

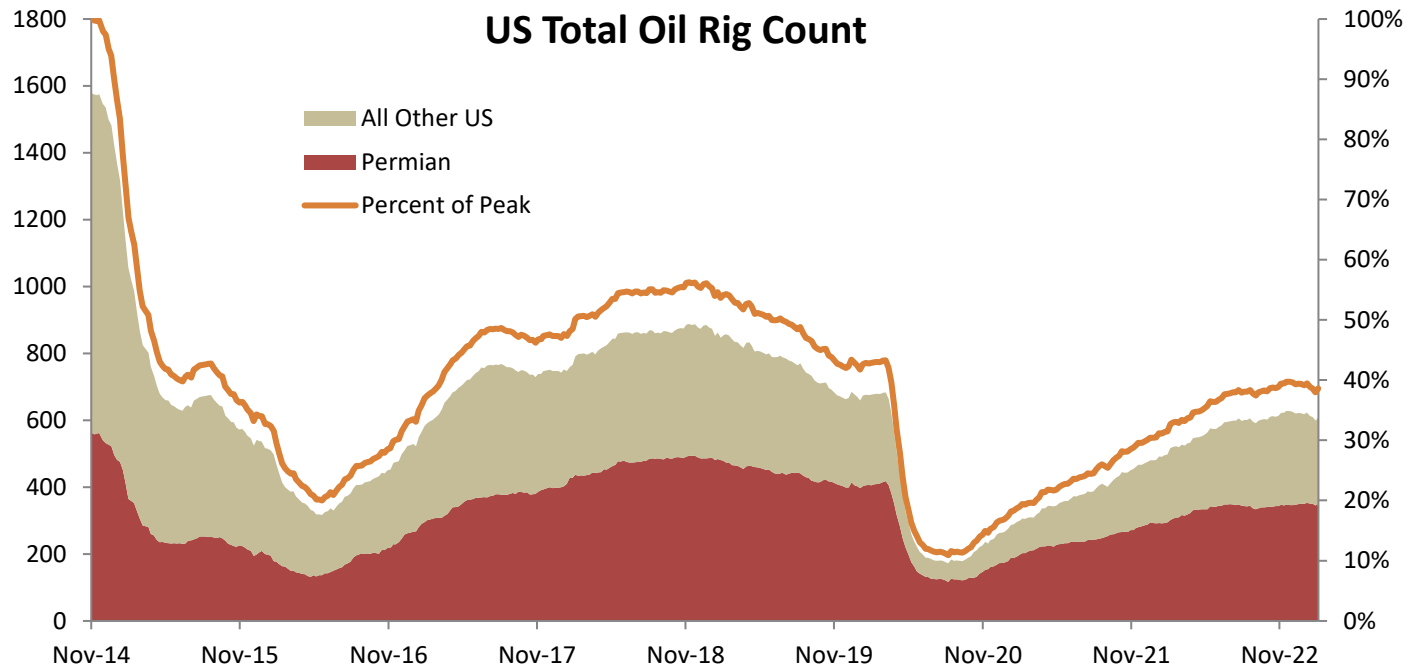
Baker Hughes Oil Rig and Primary Vision Frac Spread Counts

10 February 2023

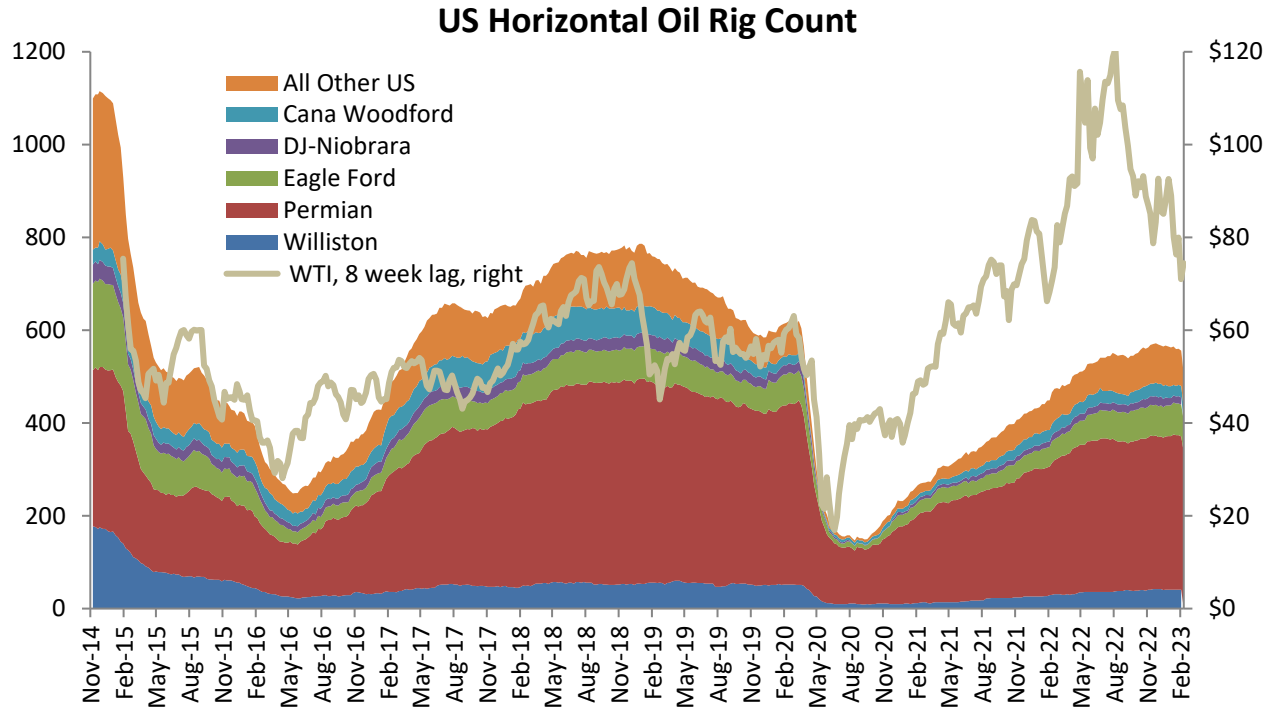
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- Rigs counts recovered
 - Total oil rig counts rebounded, +10 to 609
 - Horizontal oil rig counts similarly rose, +7 to 563
 - Net all 7 of the added horizontal rigs were from the Permian.
 - The pace of horizontal rig additions rose to -0.5 / week on a 4 wma basis, with this metric in negative numbers for the last two months
- The calculated US breakeven to add horizontal oil rigs rose to \$74 / barrel WTI versus \$79 on the screen at writing.
- Frac spreads fell, -4 to 266, still no higher than a year ago
 - As with rigs, the local peak was reached on November 25th at 300 spreads.
 - With the loss of spreads and rise in rigs, DUC counts appear stable
- The overall thesis is unchanged. The shale sector looks to be in trouble.

