

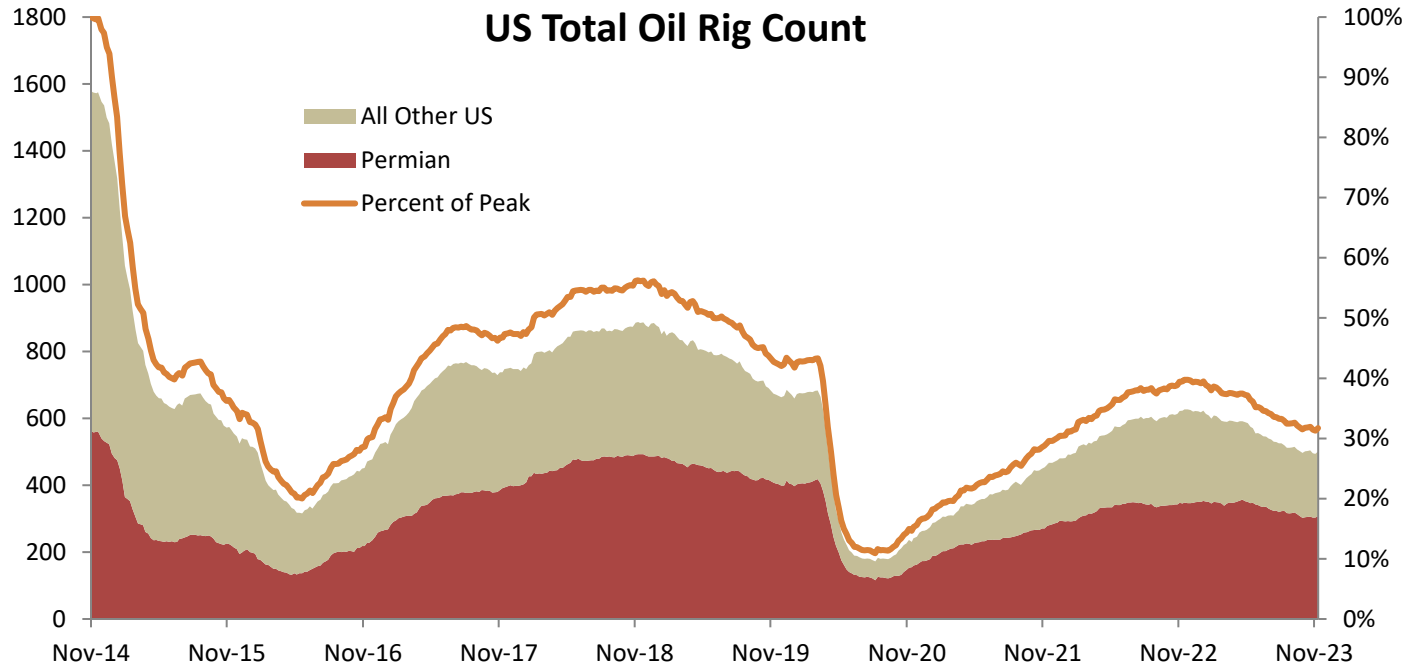
Baker Hughes Oil Rig and Primary Vision Frac Spread Counts

17 November 2023

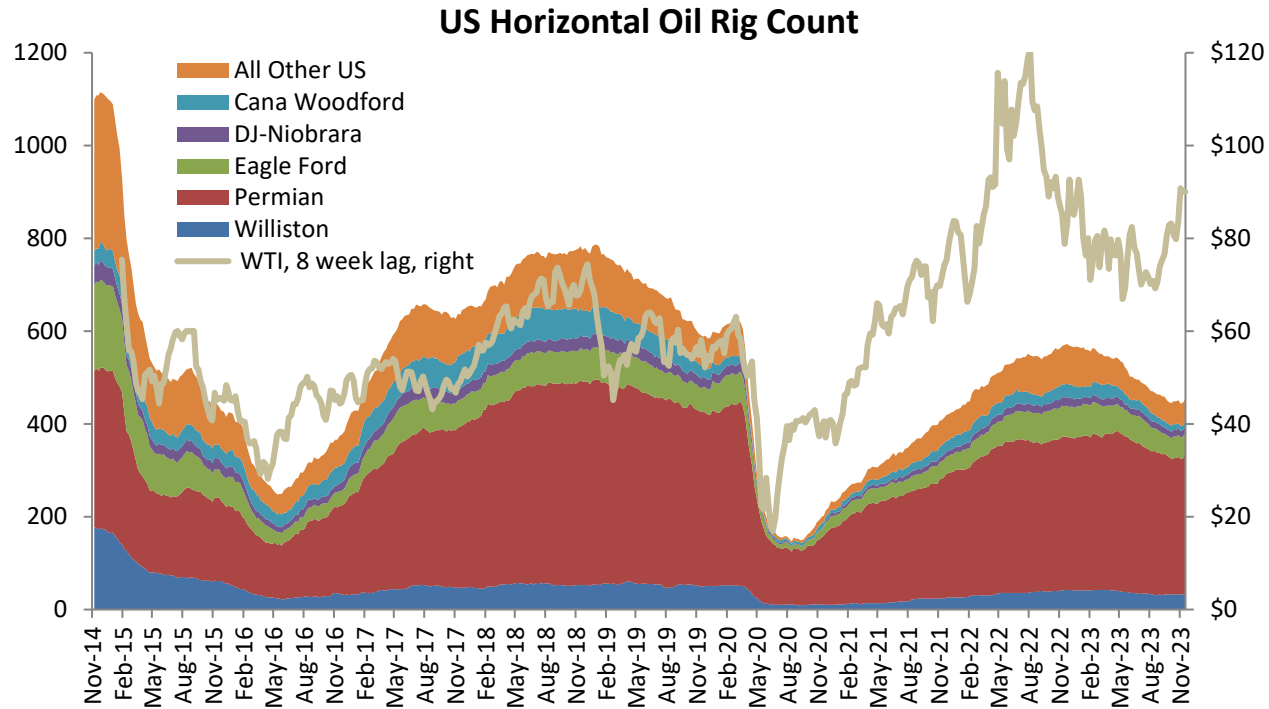
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- The breakeven to add US horizontal oil rigs now exceeds \$90 / barrel WTI. That is, at \$90 WTI, we can expect US operators to be cutting rigs. That is incredible by the standards of the last decade, when analysts like Goldman Sachs spoke of \$30-40 breakevens.
- Rig counts are essentially holding steady over the last five weeks
 - Total oil rig counts: +6 to 500
 - Horizontal oil rig counts: +6 to 452
 - The Permian horizontal oil rig count: +5, the biggest gain since February
 - The Canadian horizontal oil rig count eased back this week, -4 to 119, now 10 below this week last year
- The US horizontal oil rig count is rising at a pace of +0.75 / week on a 4 wma basis.
 - This number is positive for the third time in the last 50 weeks
- Frac spreads rose, +8 to 276
 - DUC inventory, as measured in days of turnover, fell to a new low of 12.8 weeks
 - Since July 2020, 16% of completions have come from cannibalization of DUC inventory
- The Brent Spread (Brent – WTI) remains open, suggesting US shale oil production is exceeding expectations.
 - This is also true if we consider US production including unaccounted-for barrels, which continues to suggest production growth in the 600-800 kbpd / year pace

