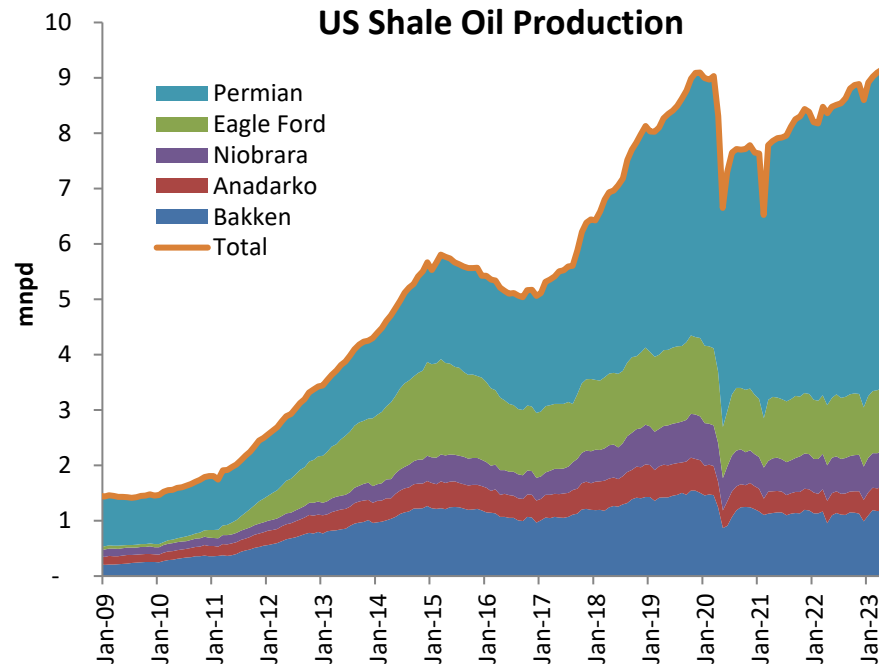


- Canada horizontal oil rigs were +6 to 118 last week
- Rigs counts were -24 compared to the same week last year



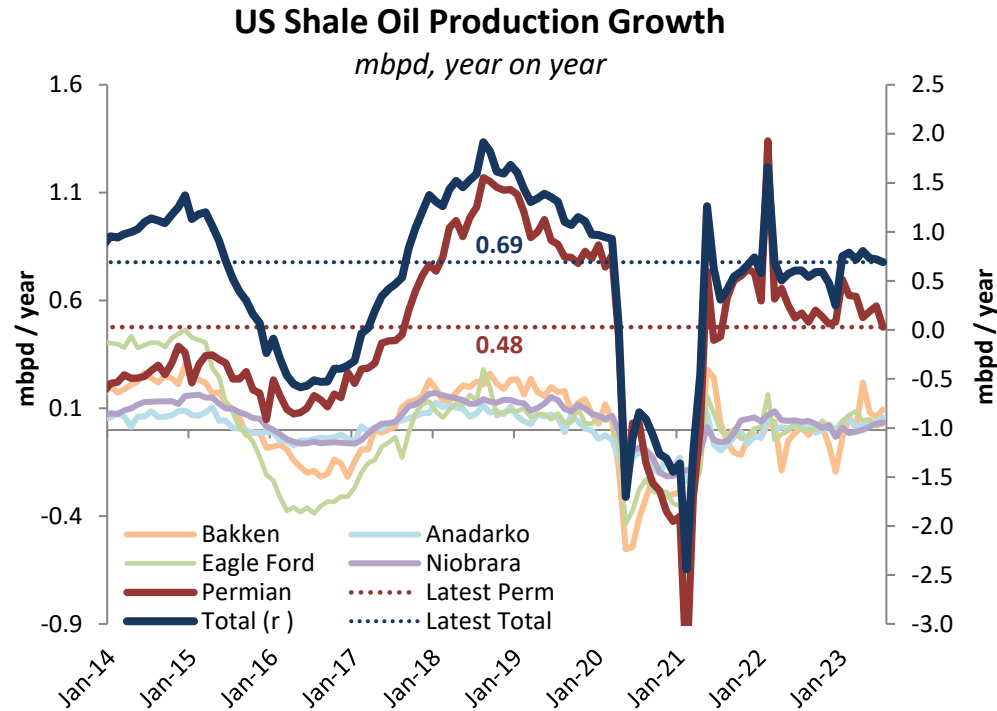
- Vertical oil rigs: +2 to 13
- Permian: +1
- All Other US: +1

