

County: Winkler		Permit #: 833905	As Drilled Wellbore Schematic		SHL: X = 1,391,248.92 Y = 10,593,006.26	Geologist: Vince Smith & Matt Zauner Project Manger/Supt: Michael Johnson Drilling Engineer: Jeremy Braden
Field: Phantom (Wolfcamp)		AFE #: O 17041	Oasis Petroleum		BHL: X = 1,388,285.75 Y = 10,603,154.27	
API #: 42-495-34008		Rig Name & #: H&P 602	Well Name: UL 21 Bighorn 4H		GL: 2,766' KB: 2,791'	
Spud Date: TBD						
MD/TVD	GEOL	Hole Size/Casing Program	Drilling Fluids	BHA	Cementing/Centralizers/Float Equip	Notes
704'	Rustler	17-1/2" Hole	8.30 ppg FW	17 ½" Ulterra U616S with 9x12'sBit, Shock	<u>13 3/8" Surface Cement</u>	Lead: 480 sks, 904 cuft, 170% OH Excess
822'		13-3/8", 54.50#, J-55, BTC		Sub, True Shot survey tool, 17 ¼" IBS, 8" DC,	<u>12.9 ppg Lead (TOC Surface)</u>	Tail: 180 sks, 246 cuft, 0% OH Excess
		Set @ 822'		17 ¼" IBS, 2 - 8" DC's, XO, 15 - 6 ½" DC's	<u>14.8 ppg Tail (TOC 520')</u>	
					<u>Cent every 3rd joint</u>	
					<u>≈6 Bow Springs, 2 Stop Collars</u>	
					<u>Non-Rotating Float Equipment</u>	
5,045'	Lamar	12-1/4" Hole	10.0 - 10.2 ppg Brine	12.25" bit, 0.78° mud motor w/12" NB, 8" Shock	<u>9 5/8" Intermediate cement</u>	Lead: 1,140 sks, 3,199cuft, 150% OH Excess
5,055'	TVD/5,055' MD	9-5/8", 40#, HCL-80, LTC (0' - 5,055')		Sub, 12" Stab, 8" UBHO, NMDC, 12" Stab, XO, 6 -8" DCs, X/O, 12 - 6.5" DC's, XO, 21- 5" HWDP	<u>11.0 ppg Lead (TOC Surface)</u>	Tail: 155 sks, 207 cuft, 20% OH Excess
		Special Drift 8.750"*			<u>14.8 ppg Tail (TOC 4,565')</u>	
					<u>Cent every 3rd joint</u>	
5,089'	Bell Canyon				<u>≈40 Bow Springs, 2 Stop Collars</u>	
6,002'	Cherry Canyon				<u>Non-Rotating Float Equipment</u>	
7,403'	Brushy Canyon		9.0 ppg WBM	<u>Vertical Assembly</u>		
				8.75" bit, 1.15° mud motor w/8 ½" NB, 8 ½" Stab,		
8,484'	Bone Spring Lime			6.75" UBHO, 6.75" NMDC, 8 ¾" Stab, X/O 12 – 6.5" DC's, XO, 21 – 5" HWDP		
8,646'	1st Bone Spring Carb					
9,675'	1st Bone Spring Sand			<u>Tri-Cone Vert Assembly</u>		
				8 3/4" bit, 1.15° mud motor (0.15 revs/gal)		
				8 1/2" stab, UBHO, NMDC, 8 1/2" stab		
				12 - 6.5" DC's, XO, 21 - 5" HWDP		
10,015'	2nd Bone Spring Carb		9.2 ppg WBM		<u>7" Intermediate cement</u>	
10,536'	2nd Bone Spring Sand				2000 gallons of Flush Spacer	
10,670'	3rd Bone Spring Carb				11.0 ppg Lead (TOC 3,000')	Lead: 410 sks, 1,153 cuft, 125% OH Excess
	Build 8.75" Curve 10°/100'				15.6 ppg Tail (TOC 7,500')	Tail: 590 sks, 700 cuft, 0% OH Excess
11,100'	MD/11,079' TVD KOP		9.4 ppg WBM	<u>Curve Assembly</u>	<u>Cent every 3rd joint</u>	
11,132'	3rd Bone Spring Shale			8 ¾" Bit, 2.12° Fix mud motor slick, 6.75" MWD,		
11,399'	3rd Bone Spring Sand			6.75" NMDC, DP, HWDP, DP to surface		
					<u>Turbulizer/Bow Springs Cents, 2 Stop Collars</u>	
					<u>Non-Rotating Float Equipment</u>	
11,839'	MD/11,680' TVD Csg					Window is +/-20' (High/Low) & +/-25' (Left/Right)
11,713'	Wolfcamp A Sand		13.0 ppg OBM			Please Note 50' Hard Line East of Target Line
						11,883' TVD/22,188' MD
12,137'	MD/11,722' TVD LP					Vertical Section: 10,668'
	**Target is Wolcamp A					
		6" Hole		<u>Curve/Lateral Assembly</u>	<u>4 1/2" Production cement</u>	
		4-1/2", 13.5#, HCP-110, VAM (10,976' - 22,178')		6" Bit, 1.55° mud motor, MWD, 1500' of 4" DP, NOV	14.5 ppg Tail (TOC = 11,050')	
		3 Mkr Joints Needed		Agitator with safety joint, 4" DP to surface	Cent every joint in the cased curve	Tail: 930 sks, 1,137 cuft, 20% OH Excess
					≈20 Poly Solid Body Spiral (5.75" OD)	
					Eccentric Nose Shoe, FC, Ld Collar	
				*Back-up Lateral motor (0.65 revs/gal)		Jeremy Braden (D.E.)
				*Back-Up Curve Motor - 2.12 True-Slick		Updated 6.12.2019 (MJ)