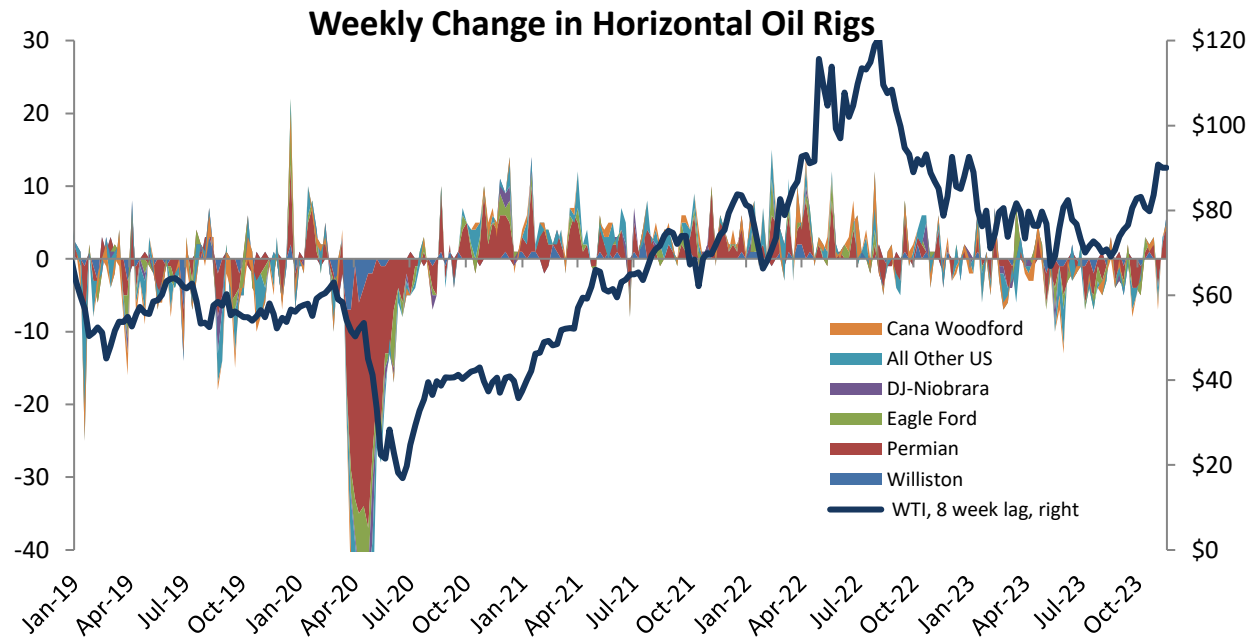


- Total oil rigs: +6 to 500
- Permian: +4
- All Other US: +2



- Horizontal oil rigs: +6 to 452
- Permian: +5
- All Other US: +1

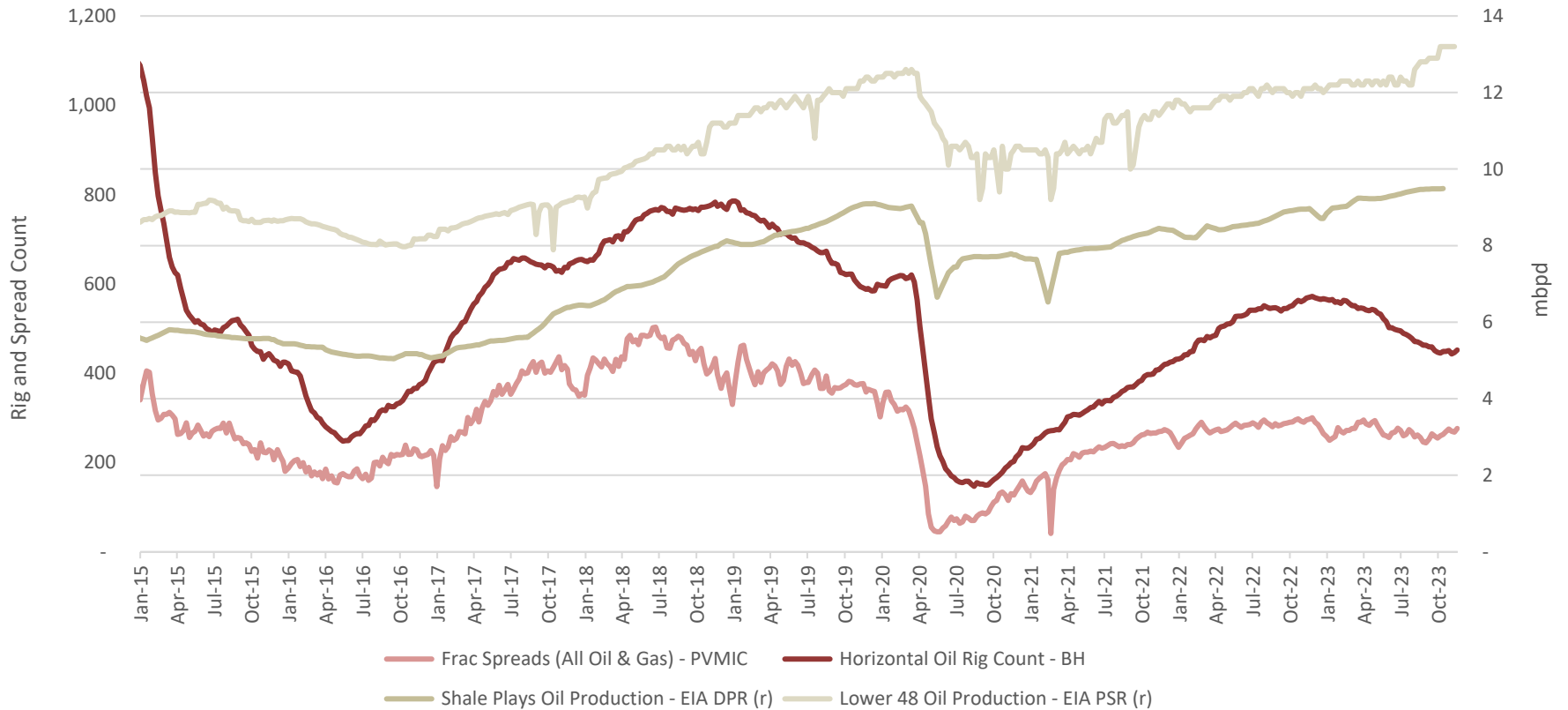
Weekly Change in Horizontal Oil Rig Count by Basin



• By Basin	Change	Count
- Williston	+1	33
- Permian	+5	299
- Eagle Ford	0	47
- DJ Niobrara	+1	15
- Cana Wdford	+1	11
- Other US	-2	47
- Total	+6	452