US Shale Production Growth (Aug DPR)



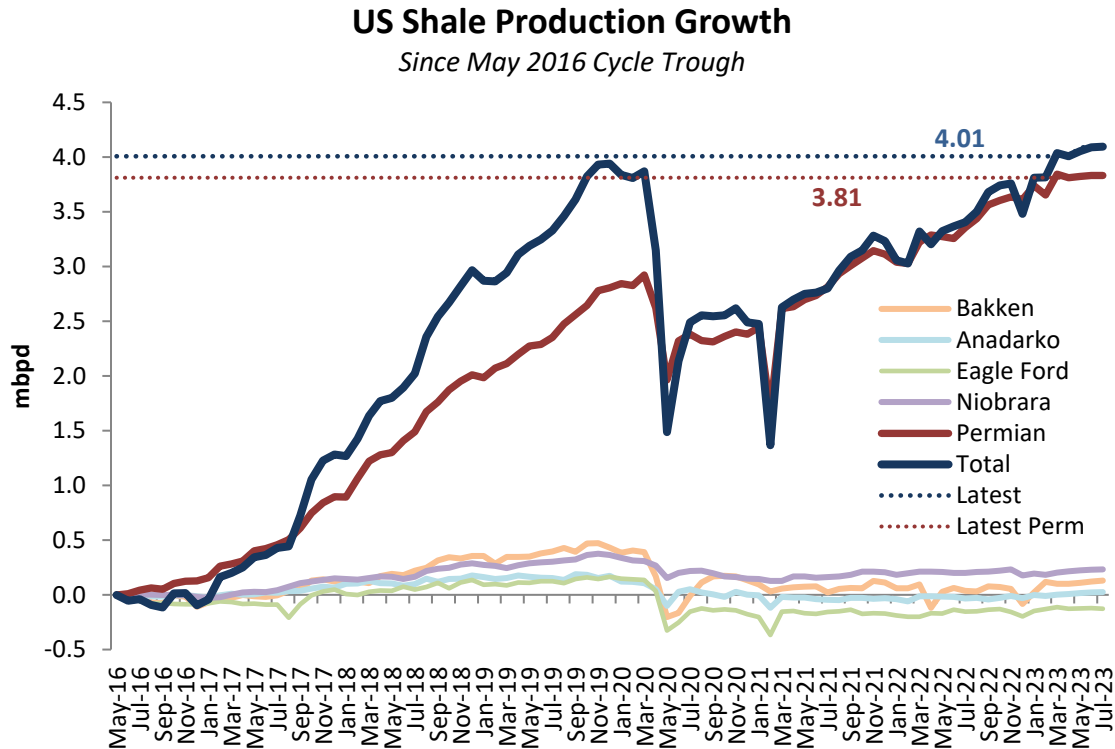
- In the August DPR report, July crude and condensate production from key shale plays rose to 9.25 mnpd, up 6 kbpd from June
- Permian production actually fell in July, down a marginal 0.1 kbpd over June, and in July was 11 kbpd lower than its March peak
- The minor plays are up marginally over the period, supporting modest shale oil production growth in aggregate
- In the August report, the EIA revised up production from key shales play in the March-June period by an average of 62 kbpd.

