

County: Winkler		Permit #: 833905	Wellbore Schematic		SHL: X = 1,391,248.92	Y = 10,593,006.26	Geologist: Vince Smith & Matt Zauner	
Field: Phantom (Wolfcamp)			FORGE ENERGY		BHL: X = 1,388,285.75	Y = 10,603,154.27	Project Manger/Supt: Michael Johnson	
API #: 42-495-34008		Rig Name & #: H&P 602	Well Name: UL 21 Bighorn 4H		GL: 2,766'	KB: 2,791'	Drilling Engineer: Jeremy Braden	
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 1/2" Ulterra U616S with 9x12'sBit, Shock Sub, True Shot survey tool, 17 1/4" IBS, 8" DC, 17 1/4" IBS, 2 - 8" DC's, XO, 15 - 6 1/2" DC's	13 3/8" Surface Cement		Lead: 480 sks, 904 cuft, 170% OH Excess	
822'		13-3/8", 54.50#, J-55, BTC			12.9 ppg Lead (TOC Surface)		Tail: 180 sks, 246 cuft, 0% OH Excess	
		Set @ 822'			14.8 ppg Tail (TOC 520')			
					Cent every 3rd joint			
					≈6 Bow Springs, 2 Stop Collar			
					Non-Rotating Float Equipmen			
5,045'	Lamar	12-1/4" Hole	10.0 - 10.2 ppg Brine		9 5/8" Intermediate cement			
4,985' MD		9-5/8", 40#, HCL-80, LTC (0' - 4985')		12.25" bit, 0.78° mud motor w/12" NB, 8" Shock Sub, 12" Stab, 8" UBHO, NMDC, 12" Stab, XO, 6 - 8" DCs, X/O, 12 - 6.5" DC's, XO, 21 - 5" HWDP	11.0 ppg Lead (TOC Surface)		Lead: 1,140 sks, 3,199cuft, 150% OH Excess	
		**Special Drift 8.750"***			14.8 ppg Tail (TOC 4,565')		Tail: 155 sks, 207 cuft, 20% OH Excess	
5,089'	Bell Canyon				Cent every 3rd joint			
6,002'	Cherry Canyon				≈40 Bow Springs, 2 Stop Colla			
					Non-Rotating Float Equipmen			
7,403'	Brushy Canyon		9.0 ppg WBM	Vertical Assembly				
8,484'	Bone Spring Lime	8-3/4" Hole		8.75" bit, 1.15° mud motor w/8 1/2" NB, 8 1/2" Stab, 6.75" UBHO, 6.75" NMDC, 8 1/2" Stab, X/O 12 - 6.5" DC's, XO, 21 - 5" HWDP				
8,646'	1st Bone Spring Carb			Tri-Cone Vert Assembly				
				8 3/4" bit, 1.15° mud motor (0.15 revs/gal)				
9,675'	1st Bone Spring Sand			8 1/2" stab, UBHO, NMDC, 8 1/2" stab				
		VersaFlex Liner System - Halliburton		12 - 6.5" DC's, XO, 21 - 5" HWDP				
10,015'	2nd Bone Spring Carb	VAMM HTTC	9.2 ppg WBM		7" Intermediate cement			
10,536'	2nd Bone Spring Sand	TOL @ 11,050'			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'		9.4 ppg WBM	Curve Assembly	15.6 ppg Tail (TOC 7,500')		Tail: 590 sks, 700 cuft, 0% OH Excess	
11,100' MD KOP		7", 32#, P-110, LTC Set @ 88°		8 3/4" Bit, 2.12° Fix mud motor slick, 6.75" MWD, 6.75" NMDC, DP, HWDP, DP to surface	Cent every 3rd joint			
11,132'	3rd Bone Spring Shale	**Special Drift 6.000"***			Turbulizer/Bow Springs Cents, 2 Stop Collars			
11,399'	3rd Bone Spring Sand	Set at 11,839			Non-Rotating Float Equipment		Window is +/-20' (High/Low) & +/-25' (Left/Right)	
11,839' MD							Please Note 50' Hard Line East of Target Line	
11,713'	Wolfcamp A Sand		13.0 ppg OBM		13.5 ppg OBM	13.7 ppg OBM	11,862' TVD/22,144' MD	
12,137' MD LP		6" Hole		Curve/Lateral Assembly	4 1/2" Production cement		Vertical Section: 10,668'	
**Target is Wolcamp A		4-1/2", 13.5#, HCP-110, VAM (10,500' - 21,665')		6" Bit, 1.55° mud motor, MWD, 1500' of 4" DP, NOV Agitator with safety joint, 4" DP to surface	14.5 ppg Tail (TOC = 10,500')		Tail: 930 sks, 1,137 cuft, 20% OH Excess	
		3 Mkr Joints Needed			Cent every joint in the cased curve			
					≈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 1.18.2018 (JB)			