

OCD Hobbs

HOBBS
OCT 26 2015

14-861

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
APPLICATION FOR PERMIT TO DRILL OR REENTER

RECEIVED

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. SHL: NMNM 27509 BHL: NMLC 071985	
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name	
2. Name of Operator ConocoPhillips Company (217817)		7. If Unit or CA Agreement, Name and No.	
3a. Address P.O. Box 51810 Midland, TX 79710		8. Lease Name and Well No. Battle Axe 27 Federal COM1H 315614	
3b. Phone No. (include area code) (432)688-6938		9. API Well No. 30-025- K2895	
4. Location of Well (Report location clearly and in accordance with any State requirements*) At surface 250' FNL & 245' FEL (NENE) 27-26S-32E (A) At proposed prod. zone 50' FSL & 380' FEL (Lot 1) 34-26S-32E (H)		10. Field and Pool, or Exploratory WC-025 G-08 S263205N:UPR WOLFCAMP1980651	
14. Distance in miles and direction from nearest town or post office* ~47.8 miles northwest of Jal, NM		11. Sec., T. R. M. or Blk. and Survey or Area 27, 26S, 32E	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) SHL: 250' BHL: 50'		12. County or Parish Lea	
16. No. of acres in lease NMNM27509: 729.66 NMLC071985: 209.82		13. State NM	
17. Spacing Unit dedicated to this well 224.93		18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 33'	
19. Proposed Depth 19,270' MD 12974 TWD		20. BLM/BIA Bond No. on file ES0085	
21. Elevations (Show whether DR, KDB, RT, GL, etc.) 3118'		22. Approximate date work will start* 12/01/2015	
		23. Estimated duration 30 Days	

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, must be attached to this form:

- | | |
|--|---|
| 1. Well plat certified by a registered surveyor. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the BLM. |

25. Signature Ashley Berger	Name (Printed/Typed) Ashley Berger	Date 07/27/2015
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Title
Regulatory Specialist

Approved by (Signature) Steve Caffey	Name (Printed/Typed)	Date OCT 22 2015
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Title
FIELD MANAGER

Office
CARLSBAD FIELD OFFICE

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)

K2
10/26/15

Carlsbad Controlled Water Basin

Approval Subject to General Requirements
& Special Stipulations Attached

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

OCT 28 2015

Drilling Program
ConocoPhillips Company
 Battle Axe 27 Federal COM W3 1H
 250' FNL 245' FEL (SHL)
 Sec 27-T26S-R32E
 330' FSL 380' FEL (BHL)
 Sec 34-T26S-R32E
 Lea County, New Mexico

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1. Estimated tops of geological formations:

Geologic Formation at surface: Quaternary

Formation	TVD (ft)
Base Fresh Water	300
Rustler	600
Top Salt	843
Base Salt	4398
* Cherry Canyon	5433
* Brushy Canyon	7043
* Bone Spring Carb	8608
* Avalon	8848
* 1st Bone Spring	9523
* 2nd Bone Spring	10248
* 3rd Bone Spring	10573
* Wolfcamp	11683

2. Estimated depth/thickness of freshwater and/or hydrocarbons:

Water:

Fresh water is anticipated above the Rustler at 300' and will be protected by surface casing at 950' and cemented to surface.

Hydrocarbons:

Oil and gas are anticipated in the formations annotated above (*). These zones will be isolated as necessary.

3. Pressure Control Equipment:

*Please see attached BOPE and Choke Manifold Schematic for more detail. *Multi bowl well head - See COA*

A 13-5/8" BOP system will be installed and tested prior to drilling out of the surface casing shoe. The BOP system will be utilized to drill the intermediate and production hole sections, and will be tested per BLM Onshore Oil & Gas Order No. 2 per each hole section specified in the final column of the table in section four.

Pressure tests will be conducted at the initial installation of the BOPE and again if needed 30 days from the initial test as per BLM Onshore Oil and Gas Order No. 2. BOPE controls will be installed prior to drilling under the surface casing and will be used until the completion of drilling operations. The intermediate 1 and intermediate 2 string will be tested per 5M working system requirements. The production interval will be tested per 10M working system requirements.

See COA

ConocoPhillips Company requests a variance to use a flexible line between the BOP and the choke. The testing and manufacturing specifications for this equipment is attached. The line will be kept as straight as possible with minimum turns.

4. Proposed Casing Program

*All tubulars used for this design will be new.

Hole Size (in)	Casing (in)	Wt/Ft	Grade	Connection	Depth (ft)	Depth (ftTVD)	Depth (ftMD)	BOPE System
17 1/2	13 3/8	54.5	J-55	BTC	0-950	660 950	950	N/A
12 1/4	9 5/8	40.0	L-80	BTC	0- 4550 4480	4550	4550	5M
8 3/4	7 5/8	33.7	P-110	Wedge 523	0-12015	12000	12015	5M
6 5/8	5	21.4	P-110	BTC	0-11515	11500	11515	10M
6 5/8	4 1/2	15.1	P-110	BTC	11515-19949	12974	19949	10M

Drilling Program
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Minimum casing design factors: Burst 1.0, Collapse:1.125, Tensile Strength 1.6 dry / 1.8 buoyant

Hole Size (in)	Casing (in)	Burst	Collapse	Tension	Thread & Cplg. OD (in)	Minimum Clearance (in)
17 1/2	13 3/8	6.07	2.51	20.39	14.375	1.5625
12 1/4	9 5/8	2.31	1.24	6.20	10.625	0.8125
8 3/4	7 5/8	1.87	1.36	3.15	7.775	0.4875
6 5/8	5	1.82	2.35	3.37	5.563	0.5310
6 5/8	4 1/2	1.71	1.70	3.21	5.000	0.8125

5. Proposed Cementing Program

		Volume (sx)	Type	Weight (ppg)	Yield (ft3/sx)	Water (Gal/sx)	Excess	Cement Top
Surface	Lead	530	Class C	13.5	1.73	9.14	100%	Surface
	Tail	310	Class C	14.8	1.35	6.39	100%	650ft
Additives (BWOB): 4% Extender, 2% CaCl2, 0.125 lb/sx LCM, 0.2% Anti-Foam								
Intermediate 1	Lead	1340	Class C	12.9	1.97	10.88	100%	Surface
	Tail	380	Class C	14.8	1.35	6.19	100%	4050ft
Additives (BWOB): 4% Extender, 2% CaCl2, 0.125 lb/sx LCM, 0.2% Anti-Foam								
Intermediate 2	Lead	440	Tuned Light	9.5	3.45	14.38	100%	4050ft
	Tail	140	Class C	13.2	1.61	8.20	100%	11515ft
Additives (BWOB): 0.4% Dispersant, 1 lb/sx Salt, 0.1% Retarder, 0.5% Fluid Loss, 3 lb/sx LCM								
Production	Lead							
	Tail	640	Class H	15.0	2.61	6.00	30%	11515ft
Additives (BWOB): 0.4% Retarder, 0.2% Anti-foam, 0.7 Anti-gelling, 0.4% Fluid Loss, 2% Expanding Agent, 5.0% Silica								

6. Proposed Fluids Program

Depth (ft)	Type	Mud Weight (ppg)	Viscosity	Fluid Loss
0 to 950	Spud Mud	8.4 - 9.3	32-36	NC
950 to 4550	Brine	9.3 - 10.5	28-30	≤5
4550 to 12015	Cut Brine	8.6 - 9.1	30-40	≤5
12015 to 19974	Oil Based Mud	12.0 - 14.0	30-40	≤5

Sufficient fluid volume, weight material, and additives will be available onsite at all times. Visual and electronic mud monitoring equipment will be in place to indicate gain or loss.

7. Formation Evaluation Program

Samples: Dry samples taken 30' from intermediate casing point to TD. GC Tracers KOP to TD.
 Logging: GR/Neutron from base salt to surface. GR from 200' above KOP to TD. Shuttle log in the lateral.

8. Anticipated Wellbore Conditions

	Value	Comments
Bottom Hole Pressure (psi)	7265	Assumes 0.78psi/ft - 0.22psi/ft Partial Evacuation
Bottom Hole Temperature (°F)	202	Assumes 0.01deg/100ft
Abnormal Pressure / Potential Hazards	Losses below Delaware will be mitigated with lost circulation material. Potential overpressure below the top of Wolfcamp will be mitigated with mud weight. If H2S is encountered the operator will comply with the provisions of Onshore Oil and Gas Order No. 6. All personnel will be familiar with all aspects of safe operation being used to drill this well.	

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Lea County, New Mexico

9. Directional Plan:

Kick off Point (ft)	Landing TVD (ft)	Landing MD (ft)	Total Measured Depth (ft)
12416	12974	13316	19974

*ConocoPhillips proposes to drill a vertical wellbore to kick off point and then drill horizontally to TD. Please see the attached directional plan for more detail.