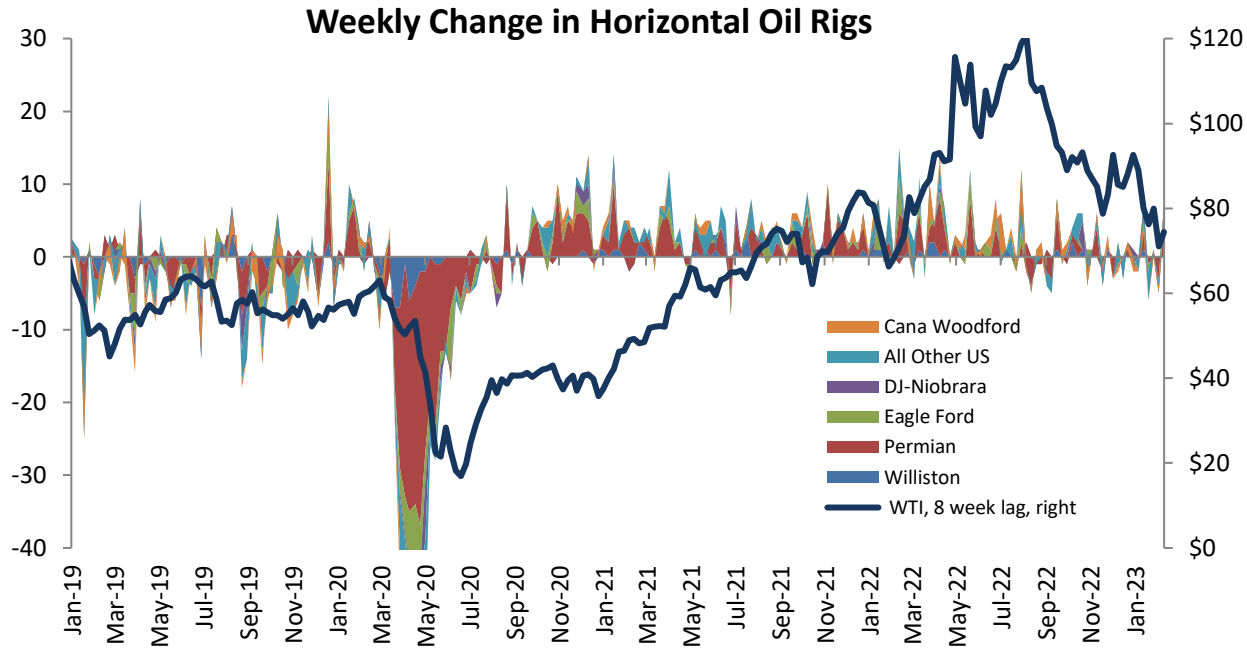


- Total oil rigs: +10 to 609
- Permian: +5
- All Other US: +5



- Horizontal oil rigs: +7 to 563
- Permian: +7
- All Other US: +0

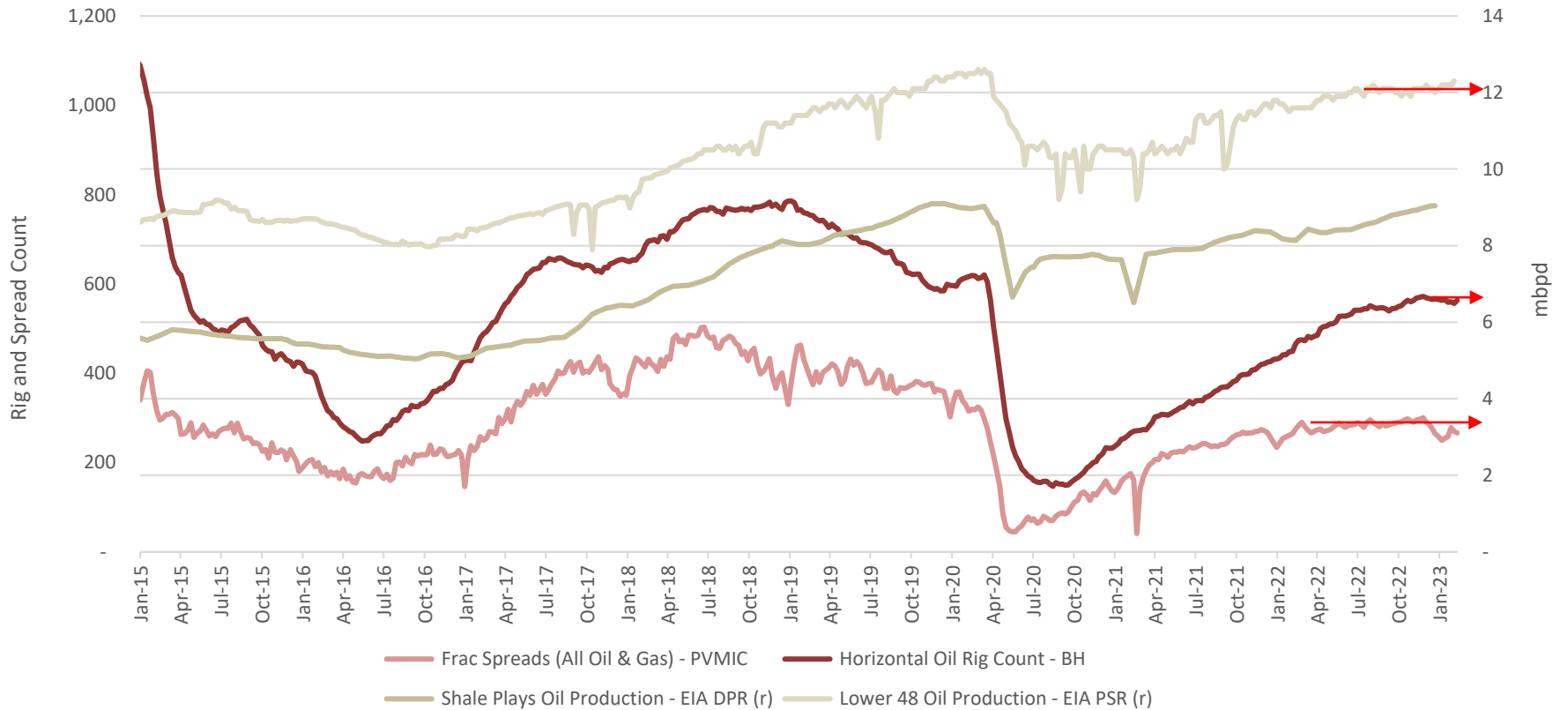
Weekly Change in Horizontal Oil Rig Count by Basin



• By Basin	Change	Count
- Williston	+1	42
- Permian	+7	337
- Eagle Ford	0	68
- DJ Niobrara	0	16
- Cana Wdford	+2	27
- Other US	-3	73
- Total	+7	563