US Shale Production Growth (Aug DPR)



- Compared to last year, total shale oil production is up 0.7 mbpd
- The Permian is up 0.5 mbpd
- On paper, this is still decent growth at the annual horizon

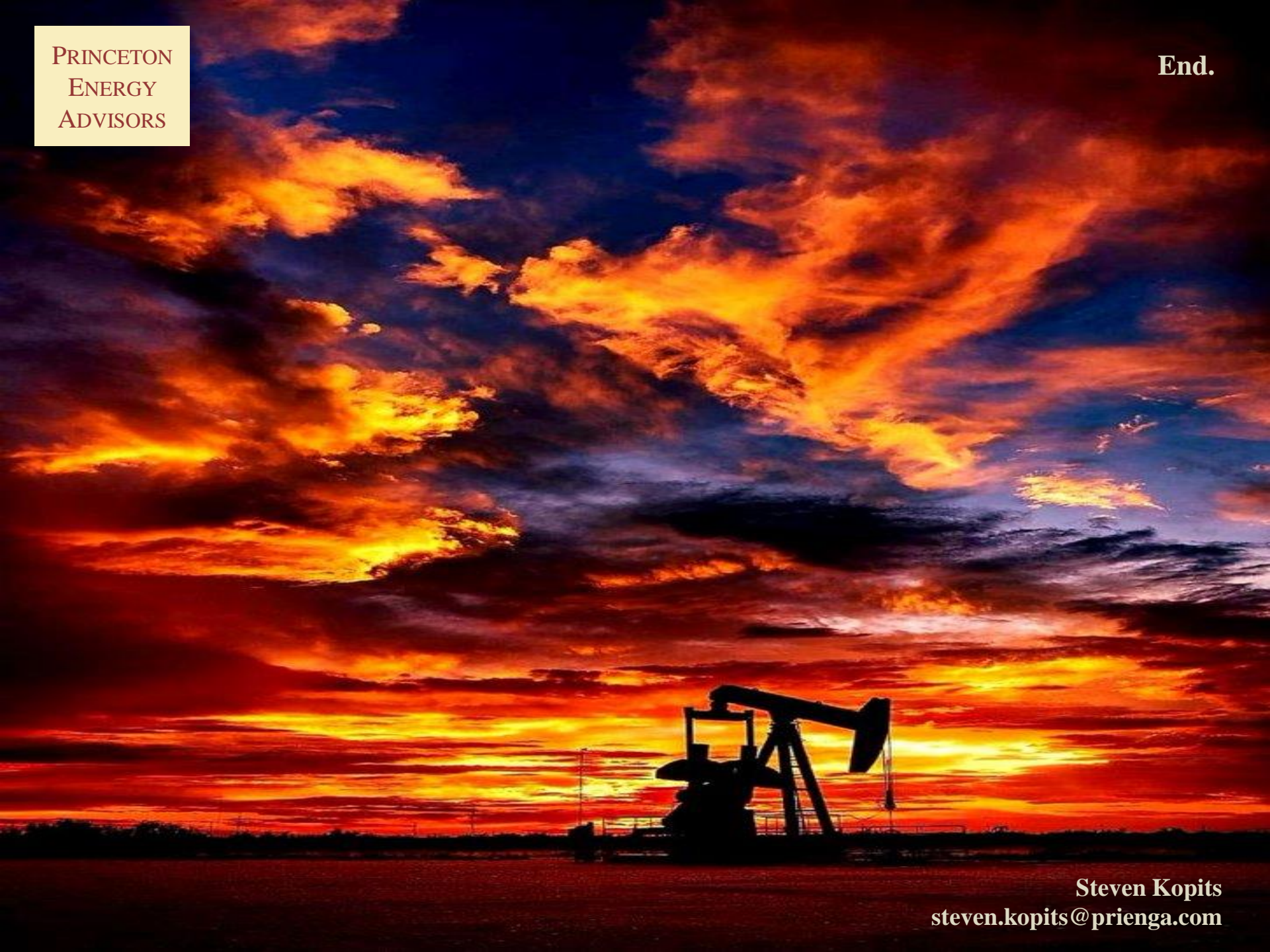
US Shale Production Growth from May '16 (Aug DPR)



- Since the prior cyclical trough in May 2016, total shale oil production from the key plays is up 4.01 mbpd
- All but 200,000 bpd of this growth comes from the Permian basin

PRINCETON
ENERGY
ADVISORS

End.



Steven Kopits
steven.kopits@prienga.com