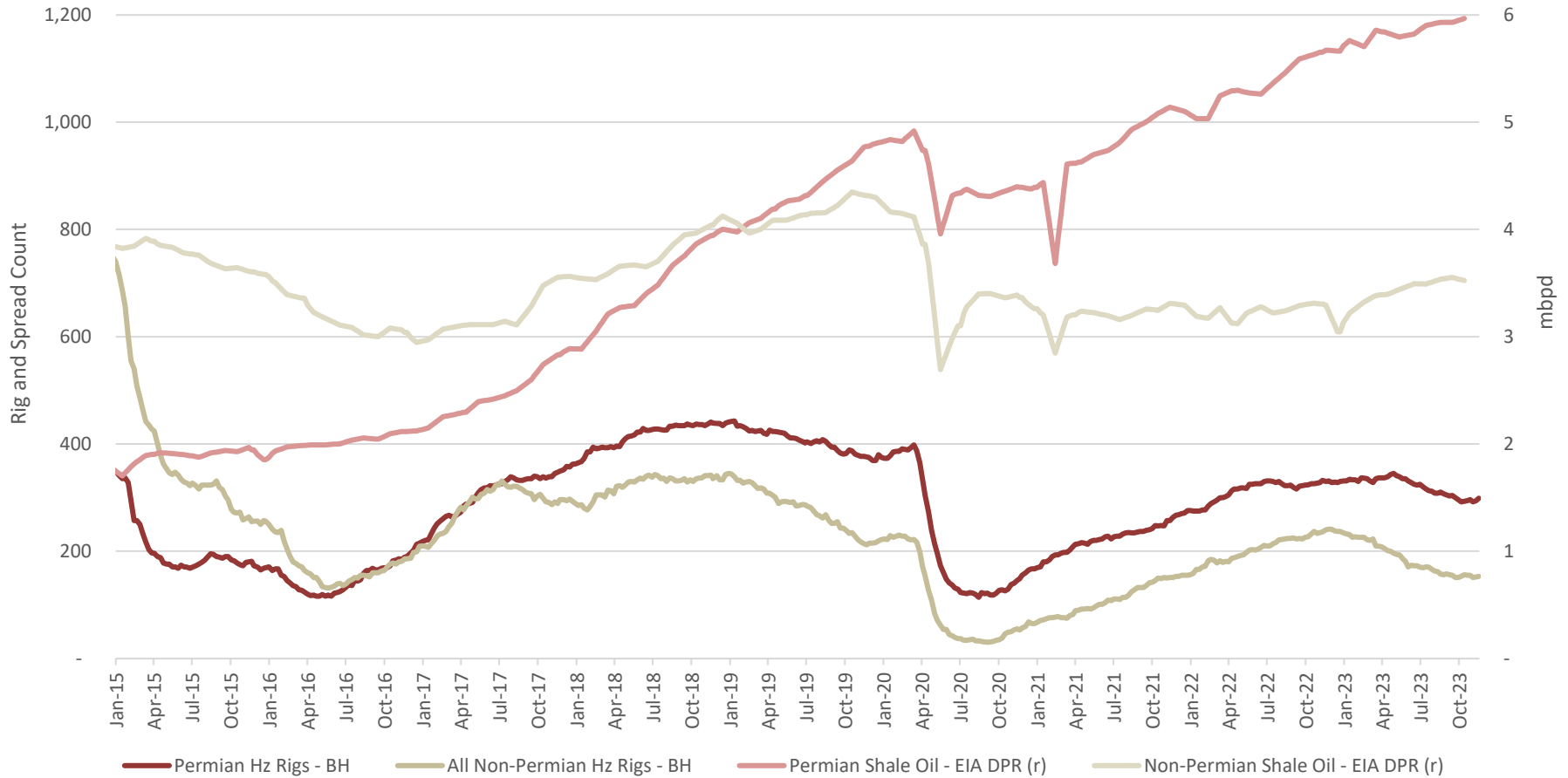
Rigs, Spreads and US Oil Production

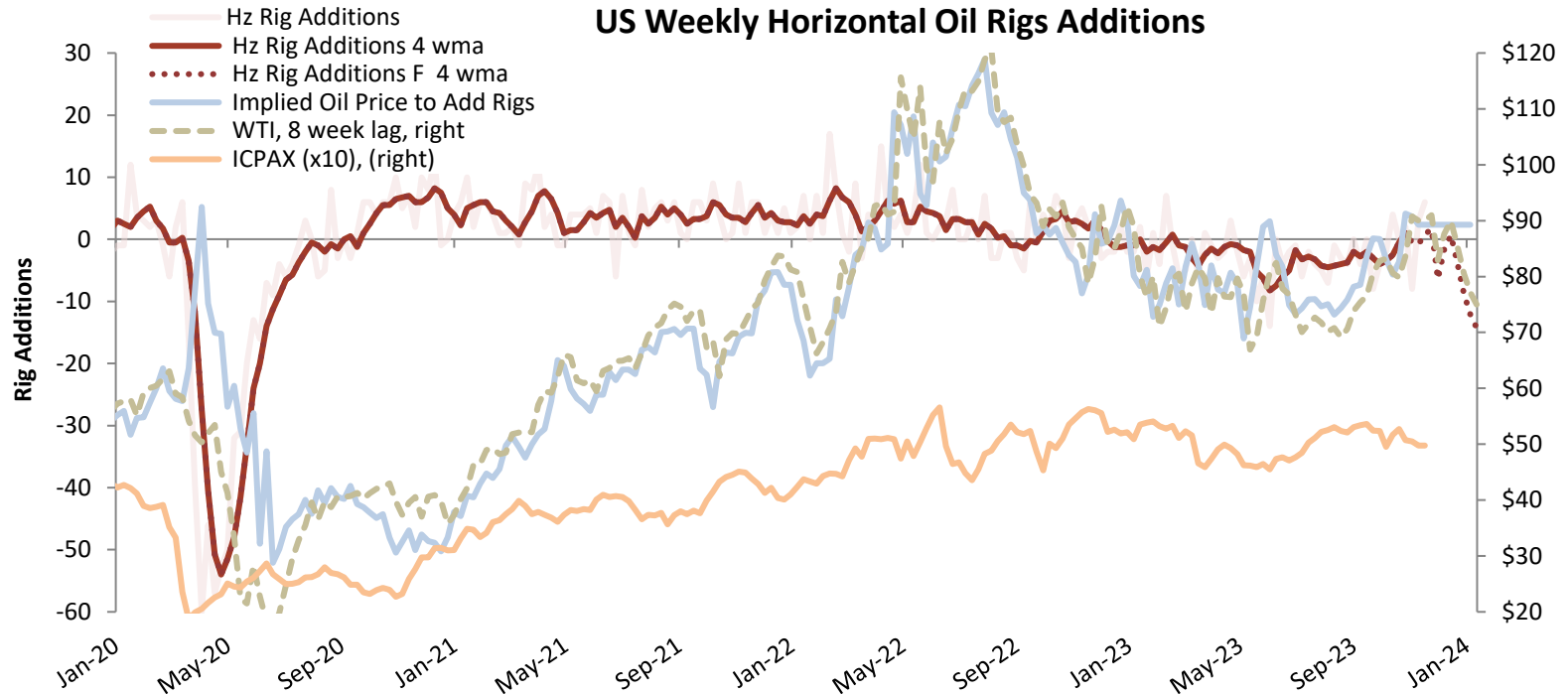
Rigs, Spreads and US Crude and Condensate Production



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

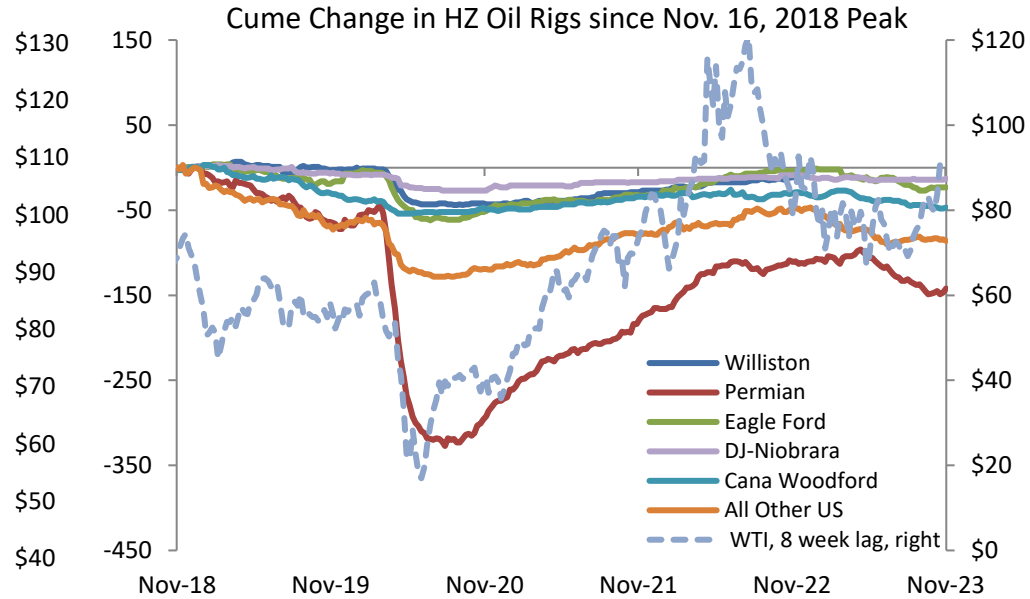
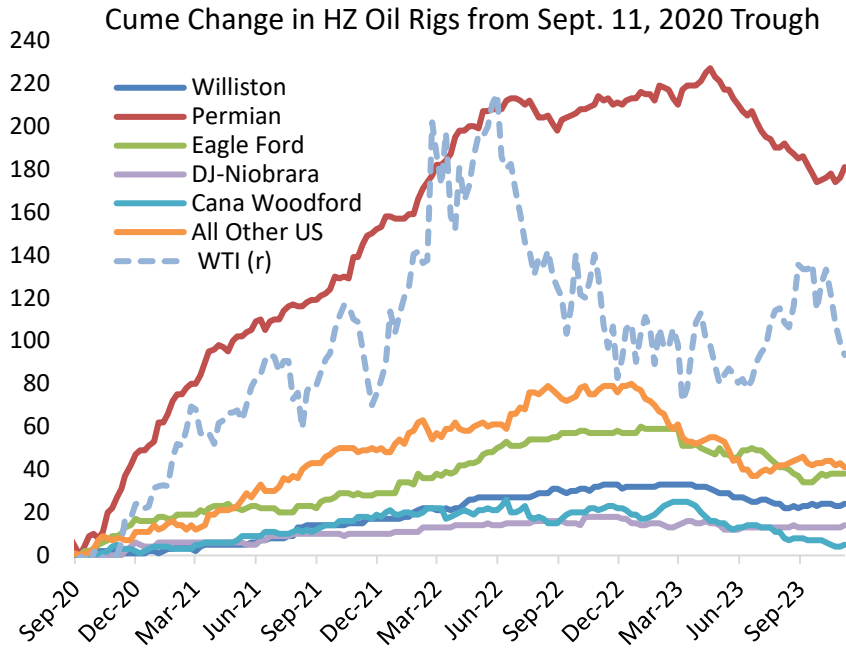
Permian and Non-Permian Shale Oil Production and Horizontal Rigs





