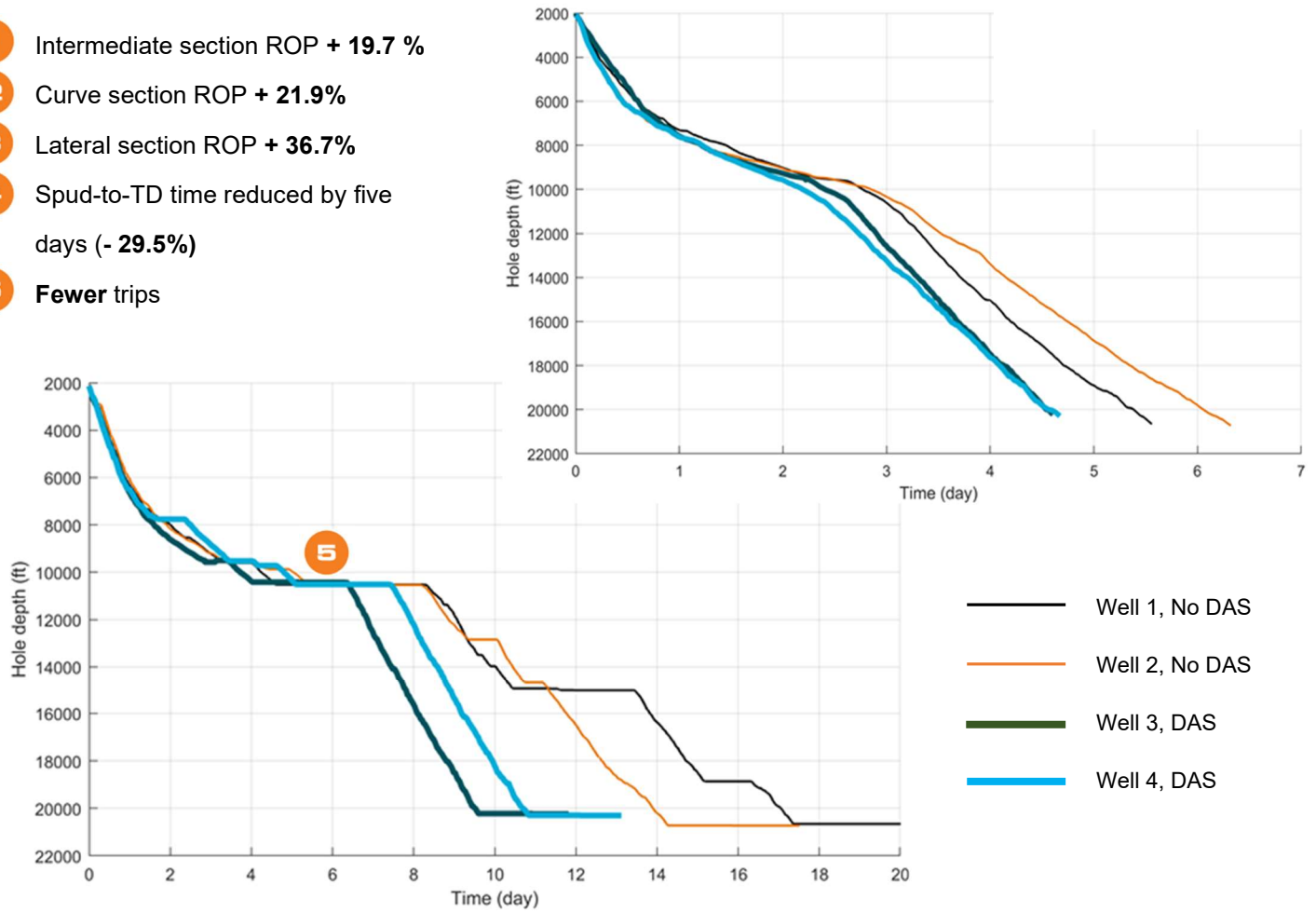


In 2019, we closely studied a Bakken pad rig as it drilled four offset wells. The rig drilled the wells with and without DAS\*, which provided excellent comparative data. The crew drilled wells 1 to 4 in sequential order: wells 1 and 2 without DAS, wells 3 and 4 with DAS.

The results speak for themselves.

- 1 Intermediate section ROP + 19.7 %
- 2 Curve section ROP + 21.9%
- 3 Lateral section ROP + 36.7%
- 4 Spud-to-TD time reduced by five days (- 29.5%)
- 5 Fewer trips



Well	System Used	Vertical Usage (%)	Vertical Rotary ROP (ft/hr)	Build Usage (%)	Build Rotary ROP (ft/hr)	Lateral Usage (%)	Lateral Rotary ROP (ft/hr)	Flat Times (#)	Spud-to-TD (days)
Well 1	No	0	132.4	0	114.1	0	200.2	6	20.4
Well 2	No	0	128.6	0	54.2	0	144.2	6	17.2
<b>Average</b>	<b>No</b>		<b>130.5</b>		<b>84.15</b>		<b>172.2</b>	<b>6</b>	<b>18.8</b>
Well 3	Yes	96.6	143.4	61.7	91.6	89.6	256.0	3	12.6
Well 4	Yes	65.0	169.0	100.0	113.6	50.6	214.8	5	13.9
<b>Average</b>	<b>Yes</b>	<b>80.8</b>	<b>156.2</b>	<b>80.9</b>	<b>102.6</b>	<b>70.1</b>	<b>235.4</b>	<b>4</b>	<b>13.25</b>
<b>Improvement</b>			<b>19.7%</b>		<b>21.9%</b>		<b>36.7%</b>	<b>33.3%</b>	<b>29.5%</b>

1

2

3

4

\* DAS is a trademark of and contains technology licensed from ExxonMobil Upstream Research Company.