



**HARTMAN-BLACK USW A 1, HARTMAN-BLACK USW B 1, HARTMAN-BLACK USW C 1, HARTMAN-BLACK USW D 1**

Pad Drilling Program

11/28/2023

Area: Cuero West	County: De Witt
Objective: DEVELOPMENT	Pad Size: 4

*At ConocoPhillips, our work is never so urgent or important that we cannot take the time to do it safely and in an environmentally prudent manner.*

The information provided in this drilling program is prepared to assist the on-site drilling representatives in planning and conducting drilling operations. It is not the intent of this document to be followed verbatim and without question, but instead to serve as a guide. It is expected that the Drilling Representative(s) will question and discuss operational practices, utilizing all available resources including, but not limited to, the **Eagle Ford Basis of Design, Standard Operating Procedure**, and the **ConocoPhillips Well Control Manual**. Operational parameters can and will be modified on-site as dictated by hole conditions and observed trends. It is imperative to observe and document actual drilling parameters while drilling and make adjustments as required to achieve set objectives.

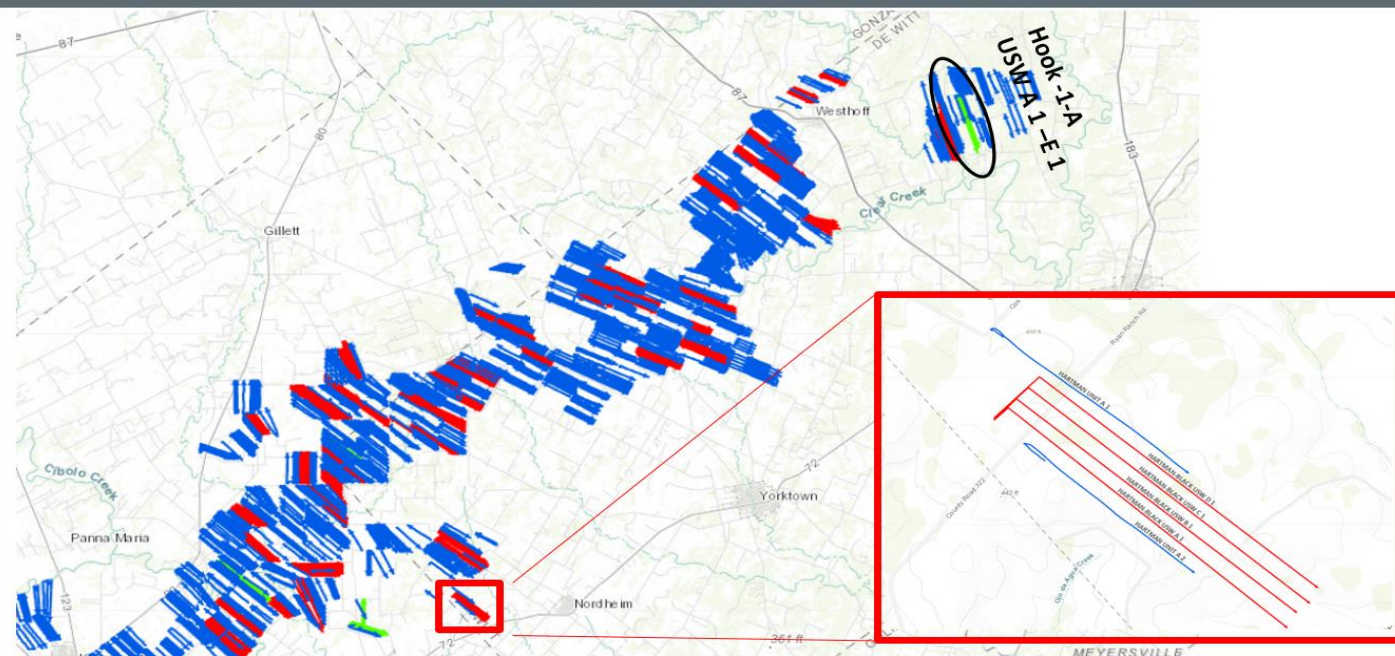
Prepared by: \_\_\_\_\_  
Taylor Daughtrey  
Drilling Engineer

Approved by: \_\_\_\_\_  
Robert Taliaferro  
Engineering Supervisor

Approved by: \_\_\_\_\_  
Brian Sexton  
Drilling Superintendent

***Any deviation from this program requires an MOC approved by the Drilling Superintendent and Engineering Supervisor***

## Field Overview (~35 miles SW)



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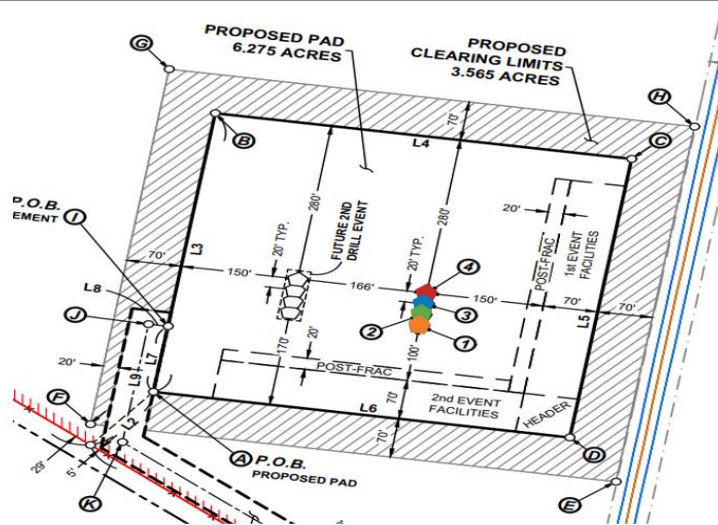
## Drill Order

### Surface

1. Hartman-Black **USW D 1**
2. Hartman-Black **USW C 1**
3. Hartman-Black **USW B 1**
4. Hartman-Black **USW A 1**

### Production

1. Hartman-Black **USW D 1** (L1)
2. Hartman-Black **USW C 1** (L2)
3. Hartman-Black **USW B 1** (L1)
4. Hartman-Black **USW A 1** (L2)