10. Spudder Rig and Skid Operations.

The reasons for using the spudder rig to drill and pre-set surface casing are: Time & Cost Saving.

The "Pinnergy #1" Rig will be used to drill the surface hole and pre-set surface casing on all of the wells in the same pad. Once each surface hole section has been drilled, it will be cased and cemented according to all applicable rules and regulations (Onshore Orders). The wellhead will be nipped up and tested as soon as 13-3/8" surface casing is cut off after the applicable WOC time has been reached. A blind flange of the same pressure rating as the wellhead will be utilized to seal the wellbore on all casing strings. Pressure will be monitored via wing valves on each wellhead section and a means for intervention will be maintained while the drilling rig is not over the well. Spudder rig operation is expected to take 7-10 days for a quad pad and 4-6 days for a dual pad. The BLM will be contacted / notified 24 hours prior to commencing spudder rig operations.

Drilling operation will start with a big Drilling Rig (H&P Flex 3 rig type) and an approved BOP stack will be nipped up and tested on the wellhead before drilling operations resumes on each well. The rig will skid between the wells until each well's section has been drilled as planned (see "Skid-Batch Drilling Operations" Attachment). The BLM will be contacted / notified 24 hours before the big rig moves back on the location.

Once "Spudder Rig" has left the location, The "big Drilling Rig" will be on location within 90 days to drill each well in the Pad as batch drilling operations.

ConocoPhillips MCBU

Permian Delaware Hz New Mexico

BATTLE AXE 27 FEDERAL COM 1H - PS

BATTLE AXE 27 FEDERAL COM 1H - PS

Original Hole

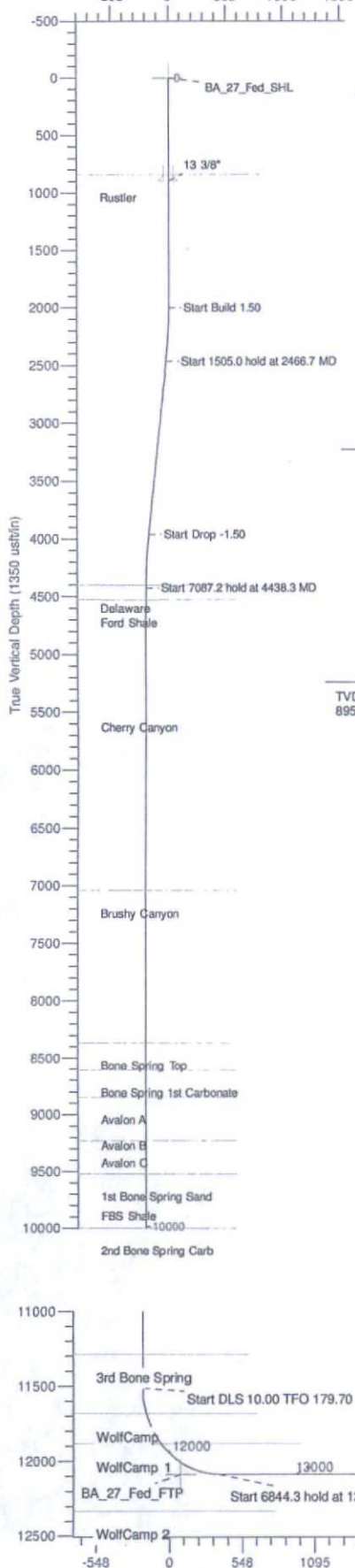
Plan: Prelim Design #1

Standard Planning Report

14 July, 2015



Vertical Section at 179.70° (1350 usft/in)



FORMATION TOPS ALONG WELLPATH

TVDPath	MDPath	Formation
843.0	843.0	Rustler
4398.0	4411.5	Delaware
4528.0	4541.5	Ford Shale
5433.0	5446.5	Cherry Canyon
7043.0	7056.5	Brushy Canyon
8368.0	8381.5	Bone Spring Top
8608.0	8621.5	Bone Spring 1st Carbonate
8848.0	8861.5	Avalon A
9073.0	9086.5	Avalon B
9228.0	9241.5	Avalon C
9523.0	9536.5	1st Bone Spring Sand
9693.0	9706.5	FBS Shale
9998.0	10011.5	2nd Bone Spring Carb
10248.0	10261.5	2nd Bone Spring Sand
10573.0	10586.5	3rd Bone Spring Carbonate
11288.0	11301.5	3rd Bone Spring
11683.0	11699.2	WolfCamp
11882.0	11927.8	WolfCamp 1

PROJECT DETAILS: Permian Delaware Hz New Mexico

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
North Reference: Grid
System Datum: Mean Sea Level
To convert a True Direction to a Grid Direction, Subtract 0.36°
To convert a Magnetic Direction to a True Direction, Add 7.30° East
To convert a Magnetic Direction to a Grid Direction, Add 6.94°

CASING DETAILS

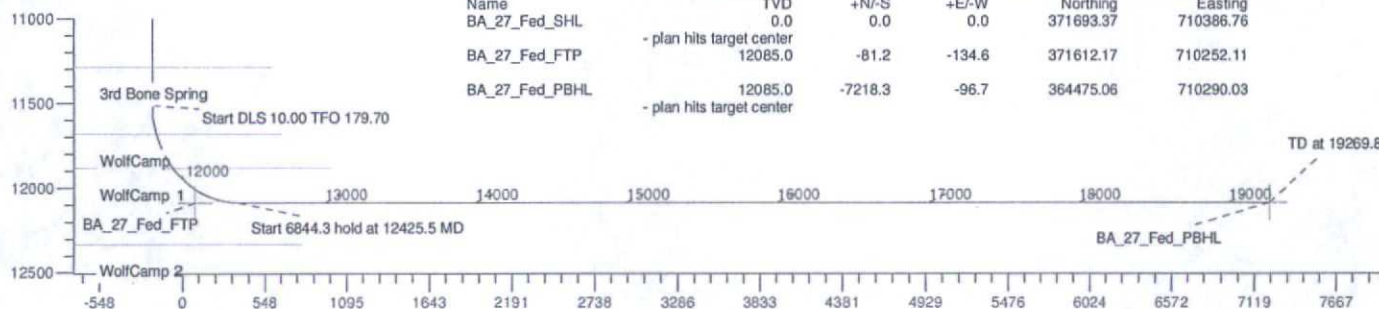
TVD	MD	Name	Size
895.0	895.0	13 3/8"	13-3/8"

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	2000.0	0.00	0.00	2000.0	0.0	0.0	0.00	0.00	0.0	
3	2466.7	7.00	325.83	2465.5	23.6	-16.0	1.50	325.83	-23.6	
4	3971.7	7.00	325.83	3959.3	175.3	-119.0	0.00	0.00	-175.9	
5	4438.3	0.00	0.00	4424.8	198.9	-135.0	1.50	180.00	-199.6	
6	11525.5	0.00	0.00	11512.0	198.9	-135.0	0.00	0.00	-199.6	
7	12425.5	90.00	179.70	12085.0	-374.1	-132.0	10.00	179.70	373.4	
8	19269.8	90.00	179.70	12085.0	-7218.3	-96.7	0.00	0.00	7217.7	