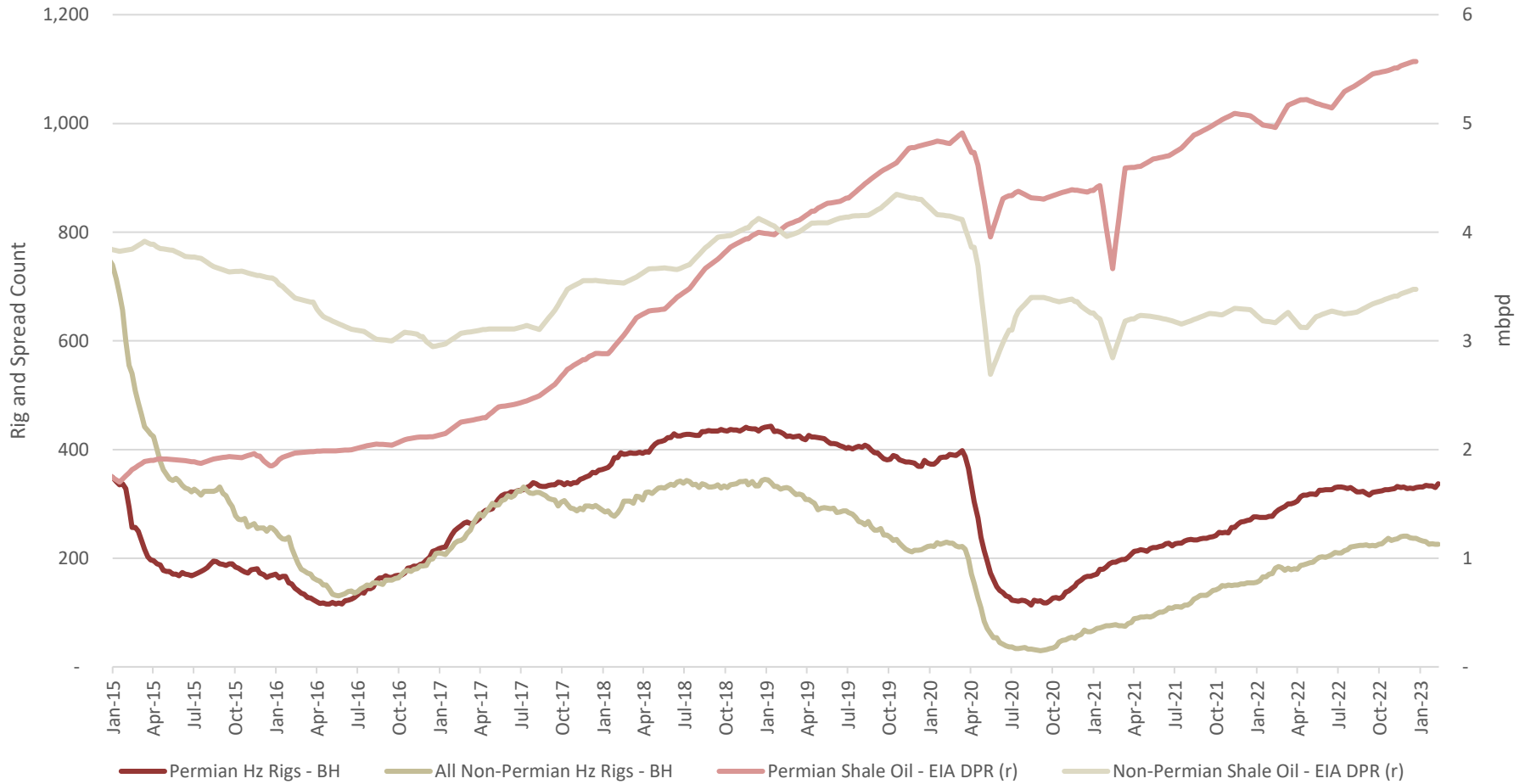
Rigs, Spreads and US Oil Production

Rigs, Spreads and US Crude and Condensate Production

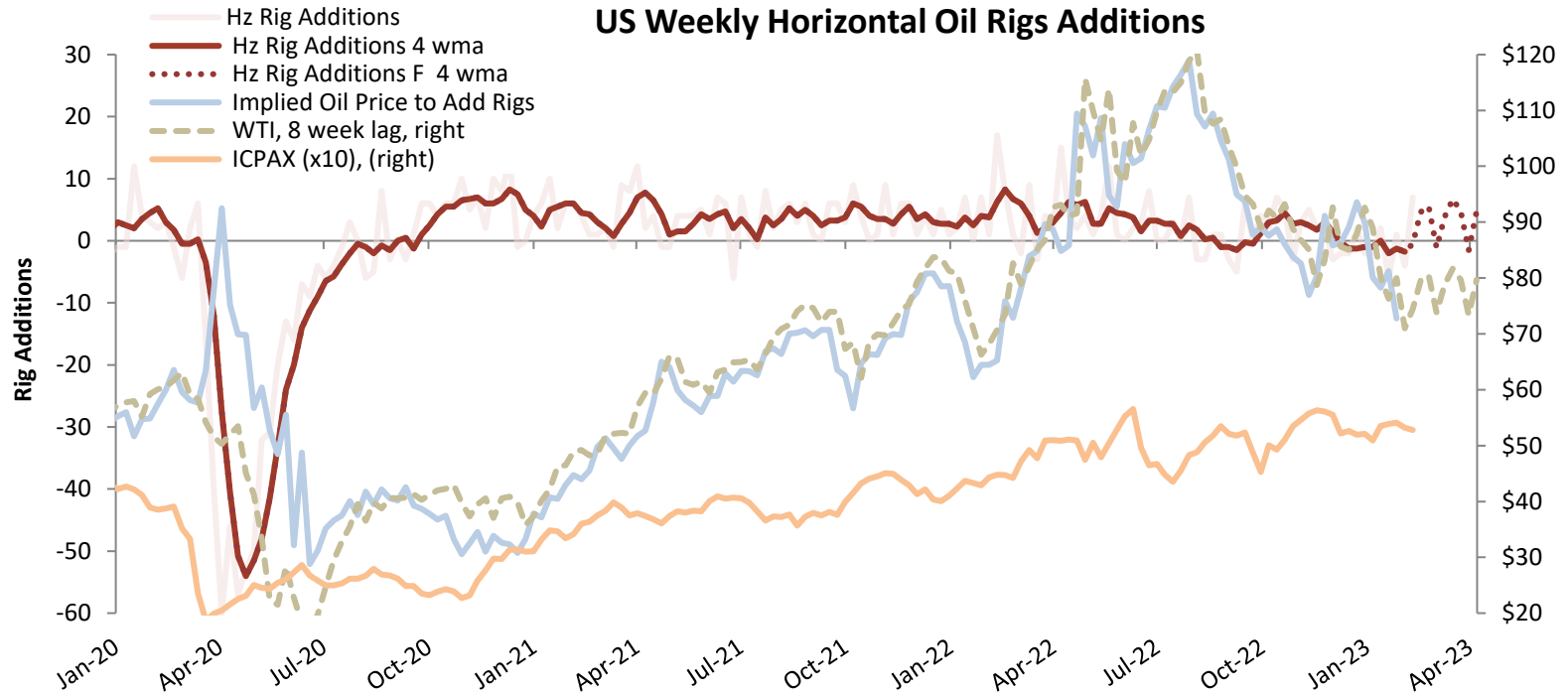


Permian & Non-Permian Shale Oil Production and Hz Oil Rigs

Permian and Non-Permian Shale Oil Production and Horizontal Rigs



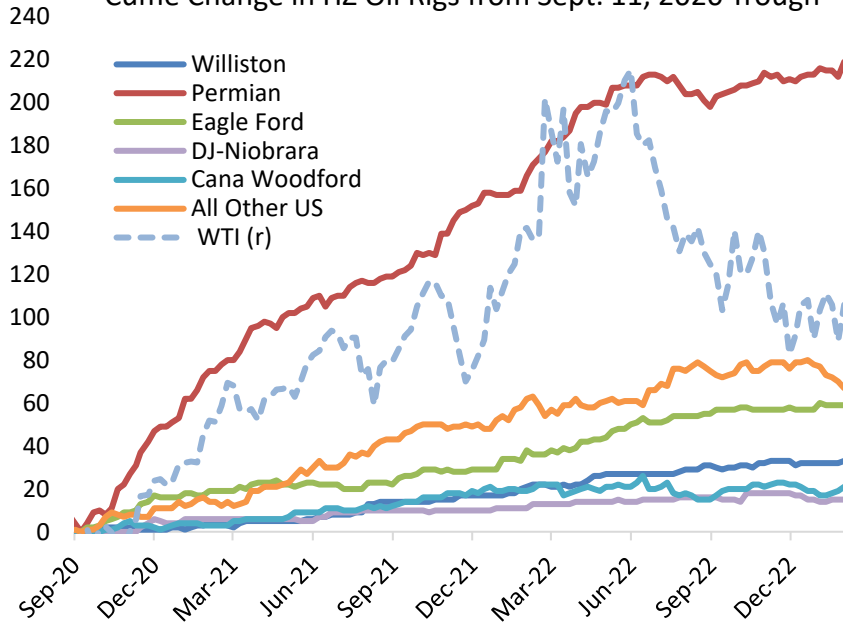
Rig Additions and Breakevens



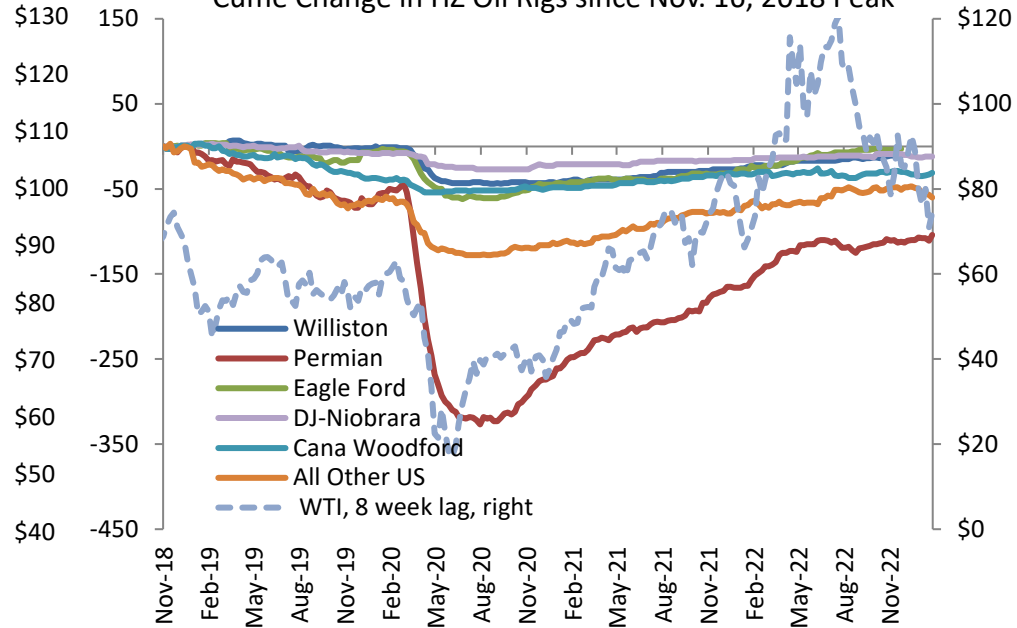
- The 4 wma pace of horizontal rig additions rose to -0.5 / week.
- With an eight week lag, the breakeven to add horizontal oil rigs rose to \$75 / barrel on a WTI basis with \$79 on the screen