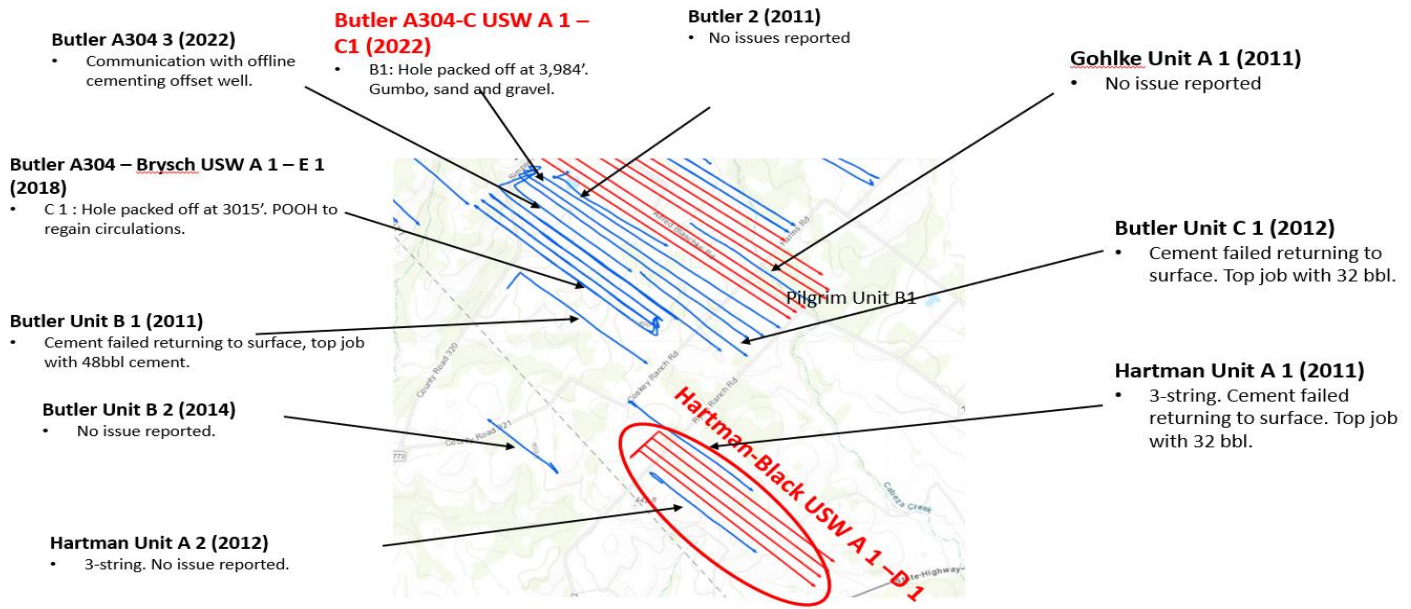


- PROPOSED SURFACE LOCATION:**  
BURLINGTON RESOURCES  
O & G CO LP  
HARTMAN-BLACK USW A 1  
AS-STAKED ON 01/11/2023  
X = 2,422,825  
Y = 400,667 (NAD27 TSC)  
Elev. 414.0' (NAVD 1988)  
LAT. 28° 55' 41.44" N (NAD27)  
LONG. 97° 40' 41.22" W  
LAT. 28° 55' 42.36" N (NAD83/86)  
LONG. 97° 40' 42.21" W
- PROPOSED SURFACE LOCATION:**  
BURLINGTON RESOURCES  
O & G CO LP  
HARTMAN-BLACK USW B 1  
AS-STAKED ON 01/11/2023  
X = 2,422,828  
Y = 400,687 (NAD27 TSC)  
Elev. 414.3' (NAVD 1988)  
LAT. 28° 55' 41.84" N (NAD27)  
LONG. 97° 40' 41.18" W  
LAT. 28° 55' 42.56" N (NAD83/86)  
LONG. 97° 40' 42.18" W
- PROPOSED SURFACE LOCATION:**  
BURLINGTON RESOURCES  
O & G CO LP  
HARTMAN-BLACK USW C 1  
AS-STAKED ON 01/11/2023  
X = 2,422,831  
Y = 400,596  
Elev. 414.1' (NAVD 1988)  
LAT. 28° 55' 41.84" N (NAD27)  
LONG. 97° 40' 41.15" W  
LAT. 28° 55' 42.75" N (NAD83/86)  
LONG. 97° 40' 42.14" W
- PROPOSED SURFACE LOCATION:**  
BURLINGTON RESOURCES  
O & G CO LP  
HARTMAN-BLACK USW D 1  
AS-STAKED ON 01/11/2023  
X = 2,422,834  
Y = 400,526  
Elev. 414.0' (NAVD 1988)  
LAT. 28° 55' 42.03" N (NAD27)  
LONG. 97° 40' 41.11" W  
LAT. 28° 55' 42.95" N (NAD83/86)  
LONG. 97° 40' 43.10" W

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## Offset Map – Surface Issues



## Risks and Mitigations – Surface Hole

- **Risk 1 : Hole packing off and lost returns**

- 1 offset well experienced hole packing off and lost returns
  - Monitor drilling parameters trend, adjust pump rate and ROP accordingly
  - Consider to circulate 1-2min to flush cuttings farther above BHA before making connections
  - Stage up pump cautiously with drill pipe rotation to break the gels if there is a long pause between connections
  - Be prepared for hole packing off and discuss best practices

- **Risk 2 : Offset well communications while drilling**

- 1 surface holes had communication with neighbor wells.
  - Monitor target well on returns for signs of communication
  - WOC for neighbor well until 500psi UCA if communication is noticed

- **Risk 3 : Cement failed returning to surface**

- 3 surface cement didn't get returns to surface, top jobs.
  - Circulate 1.5x BU before pumping cement to condition the wellbore for cementing.
  - Review and prepare for top job as needed.

- **Section goals**

- Manage hole packing off, avoid losses
- Set surface casing in competent shales
- Success offline cement jobs
- Safe & Efficient Surface Moves



# Offset Map – Production Holes

## Butler A304 3 (2022) L2

- 1 motor failure at 15,860'.
- No other issue is reported.
- **13.5ppg max MW**

## Butler A304 – Brysch USW A 1 – E 1 @ 701 (2018)

- A1-U2: Well started ballooning after BHA trip at 18,898' w/ **13.3ppg MW. 13.4ppg max MW.** Toe valve opened, SI, WOC and set RP.
- B 1-L2: Annulus flow after production cement job. WOC and bled pressure. **13.3ppg max MW.**
- C 1-L1: Floats failed, annulus flow. WOC. Set RBP. **13.4ppg max MW.**
- D 1-L2: No issues. **13.4ppg max MW.**
- E 1-U2: Floats failed. WOC and bled pressure, set RBP. **13.6ppg max MW.**
- 701-AC: (AC) MW 12.8ppg.

## Butler Unit B 1 (2011) L2

- 3-string
- 2 motors and 1 MWD failure in curve and lateral.
- No other issue is reported. **13.8ppg max MW.**

## Butler Unit B 2 (2014) L2

- Vertical BHA failure.
- No issue is reported. **13.3ppg max MW.**

## Hartman Unit A 2 (2012) Multi

- 3-string slim hole. **14.5ppg max MW.**
- Annulus flowing after cementing job. WOC. Bled off as pressure reaches 1850psi.

## Butler A304-C USW A 1 – C 1 and Brysch-Butler A 1(2022)

- A 1-L1: Gamma failure @17,594'. Weight up from **13.2ppg to 13.4ppg MW.** Well breathing @3bph. Hole tight. Increased back ground gas while circulating. BROOH, spot LCM and mud cap for BHA trips.
- Wash and cut mud back to **13.2ppg** for drilling. **13.6ppg max MW**
- B1-L2: 2 MWD failures. Cement plug didn't bump. Floats failed. WOC. Set RBP. **13.6ppg max MW** at TD.
- C 1-L1: Lost circulation at 20,178' while drilling w/ 13.2ppg MW. Attempted to open Churchill sub, no success, well stabilized with 325-400gpm. Continued to drill with **13.2ppg. 13.5ppg max MW.**
- Brys A1-L1: Lost circulations at 19,700'. Pumped LCM pills, was able to resume drilling with 500gpm. Differentially stuck at 21,275'. Unable to free pipe. Severing above BHA. ST at 14,989' with **12.8ppg MW. TD with 13.2 ppg MW. 13.5ppg max MW.**

## Butler A304 2 (2011) L2

- 3-string
- 2 x bailout BHAs.
- No issue reported. **13.5ppg max MW.**

## Gohlke Unit A 1 (2011) L2

- 3-string
- 2 x bailout BHAs.
- No issue reported. **13.5ppg max MW.**

## Butler Unit C 1 (2012) L2

- 3-string
- 2 motor failures and 2 MWD failures in curve and lateral
- **13.6ppg max MW.**

## Hartman Unit A 1 (2011) Multi

- 3-string slim hole.
- 7-5/8" casing differential stuck. Worked free.
- High downhole temperature 320deg. TD with **13.6ppg MW. 13.8ppg max MW.**
- Cement plug bumped 14 bbls early. Annulus flowing. WOC. Bled off as pressure reaches 1222psi.

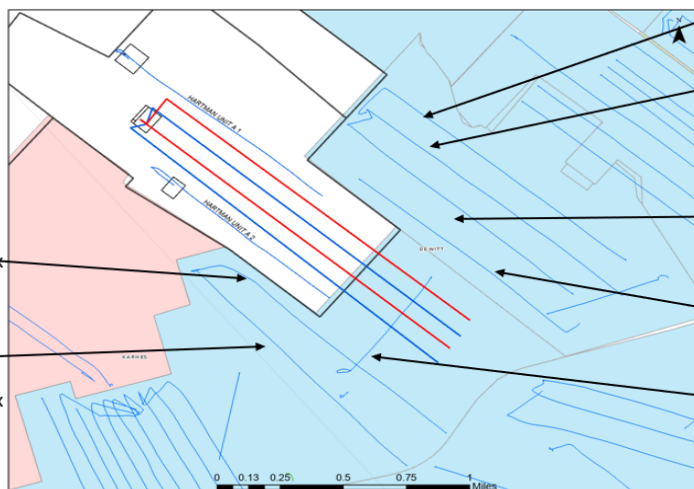
# Repsol Offset Wells

## Blackwell Gas Unit 1 1H

- 2012
- 3-string (13-3/8", 9-5/8, 5-1/2 x 4-1/2")
- 19,661'

## Blackwell Gas Unit 1 2H

- 2012
- 3-string (13-3/8", 9-5/8, 5-1/2 x 5")
- 19,704'



## Blackwell Gas Unit 2 C 1 H

- 2012
- 3-string (13-3/8, 9-5/8, 5-1/2")
- 19,947'

## Blackwell Gas Unit 2 C 2 H

- 2014
- 3-string (13-3/8, 9-5/8, 5-1/2")
- 20,133'

## Blackwell Gas Unit 2 C 3 H

- 2014
- 3-string (13-3/8, 9-5/8, 5-1/2")
- 19,465'

## Blackwell Gas Unit 2 2

- 2011
- 3-string (13-3/8, 9-5/8, 5-1/2")
- 19,010'

## Blackwell Gas Unit 1 1

- 2008
- 3-string (9-5/8, 7', 4-1/2")
- 16,010'

# Risks and Mitigations – Production Hole

- **Risk #1: Lost circulations and wellbore breathing**

- The recently drilled wells experienced well breathing and lost circulations due to offset well frac and productions.
- Keep the mud weight and properties within planned ranges.
- Stage up pump after connections, and extremely cautious to re-establish circulation after a pause of drilling.