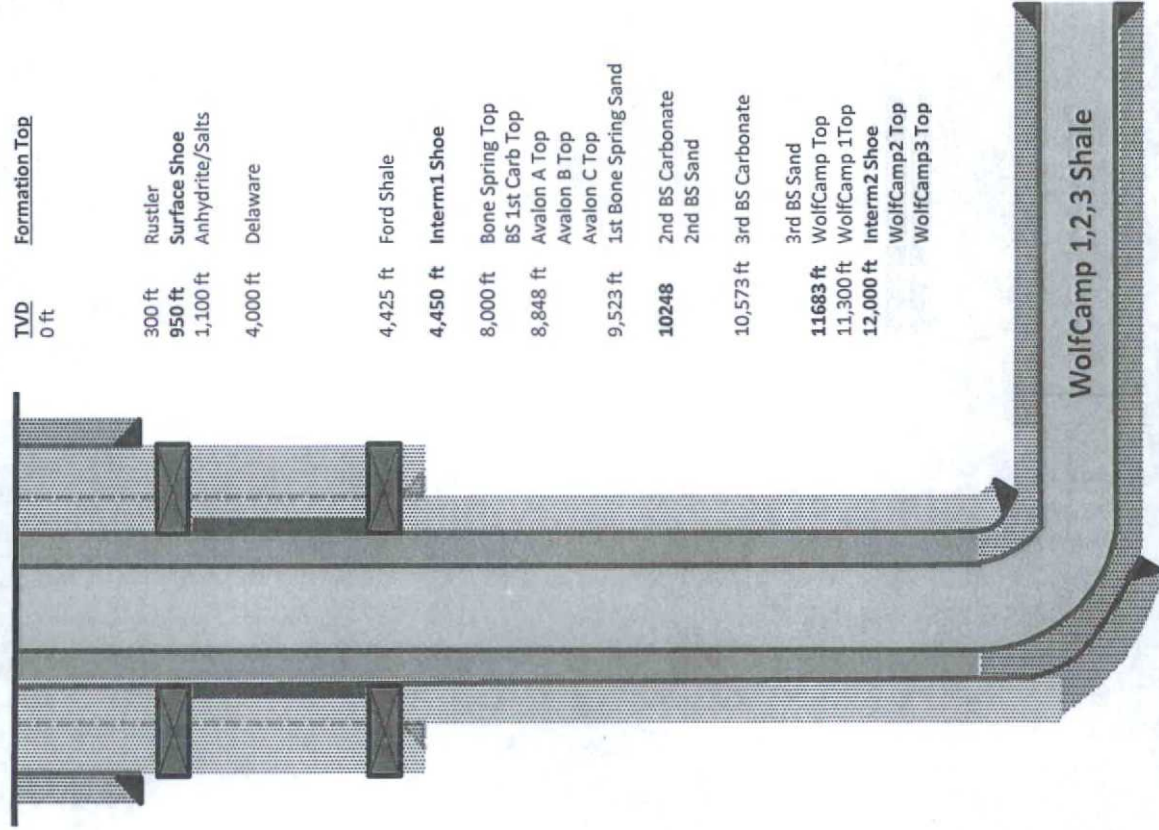
WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
BA_27_Fed_SHL	0.0	0.0	0.0	371693.37	710386.76
BA_27_Fed_FTP	12085.0	-81.2	-134.6	371612.17	710252.11
BA_27_Fed_PBHL	12085.0	-7218.3	-96.7	364475.06	710290.03



Vertical Section at 179.70° (1150 usft/in)

Attachment #2 – Option not to run 9-5/8" Csg



TVD
0 ft

Formation Top

300 ft Rustler

950 ft Surface Shoe

1,100 ft Anhydrite/Salts

4,000 ft Delaware

4,425 ft Ford Shale

4,450 ft Intern1 Shoe

8,000 ft Bone Spring Top

BS 1st Carb Top

8,848 ft Avalon A Top

Avalon B Top

Avalon C Top

9,523 ft 1st Bone Spring Sand

10,248 2nd BS Carbonate

2nd BS Sand

10,573 ft 3rd BS Carbonate

3rd BS Sand

11,683 ft WolfCamp Top

11,300 ft WolfCamp 1Top

12,000 ft Intern2 Shoe

WolfCamp2 Top

WolfCamp3 Top

WolfCamp 1,2,3 Shale

19,300 ft TD
~6,500 ft Lateral

Surface Section:

- Objective: Protect fresh water horizons.
- Drill 17-1/2" hole to +/- 950 ft. "Rustler"
- Mud weight: 8.6 – 9.1 ppg FW-Native Mud
- Set 13-3/8" 54.5# J-55 BTC casing.
- Cement to surface.

Intermediate1 Section (Only for Contingency):

- Objective: Isolate the Salado Salt and Delaware Sand interval.
- Drill 12-1/4" hole to +/- 4,450 ft. "Ford Shale"
- Mud weight: 10.0 ppg Brine.
- Set 9-5/8" 40# L-80 BTC casing.
- Cement to surface.

Intermediate2 Section:

- Objective: Isolate depleted/weak formations above WC1.
- Drill 8-3/4" hole to +/- 12,000 ft. 50'-120' inside WC1 Top.
- Mud weight: 8.9 – 10.5 ppg Brine or OBM w/ 25 ppb WBS
- Set 7-5/8" 29.7# P-110 Tenaris W523 casing.
- Cement to surface.
- 2 or 3-Stage Contingency with 2ea. Packer/Stage Collars
- Bond Coat ~ 3000' of Csg covering the Delaware Sands

Production Section:

- Objective: Provide zonal isolation of production interval and provide medium for stimulation.
- Drill 6-3/4" hole to +/- 18,000ft – 20,000ft. "Production TD"
- Mud Weight: 12.5 – 15.2 ppg OBM.
- Set 5" 18# P-110 TenBlue/TXP casing.
- Cement lap 500 ft above previous shoe (near KOP).

ConocoPhillips

Planning Report

Database: EDM Central Planning
Company: ConocoPhillips MCBU
Project: Permian Delaware Hz New Mexico
Site: BATTLE AXE 27 FEDERAL COM 1H - PS
Well: BATTLE AXE 27 FEDERAL COM 1H - PS
Wellbore: Original Hole
Design: Prelim Design #1

Local Co-ordinate Reference: Site BATTLE AXE 27 FEDERAL COM 1H - PS
TVD Reference: WELL @ 3145.0usft (Original Well Elev)
MD Reference: WELL @ 3145.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project	Permian Delaware Hz New Mexico, Mexico		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	BATTLE AXE 27 FEDERAL COM 1H - PS, Lea County, NM - Section 27 and 34		
Site Position:	Northing:	371,693.37 usft	Latitude: 32° 1' 12.297 N
From: Map	Easting:	710,386.76 usft	Longitude: 103° 39' 16.249 W
Position Uncertainty:	0.0 usft	Slot Radius: 13-3/16"	Grid Convergence: 0.36 °

Well	BATTLE AXE 27 FEDERAL COM 1H - PS, Development - Horizontal		
Well Position	+N/-S	0.0 usft	Latitude: 32° 1' 12.297 N
	+E/-W	0.0 usft	Longitude: 103° 39' 16.249 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft
		Ground Level:	3,118.0 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2015	7/8/2015	7.30	59.93	48,085

Design	Prelim Design #1			
Audit Notes:				
Version:	1	Phase:	PROTOTYPE	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	179.70

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,466.7	7.00	325.83	2,465.5	23.6	-16.0	1.50	1.50	0.00	325.83	
3,971.7	7.00	325.83	3,959.3	175.3	-119.0	0.00	0.00	0.00	0.00	
4,438.3	0.00	0.00	4,424.8	198.9	-135.0	1.50	-1.50	0.00	180.00	
11,525.5	0.00	0.00	11,512.0	198.9	-135.0	0.00	0.00	0.00	0.00	
12,425.5	90.00	179.70	12,085.0	-374.1	-132.0	10.00	10.00	19.97	179.70	
19,269.8	90.00	179.70	12,085.0	-7,218.3	-96.7	0.00	0.00	0.00	0.00	BA_27_Fed_PBHL

ConocoPhillips

Planning Report

Database: EDM Central Planning
 Company: ConocoPhillips MCBU
 Project: Permian Delaware Hz New Mexico
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 Well: BATTLE AXE 27 FEDERAL COM 1H - PS
 Wellbore: Original Hole
 Design: Prelim Design #1