US Horizontal Oil Rig Change from Peak and Trough

Cume Change in HZ Oil Rigs from Sept. 11, 2020 Trough

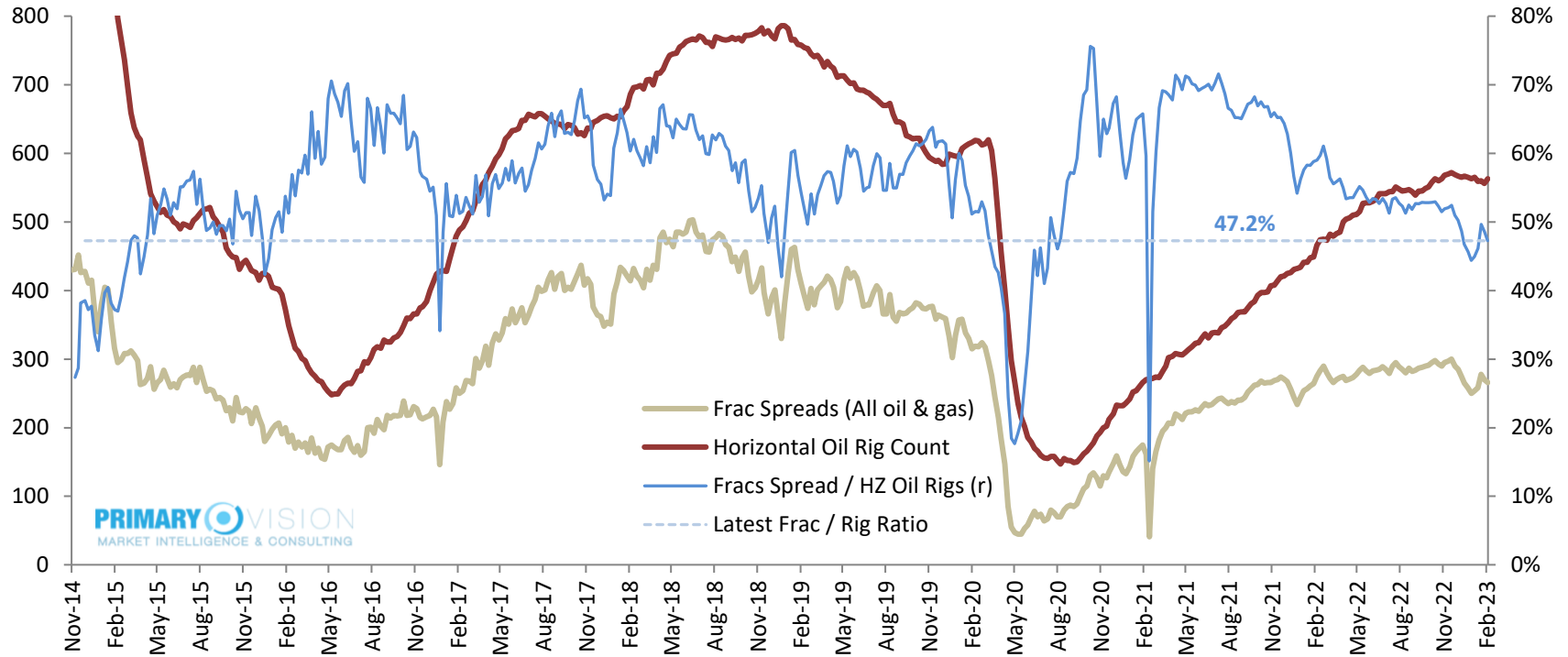


Cume Change in HZ Oil Rigs since Nov. 16, 2018 Peak

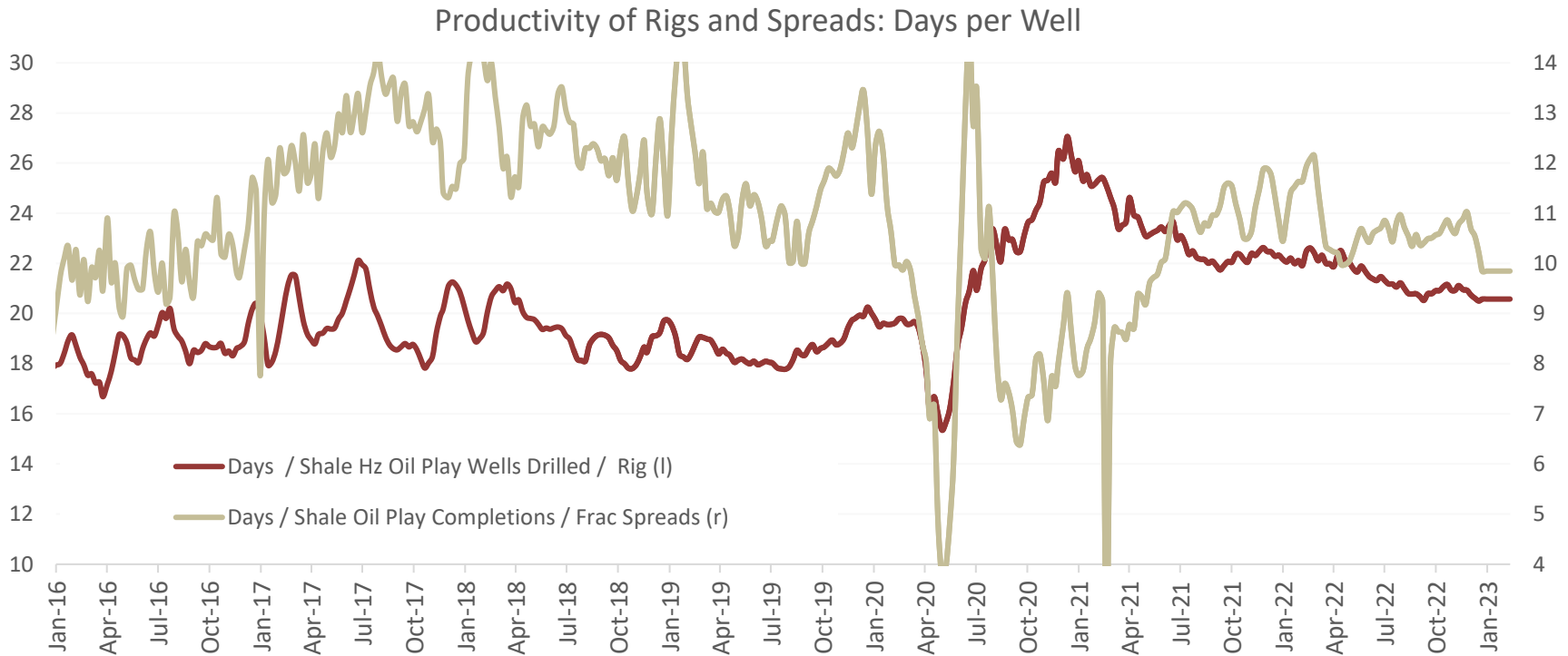


	Latest HZ Rig Count	Trough August 14, 2020				Prior Peak Nov. 16, 2018			
		Trough Count	Rig Change	Percent Change	Pct of Rig Gained	Peak Count	Rig Change	Percent Change	Pct of Rigs Lost
- Williston	42	11	31	282%	7%	53	(11)	-21%	5%
- Permian	337	114	223	196%	54%	441	(104)	-24%	47%
- Eagle Ford	68	10	58	580%	14%	70	(2)	-3%	1%
- DJ Niobrara	16	1	15	1500%	4%	28	(12)	-43%	5%
- Cana Wdford	27	6	21	350%	5%	58	(31)	-53%	14%