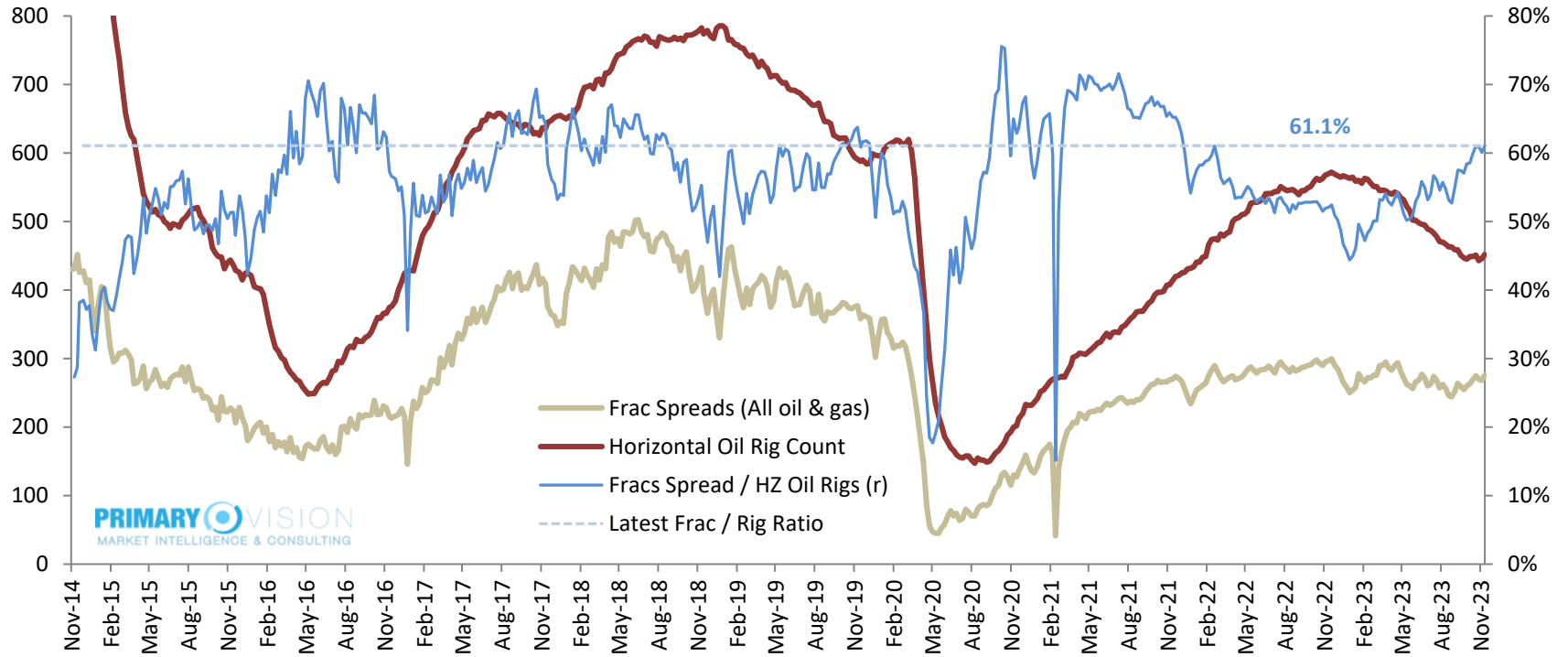
- The 4 wma pace of horizontal rig additions rose to +0.75 / week, positive for the third time in the last 50 weeks
- With an eight-week lag, the breakeven to add horizontal oil rigs stands at WTI \$90 / barrel with \$76 on the screen at writing