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 TVD Reference: WELL @ 3145.0usft (Original Well Elev)
 MD Reference: WELL @ 3145.0usft (Original Well Elev)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	1.50	325.83	2,100.0	1.1	-0.7	-1.1	1.50	1.50	0.00
2,200.0	3.00	325.83	2,199.9	4.3	-2.9	-4.3	1.50	1.50	0.00
2,300.0	4.50	325.83	2,299.7	9.7	-6.6	-9.8	1.50	1.50	0.00
2,400.0	6.00	325.83	2,399.3	17.3	-11.8	-17.4	1.50	1.50	0.00
2,466.7	7.00	325.83	2,465.5	23.6	-16.0	-23.6	1.50	1.50	0.00
2,500.0	7.00	325.83	2,498.6	26.9	-18.3	-27.0	0.00	0.00	0.00
2,600.0	7.00	325.83	2,597.8	37.0	-25.1	-37.1	0.00	0.00	0.00
2,700.0	7.00	325.83	2,697.1	47.1	-32.0	-47.3	0.00	0.00	0.00
2,800.0	7.00	325.83	2,796.4	57.2	-38.8	-57.4	0.00	0.00	0.00
2,900.0	7.00	325.83	2,895.6	67.3	-45.7	-67.5	0.00	0.00	0.00
3,000.0	7.00	325.83	2,994.9	77.3	-52.5	-77.6	0.00	0.00	0.00
3,100.0	7.00	325.83	3,094.1	87.4	-59.3	-87.7	0.00	0.00	0.00
3,200.0	7.00	325.83	3,193.4	97.5	-66.2	-97.8	0.00	0.00	0.00
3,300.0	7.00	325.83	3,292.6	107.6	-73.0	-108.0	0.00	0.00	0.00
3,400.0	7.00	325.83	3,391.9	117.7	-79.9	-118.1	0.00	0.00	0.00
3,500.0	7.00	325.83	3,491.1	127.7	-86.7	-128.2	0.00	0.00	0.00
3,600.0	7.00	325.83	3,590.4	137.8	-93.6	-138.3	0.00	0.00	0.00
3,700.0	7.00	325.83	3,689.6	147.9	-100.4	-148.4	0.00	0.00	0.00
3,800.0	7.00	325.83	3,788.9	158.0	-107.3	-158.6	0.00	0.00	0.00
3,900.0	7.00	325.83	3,888.2	168.1	-114.1	-168.7	0.00	0.00	0.00
3,971.7	7.00	325.83	3,959.3	175.3	-119.0	-175.9	0.00	0.00	0.00
4,000.0	6.58	325.83	3,987.4	178.1	-120.9	-178.7	1.50	-1.50	0.00
4,100.0	5.08	325.83	4,086.9	186.5	-126.6	-187.1	1.50	-1.50	0.00
4,200.0	3.58	325.83	4,186.6	192.7	-130.8	-193.4	1.50	-1.50	0.00
4,300.0	2.08	325.83	4,286.5	196.8	-133.6	-197.5	1.50	-1.50	0.00
4,400.0	0.58	325.83	4,386.5	198.7	-134.9	-199.4	1.50	-1.50	0.00
4,438.3	0.00	0.00	4,424.8	198.9	-135.0	-199.6	1.50	-1.50	0.00
4,500.0	0.00	0.00	4,486.5	198.9	-135.0	-199.6	0.00	0.00	0.00
4,600.0	0.00	0.00	4,586.5	198.9	-135.0	-199.6	0.00	0.00	0.00
4,700.0	0.00	0.00	4,686.5	198.9	-135.0	-199.6	0.00	0.00	0.00
4,800.0	0.00	0.00	4,786.5	198.9	-135.0	-199.6	0.00	0.00	0.00
4,900.0	0.00	0.00	4,886.5	198.9	-135.0	-199.6	0.00	0.00	0.00
5,000.0	0.00	0.00	4,986.5	198.9	-135.0	-199.6	0.00	0.00	0.00

ConocoPhillips

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Well: BATTLE AXE 27 FEDERAL COM 1H - PS
Wellbore: Original Hole
Design: Prelim Design #1

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TVL Reference: WELL @ 3145.0usft (Original Well Elev)
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North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,100.0	0.00	0.00	5,086.5	198.9	-135.0	-199.6	0.00	0.00	0.00
5,200.0	0.00	0.00	5,186.5	198.9	-135.0	-199.6	0.00	0.00	0.00
5,300.0	0.00	0.00	5,286.5	198.9	-135.0	-199.6	0.00	0.00	0.00
5,400.0	0.00	0.00	5,386.5	198.9	-135.0	-199.6	0.00	0.00	0.00
5,500.0	0.00	0.00	5,486.5	198.9	-135.0	-199.6	0.00	0.00	0.00
5,600.0	0.00	0.00	5,586.5	198.9	-135.0	-199.6	0.00	0.00	0.00
5,700.0	0.00	0.00	5,686.5	198.9	-135.0	-199.6	0.00	0.00	0.00
5,800.0	0.00	0.00	5,786.5	198.9	-135.0	-199.6	0.00	0.00	0.00
5,900.0	0.00	0.00	5,886.5	198.9	-135.0	-199.6	0.00	0.00	0.00
6,000.0	0.00	0.00	5,986.5	198.9	-135.0	-199.6	0.00	0.00	0.00
6,100.0	0.00	0.00	6,086.5	198.9	-135.0	-199.6	0.00	0.00	0.00
6,200.0	0.00	0.00	6,186.5	198.9	-135.0	-199.6	0.00	0.00	0.00
6,300.0	0.00	0.00	6,286.5	198.9	-135.0	-199.6	0.00	0.00	0.00
6,400.0	0.00	0.00	6,386.5	198.9	-135.0	-199.6	0.00	0.00	0.00
6,500.0	0.00	0.00	6,486.5	198.9	-135.0	-199.6	0.00	0.00	0.00
6,600.0	0.00	0.00	6,586.5	198.9	-135.0	-199.6	0.00	0.00	0.00
6,700.0	0.00	0.00	6,686.5	198.9	-135.0	-199.6	0.00	0.00	0.00
6,800.0	0.00	0.00	6,786.5	198.9	-135.0	-199.6	0.00	0.00	0.00
6,900.0	0.00	0.00	6,886.5	198.9	-135.0	-199.6	0.00	0.00	0.00
7,000.0	0.00	0.00	6,986.5	198.9	-135.0	-199.6	0.00	0.00	0.00
7,100.0	0.00	0.00	7,086.5	198.9	-135.0	-199.6	0.00	0.00	0.00
7,200.0	0.00	0.00	7,186.5	198.9	-135.0	-199.6	0.00	0.00	0.00
7,300.0	0.00	0.00	7,286.5	198.9	-135.0	-199.6	0.00	0.00	0.00
7,400.0	0.00	0.00	7,386.5	198.9	-135.0	-199.6	0.00	0.00	0.00
7,500.0	0.00	0.00	7,486.5	198.9	-135.0	-199.6	0.00	0.00	0.00
7,600.0	0.00	0.00	7,586.5	198.9	-135.0	-199.6	0.00	0.00	0.00
7,700.0	0.00	0.00	7,686.5	198.9	-135.0	-199.6	0.00	0.00	0.00
7,800.0	0.00	0.00	7,786.5	198.9	-135.0	-199.6	0.00	0.00	0.00
7,900.0	0.00	0.00	7,886.5	198.9	-135.0	-199.6	0.00	0.00	0.00
8,000.0	0.00	0.00	7,986.5	198.9	-135.0	-199.6	0.00	0.00	0.00
8,100.0	0.00	0.00	8,086.5	198.9	-135.0	-199.6	0.00	0.00	0.00
8,200.0	0.00	0.00	8,186.5	198.9	-135.0	-199.6	0.00	0.00	0.00
8,300.0	0.00	0.00	8,286.5	198.9	-135.0	-199.6	0.00	0.00	0.00
8,400.0	0.00	0.00	8,386.5	198.9	-135.0	-199.6	0.00	0.00	0.00
8,500.0	0.00	0.00	8,486.5	198.9	-135.0	-199.6	0.00	0.00	0.00
8,600.0	0.00	0.00	8,586.5	198.9	-135.0	-199.6	0.00	0.00	0.00
8,700.0	0.00	0.00	8,686.5	198.9	-135.0	-199.6	0.00	0.00	0.00
8,800.0	0.00	0.00	8,786.5	198.9	-135.0	-199.6	0.00	0.00	0.00
8,900.0	0.00	0.00	8,886.5	198.9	-135.0	-199.6	0.00	0.00	0.00
9,000.0	0.00	0.00	8,986.5	198.9	-135.0	-199.6	0.00	0.00	0.00
9,100.0	0.00	0.00	9,086.5	198.9	-135.0	-199.6	0.00	0.00	0.00
9,200.0	0.00	0.00	9,186.5	198.9	-135.0	-199.6	0.00	0.00	0.00
9,300.0	0.00	0.00	9,286.5	198.9	-135.0	-199.6	0.00	0.00	0.00
9,400.0	0.00	0.00	9,386.5	198.9	-135.0	-199.6	0.00	0.00	0.00
9,500.0	0.00	0.00	9,486.5	198.9	-135.0	-199.6	0.00	0.00	0.00
9,600.0	0.00	0.00	9,586.5	198.9	-135.0	-199.6	0.00	0.00	0.00
9,700.0	0.00	0.00	9,686.5	198.9	-135.0	-199.6	0.00	0.00	0.00
9,800.0	0.00	0.00	9,786.5	198.9	-135.0	-199.6	0.00	0.00	0.00
9,900.0	0.00	0.00	9,886.5	198.9	-135.0	-199.6	0.00	0.00	0.00
10,000.0	0.00	0.00	9,986.5	198.9	-135.0	-199.6	0.00	0.00	0.00
10,100.0	0.00	0.00	10,086.5	198.9	-135.0	-199.6	0.00	0.00	0.00
10,200.0	0.00	0.00	10,186.5	198.9	-135.0	-199.6	0.00	0.00	0.00
10,300.0	0.00	0.00	10,286.5	198.9	-135.0	-199.6	0.00	0.00	0.00