- **Risks #2: Differential sticking and stuck pipe**

- Keep the mud weight and properties within planned ranges.
- Keep monitoring hole condition for signs of differential sticking. Adjust mud weight and properties accordingly.
- Keep the pipe moving, avoid stationary for long time.

- **Section goals**

- Manage well breathing and lost circulations.
- Drill lateral to TD with 2 curve/lateral BHAs.
- Float casing in with wet shoe.

## OFFSET OPERATOR # of Csg Strings



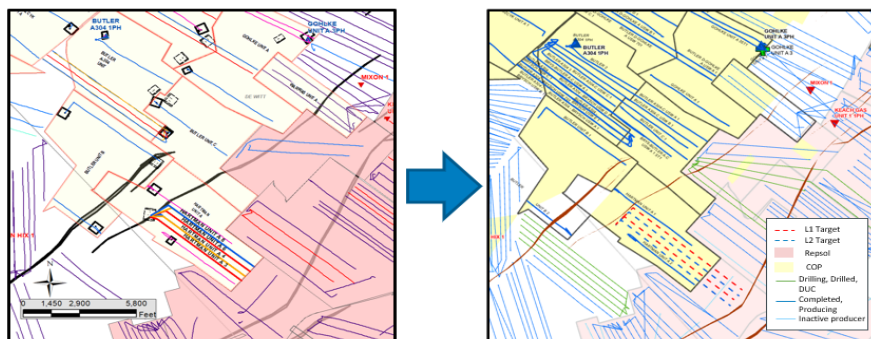


## LAND – Hartman-Black USW A1, B1, C1, D1

- Depths lying deeper than the stratigraphic equivalent of the base of the Eagle Ford Shale Formation, as seen in the BROG Hooks #1 well (API 42-123-32193) at a depth of 13,087' are not unitized and should not be produced
- If wellbores traverse any depth below the stratigraphic equivalent of the base of the Eagle Ford formation as defined above:
  - Sidetrack the well
- Ensure each well remains at legal a location off the unit boundaries since surrounded by non-operated acreage (Repsol)
- Surface
  - Contact Lyndsay Drahuschak with any surface issues: 832-486-2851



## Project Summary



On average increase P2P by 2584' with Repsol JV Opportunity

	Step-out	P2P	TMD	Dip	Azimuth	Target	P2P Δ
HARTMAN-BLACK USW A 1	431	7195	22874	87	130	L2	2552
HARTMAN-BLACK USW B 1	691	7115	22789	87	129	L1	2562
HARTMAN-BLACK USW C 1	1046	7164	22849	87	129	L2	2728
HARTMAN-BLACK USW D 1	1379	7046	22757	87	129	L1	2497

Justification	Discretionary Infill
Exp vs. Dev	DEVELOPMENT
LRP Ranking	P60 - P70
Spud Date	11/8/2023
Critical Date	None
Rig Name	H&P 256
DSM Status	Pre-Ready to Implement
Unit Size	671 acres
SUE & SSUE	SUE required & SSUE required
Yield	133-139 bbls/mmc
Tests	NA
Collision Risk	No AC Issues identified
Multi-Well Pad	4 well Q12021
Type Curve	Q12023_EF_PH1_G25_80_HL_15ftCS_HIP
T, P, Thickness	338 F, 12865-12891 psi, 178 ft
Closest Pilot Hole(s)	BUTLER A304 1PH, LONG 01 1PH
FE Data Collection	Standard

Rig H&P 256		Trials, Goals, ECD Limit				V2
Trials						
<div>- Utilize WBS in the production hole to prepare the well for higher MW, than planned, when needed on 1st well and as needed on following wells</div> <div>- Utilize NOV agitator for curve/lateral and lateral BHAs to improve build rate and ROP</div> <div>- Planning to TD approx. 250' prior to large fault at toe</div> <div>- Floating casing on all wells / wet shoe design - unless high gas is seen or mud cap is used</div> <div>- All wells are JV with Repsol</div>						
Goals						
<div>1. Continue to strive for the attainable goal of <b>ZERO</b> recordable incidents</div> <div>2. Reduce sliding time in vertical section, continue to utilize and optimize digital roadmap</div> <div>3. 2-run C/L bha - no curve bailouts</div> <div>4. 100% &lt;24hr curve</div> <div>5. &lt; 2.5 day/well TT<div>- No major mud loss or communication events</div><div>- No sidetracks - steer wells with no geologic issues</div><div>- Less reaming casing down, less reaming out of Wilcox</div></div> <div>6. &lt;16 days spud to TD avg</div>						
Phase Performance Targets		Dispensations				
Phase	Target	Well	Planned SF	Risk Level	MCR or Dispensation	Dispensation Notes
MIRU	2.5	HARTMAN-BLACK USW A 1	1.97		N/A	
SFC-SKID	0.1	HARTMAN-BLACK USW B 1	1.98		N/A	
SFC-DRILL	0.6	HARTMAN-BLACK USW C 1	2.07		N/A	
SFC-CSG	0.5	HARTMAN-BLACK USW D 1	1.54		N/A	
SCG-CMT	0.1					
PROD-MOVE	0.2					
PROD-DRILL-VERT	3.25					
PROD-DRILL-CURVE	0.9					
PROD-DRILL-LAT	10					
PROD-CSG	2.5					
PROD-CMT	0.5	**Risk category/workflow is outlined in the GCR Wellbore Collision Management Field Wide Practice.				
PROD-WHDBOP	0.15	Notes				
SPUD-TD (AVG)	15.55	All wells on pad have lowest planned SF greater than 1.5.				
SPUD-RR (AVG)	18.7					
RR-RR (AVG)	18.8					
PAD DAYS	77.7					
Wilcox ECD Limit					14.3 PPG	

H&P 256		Anti-Collision				V2
HARTMAN-BLACK USW A 1						
Offset Well	Min. SF	Min Op SF	MD	Planned SF < 1.5?	Where is SF < 1.5?	SF < 1? (MCR Req'd)
Hartman Unit A 2	1.97	1.595	19,125'	No		No
HARTMAN-BLACK USW B 1						
Offset Well	Min. SF	Min Op SF	MD	Planned SF < 1.5?	Where is SF < 1.5?	SF < 1? (MCR Req'd)
Hartman-Black USW A1	1.98	0.087	10,375'	No		No
HARTMAN-BLACK USW C 1						
Offset Well	Min. SF	Min Op SF	MD	Planned SF < 1.5?	Where is SF < 1.5?	SF < 1? (MCR Req'd)
Hartman-Black USW B1	2.07	1.715	21,475'	No		No
HARTMAN-BLACK USW D 1						
Offset Well	Min. SF	Min Op SF	MD	Planned SF < 1.5?	Where is SF < 1.5?	SF < 1? (MCR Req'd)
Hartman Unit A 1	1.54	1.224	17,575'	No		No