US Horizontal Oil Rig Change from Peak and Trough

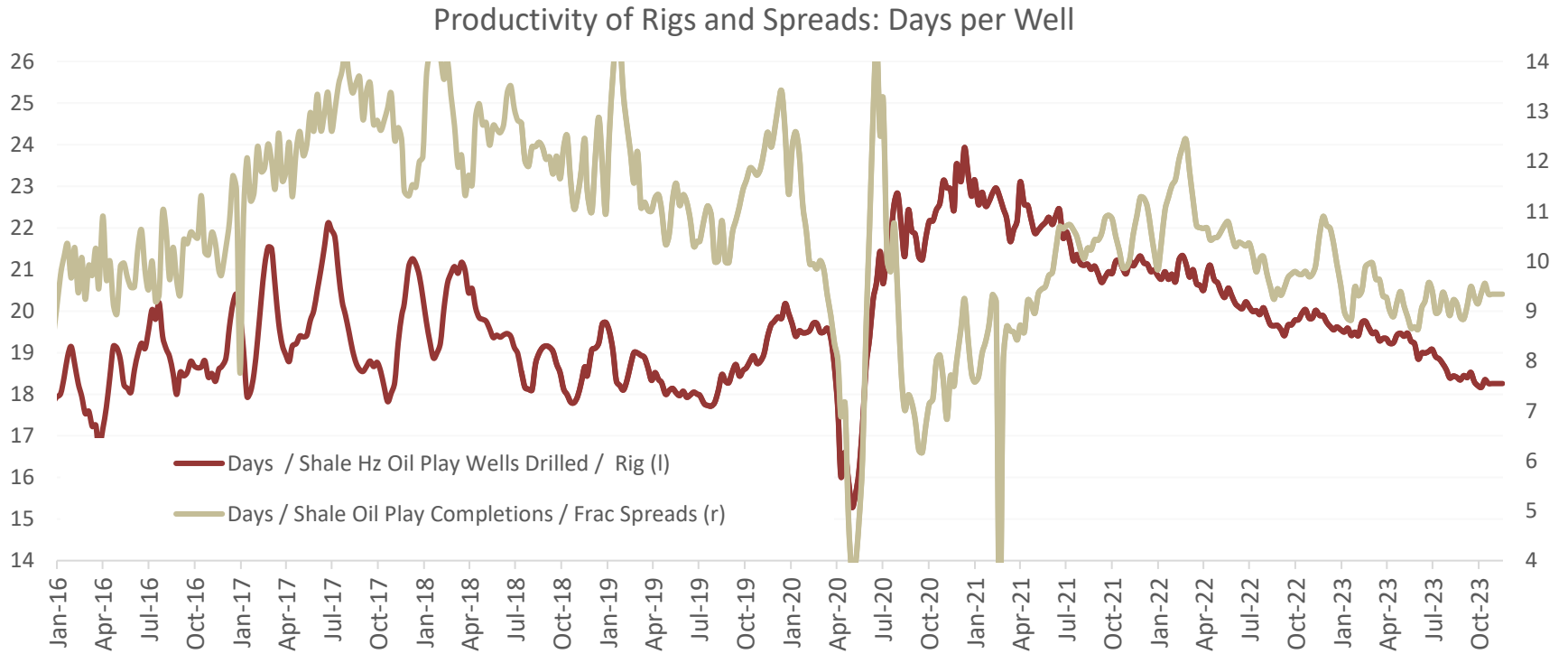


	Latest HZ Rig Count	Trough August 14, 2020				Prior Peak Nov. 16, 2018			
		Trough Count	Rig Change	Percent Change	Pct of Rig Gained	Peak Count	Rig Change	Percent Change	Pct of Rigs Lost
- Williston	33	11	22	200%	7%	53	(20)	-38%	6%
- Permian	299	114	185	162%	61%	441	(142)	-32%	43%
- Eagle Ford	47	10	37	370%	12%	70	(23)	-33%	7%
- DJ Niobrara	15	1	14	1400%	5%	28	(13)	-46%	4%
- Cana Wdford	11	6	5	83%	2%	58	(47)	-81%	14%
- Other US	47	5	42	840%	14%	133	(86)	-65%	26%
- Total	452	147	305	207%	100%	783	(331)	-42%	100%
		<i>05/22/20</i>							
- Frac Spreads	276	45	231	513%		433	(157)	-36%	
<i>Spread Ratio</i>	<i>61.1%</i>	<i>30.6%</i>				<i>55.3%</i>			