ConocoPhillips

Planning Report

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Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,400.0	0.00	0.00	10,386.5	198.9	-135.0	-199.6	0.00	0.00	0.00
10,500.0	0.00	0.00	10,486.5	198.9	-135.0	-199.6	0.00	0.00	0.00
10,600.0	0.00	0.00	10,586.5	198.9	-135.0	-199.6	0.00	0.00	0.00
10,700.0	0.00	0.00	10,686.5	198.9	-135.0	-199.6	0.00	0.00	0.00
10,800.0	0.00	0.00	10,786.5	198.9	-135.0	-199.6	0.00	0.00	0.00
10,900.0	0.00	0.00	10,886.5	198.9	-135.0	-199.6	0.00	0.00	0.00
11,000.0	0.00	0.00	10,986.5	198.9	-135.0	-199.6	0.00	0.00	0.00
11,100.0	0.00	0.00	11,086.5	198.9	-135.0	-199.6	0.00	0.00	0.00
11,200.0	0.00	0.00	11,186.5	198.9	-135.0	-199.6	0.00	0.00	0.00
11,300.0	0.00	0.00	11,286.5	198.9	-135.0	-199.6	0.00	0.00	0.00
11,400.0	0.00	0.00	11,386.5	198.9	-135.0	-199.6	0.00	0.00	0.00
11,500.0	0.00	0.00	11,486.5	198.9	-135.0	-199.6	0.00	0.00	0.00
11,525.5	0.00	0.00	11,512.0	198.9	-135.0	-199.6	0.00	0.00	0.00
11,600.0	7.45	179.70	11,586.3	194.0	-135.0	-194.7	10.00	10.00	0.00
11,700.0	17.45	179.70	11,683.8	172.5	-134.9	-173.2	10.00	10.00	0.00
11,800.0	27.45	179.70	11,776.1	134.4	-134.7	-135.1	10.00	10.00	0.00
11,900.0	37.45	179.70	11,860.4	80.8	-134.4	-81.5	10.00	10.00	0.00
12,000.0	47.45	179.70	11,934.1	13.4	-134.0	-14.1	10.00	10.00	0.00
12,100.0	57.45	179.70	11,994.9	-65.8	-133.6	65.1	10.00	10.00	0.00
12,200.0	67.45	179.70	12,041.1	-154.3	-133.2	153.6	10.00	10.00	0.00
12,300.0	77.45	179.70	12,071.3	-249.6	-132.7	248.9	10.00	10.00	0.00
12,400.0	87.45	179.70	12,084.4	-348.6	-132.2	347.9	10.00	10.00	0.00
12,425.5	90.00	179.70	12,085.0	-374.1	-132.0	373.4	10.00	10.00	0.00
12,500.0	90.00	179.70	12,085.0	-448.6	-131.7	447.9	0.00	0.00	0.00
12,600.0	90.00	179.70	12,085.0	-548.5	-131.1	547.9	0.00	0.00	0.00
12,700.0	90.00	179.70	12,085.0	-648.5	-130.6	647.9	0.00	0.00	0.00
12,800.0	90.00	179.70	12,085.0	-748.5	-130.1	747.9	0.00	0.00	0.00
12,900.0	90.00	179.70	12,085.0	-848.5	-129.6	847.9	0.00	0.00	0.00
13,000.0	90.00	179.70	12,085.0	-948.5	-129.1	947.9	0.00	0.00	0.00
13,100.0	90.00	179.70	12,085.0	-1,048.5	-128.6	1,047.9	0.00	0.00	0.00
13,200.0	90.00	179.70	12,085.0	-1,148.5	-128.0	1,147.9	0.00	0.00	0.00
13,300.0	90.00	179.70	12,085.0	-1,248.5	-127.5	1,247.9	0.00	0.00	0.00
13,400.0	90.00	179.70	12,085.0	-1,348.5	-127.0	1,347.9	0.00	0.00	0.00
13,500.0	90.00	179.70	12,085.0	-1,448.5	-126.5	1,447.9	0.00	0.00	0.00
13,600.0	90.00	179.70	12,085.0	-1,548.5	-126.0	1,547.9	0.00	0.00	0.00
13,700.0	90.00	179.70	12,085.0	-1,648.5	-125.5	1,647.9	0.00	0.00	0.00
13,800.0	90.00	179.70	12,085.0	-1,748.5	-124.9	1,747.9	0.00	0.00	0.00
13,900.0	90.00	179.70	12,085.0	-1,848.5	-124.4	1,847.9	0.00	0.00	0.00
14,000.0	90.00	179.70	12,085.0	-1,948.5	-123.9	1,947.9	0.00	0.00	0.00
14,100.0	90.00	179.70	12,085.0	-2,048.5	-123.4	2,047.9	0.00	0.00	0.00
14,200.0	90.00	179.70	12,085.0	-2,148.5	-122.9	2,147.9	0.00	0.00	0.00
14,300.0	90.00	179.70	12,085.0	-2,248.5	-122.4	2,247.9	0.00	0.00	0.00
14,400.0	90.00	179.70	12,085.0	-2,348.5	-121.9	2,347.9	0.00	0.00	0.00
14,500.0	90.00	179.70	12,085.0	-2,448.5	-121.3	2,447.9	0.00	0.00	0.00
14,600.0	90.00	179.70	12,085.0	-2,548.5	-120.8	2,547.9	0.00	0.00	0.00
14,700.0	90.00	179.70	12,085.0	-2,648.5	-120.3	2,647.9	0.00	0.00	0.00
14,800.0	90.00	179.70	12,085.0	-2,748.5	-119.8	2,747.9	0.00	0.00	0.00
14,900.0	90.00	179.70	12,085.0	-2,848.5	-119.3	2,847.9	0.00	0.00	0.00
15,000.0	90.00	179.70	12,085.0	-2,948.5	-118.8	2,947.9	0.00	0.00	0.00
15,100.0	90.00	179.70	12,085.0	-3,048.5	-118.2	3,047.9	0.00	0.00	0.00
15,200.0	90.00	179.70	12,085.0	-3,148.5	-117.7	3,147.9	0.00	0.00	0.00
15,300.0	90.00	179.70	12,085.0	-3,248.5	-117.2	3,247.9	0.00	0.00	0.00
15,400.0	90.00	179.70	12,085.0	-3,348.5	-116.7	3,347.9	0.00	0.00	0.00

ConocoPhillips

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Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
15,500.0	90.00	179.70	12,085.0	-3,448.5	-116.2	3,447.9	0.00	0.00	0.00
15,600.0	90.00	179.70	12,085.0	-3,548.5	-115.7	3,547.9	0.00	0.00	0.00
15,700.0	90.00	179.70	12,085.0	-3,648.5	-115.1	3,647.9	0.00	0.00	0.00
15,800.0	90.00	179.70	12,085.0	-3,748.5	-114.6	3,747.9	0.00	0.00	0.00
15,900.0	90.00	179.70	12,085.0	-3,848.5	-114.1	3,847.9	0.00	0.00	0.00
16,000.0	90.00	179.70	12,085.0	-3,948.5	-113.6	3,947.9	0.00	0.00	0.00
16,100.0	90.00	179.70	12,085.0	-4,048.5	-113.1	4,047.9	0.00	0.00	0.00
16,200.0	90.00	179.70	12,085.0	-4,148.5	-112.6	4,147.9	0.00	0.00	0.00
16,300.0	90.00	179.70	12,085.0	-4,248.5	-112.1	4,247.9	0.00	0.00	0.00
16,400.0	90.00	179.70	12,085.0	-4,348.5	-111.5	4,347.9	0.00	0.00	0.00
16,500.0	90.00	179.70	12,085.0	-4,448.5	-111.0	4,447.9	0.00	0.00	0.00
16,600.0	90.00	179.70	12,085.0	-4,548.5	-110.5	4,547.9	0.00	0.00	0.00
16,700.0	90.00	179.70	12,085.0	-4,648.5	-110.0	4,647.9	0.00	0.00	0.00
16,800.0	90.00	179.70	12,085.0	-4,748.5	-109.5	4,747.9	0.00	0.00	0.00
16,900.0	90.00	179.70	12,085.0	-4,848.5	-109.0	4,847.9	0.00	0.00	0.00
17,000.0	90.00	179.70	12,085.0	-4,948.5	-108.4	4,947.9	0.00	0.00	0.00
17,100.0	90.00	179.70	12,085.0	-5,048.5	-107.9	5,047.9	0.00	0.00	0.00
17,200.0	90.00	179.70	12,085.0	-5,148.5	-107.4	5,147.9	0.00	0.00	0.00
17,300.0	90.00	179.70	12,085.0	-5,248.5	-106.9	5,247.9	0.00	0.00	0.00
17,400.0	90.00	179.70	12,085.0	-5,348.5	-106.4	5,347.9	0.00	0.00	0.00
17,500.0	90.00	179.70	12,085.0	-5,448.5	-105.9	5,447.9	0.00	0.00	0.00
17,600.0	90.00	179.70	12,085.0	-5,548.5	-105.3	5,547.9	0.00	0.00	0.00
17,700.0	90.00	179.70	12,085.0	-5,648.5	-104.8	5,647.9	0.00	0.00	0.00
17,800.0	90.00	179.70	12,085.0	-5,748.5	-104.3	5,747.9	0.00	0.00	0.00
17,900.0	90.00	179.70	12,085.0	-5,848.5	-103.8	5,847.9	0.00	0.00	0.00
18,000.0	90.00	179.70	12,085.0	-5,948.5	-103.3	5,947.9	0.00	0.00	0.00
18,100.0	90.00	179.70	12,085.0	-6,048.5	-102.8	6,047.9	0.00	0.00	0.00
18,200.0	90.00	179.70	12,085.0	-6,148.5	-102.2	6,147.9	0.00	0.00	0.00
18,300.0	90.00	179.70	12,085.0	-6,248.5	-101.7	6,247.9	0.00	0.00	0.00
18,400.0	90.00	179.70	12,085.0	-6,348.5	-101.2	6,347.9	0.00	0.00	0.00
18,500.0	90.00	179.70	12,085.0	-6,448.5	-100.7	6,447.9	0.00	0.00	0.00
18,600.0	90.00	179.70	12,085.0	-6,548.5	-100.2	6,547.9	0.00	0.00	0.00
18,700.0	90.00	179.70	12,085.0	-6,648.5	-99.7	6,647.9	0.00	0.00	0.00
18,800.0	90.00	179.70	12,085.0	-6,748.5	-99.2	6,747.9	0.00	0.00	0.00
18,900.0	90.00	179.70	12,085.0	-6,848.5	-98.6	6,847.9	0.00	0.00	0.00
19,000.0	90.00	179.70	12,085.0	-6,948.5	-98.1	6,947.9	0.00	0.00	0.00
19,100.0	90.00	179.70	12,085.0	-7,048.5	-97.6	7,047.9	0.00	0.00	0.00
19,200.0	90.00	179.70	12,085.0	-7,148.5	-97.1	7,147.9	0.00	0.00	0.00
19,269.8	90.00	179.70	12,085.0	-7,218.3	-96.7	7,217.7	0.00	0.00	0.00