Rig H&P 256			Well Bore Diagram HARTMAN-BLACK USW A 1 Target: L2				V2	
			PSHL: (N,E)	400467'	2422825'	GL Elevation: 415.48'	API #: 42-123-35317	Network #: 10453742
			PBHL: (N,E)	395597'	2429228'	KB Elevation: 441.48'	KB to GL: 26'	APD Permit #: 893144
Formation	MD (ft)	TVD (ft)	Section Info			Risks	Notes	
20" Conductor	120	120	WBM	Surface BHA 12-1/4" PDC Bit  8.5" 7/8 - 4.0 S 1.5 FBH, 0.166 RPG  Surface MW 9 ppg - 9.5 ppg		Gumbo	Surface  <b>1. (2/19) Offset gumbo/packing off issues, 1 issue cmt communication.</b> <b>2. Mudloggers call TD on 1st well. Must have min. 80% shale. GYRO 3/4 WELLS - 1st well doesn't need it.</b> 3. Fluid Pro Dewatering for surface. Watch MBT's. <b>4. Pump caliper sweep, if wash casing, pump another.</b> <b>5. Casing set ~4,400'. Don't exceed 4,500' MD on surface (SCE depth), don't set shallower than 500' (GAU).</b> 6. Tail CMT required to cover 20% of the CSG length or 1,000ft, whichever is less. (Before XS) 7. 100%/30% (lead/tail) excess for surface cmt <b>8. (3/19) Offset cement returns failed getting to surface, performed top job.</b>	
				Pack Off				
				Loss communication cmt				
<b>Water Board Min Depth: 500</b> <b>Casing Exception Depth: 4500</b>						No returns to surf on cmt		
Surface TD	4,400'	4,399'	OBM	Vertical BHA 8 3/4" Ulterra SPL616  7" 1.83° slick FBH, 6.9, 7/8, 0.25 rpg  Vertical MW 11.8 ppg - 12.8 ppg			Vertical  1. 1st well drill conservatively and pay close attention to drilling parameters while entering/exiting the Wilcox, watch for torque spikes/stalls  2. 1st well use Stage 3 WBS and if needed on other 3 wells.  3. Pump sweeps per sweep standardization - can add LCM for prevention or as needed  <b>4. Follow Vertical Roadmap</b>	
Perform Surface FIT to 14.5 ppge @ CSG Shoe +10' New Formation. Test casing to 2,000 psi						Transitions		
Sparta	4,723'	7,256'				Losses & Ballooning		
Queen City	5,064'	7,854'						
Upper Wilcox	6,276'	9,356'				ECD Management		
Middle Wilcox	7,257'	10,387'						
Lower Wilcox	7,855'	7,854'						
Midway Shale	9,357'	9,356'						
Poth SD	10,388'	10,387'						
Olmos	11,982'	11,970'						
KOP	13,143'	13,118'						
				Curve/Lateral BHA Baker 406TS 7" 2.25° FBH, 8.4, 5/6, 0.35 rpg  Curve MW 12.8 ppg - 13.2 ppg  Lateral MW 13.2 ppg TD MW 13.2ppg - 13.5 ppg			Curve/Lateral  1. Every survey from KOP to TD will have to be sent to MagVar for a correction. 2. Follow standardized sweep document. Only Pump sweeps in lateral as needed <b>3. Building on 10s.</b> <b>4. Curve: 525-550 GPM, don't fluctuate gpms unless build rate or loss issues occur, maintain consistent flow rate.</b> 5. If DLS>15 deg needed to land, <b>STOP drilling</b> and consult Houston Engineering <b>6. Utilizing NOV's On Demand Agitator in C/L BHA</b>  7. Monitor hole conditions and watch for pack off tight/hole in the lateral while tripping	
Pecan Gap	13,154'					Hole instability		
A. CHALK	13,253'	13,230'						
EF_UPPER	13,479'	13,436'						
EF_LOWER	13,574'	13,510'						
Landing	14,051'	13,692'					TD and Casing Running  1. Perform standard 5 stand clean up cycle. <b>2. This well using 15K float shoe + collar from Arsenal (3 plug system / wet shoe)</b> 3. 10%/10% (lead/tail) excess for production cement	
Formation Tops from Reference Well HARTMAN-BLACK USW A 1								
Total Depth			21494' MD	13687' TVD				
Casing Information								
Surface		Casing Type		Length				
Section 1		9-5/8" J55 36# BTC		4400				
BTM Plug		HES BOT 24T 5 WIPER NR		Top Plug	HES TOP 24T 5 WIPER NR			
Production		Casing Type		Bottom	Tool	Run		
Section 1		uction Casing(5.5" 23# P110-S, TXP		6532	Float Sub	YES		
Section 2		ction Casing (5.5" 23# P110-ICY, TXP		TD	Toe-Valve:	NO		
BTM Plug		750 PSI - Arsenal			Sleeves:	NO		
Mid Plug		2,500 PSI - Arsenal		Top Plug	2,500 PSI - Arsenal			
Cement Information								
				Surface		Production		
				Lead	11.8 ppg	Lead		14.3 ppg
				Tail	14.5 ppg	Tail		16.4 ppg
Density (ppg)				Lead	409 bbl	Lead		230 bbl
				Tail	64 bbl	Tail		438 bbl
Volume (bbl)				Lead	100%	Lead		10%
				Tail	30%	Tail		10%
% Excess								

Rig H&P 256			Well Bore Diagram HARTMAN-BLACK USW B 1 Target: L1				V2	
ConocoPhillips			PSHL: (N,E)	400487'	2422828'	GL Elevation: 415.15'	API #: 42-123-35318	Network #: 10453900
			PBHL: (N,E)	395962'	2429427'	KB Elevation: 441.15'	KB to GL: 26'	APD Permit #: 893145
Formation	MD (ft)	TVD (ft)	Section Info		Risks	Notes		
20" Conductor	120	120	WBM	Surface BHA 12-1/4" PDC Bit 8.5" 7/8 - 4.0 S 1.5 FBH, 0.166 RPG Surface MW 9 ppg - 9.5 ppg	Gumbo	Surface  1. (2/19) Offset gumbo/packing off issues, 1 issue cmt communication. 2. Mudloggers call TD on 1st well. Must have min. 80% shale. GYRO 3/4 WELLS - 1st well doesn't need it. 3. Fluid Pro Dewatering for surface. Watch MBT's. 4. Pump caliper sweep, if wash casing, pump another. 5. Casing set ~4,400'. Don't exceed 4,500' MD on surface (SCE depth), don't set shallower than 500' (GAU). 6. Tail CMT required to cover 20% of the CSG length or 1,000ft, whichever is less. (Before XS) 7. 100%/30% (lead/tail) excess for surface cmt 8. (3/19) Offset cement returns failed getting to surface, performed top job.		
				Pack Off				
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KOP	13,089'	13,031'			Curve/Lateral  1. Every survey from KOP to TD will have to be sent to MagVar for a correction. 2. Follow standardized sweep document. Only Pump sweeps in lateral as needed 3. Building on 10s. 4. Curve: 525-550 GPM, don't fluctuate gpm's unless build rate or loss issues occur, maintain consistent flow rate. 5. If DLS>15 deg needed to land, STOP drilling and consult Houston Engineering 6. Utilizing NOV's On Demand Agitator in C/L BHA  7. Monitor hole conditions and watch for pack off tight/hole in the lateral while tripping  TD and Casing Running  1. Perform standard 5 stand clean up cycle. 2. This well using 15K float shoe + collar from Arsenal (3 plug system / wet shoe) 3. 10%/10% (lead/tail) excess for production cement			
			Curve/Lateral BHA Baker 406TS 7" 2.25" FBH, 8.4, 5/6, 0.35 rpg Curve MW 12.8 ppg - 13.2 ppg					
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Rig H&P 256			Well Bore Diagram HARTMAN-BLACK USW C 1 Target: L2				V2			
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			PBHL: (N,E)	396189'	2429707'	KB Elevation: 440.9'	KB to GL: 26'	APD Permit #: 893146		
Formation	MD (ft)	TVD (ft)	Section Info		Risks	Notes				
20" Conductor	120	120	WBM	Surface BHA 12-1/4" PDC Bit 8.5" 7/8 - 4.0 S 1.5 FBH, 0.166 RPG Surface MW 9 ppg - 9.5 ppg	Gumbo	<b>Surface</b> <b>1. (2/19) Offset gumbo/packing off issues, 1 issue cmt communication.</b> <b>2. Mudloggers call TD on 1st well. Must have min. 80% shale. GYRO 3/4 WELLS - 1st well doesn't need it.</b> 3. Fluid Pro Dewatering for surface. Watch MBT's. <b>4. Pump caliper sweep, if wash casing, pump another.</b> <b>5. Casing set ~4,400'. Don't exceed 4,500' MD on surface (SCE depth), don't set shallower than 500' (GAU).</b> 6. Tail CMT required to cover 20% of the CSG length or 1,000ft, whichever is less. (Before XS) 7. 100%/30% (lead/tail) excess for surface cmt <b>8. (3/19) Offset cement returns failed getting to surface, performed top job.</b>				
					Pack Off					
					Loss communication cmt					
					No returns to surf on cmt					
<b>Water Board Min Depth: 500</b> <b>Casing Exception Depth: 4500</b>			OBM	Vertical BHA 8 3/4" Ulterra SPL616  7" 1.83" slick FBH, 6.9, 7/8, 0.25 rpg  Vertical MW 11.8 ppg - 12.8 ppg		<b>Vertical</b> 1. 1st well drill conservatively and pay close attention to drilling parameters while entering/exiting the Wilcox, watch for torque spikes/stalls  2. 1st well use Stage 3 WBS and if needed on other 3 wells.  3. Pump sweeps per sweep standardization - can add LCM for prevention or as needed  <b>4. Follow Vertical Roadmap</b>				
Surface TD	4,400	4,400								
Perform Surface FIT to 14.5 ppg @ CSG Shoe +10' New Formation. Test casing to 2,000 psi										
Sparta	4,723'	7,256'			Transitions					
Queen City	5,064'	7,854'			Losses & Ballooning					
Upper Wilcox	6,276'	9,356'								
Middle Wilcox	7,257'	10,387'								
Lower Wilcox	7,855'	7,854'								
Midway Shale	9,357'	9,356'			ECD Management					
Poth SD	10,388'	10,387'								
Olmos	11,982'	11,970'								
KOP	13,234	13,122			<b>Curve/Lateral</b> 1. Every survey from KOP to TD will have to be sent to MagVar for a correction. 2. Follow standardized sweep document. Only Pump sweeps in lateral as needed <b>3. Building on 10s.</b> <b>4. Curve: 525-550 GPM, don't fluctuate gpm's unless build rate or loss issues occur, maintain consistent flow rate.</b> 5. If DLS>15 deg needed to land, <b>STOP drilling</b> and consult Houston Engineering <b>6. Utilizing NOV's On Demand Agitator in C/L BHA</b>  7. Monitor hole conditions and watch for pack off tight/hole in the lateral while tripping					
A. CHALK 13,253' 13,230' EF_UPPER 13,479' 13,436' EF_LOWER 13,574' 13,510'			Curve/Lateral BHA Baker 406TS 7" 2.25" FBH, 8.4, 5/6, 0.35 rpg Curve MW 12.8 ppg - 13.2 ppg  Lateral MW 13.2 ppg TD MW 13.2ppg - 13.5 ppg							
<b>Landing</b> 14,115 13,659				<b>TD and Casing Running</b> 1. Perform standard 5 stand clean up cycle. <b>2. This well using 15K float shoe + collar from Arsenal (3 plug system / wet shoe)</b> 3. 10%/10% (lead/tail) excess for production cement						
Formation Tops from Reference Well HARTMAN-BLACK USW A 1										
Total Depth 21532' MD 13707' TVD										
Casing Information							Cement Information			
Surface	Casing Type	Length					Surface		Production	
Section 1	9-5/8" J55 36# BTC	4400								
BTM Plug	HES BOT 24T 5 WIPER NR	Top Plug	HES TOP 24T 5 WIPER NR							
Production	Casing Type	Bottom	Tool				Run			
Section 1	uction Casing(5.5" 23# P110-S, TXP	6532	Float Sub				YES			
Section 2	ction Casing (5.5" 23# P110-ICY, TXP	TD	Toe-Valve:				NO			
BTM Plug	750 PSI - Arsenal		Sleeves:				NO			
Mid Plug	2,500 PSI - Arsenal	Top Plug	2,500 PSI - Arsenal							