Frac Spreads and Horizontal Oil Rigs



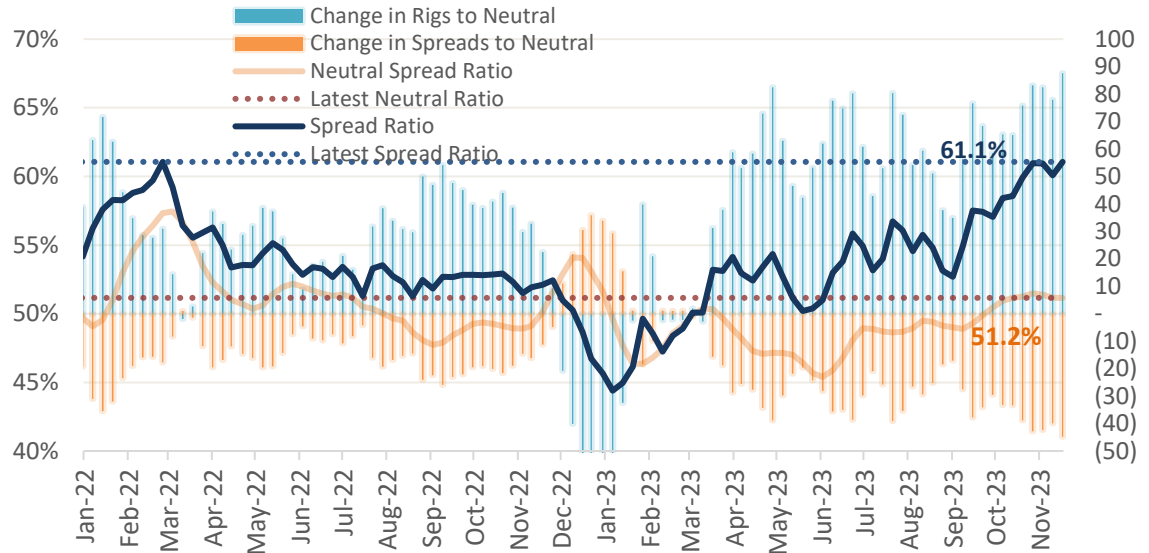
- Frac spreads were +8 to 276



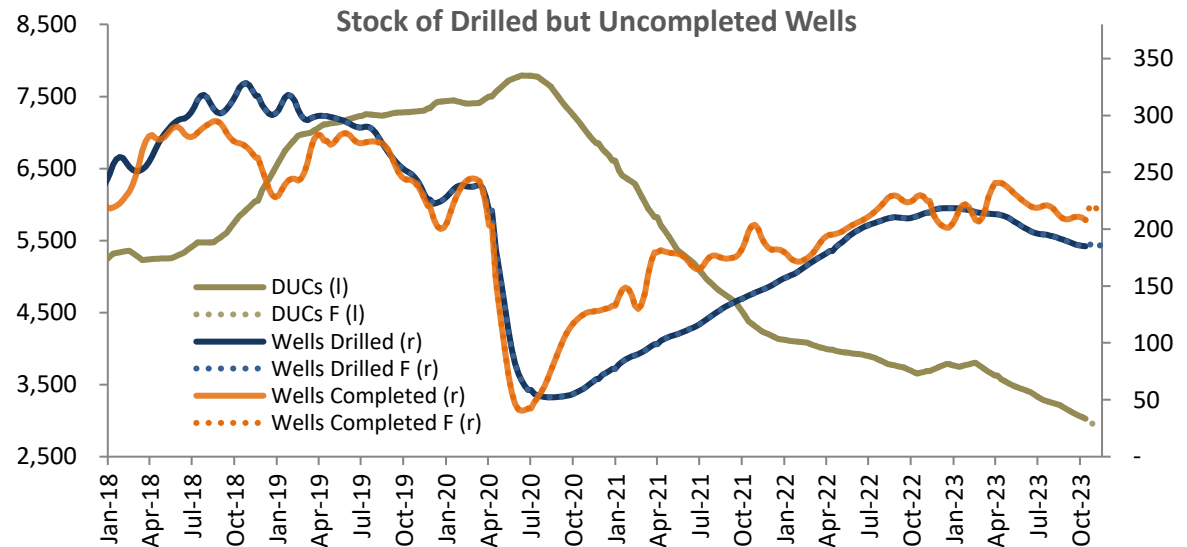
Rig and Spread Productivity

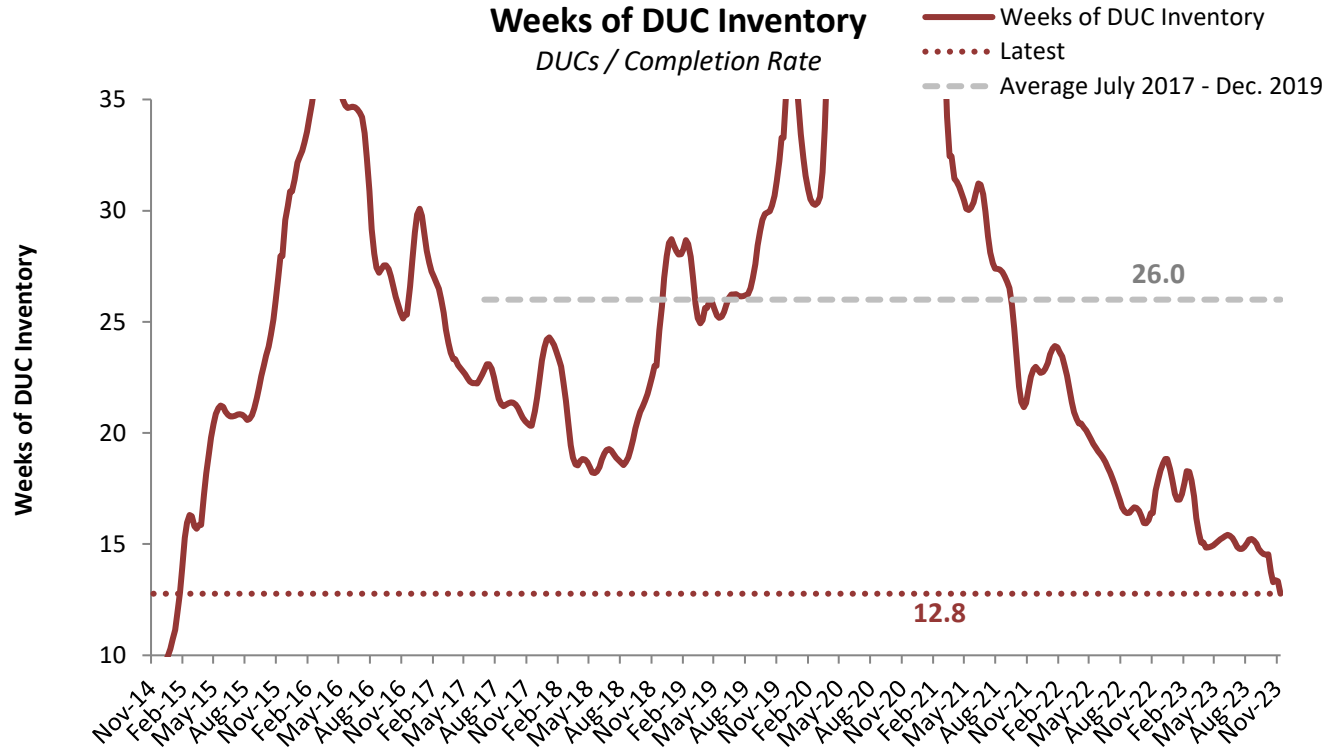
- At estimated productivity levels and current rig and spread counts, the DUC inventory is declining
- To hold DUCs constant, rigs would have to fall by 83 or spreads would have to rise by 42