- Other US	73	5	68	1360%	16%	133	(60)	-45%	27%
- Total	563	147	416	283%	100%	783	(220)	-28%	100%
		<i>05/22/20</i>							
- Frac Spreads	266	45	221	491%		433	(167)	-39%	
<i>Spread Ratio</i>	<i>47.2%</i>	<i>30.6%</i>				<i>55.3%</i>			

Frac Spreads and Horizontal Oil Rigs



- Frac spreads fell, -4 to 266

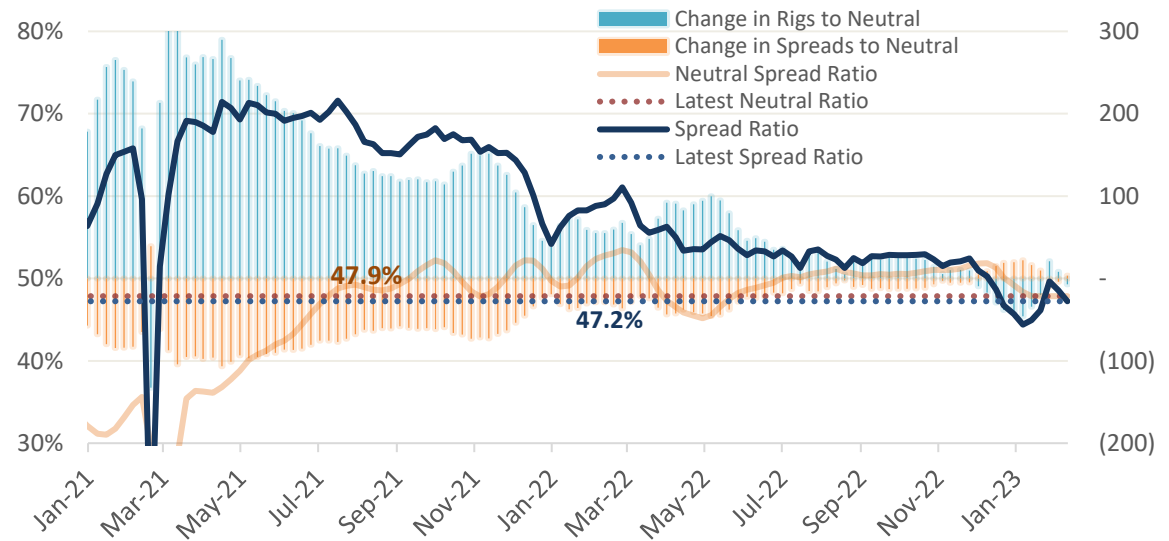


- The latest EIA DPR suggests that rig productivity has stalled and spread productivity is deteriorating modestly.

Rig and Spread Productivity

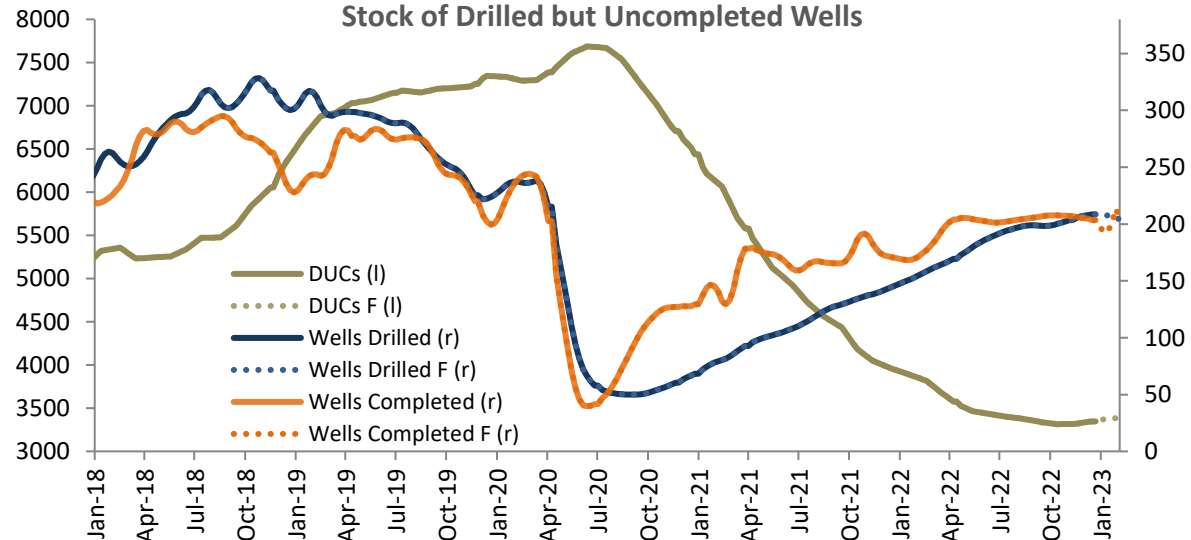
- At estimated productivity levels, the DUC inventory should hold steady at current levels