Rig H&P 256			Well Bore Diagram HARTMAN-BLACK USW D 1 Target: L1				V2		
ConocoPhillips			PSHL: (N,E)	400526'	2422834'	GL Elevation: 414.61'	API #: 42-123-35320		
			PBHL: (N,E)	396556'	2429878'	KB Elevation: 440.61'	Network #: 10453830		
						KB to GL: 26'	APD Permit #: 893148		
Formation	MD (ft)	TVD (ft)	Section Info		Risks	Notes			
20" Conductor	120	120	WBM	Surface BHA 12-1/4" PDC Bit 8.5" 7/8 - 4.0 S 1.5 FBH, 0.166 RPG Surface MW 9 ppg - 9.5 ppg	Gumbo	<b>Surface</b> <b>1. (2/19) Offset gumbo/packing off issues, 1 issue cmt communication.</b> <b>2. Mudloggers call TD on 1st well. Must have min. 80% shale. GYRO 3/4 WELLS - 1st well doesn't need it.</b> 3. Fluid Pro Dewatering for surface. Watch MBT's. <b>4. Pump caliper sweep, if wash casing, pump another.</b> <b>5. Casing set ~4,400'. Don't exceed 4,500' MD on surface (SCE depth), don't set shallower than 500' (GAU).</b> 6. Tail CMT required to cover 20% of the CSG length or 1,000ft, whichever is less. (Before XS) 7. 100%/30% (lead/tail) excess for surface cmt <b>8. (3/19) Offset cement returns failed getting to surface, performed top job.</b>			
				Pack Off					
				Loss communication cmt					
<b>Water Board Min Depth: 500</b> <b>Casing Exception Depth: 4500</b>					No returns to surf on cmt				
Surface TD	4,400	4,399	OBM	Vertical BHA 8 3/4" Ulterra SPL616  7" 1.83" slick FBH, 6.9, 7/8, 0.25 rpg		<b>Vertical</b> 1. 1st well drill conservatively and pay close attention to drilling parameters while entering/exiting the Wilcox, watch for torque spikes/stalls  2. 1st well use Stage 3 WBS and if needed on other 3 wells.  3. Pump sweeps per sweep standardization - can add LCM for prevention or as needed  <b>4. Follow Vertical Roadmap</b>			
Perform Surface FIT to 14.5 ppg @ CSG Shoe +10' New Formation. Test casing to 2,000 psi									
Sparta	4,723'	7,256'		Vertical MW 11.8 ppg - 12.8 ppg	Transitions				
Queen City	5,064'	7,854'			Losses & Ballooning				
Upper Wilcox	6,276'	9,356'							
Middle Wilcox	7,257'	10,387'			ECD Management				
Lower Wilcox	7,855'	7,854'							
Midway Shale	9,357'	9,356'							
Poth SD	10,388'	10,387'							
Olmos	11,982'	11,970'							
KOP	13,266	13,079							
					Curve/Lateral BHA Baker 406TS 7" 2.25° FBH, 8.4, 5/6, 0.35 rpg Curve MW 12.8 ppg - 13.2 ppg		<b>Curve/Lateral</b> 1. Every survey from KOP to TD will have to be sent to MagVar for a correction. 2. Follow standardized sweep document. Only Pump sweeps in lateral as needed <b>3. Building on 10s.</b> <b>4. Curve: 525-550 GPM, don't fluctuate gpm's unless build rate or loss issues occur, maintain consistent flow rate.</b> 5. If DLS>15 deg needed to land, <b>STOP drilling</b> and consult Houston Engineering <b>6. Utilizing NOV's On Demand Agitator in C/L BHA</b>  7. Monitor hole conditions and watch for pack off tight/hole in the lateral while tripping		
			Curve MW 12.8 ppg - 13.2 ppg						
			Lateral MW 13.2 ppg TD MW 13.2ppg - 13.5 ppg						
A. CHALK	13,253'	13,230'			Hole instability				
EF_UPPER	13,479'	13,436'							
EF_LOWER	13,574'	13,510'							
Landing	14,139	13,599				<b>TD and Casing Running</b> 1. Perform standard 5 stand clean up cycle. <b>2. This well using 15K float shoe + collar from Arsenal (3 plug system / wet shoe)</b> 3. 10%/10% (lead/tail) excess for production cement			
Formation Tops from Reference Well HARTMAN-BLACK USW A 1									
Total Depth 21462' MD 13659' TVD									
Casing Information				Cement Information					
Surface		Casing Type	Length	Surface		Production			
Section 1	9-5/8" J55 36# BTC	4400							
BTM Plug	HES BOT 24T 5 WIPER NR	Top Plug	HES TOP 24T 5 WIPER NR						
Production		Casing Type	Bottom	Tool	Run				
Section 1	uction Casing(5.5" 23# P110-S, TXP	6532	Float Sub	YES					
Section 2	ction Casing (5.5" 23# P110-ICY, TXP	TD	Toe-Valve:	NO					
BTM Plug	750 PSI - Arsenal		Sleeves:	NO					
Mid Plug	2,500 PSI - Arsenal	Top Plug	2,500 PSI - Arsenal						



COP Contacts			
Position	Name	Cell Phone	Email
Drilling Engineer	Taylor Daughtrey	(806) 274-1918	taylor.hickman@conocophillips.com
Drilling Supervisor	Robert Taliaferro	(432) 924-2103	Robert.Taliaferro@conocophillips.com
Drilling Superintendent	Kurt Alexa	(907) 787-9637	Kurt.j.alex@conocophillips.com
Drilling Superintendent	Brian Sexton	(830) 299-8873	brian.sexton@conocophillips.com
Drilling Field Superintendent	Lupe Rios	(830) 400-9041	Lupe.rios@conocophillips.com
Drilling Field Superintendent	James Taylor	(830) 299-8873	james.l.taylor@conocophillips.com
Drilling Supervisor (Day)	Ronald Thornton	(318) 801-3636	ronald.thornton@contractor.conocophillips.com
Drilling Supervisor (Day)	Justin Richardson	(432) 530-7073	justin.a.richardson@conocophillips.com
Drilling Supervisor (Night)	Pierre Castro	(909) 231-5713	pierre.castro@contractor.conocophillips.com
Drilling Supervisor (Night)	Monroe Alvarez	(830) 305-0526	monroe.alvarez@contractor.conocophillips.com
Ops Geologist	Rob McConnell	(832) 917-2053	rob.h.mcconnell@conocophillips.com
Ops Geologist	Robert Scruggs	(346) 203-0037	Robert.R.Scruggs@conocophillips.com
Geology Supervisor	Todd Lippincott	(281) 794-1417	todd.a.lippincott@conocophillips.com
Completions Engineer	Brian Broussard	(337) 967-0516	brian.t.broussard@conocophillips.com
Asset Geologist	Austin Krehel	(346) 205-1681	austin.krehel@conocophillips.com
Reservoir Engineer	Phillip Estrada	(281) 352-5012	phillip.n.estrada@conocophillips.com
Land	Lindsay Smith	(281) 206-5340	Lindsay.R.Smith@conocophillips.com
Regulatory Coordinator	Stephanie Tomkinson	(281) 253-9794	stephanie.tomkinson@conocophillips.com