ConocoPhillips

Planning Report

Database: EDM Central Planning
 Company: ConocoPhillips MCBU
 Project: Permian Delaware Hz New Mexico
 Site: BATTLE AXE 27 FEDERAL COM 1H - PS
 Well: BATTLE AXE 27 FEDERAL COM 1H - PS
 Wellbore: Original Hole
 Design: Prelim Design #1

Local Co-ordinate Reference:
 TVD Reference:
 MD Reference:
 North Reference:
 Survey Calculation Method:

Site BATTLE AXE 27 FEDERAL COM 1H - PS
 WELL @ 3145.0usft (Original Well Elev)
 WELL @ 3145.0usft (Original Well Elev)
 Grid
 Minimum Curvature

Targets

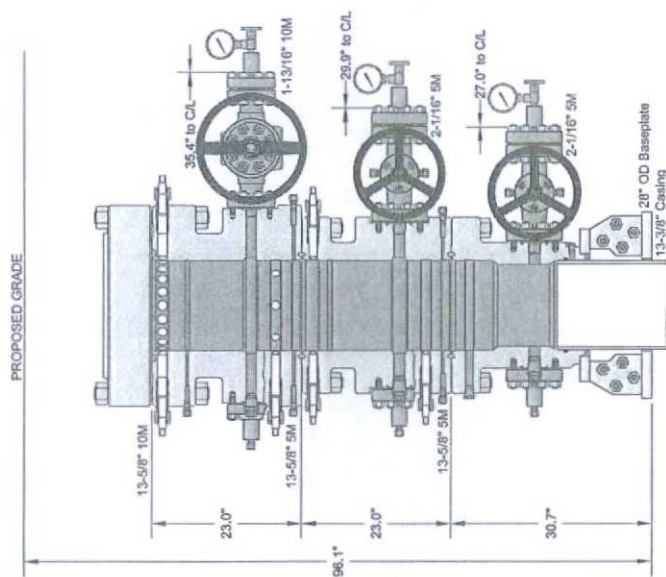
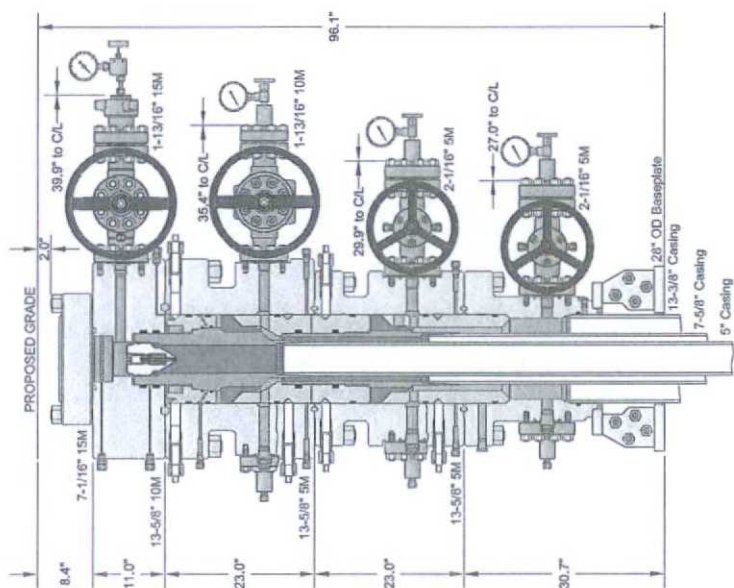
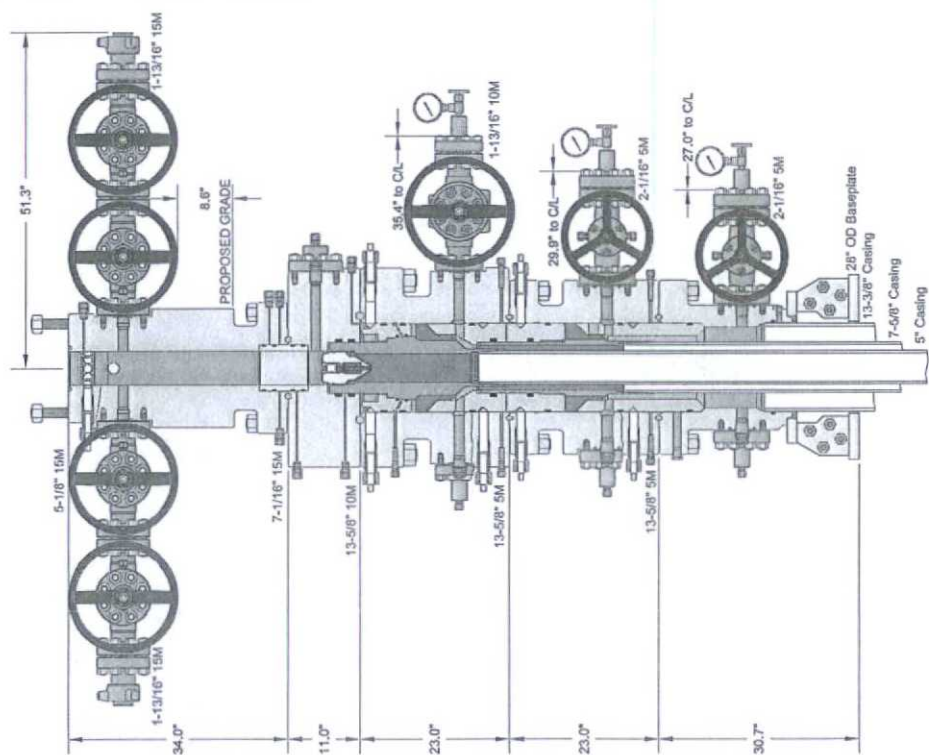
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
BA_27_Fed_PBHL - plan hits target center - Point	0.00	0.00	12,085.0	-7,218.3	-96.7	364,475.06	710,290.03	32° 0' 0.871 N	103° 39' 17.899 W
BA_27_Fed_SHL - plan hits target center - Point	0.00	0.00	0.0	0.0	0.0	371,693.37	710,386.76	32° 1' 12.297 N	103° 39' 16.249 W
BA_27_Fed_FTP - plan misses target center by 70.6usft at 12155.4usft MD (12022.4 TVD, -113.8 N, -133.4 E) - Point	0.00	0.00	12,085.0	-81.2	-134.6	371,612.17	710,252.11	32° 1' 11.502 N	103° 39' 17.819 W

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
895.0	895.0	13 3/8"	13-3/8	17-1/2