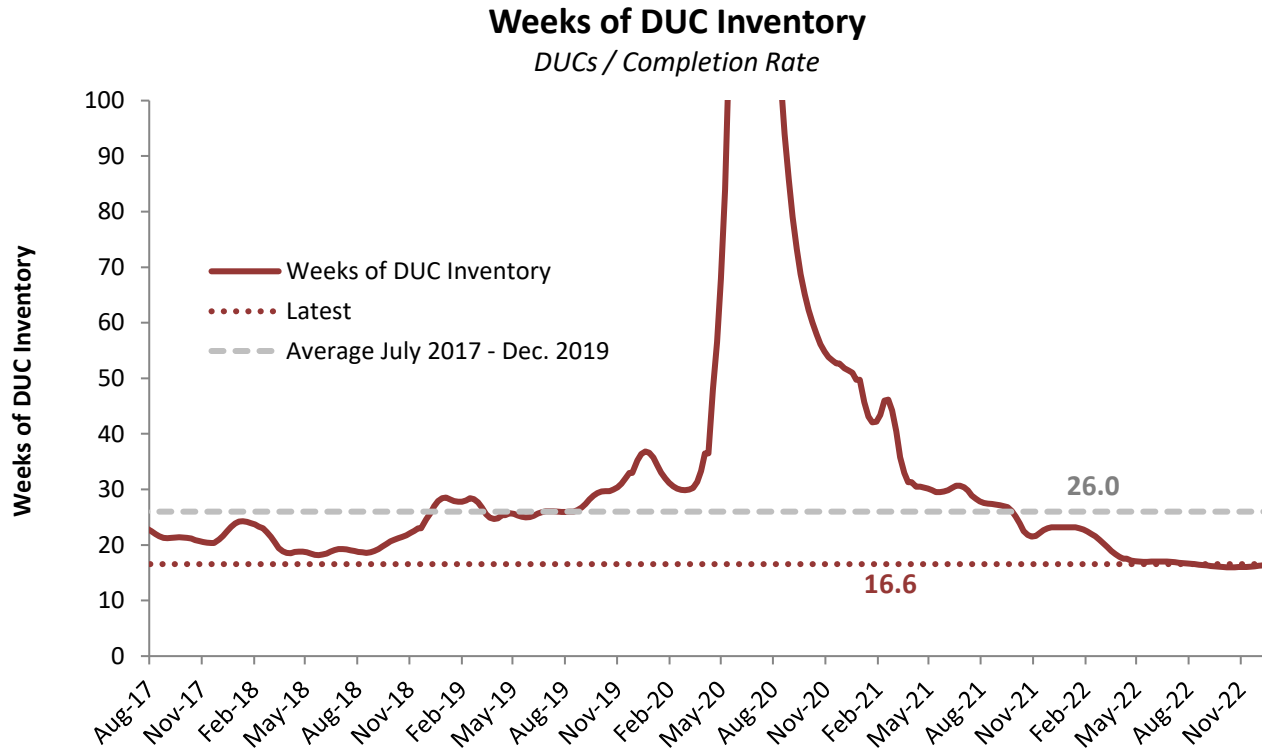
The Spread Ratio and Rigs and Spreads for DUC Neutrality



Horizontal Oil Wells Drilled and Completed per Week

Stock of Drilled but Uncompleted Wells

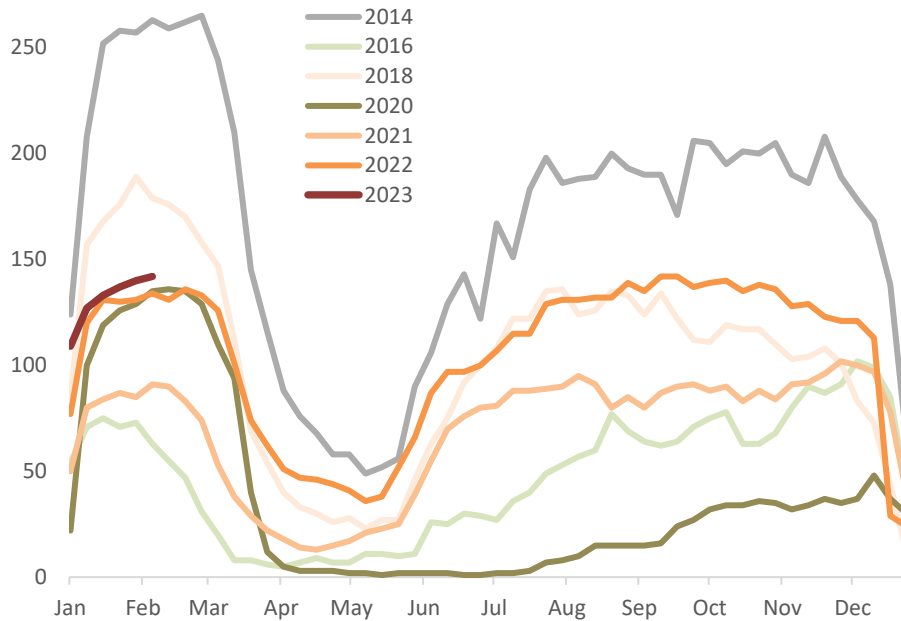




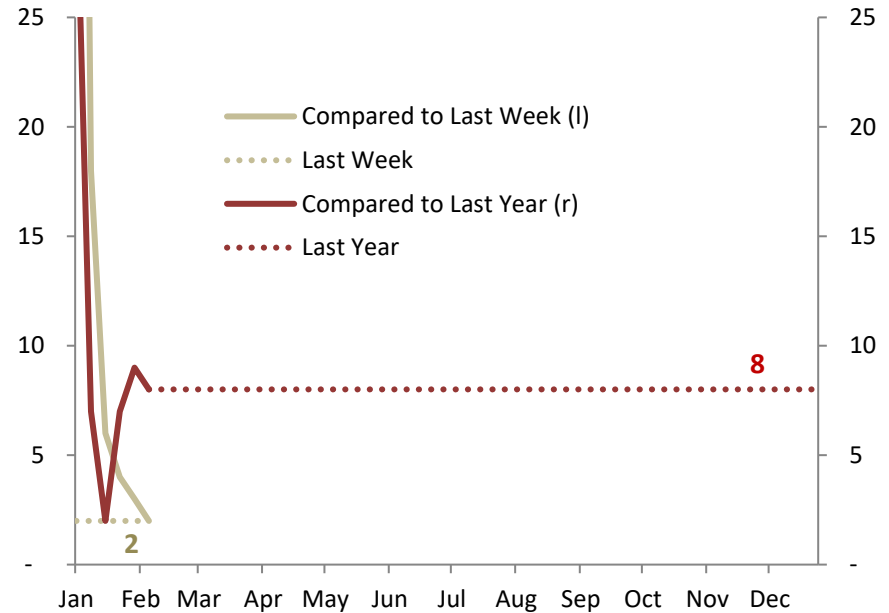
- DUC inventories remain range-bound at around 16 weeks