Service Contacts				
Company	Item	Contact	Cell Phone	Email
H&P Rig	Rig	H&P 256	(432) 200-0789	drillingrighp256@conocophillips.com
H&P	Motive Performance	Aaron Malik	(361) 648-0862	Aaron.Malik@hpinc.com
H&P	Remote Ops	Motive Command Center	(469) 203-0201	command.center@hpinc.com
H&P DAT	Auto Slide	Eli King	(512) 644-7344	Eli.king@hpinc.com
Fluid Pro	Dewatering	Morgan	(307) 851-1452	-
Pro Directional	MWD Coordinator	Chris Hendrix	(214) 620-7936	chendrix@prodirectional.com
Pro Directional	Directional Coordinator	Kyle Dewberry	(936) 525-9719	kdewberry@prodirectional.com
Pro Directional	Well Planner	Rolando Garza	(713) 438-4165	RGarza@prodirectional.com
Scientific Drilling	Gyro	Wes Shedd	(832) 527-7720	wes.shedd@scientificdrilling.com
Cameron	Wellhead	Jana Byrne	(832) 278-8097	JRumsey@slb.com
Baroid	Drilling Fluids	Abdel Zoungrana	(361) 813-1951	abdel.zoungrana@halliburton.com
Halliburton	Cementing	Aroldo Garza	(956) 285-2903	aroldo.garza@halliburton.com
Halliburton	Wireline	Joel Waldem	(303) 240-4756	joel.walden@haliburtion.com
Butch's	Casing Equipment Rep	Joel Fitzgerald	(979) 324-7546	jfitzgerald@eeslp.com

Emergency Contacts
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**Axiom - (281) 419-7063**

**Nordheim Fire Department - (361) 275-5734**

**Otto Kaiser Memorial Hospital (Kenedy) - (830) 583-3401**

**Runge Ambulance - (830) 780-3931**

**Wild Well Control (1st call) - (281) 784-4700**

**Boots & Coots (2nd call) - (281) 931-8884**

Alerts (Only list well-specific alerts)						
Alerts	Low Limit	High Limit	Section	Alert Level		Wells
ECD at casing shoe	N/A	14.5	Vertical	Email		
Gamma	50	100	Lateral	Text		
Overpull Limits	N/A	30	General	Text		Wilcox (All Wells)
ROP	N/A	550	Vertical	In-App		All Wells
Operational torque limit	N/A	19	Casing	Email		
Window (directional)	N/A	15	Vertical	Text		All wells
Window (directional)	N/A	20	Lateral	Text		All wells

Rig H&P 256		Operation Summary				V2	
<p><b>A plate with the well name and number will be welded on the North side of the Cellar deck. Use this to identify the well along with SUP and plat. In case of any discrepancies contact DE immediately. <i>NOTE: wells are not in numerical order, check all paperwork before comencing operations</i></b></p>							
Well	HARTMAN-BLACK USW A 1	HARTMAN-BLACK USW B 1	HARTMAN-BLACK USW C 1	HARTMAN-BLACK USW D 1			
SFC. Order	4	3	2	1			
PRD. Order	4	3	2	1			
<p><i>Refer to the Eagle Ford BOD and SOP for detailed information related to Drilling Operations, Well Category, PCE Class and Well Control Plan.</i></p>							
1	<p><b>Drill surface hole to planned depth. Do not exceed SCE depth when setting casing. (Phase code: SURFACE-DRILL)</b></p>						
2	<p>Circulate hole clean, pump nut plug fluid caliper, POOH, rack back 12-1/4" BHA. If excess drag is seen, consult DE about wiper trip. (Phase code: SURFACE-CASING)  <b>*GRYO FOR ALL WELLS AFTER FIRST SURFACE</b></p>						
3	<p>R/U casing equipment. P/U and run 9-5/8" casing. Land casing with landing joint as per vendor's wellhead procedure. Circulate B/U. (Phase code: SURFACE-CASING) <b>DO NOT RIG UP CSG VALVE DURING CIRC</b></p>						
4	<p>R/D casing equipment. (Phase code: SURFACE-CASING)</p>						
5	<p>Walk rig to next well as per skid order. R/U cementers to cement the offline while picking up surface drilling assembly.  <b>NOTES FOR SURFACE CEMENTING:</b>            - Pump a dyed fluid caliper to determine hole volume            - Circulate 1 well bore volume with Fig 4 mud weight and look for abnormally high pressures            - All surface cement jobs will be preceded with a 100 bbl weighted spacer</p>						
6	<p>N/U and Test BOPs per EF SOP. Install wear bushing. Latch onto <b>8.75" vertical BHA</b> and scribe MWD. TIH to within one stand of float shoe. Conduct choke drill and circulate through the gas buster prior to drilling shoe track. (Phase code: PROD1-MOVE)</p>						
7	<p>Drill out shoe track and 10' of new formation. Perform <b>FIT to a 14.5 ppg</b> EMW. Record pressures in WellView. (Phase code: PROD1-MOVE)</p>						
8	<p>There are no AC concerns with offset wells on this pad <b>IN THE VERTICAL</b>. Verify AC with as drilled surveys from wells on pad.</p>						
9	<p>According to directional plan, drill VERTICAL section <b>as per plan</b> (Phase code: PROD1-Drill Vert)</p>						
10	<p>Drill to 100' above KOP. POOH with the vertical BHA and PU, TIH with curve/lateral BHA. (Phase code: PROD1-DRILL-VERTICAL)</p>						
11	<p>According to directional plan, drill CURVE section (Phase code: PROD1-Drill Curve), surveying every 45' according to the procedure below:            a. Carefully increase MW per plan prior to landing curve.            b. Directional Driller will need to plot surveys on wall plot after every survey while the separation is less than 2 or, every third survey if the separation factor is greater than 2.</p>						
12	<p>If BHA is operating within parameters, continue drilling the LATERAL, surveying every stand. If SF is below 1.5, alert DE and well planner. Real time AC will be run for all surveys. Refer to the EF SOP for additional anti-collision guidance. <b>Notify engineer/geologist of plan for TD for review and approval. DE/Ops Geologist will send an e-mail confirmation of approval.</b> (Phase code: PROD1-DRILL-Lateral)</p>						
13	<p>Upon reaching TD, backream 5 stands @ 2 ft/min and rotating at 80 RPM. <b>Do not begin to trip until shakers show the hole is clean.</b> Pull 5 stands wet, then if drag is acceptable, pump slug and TOH. If a tight spot is seen record depth for WV records and RIH with one stand and circulate one bottoms up. Repeat if another tight spot is seen, remember to record depth of tight spots. (Phase code: PROD1-CASING)</p>						
14	<p>TOH laying down drill pipe. If excess drag is seen, RIH with 2 stands and circulate 1 bottoms up. Perform wiper trip to KOP only if needed. (Phase code: PROD1-CASING)</p>						
15	<p><b>Pull wear bushing.</b> (Phase code: PROD1-CASING)</p>						
16	<p>P/U and run casing per casing layout. (Phase code: PROD1-CASING)</p>						
17	<p>Fill casing on the fly with fill-up hose. Break circulation at KOP and TD. Keep casing string moving. (Phase code: PROD1-CASING)</p>						
18	<p>When landing casing, P/U Landing joint and mark a scribe line to line up flutes in hanger with casing valves to allow the stack to drain freely after cement job. Circulate a bottoms up on full open choke. (Phase code: PROD1-CASING)</p>						
19	<p>R/U cementing equipment and install FOSV below cement head. <b>***If well locks up and pressure spikes, pressure up to the test pressure of the lines and hold, it is important to get cement out of the well ***</b> (Phase code: PROD1-Cement)            ---&gt; <b><u>This pad is using a WET SHOE DESIGN</u></b></p>						
20	<p>Cement casing in place, per WET SHOE PROCEDURE, begin displacement with 5 bbls of MMCR water and then finish displacing with fresh water. Rupture the middle plug. <b>Bump the top plug and walk it up until the top plug ruptures. Once the top plug ruptures, pump 5 bbls, shut down, and check floats. If top plug does not bump, stop at 5 bbls over calculated displacement.</b> (Phase code: PROD1-Cement)  <b>NOTE: When inputting cement volumes into WellView, be sure to include a calculation for top of cement with 10% and 30% washout in the comments section.</b></p>						
21	<p>Monitor annular returns for 30 minutes. If well is flowing, immediately shut-in and monitor pressure while contacting field superintendent and DE. (Phase code: PROD1-Cement)</p>						
22	<p>If the floats do not hold, or the annulus is not static, WOC until tail reaches 1,500 psi and flow check. If well is static install BPV and proceed to N/D. If well will not flow check, then a RBP must be set to maintain barriers. (Phase code: PROD1-Cement)</p>						
23	<p>Drain the stack. If stack does not drain easily, close the annular around the landing joint and blow the stack out with air through either the choke or kill line. L/D landing joint, install packoff and test. (Phase code: PROD1-WHDBOP)</p>						
24	<p>N/D BOPE and install TA cap as per vendor's wellhead procedure. Test to 10,000 psi (Phase code: PROD1-WHDBOP)  <b>NOTE: While installing wellheads, ensure that the correct wellhead is placed on the corresponding well as per the plat and SUP.</b></p>						
25	<p><b>Release rig and skid/walk to the next well or prepare to move.</b></p>						