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,411.5	4,398.0	Delaware		0.00	
4,541.5	4,528.0	Ford Shale		0.00	
10,586.5	10,573.0	3rd Bone Spring Carbonate		0.00	
7,056.5	7,043.0	Brushy Canyon		0.00	
9,536.5	9,523.0	1st Bone Spring Sand		0.00	
11,927.8	11,882.0	WolfCamp 1		0.00	
5,446.5	5,433.0	Cherry Canyon		0.00	
10,011.5	9,998.0	2nd Bone Spring Carb		0.00	
11,301.5	11,288.0	3rd Bone Spring		0.00	
10,261.5	10,248.0	2nd Bone Spring Sand		0.00	
8,621.5	8,608.0	Bone Spring 1st Carbonate		0.00	
9,241.5	9,228.0	Avalon C		0.00	
9,706.5	9,693.0	FBS Shale		0.00	
11,699.2	11,683.0	WolfCamp		0.00	
8,861.5	8,848.0	Avalon A		0.00	
9,086.5	9,073.0	Avalon B		0.00	
8,381.5	8,368.0	Bone Spring Top		0.00	
843.0	843.0	Rustler		0.00	



SPUD CONFIGURATION

DRILL & SKID CONFIGURATION

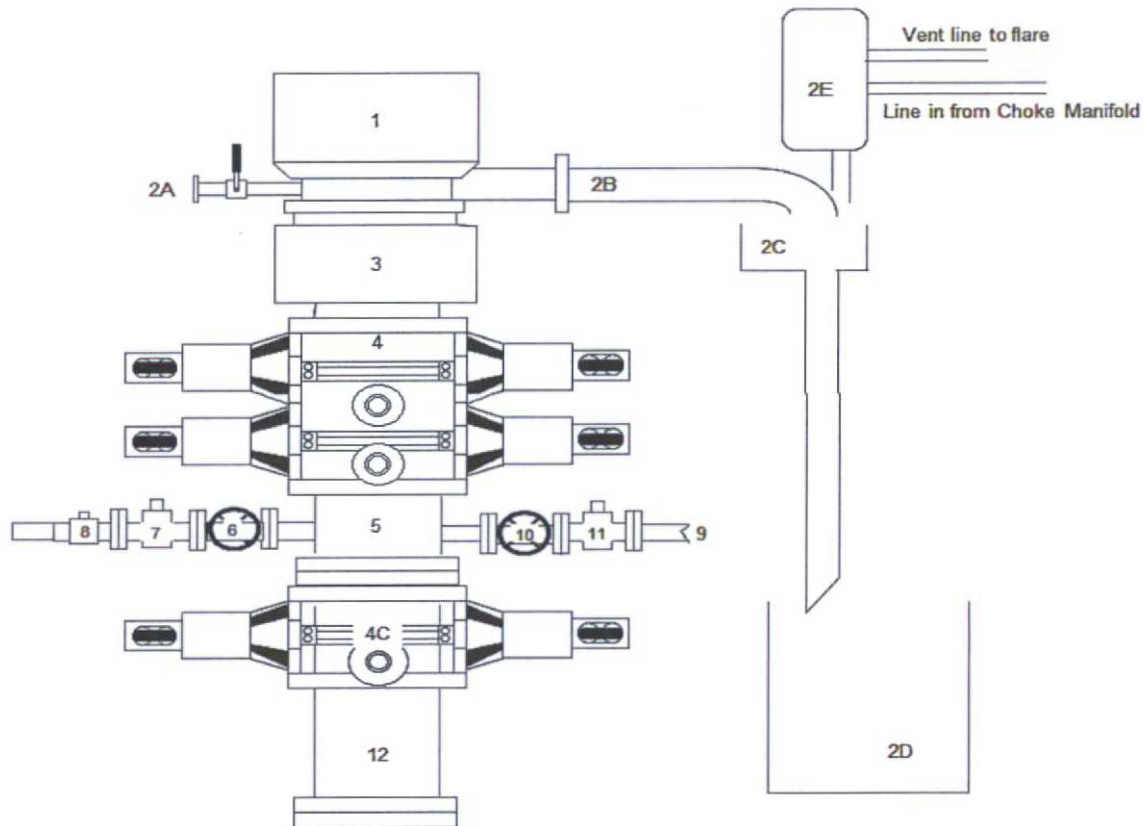
COMPLETION CONFIGURATION

CACTUS WELLHEAD LLC	CONCOPHILLIPS			
13-3/8" x 7-5/8" x 5" 5M MBS2 Wellhead System With 13-5/8" 10M x 7-1/16" 15M DBLHPS DSPA And 7-1/16" 15M x 5-1/8" 15M CMT-FB-EN Tubing Head, 34" Tall	3 STRING CONFIGURATION			
	DRAWN	THH	09JUN15	
	APPRV			
	DRAWING NO.		ODE0000491-A	

INFORMATION CONTAINED HEREIN IS THE PROPERTY OF CACTUS WELLHEAD, L.L.C. REPRODUCTION, DISCLOSURE, OR USE THEREOF IS PERMISSIBLE ONLY AS PROVIDED BY CONTRACT OR AS EXPRESSLY AUTHORIZED BY CACTUS WELLHEAD, L.L.C.

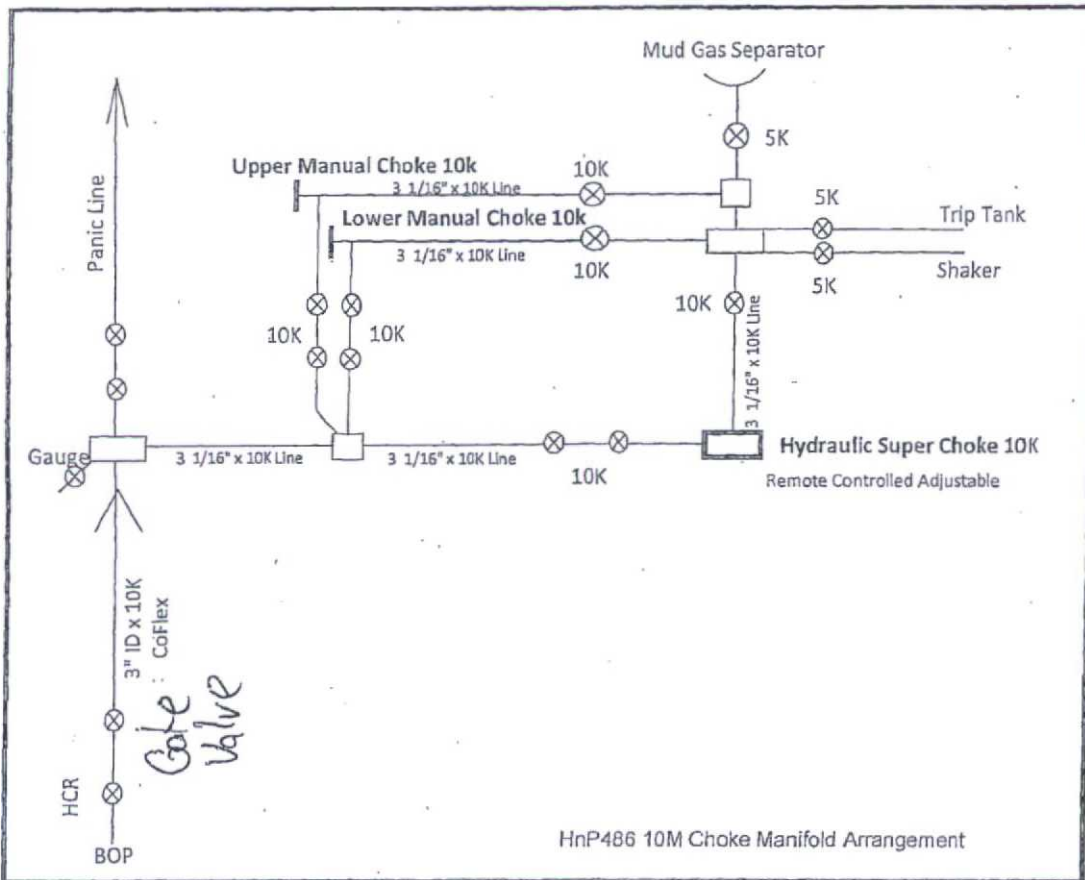
BLOWOUT PREVENTER ARRANGEMENT - H&P486

10M System per Onshore Oil and Gas Order No. 2 utilizing 10M Rated Equipment



Item	Description
1	Rotating Head
2A	Fill up Line and Valve
2B	Flow Line (8")
2C	Shale Shakers and Centrifuges
2D	Cuttings Bins for Zero Discharge
2E	Mud Gas Separator with vent line to flare and return line to mud system
3	Annular Preventer (13-5/8", 10M)
4	Double Ram (13-5/8", 10M, Bline Ram bottom x Pipe Ram top)
5	Drilling Spool (13-5/8" 10M)
4C	Single Ram (13-5/8", 10M, Pipe Rams)
6	Kill Line Valve, Inner (4-1/16", 10k psi WP)
7	Kill Line Valve, Outer (4-1/16", 10k psi WP)
8	Kill Line Check Valve (4-1/16", 10k psi WP)
9	Choke Line (4-1/16", 10k psi WP)
10	Choke Line Valve, Inner (4-1/16", 10k psi WP)
11	Choke Line Valve, Outer, (4-1/16" 10k psi WP HCR)
12	Drilling Spool Adapter (13-5/8", 10M)