Canada Horizontal Oil Rig Count

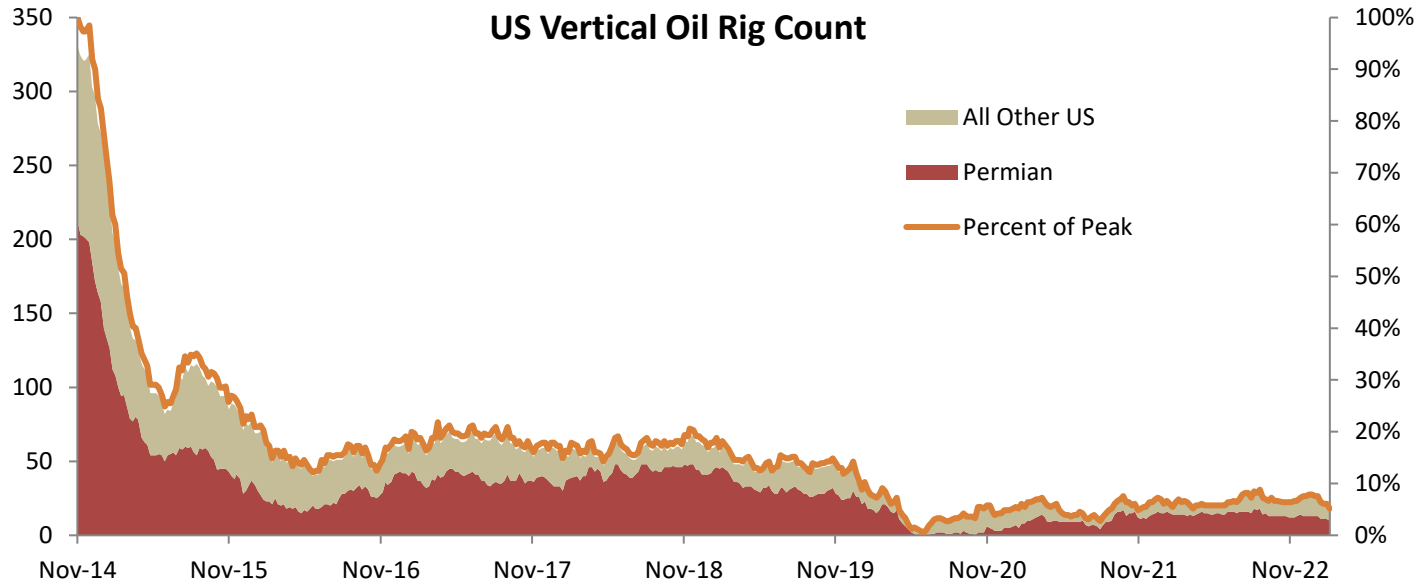
Canada Horizontal Oil Rigs



Compared to Previous Week, Previous Year

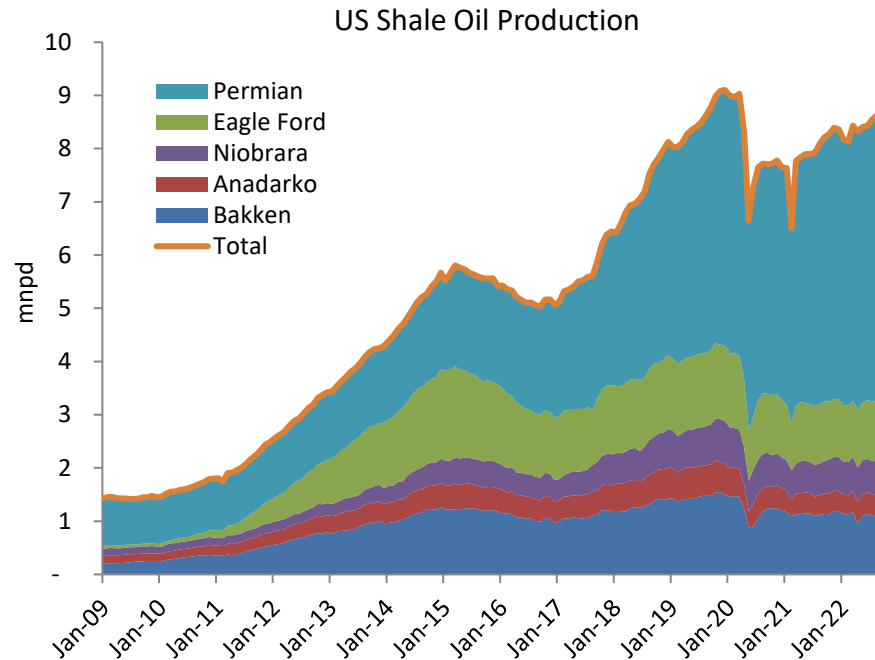


- Canada horizontal oil rigs rose seasonally, +2 to 142 last week
- Rigs counts were 8 above last year.



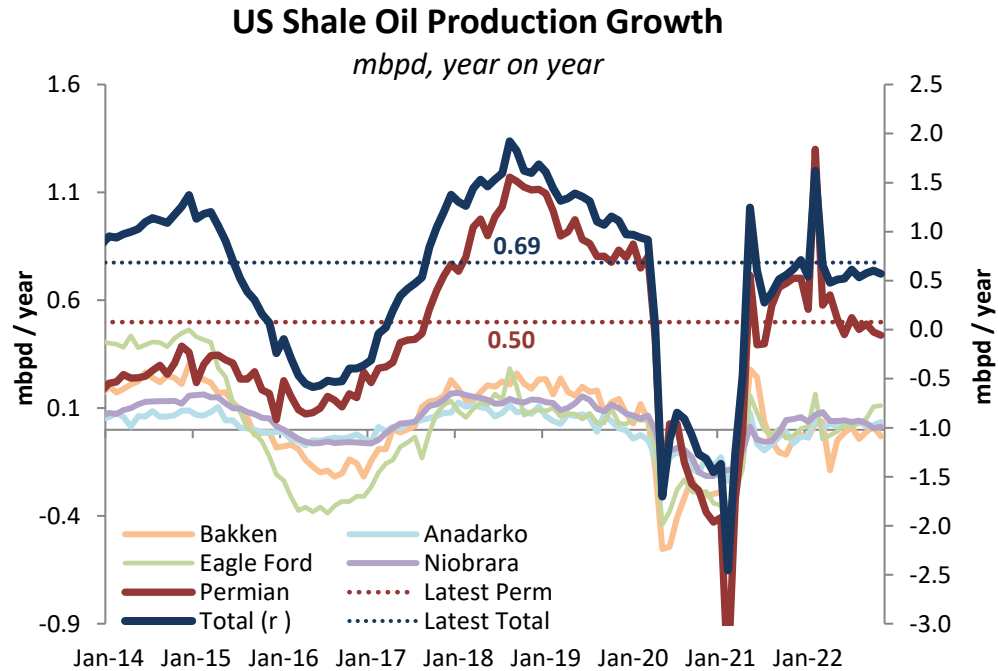
- Vertical oil rigs: -3 to 17
- Permian: -1
- All Other US: -2