## 5 ½ " Wet Shoe Cement Job Procedure

Arsenal Float Equipment	Arsenal Cement Plugs
5 ½" 15K Float Shoe	<b>Bottom Plug</b> – 750 or 1,250 psi burst
5 ½" 15K Float Collar – 3 Plug System	<b>Middle Plug</b> – 2,500 psi burst
	<b>Top Plug</b> – 2,500 psi burst

1. RU cement pumps, bulk trucks, booster pumps, high pressure iron, and ancillary equipment per normal procedure.
2. Install 10K FOSV and autoclave double valve with gauge.
3. Test high-pressure iron and cement head to **8,000 psi**.
4. Drop **Bottom Plug**.
5. Pump Spacer volume, Lead cement, and Tail cement. Shut down and flush lines.
6. Load and drop **Middle Plug**.
7. Pump 10 bbls of 0.5 gal/bbl MMCR water.
8. Load and drop **Top Plug**.

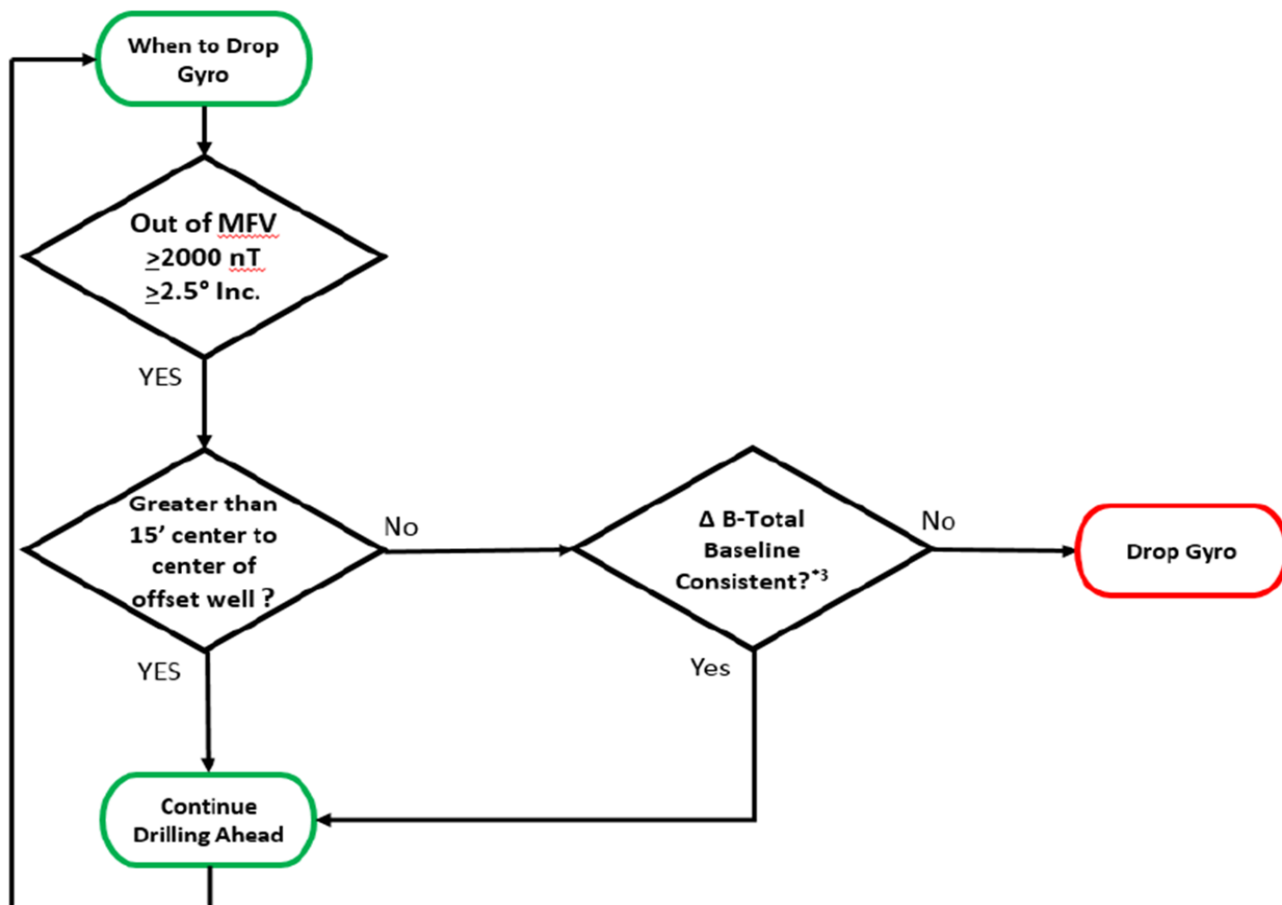
**NOTE:** When breaking off the top cap, ensure the cap seal does not come off due to the vacuum while loading plugs.

9. Begin displacement with 5 bbls of MMCR water, then continue displacing with fresh water until **Top Plug** bumps.
  - a. +/- 10 bbls from **Top Plug** bump you may see a pressure spike from **Middle Plug**. Walk up pressure until **Middle Plug** ruptures, then continue to pump until **Top Plug** bumps.
  - b. If the **Middle Plug** does not rupture and the max pressure (iron test pressure) is reached, shut down and check floats.
  - c. If **Top Plug** does not bump, stop at 5 bbls over calculated displacement.
10. When **Top Plug** bumps, walk pressure up until plug ruptures. Once ruptured, pump 5 bbls, shut down and check floats.
11. If you reach max pressure (iron test pressure) and still no **Top Plug** rupture, shut down. Hold pressure 5 min, bleed off, and check floats.
  - a. If floats hold, rig down cementers while monitoring annulus for 30 min.
  - b. If floats do not hold, shut in well and contact Sup/DE.

**NOTE:** if need 12k cement head, contact HES prior to cement callout to notify them to bring it.  
With the 12k head we can test iron to 10k prior to starting job.

## Recommended Spud Parameters

Depth	100' - 300'	300' - 500'	500' - 1000'	1000' - 2000'	2000'+
GPM	400-500	500-650	650-800	800	650 - 800
ROP	300-400	400-500	500-800	800	500-800
RPM	40-50	50-70	70-80	80-100	70-80