The Spread Ratio and Rigs and Spreads for DUC Neutrality



Horizontal Oil Wells Drilled and Completed per Week

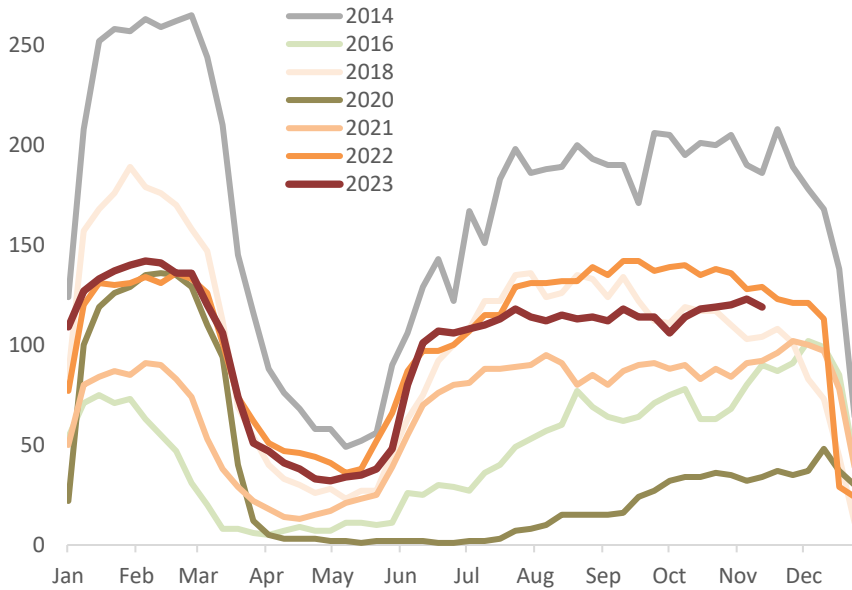




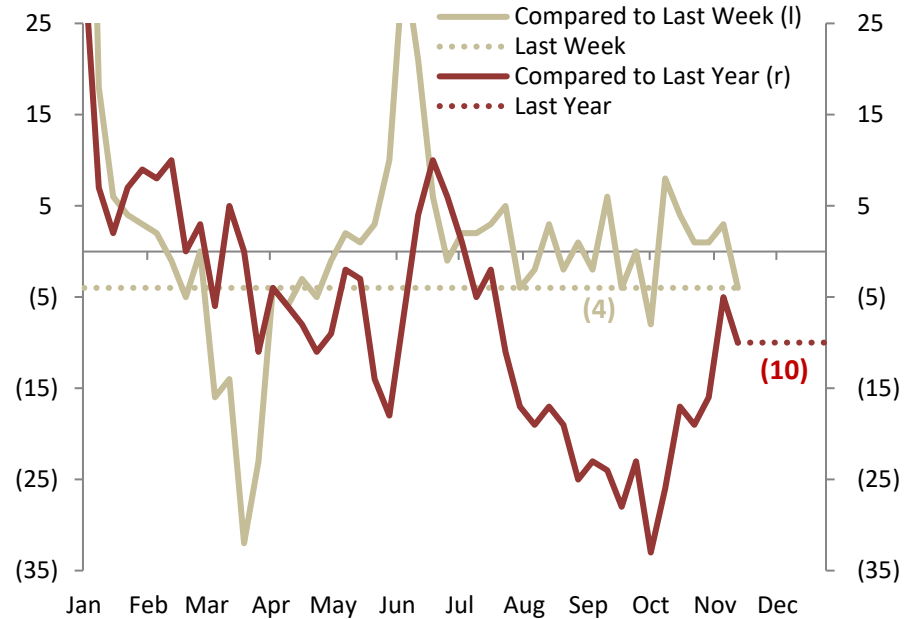
- DUC inventories fell to 12.8 weeks

Canada Horizontal Oil Rig Count

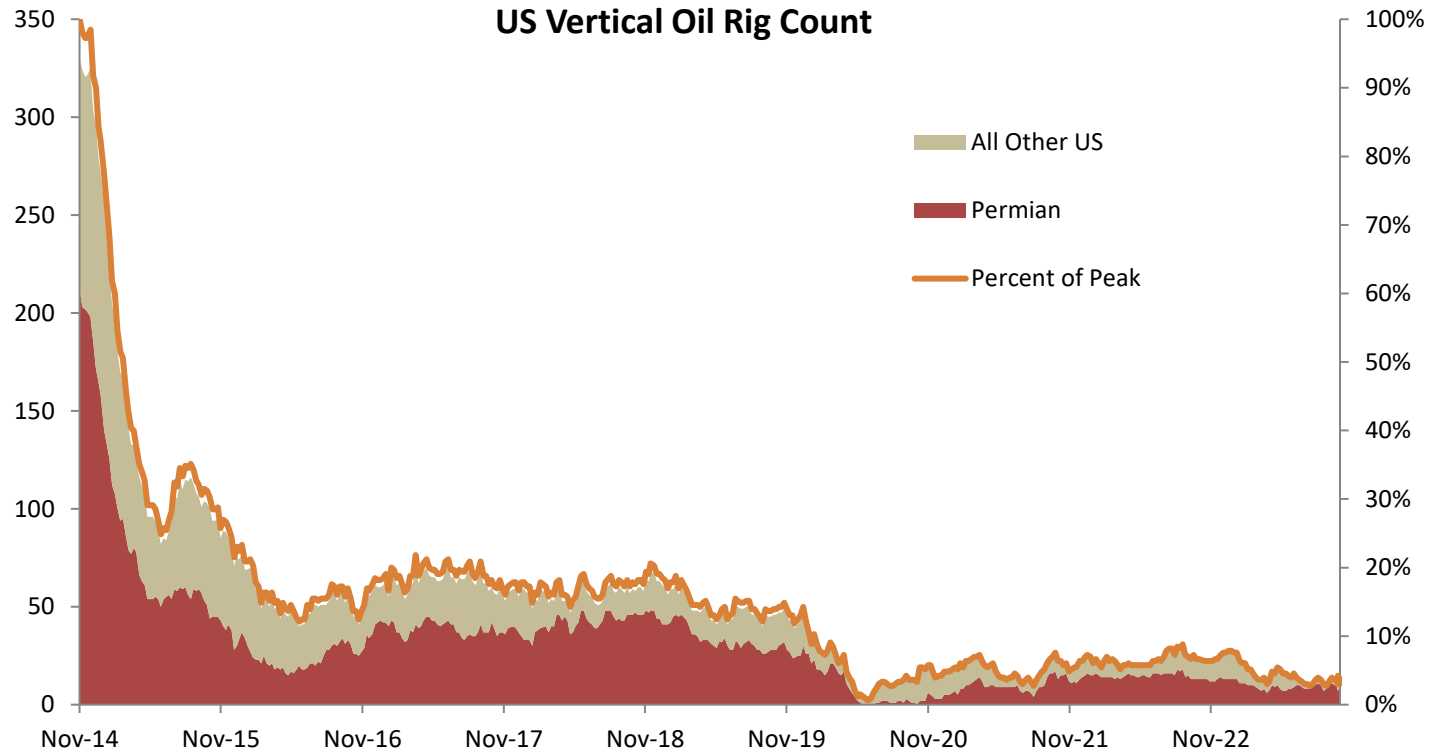
Canada Horizontal Oil Rigs



Compared to Previous Week, Previous Year

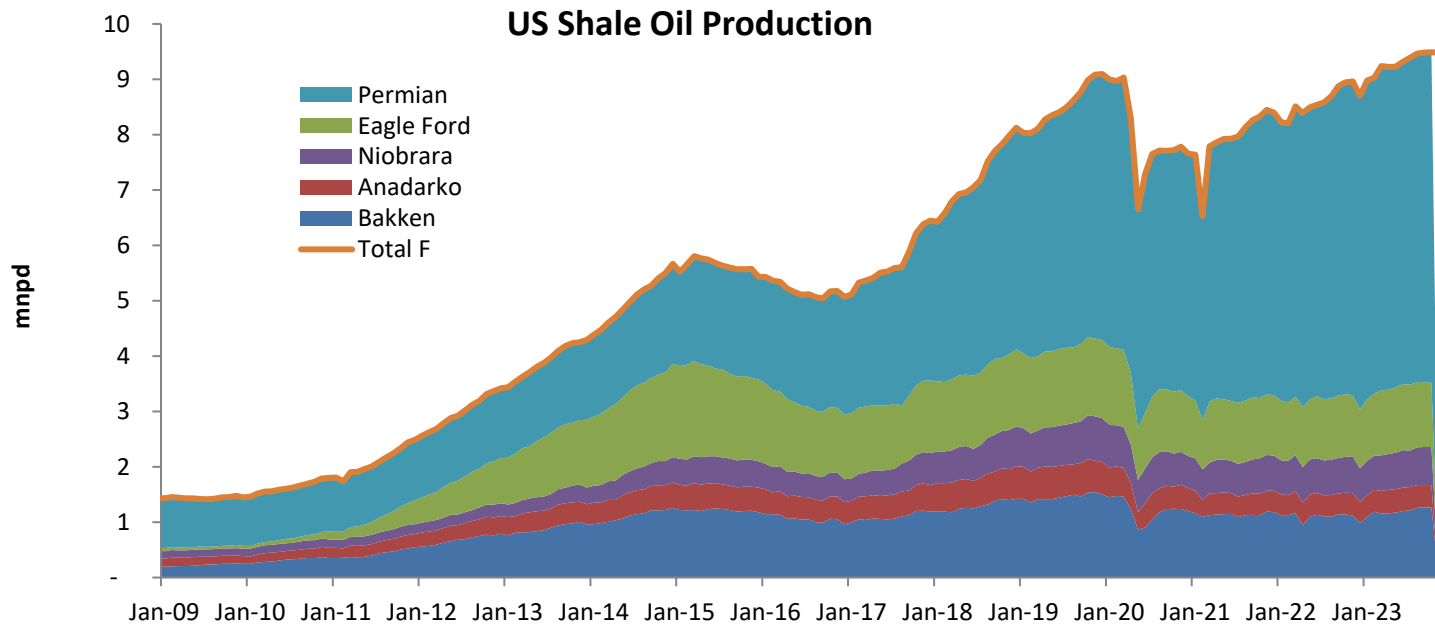


- Canada horizontal oil rigs were -4 to 119 last week
- Rigs counts were -10 compared to the same week last year



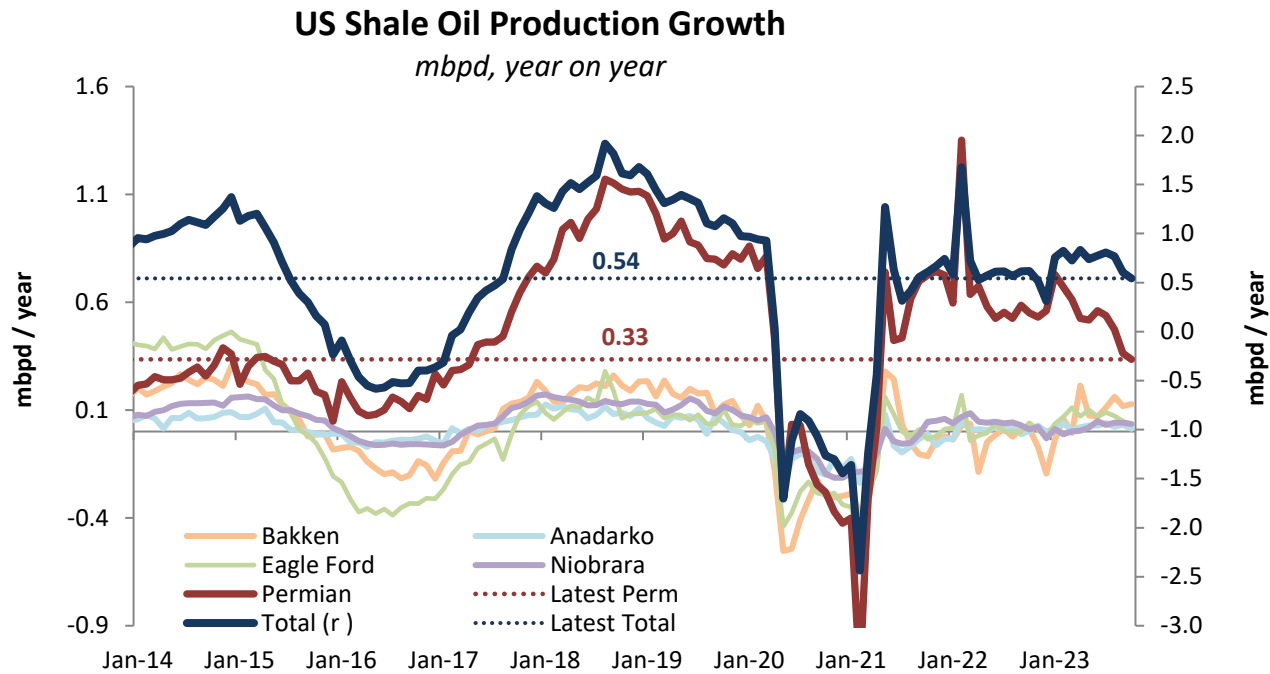
- Vertical oil rigs: +0 to 10
- Permian: -1
- All Other US: +1

US Shale Production Growth (Nov. DPR)