US Shale Production Growth (January DPR)



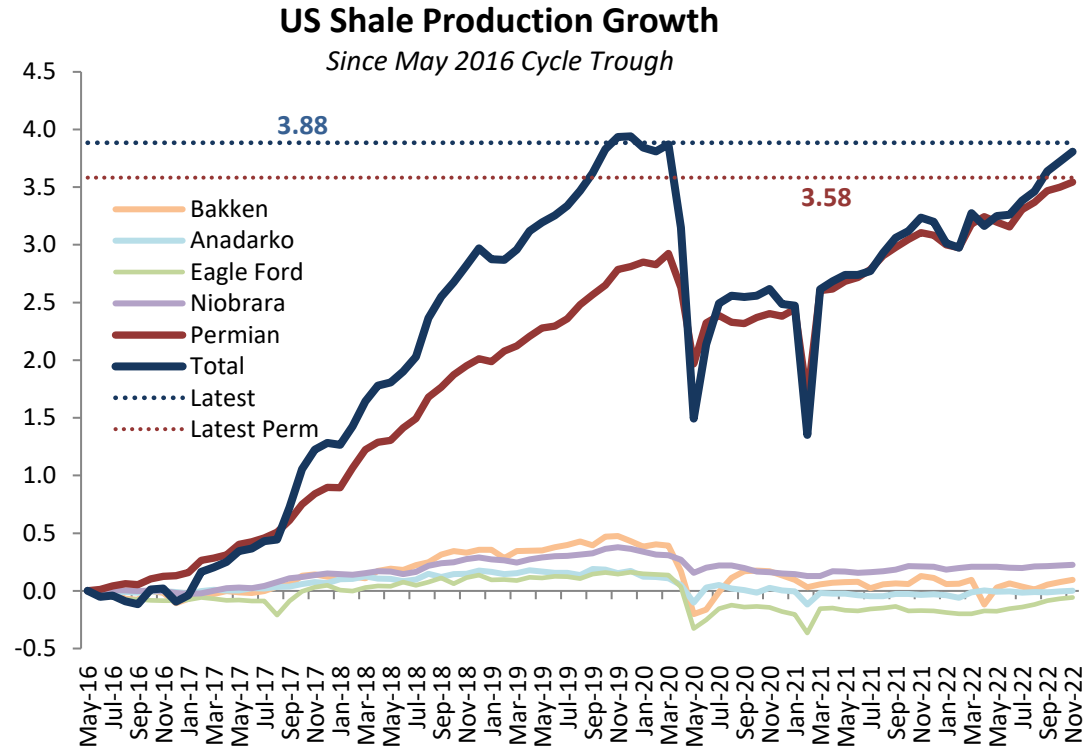
- In the January DPR report, crude and condensate production from key shale plays rose to 9.04 mbpd in December, up 79 kbpd from November. Total shale oil production growth has averaged 82 kbpd / month over the last three months
- Permian production was up 38 kbpd in December. Permian production growth has averaged 38 kbpd per month over the last three months
- The EIA revised up historical shale production quite sharply, on average by more than 130 kbpd in the Sept. 2021 to June 2022 time frame. Current growth rates appear smaller as a result of base month upward revision.

US Shale Production Growth (January DPR)



- Compared to last year, total shale oil production is up 0.69 mbpd
- The Permian is up 0.51 mbpd
- This is quite healthy growth

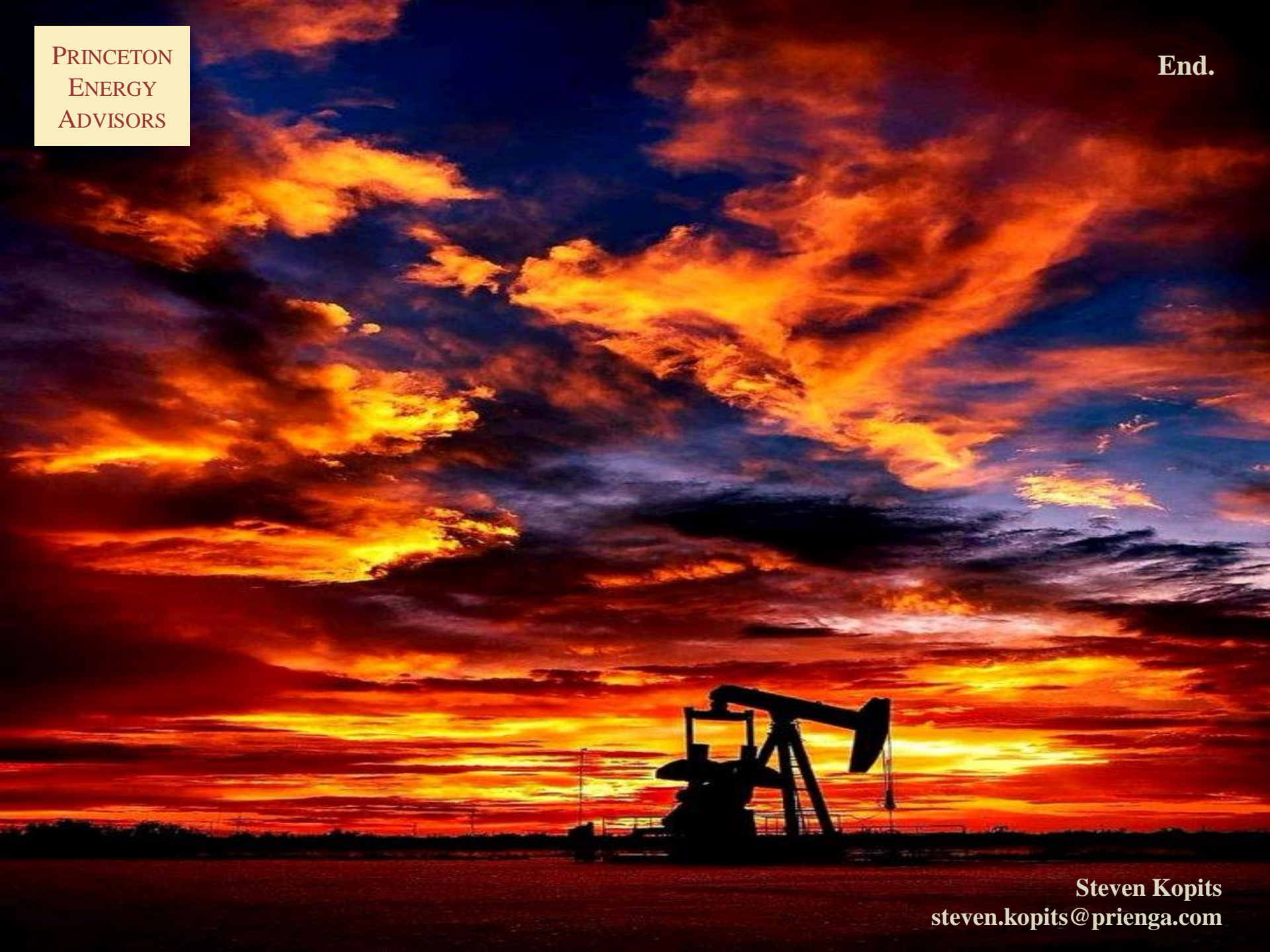
US Shale Production Growth from May '16 (January DPR)



- Since the prior cyclical trough in May 2016, total shale oil production from the key plays is up 3.88 mmbpd
- All but 300,000 bpd of this growth comes from the Permian basin

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