H&P 256			Bottom Hole Assemblies				V2
BHA #1: 12 1/4" Surface Hole						BHA #1: Drilling Parameters	
Bit:	12-1/4" Ulterra U616S or Security PDC w/ 9x11/32" nozzles					Pump Rate	400-900
Motor:	8.5" 7/8 - 4.0 stage with 1.5 deg fixed bend w/ 11.75" near-bit stab					WOB	15K-40K
BHA Components		No. of Jts.	Top Conn.	Btm Conn.	Length	Cum.	RPM 90-120
12-1/4" PDC Bit		1	6 5/8" Reg		1	1	Comments *0.84 in2 TFA *Ensure enough soap and SAPP are in the mud system to prevent gumbo. *Follow Surface Parameters Chart *Circulate cuttings above BHA prior to shutting pumps down and setting slips to make a hook. *Ensure WOB reset procedure is being followed.
8.5" 7/8 - 4.0 S 1.5 FBH, 0.166 RPG		1	6 5/8" Reg	6 5/8" Reg	30.97	31.97	
11-3/4" Stabilizer		1	6 5/8" Reg	6 5/8" Reg	6	37.97	
UBHO Sub		1	6 5/8" Reg	6 5/8" Reg	3.89	41.86	
NMDC - MWD		1	6 5/8" Reg	6 5/8" Reg	29.93	71.79	
NMDC		1	6 5/8" Reg	6 5/8" Reg	29.35	101.14	
FILTER SUB		1	6 5/8" Reg	6 5/8" Reg	5.57	106.71	
XO		1	4 1/2" IF	6 5/8" Reg	2.06	108.77	
5-1/2" Drill Pipe As Needed			UGPDS-55	UGPDS-55		108.77	
BHA #2: 8 3/4" Vertical						BHA #2: Drilling Parameters	
Bit:	8-3/4" Baker D506TWSX w/ 9x12/32" nozzles (Ulterra SPL 616 PDC as backup)					Pump Rate	Standard Parameters
Motor:	7" 1.83° slick FBH, 6.9, 7/8, 0.25 rpg, 4 3/4" btb					WOB	Standard Parameters
BHA Components		No. of Jts	Top Conn.	Btm Conn.	Length	Cum.	RPM Standard Parameters
8 3/4" Ulterra SPL616		1	4 1/2" Reg		1	1	Comments *0.8353 in2 TFA Follow drillout procedure to avoid pack off. Do not exceed ROP limits Reduce RPMs when drilling through Wilcox transitions to prevent bit damage See vertical drilling parameters, attached. Do not exceed 450 fph at any point. Ensure WOB reset procedure is being followed.
7" 1.83° slick FBH, 6.9, 7/8, 0.25 rpg		1	4 1/2" IF	4 1/2" Reg	34.56	35.56	
Pony Collar		1	4 1/2" IF	4 1/2" IF	8.19	43.75	
UBHO Sub		1	4 1/2" IF	4 1/2" IF	2.91	46.66	
NMDC (MWD)		1	4 1/2" IF	4 1/2" IF	30.5	77.16	
Flex Collar		1	4 1/2" IF	4 1/2" IF	28.47	105.63	
Pony Collar		1	4 1/2" IF	4 1/2" IF	8.41	114.04	
Float Sub		1	4 1/2" IF	4 1/2" IF	2.75	116.79	
Filter Sub		1	4 1/2" IF	4 1/2" IF	5.65	122.44	
7.25 x/o IF x UGPDS-55			UGPDS-55	4 1/2" IF	1.91	124.35	
5-1/2" Drill Pipe As Needed			UGPDS-55	UGPDS-55			
BHA #3: 8 3/4" Curve/Lateral						BHA #3: Drilling Parameters	
Bit:	Baker 406TS 3" inch gauge length w/ 9x18/32" nozzles					Pump Rate	450-550
Motor:	7" 2.25° slick FBH, 8.4, 5/6, 0.35 rpg, 4.9' btb (350gpm min flow rate)					WOB	25K-40K
BHA Components		No. of Jts	Top Conn.	Btm Conn.	Length	Cum.	RPM 70-80
Baker 406TS		1	4 1/2" Reg		1	1	Comments **Consult backreaming decision tree -2.2273 in2 TFA -Limit lateral ROP to 170 fph throughout entire section to maintain smooth wellbore. -Monitor torque to determine when sweeps/circulation are necessary -5 stand cleanup cycle at TD. *Ensure WOB reset procedure is being followed. PowerPoint for this procedure has been sent. Contact DE if the file needs to be resent. <b>-Agitator should be ~3,000'-3,500' behind MWD</b>
7" 2.25° FBH, 8.4, 5/6, 0.35 rpg		1	4 1/2" IF	4 1/2" Reg	34.66	35.66	
Pony Collar		1	4 1/2" IF	4 1/2" IF	8.19	43.85	
UBHO Sub		1	4 1/2" IF	4 1/2" IF	2.91	46.76	
NMDC (MWD)		1	4 1/2" IF	4 1/2" IF	30.5	77.26	
Flex Collar		1	4 1/2" IF	4 1/2" IF	28.47	105.73	
Pony Collar		1	4 1/2" IF	4 1/2" IF	8.41	114.14	
Float Sub		1	4 1/2" IF	4 1/2" IF	2.75	116.89	
Filter Sub		1	4 1/2" IF	4 1/2" IF	5.65	122.54	
7.25 x/o IF x UGPDS-55		1	UGPDS-55	4 1/2" IF	1.91	124.45	
5-1/2" Drill Pipe As Needed		98	UGPDS-55	UGPDS-55	3070	3194.45	
7" NOV On Demand Agitator		1	UGPDS-55	UGPDS-55	14.5	3208.95	
5-1/2" Drill Pipe As Needed			UGPDS-55	UGPDS-55			

H&P 256				Mud, Cement, Casing				V2	
Mud Weights:									
Hole Section	A 1	B 1	C 1	D 1					
Surface Start	9.0	9.0	9.0	9.0					
Surface TD	9.5	9.5	9.5	9.5					
Drill Out	11.8	11.8	11.8	11.8					
KOP	12.8	12.8	12.8	12.8					
Landing Point	13.2	13.2	13.2	13.2					
TD	13.2	13.2	13.2	13.2					
Clean Up Cycle	13.5	13.5	13.5	13.5					
Cement Program: Vendor									
	Surf. Lead: 11.8 ppg		Surf Tail: 14.5 ppg		Prod Lead: 14.3 ppg		Prod Tail: 16.4 ppg		Comments
Well	XS%	Vol	XS%	Vol	XS%	Vol	XS%	Vol	
HARTMAN-BLACK USW A 1	100%	409 bbl.	30%	64 bbl.	10%	230 bbl.	10%	438 bbl.	
HARTMAN-BLACK USW B 1	100%	409 bbl.	30%	64 bbl.	10%	232 bbl.	10%	428 bbl.	
HARTMAN-BLACK USW C 1	100%	409 bbl.	30%	64 bbl.	10%	234 bbl.	10%	436 bbl.	
HARTMAN-BLACK USW D 1	100%	409 bbl.	30%	64 bbl.	10%	237 bbl.	10%	430 bbl.	
Casing Program									
Detailed Surface Casing Design				Surface Centralizer Program					
Item/Vendor			Length (ft) (approx.)		Type	Size	Qty	Positioning	
HAL Super Seal II Float Shoe			2.0		Bow Type (HES)	9-5/8" x 12-1/4"	4	1 @ ± 6’ above FS with stop collar, 1 @ 6’ above/below casing coupling, 1 @ ± 6’ below FC with stop collar	
9-5/8" J55 36# BTC			94						
HAL Super Seal II Float Collar (BTC Threads)			2.0						
9-5/8" J55 36# BTC			As Needed						
					Bow Type (HES)	9-5/8" x 12-1/4"	47	Surface to TD will utilize One 12-1/4" size bow spring centralizer every other joints of casing & 1 per joint in build & drop sections.	
Detailed Production Casing design									
Item/Vendor			Length (ft) (approx.)						
Arsenal 5-1/2" 15ksi Double Valve Float Shoe			2.4						
Arsenal 5-1/2" 15ksi Double Valve Float Collar			2						
5-1/2" P110-ICY 23# casing			As Needed						
5-1/2" P110-ICY 23# TXP Marker Joint			20						
5.5" Arsenal 12K Air-Lock Float Sub			~100' above KOP		Total		51		
5-1/2" P110-ICY 23# TXP			As Needed		Production Centralizer Program				
5-1/2" P110-S 23# TXP			6,500		Type	Size	Qty	Positioning	
Wellhead Hanger			6		Red X	8-1/2" x 5-1/2"	2	Follow casing detail for 15' & 20' pup schematic for Nexgen subs *Tenaris yard*	
5.5" Landing Joint			26						
					Red X	8-1/2" x 5-1/2"	182	1 every joint in lateral and 1 every joint to KOP	
					Red X	8-1/2" x 5-1/2"	28	1 every 4 joints from KOP to 8000' MD	
Plug Program									
Plug	Make	Model		OD					
SFC BTM	HES	BOT 24T 5 WIPER NR		9-5/8"					
SFC TOP	HES	TOP 24T 5 WIPER NR		9-5/8"	Total		211		
PROD BTM	Arsenal	750 PSI		5.5"					
PROD MIDDLE	Arsenal	2,500 PSI		5.5"					
PROD TOP	Arsenal	2,500 PSI		5.5"					



**Wells:** HARTMAN-BLACK USW A 1, HARTMAN-BLACK USW B 1, HARTMAN-BLACK USW C 1, HARTMAN-BLACK USW D 1

**County:** De Witt

**Field:** Cuero West

**Rig Phone #:** (432) 200-0789

**Billing Address:** ConocoPhillips  
P.O. Box 2200  
Bartlesville, OK 74005

#### Directions to Lease:

From the intersection of Hwy 72 and FM 81 in Runge Tx travel east on Hwy 72 for 1.5 miles to CR 322 on the left. Follow Cr 322 for 2.5 miles to the lease entrance on the left. Follow the lease road to location.

LATITUDE: 28-55-35.27      LONGITUDE: 97-40-39.22



The **Journey to Zero** begins with the **Life Saving Rules**



#### Emergency Information

Axiom - (281) 419-7063

Nordheim Fire Department - (361) 275-5734

Otto Kaiser Memorial Hospital (Kenedy) - (830) 583-3401

Runge Ambulance - (830) 780-3931

Wild Well Control (1st call) (281) 784-4700

Boots & Coots (2nd call) (281) 931-8884