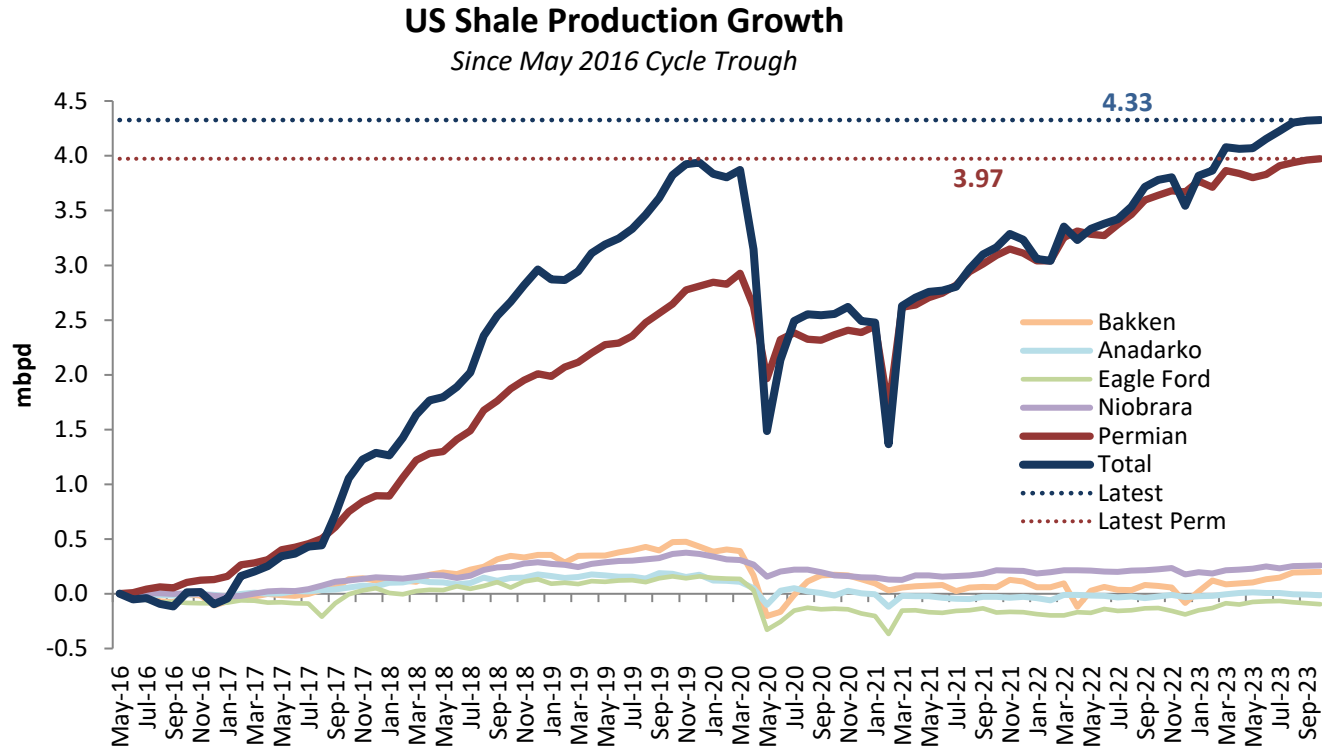
- In the November DPR report, October crude and condensate production from key shale plays fell to 9.488 mbpd, up 6 kbpd from September.
- Shale C+C production was revised down 77 kbpd on average for the April to August period, with September revised up marginally
- The EIA continues to see peak shale oil output, but with the peak delayed from July to October. As I noted above, both the Brent Spread and unaccounted-for barrels suggest another upward revision may be in the cards.

US Shale Production Growth (Nov. DPR)



- Compared to last year, total shale oil production is up 0.5 mbpd
- The Permian is up 0.3 mbpd
- As before, annual Permian growth is rapidly decelerating

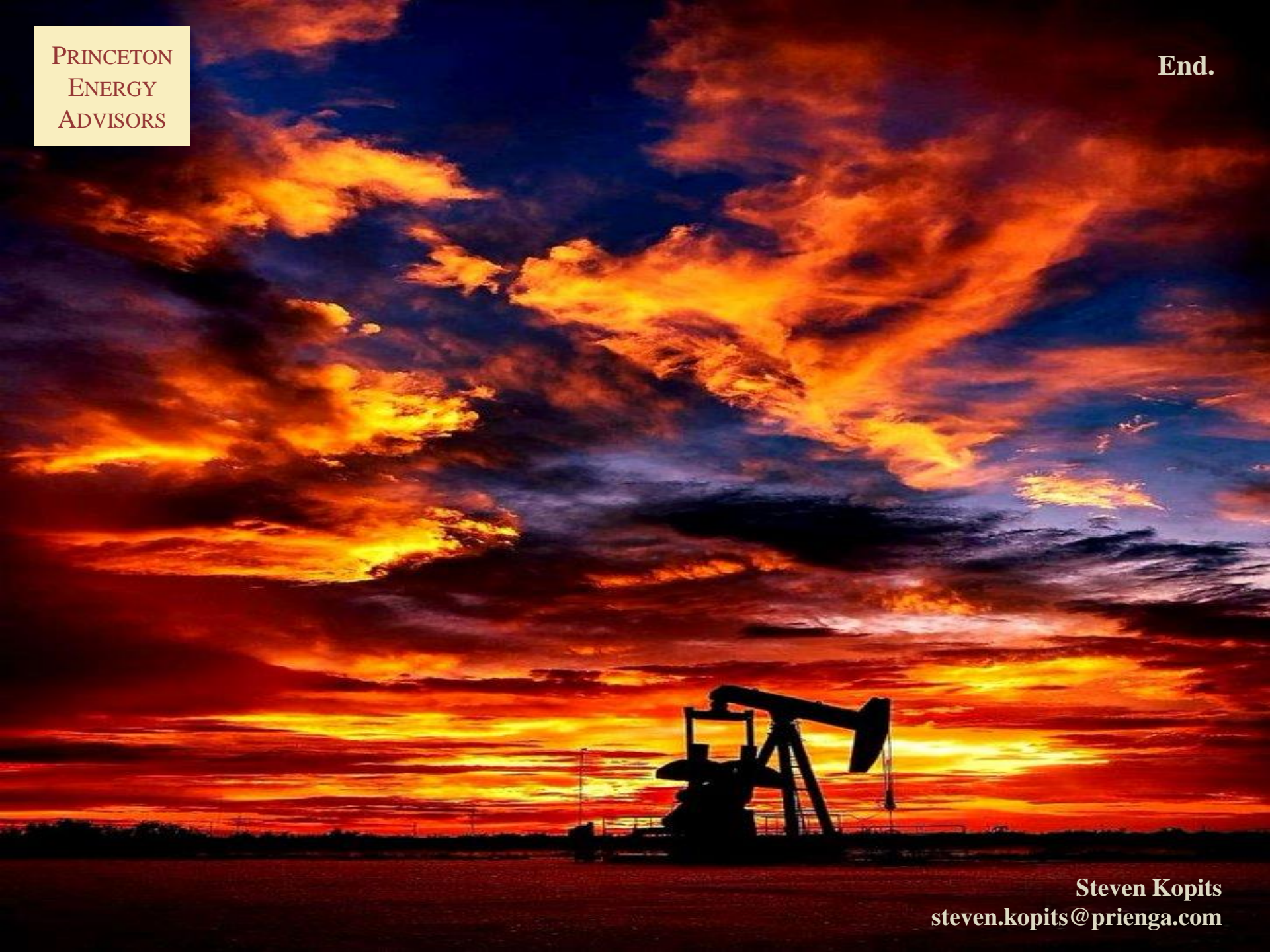
US Shale Production Growth from May '16 (Nov. DPR)



- Since the prior cyclical trough in May 2016, total shale oil production from the key plays is up 4.3 mbpd
- All but 360,000 bpd of this growth comes from the Permian basin

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