

Permian Resources, Inc

Chambers No. 2

Procedure to Drill Vertical Wellbore to Test, Log and Evaluate North Shoe Bar (Wolfcamp) & NE Shoe Bar (Strawn) Pools then Set Casing, Kick-Off and Drill Horizontally in Strawn Porosity to Proposed BHL

Proposed Surface Location

1,038' FSL & 802' FEL
Section 7, T16S, R36E
Lea County, New Mexico

Proposed Bottom Hole Location

950' FSL & 1,500' FEL
Section 7, T16S, R36E
Lea County, New Mexico

Proposed Hole Sizes, Casing Sizes and Cement

17-1/2" hole @ 450'	13-3/8" 54.5 #/ft casing @ 450'	Cmt w/ ± 450 sx Class "C" w/ 2% CaCl. Sufficient to circulate to surface.
11" hole @ $\pm 4,900'$	8-5/8" 32 & 24 #/ft casing @ $\pm 4,900'$	Cmt w/ ± 2100 sx Lite lead + 400 sx "C" + 2% CaCl tail. Sufficient to circulate to surface.
7-7/8" hole @ $\pm 11,600'$	5-1/2" 20 & 17 #/ft casing @ 11,355'	Cmt w/ ± 600 sx "H" pozmix w/ RFA & retarders + 400 sx "H". Sufficient to bring TOC to $\pm 4,000'$.
4-5/8" hole @ $\pm 11,833'$ MVD		

Abbreviated Proposed Procedure

1. Contract John West Surveys to survey confirming surface location as permitted and providing latitude and longitude. Build roads, location, cellar and dig pits to accommodate selected drilling rig. Drill mouse hole and rat hole.
2. MIRU rotary drilling rig. Drill 17-1/2" surface hole utilizing FW native spud mud and circulating cellar returns with #2 pump cellar jet to $\pm 450'$. Survey @ TD. Circ. and condition hole. POOH w/ DP, Collars & BHA. Run $\pm 450'$ of 13-3/8" Used or LS, 54.5 #/ft, J-55, ST&C casing w/ float equipment. Land casing and cement with 100% excess ± 275 sx Class "C" + 4% Gel + 2% CaCl lead + 175 sx "C" + 2% tail cement. Circulate cement to surface. WOC 12 hrs. Cut off and weld on 13-3/8" x 8-5/8" series 600 flanged casing head. NU 11" x 5000# Shaffer double preventer with 11" x 5000# Hydril annular preventer. Test casing and BOP to 1000#. PU 11" Bit, BHA, collars and RIH. Wait on cement total of 18 hrs before drilling plug.
3. Drill 11" intermediate hole utilizing FW circulating inside reserve pit adding oil @ $\pm 1,600'$ for Red Beds. At $\pm 1,900'$, after drilling Red Beds, begin adding BW to system to minimize salt washout. Mud logger on @ $\pm 3,000'$. Drill to TD @ $\pm 4,800'$. Surveys every 500', Max deviation 5 deg., Max change 1-1/2% per 100'. Circ. and condition hole. POOH w/ DP, Collars & BHA. Run $\pm 4,900'$ of 8-5/8", 24 #/ft, J-55, 32 #/ft, J-55 and 32 #/ft, S-65, ST&C casing w/ float equipment. Land casing and cement with ± 850 sx Lite (35/65) Poz / "C" lead cement + 200 sx Class "C" w/ 1% CaCl. Circulate cement to surface. WOC 8 hrs. Cut off and weld on 8-5/8" x 5-1/2" series 900 flanged casing head. NU BOP and test casing to 1000#. NU choke manifold,

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install mud degasser and flare line. Install rotating head. Test BOP, choke manifold and associated lines. PU 7-7/8" bit, BHA, collars and RIH. Wait on cement total of 18 hrs before drilling plug.

4. Drill 7-7/8" hole utilizing FW circulating outside reserve pit adding MF-55 for solids. Surveys every 500', max deviation 5 deg., max. change 1-1/2% per 100'.
5. At $\pm 10,200'$, (**KOP**), turn into steel pits and mud up by adding gel for viscosity of 32 – 34 and lower fluid loss to <15 cc by adding starch. RU directional company and MWD equipment. Run gyro. PU directional BHA and directionally drill w/ 7-7/8" bit using a build rate @ 3 deg / 100'. EOB 25 deg. Drill tangent pilot hole w/ 25 deg angle to $\pm 11,600'$. Estimated top of Strawn lime @ 11,355'. DST's possible in Wolfcamp section $\pm 10,400'$ and Strawn porosity $\pm 11,420'$. Drill 7-7/8" hole to $\pm 60'$ below last Strawn drilling break. Circ. and condition hole for logs. POOH w/ DP, Collars & directional BHA. Run open hole log suite consisting of GR / CNL / FDL and DIL / MSL from TD to intermediate casing. GR / CNL to surface. Evaluate Strawn formation for election to run 5-1/2" casing and complete.
6. If elect to complete, RIH w/ DP and circulate for casing. Spot 17.5 – 18 #/gal cement KO plug across Strawn interval to $\pm 100'$ above top of Strawn lime. POOH w/ DP and PU bit, BHA, DC's and DP and RIH to TOC. Drill and dress off cmt. KO plug to $\pm 2'$ below Strawn lime top. POOH and lay down BHA, DC's & DP.
7. Run $\pm 11,355'$ of 5-1/2", 17 #/ft, N-80 & S-95, LT&C casing w/ float equipment. Land casing and cement with ± 450 sx (50/50) Poz/ "H" lead cement w/ appropriate friction reducers and retarders + 400 sx Poz/ "C" tail cement w/ appropriate additives. Cement volume based upon open hole logs with sufficient volume to bring cement up inside intermediate casing to $\pm 4,200'$. WOC 8 hrs. Cut off and weld on 5-1/2"x 2-7/8" series 900 flanged tubing head. NU BOP and test casing to 2000#. NU choke manifold, choke lines, gas buster and flare line. Test BOP, choke manifold and associated lines. Install rotating head. Jet steel pits
8. PU 4-3/4" bit, directional BHA and RIH on 2-7/8" AOH drill pipe to top of plug. DO plug, float collar, shoe jt. and shoe w/ FW treated w/ sodium bicarb and/or SAPP. After drilling cement, mud up with Starpac II/MF-55/DCS light low viscosity system for 8.4 ppg., 30-32 viscosity with a FL of 8 cc's or less. Directional drill curve w/ build rate of 60 deg/100 ft to turn well to horizontal in Strawn porosity target. Drill horizontal section in Strawn porosity to projected BHL of 950' FSL and 1,500' FWL, Sec 7, T16S, R36E. Control well and record orientation, depth, angle, and coordinates per directional drilling contractor and NMOCD requirements. To aid in hole cleaning, utilize XCD-polymer for small periodic viscous sweeps.
9. Upon reaching BHL target estimated @ TVD @ 11,420', MVD @ $\pm 11,855'$, total displacement $\pm 450'$. Lay down DP & BHA. RD rotary drilling rig.
10. RU well service unit. NU BOP and PU 2-7/8" N-80 tbg and RIH to OH TD. Circulate hole clean w/ 2% KCL water. RU acid stimulation company and spot 15% MCA through OH interval. POOH w/ tbg & PU 5-1/5" x 2-7/8" loc-set FO pkr. w/ on/off tool and profile nipple. RIH and set pkr. @ $\pm 11,270'$ & NU flowing wellhead. Acidize Strawn formation w/ spot acid + volume of additional acid to be determined upon pay interval. RU swab and swab and test well. Complete as flowing completion or install BPU if required. RD well service unit. Restore location.