Drawn by: James Chen P.E., Drilling Engineer, ConocoPhillips Company, April 11, 2014



Request for Variance

ConocoPhillips Company

Lease Number: NMNM 27509

Well: Battle Axe 27 FEDERAL COM W3 1H

Location: Sec. 27, T26S, R32E

Rig: If drilled with H&P 486

Date: 6/4/2014

Request:

ConocoPhillips Company respectfully requests a variance to install a flexible choke line instead of a straight choke line prescribed in the Onshore Order No. 2, III.A.2.b Minimum standards and enforcement provisions for choke manifold equipment. This request is made under the provision of Onshore Order No. 2, IV Variances from Minimum Standard. The rig to be used to drill this well is equipped with a flexible choke line if the requested variance is approved and determined that the proposed alternative meets the objectives of the applicable minimum standards.

Justifications:

The applicability of the flexible choke line will reduce the number of target tees required to make up from the choke valve to the choke manifold. This configuration will facilitate ease of rig up and BOPE Testing.

Attachments:

- Attachment # 1 Specification from Manufacturer
- Attachment # 2 Mill & Test Certification from Manufacturer

Contact Information:

Program prepared by:

Jason A. Levinson

Drilling Engineer, ConocoPhillips Company

Phone (281) 206-5335

Cell (281) 682-2783

Date: 05 February 2014

Attachment # 1

CONTITECH RUBBER Industrial Kft.	No: QC-DB- 45 / 2012
	Page: 9 / 50



Hose Data Sheet

CRI Order No.	516273
Customer	ContiTech Beattie Co.
Customer Order No	PO5438 STOCK
Item No.	3
Hose Type	Flexible Hose
Standard	API SPEC 16 C
Inside dia in inches	3
Length	35 ft
Type of coupling one end	FLANGE 4 1/16" API SPEC 6A TYPE 6BX FOR 10000 PSIBX155 RING GROOVE
Type of coupling other end	FLANGE 4 1/16" API SPEC 6A TYPE 6BX FOR 10000 PSIBX155 RING GROOVE
H2S service NACE MR0175	Yes
Working Pressure	10 000 psi
Design Pressure	10 000 psi
Test Pressure	15 000 psi
Safety Factor	2,25
Marking	USUAL PHOENIX
Cover	NOT FIRE RESISTANT
Outside protection	St steel outer wrap
Internal stripwound tube	No
Lining	OIL RESISTANT
Safety clamp	No
Lifting collar	No
Element C	No
Safety chain	No
Safety wire rope	No
Max.design temperature [°C]	100
Min.design temperature [°C]	-20
MBR operating [m]	1,60
MBR storage [m]	1,40
Type of packing	WOODEN CRATE ISPM-15

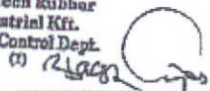
QC-DB- 45/2012

Page: 7/50



Fluid Technology

Quality Document

QUALITY CONTROL INSPECTION AND TEST CERTIFICATE				CERT. N°: 184	
PURCHASER: ContiTech Beattie Co.				P.O. N°: 005438	
CONTITECH ORDER N°: 516273		HOSE TYPE: 3" ID		Choke and Kill Hose	
HOSE SERIAL N°: 61477		NOMINAL / ACTUAL LENGTH: 10,67 m / 10,71 m			
W.P. 68,9 MPa	10000 psi	T.P. 103,4 MPa	15000 psi	Duration: 60	min
Pressure test with water at ambient temperature					
See attachment. (1 page)					
↑ 10 mm = 10 Min. → 10 mm = 20 MPa					
COUPLINGS Type		Serial N°		Quality	
3" coupling with		10178 10173		AISI 4130	
4 1/16" 10K API Flange end				AISI 4130	
				Heat N°	
				20231	
				33051	
NOT DESIGNED FOR WELL TESTING				API Spec 16 C	
				Temperature rate: "B"	
All metal parts are flawless					
WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER INSPECTED AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.					
STATEMENT OF CONFORMITY: We hereby certify that the above items/equipment supplied by us are in conformity with the terms, conditions and specifications of the above Purchaser Order and that these items/equipment were fabricated inspected and tested in accordance with the referenced standards, codes and specifications and meet the relevant acceptance criteria and design requirements.					
COUNTRY OF ORIGIN HUNGARY/EU					
Date:	Inspector		Quality Control		
30. January 2012.			ContiTech Rubber Industrial Kft. Quality Control Dept.  		

Coniflex Rubber Industrial Kit
Burlington NJ 10, Sargol H-6720
P.O. Box 162 Sargol H-6701
Hurray

Phone: +36 62 566 737
Fax: +36 62 566 736
e-mail: info@fluid.com.hu
Internet: www.crsilife-nibtech.hu

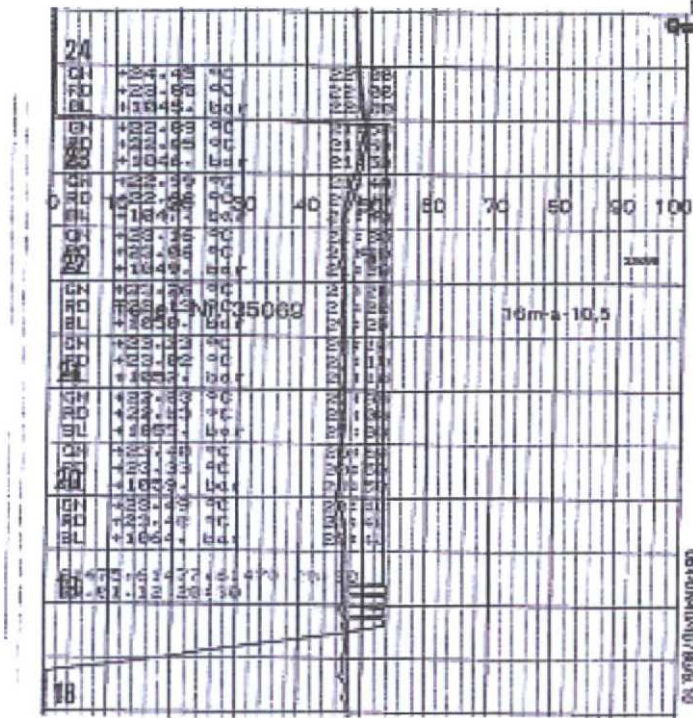
The Court of Oregon's County as
Registry Court
Registry Court No. 141 66-25-002502
By WGT No. 141 66-25-002502

Bank data
Commerzbank AG
Frankfurt
+49 228 040 140 140 140 140 140

ATTACHMENT OF QUALITY CONTROL INSPECTION AND TEST CERTIFICATE

No: 182, 184, 185

Page: 1 / 1



Request for Variance

ConocoPhillips Company

Lease Number: NMNM 27509

Well: Battle Axe 27 FEDERAL COM W3 1H

Location: Sec. 27, T26S, R32E

Rig: If drilled with H&P 453

Date: 6/4/2014

Request:

ConocoPhillips Company respectfully requests a variance to install a flexible choke line instead of a straight choke line prescribed in the Onshore Order No. 2, III.A.2.b Minimum standards and enforcement provisions for choke manifold equipment. This request is made under the provision of Onshore Order No. 2, IV Variances from Minimum Standard. The rig to be used to drill this well is equipped with a flexible choke line if the requested variance is approved and determined that the proposed alternative meets the objectives of the applicable minimum standards.

Justifications:

The applicability of the flexible choke line will reduce the number of target tees required to make up from the choke valve to the choke manifold. This configuration will facilitate ease of rig up and BOPE Testing.

Attachments:

- Attachment # 1 Specification from Manufacturer
- Attachment # 2 Mill & Test Certification from Manufacturer

Contact Information:

Program prepared by:

Jason A. Levinson

Drilling Engineer, ConocoPhillips Company

Phone (281) 206-5335

Cell (281) 682-2783

Date: 05 February 2014

Attachment # 1

CONTITECH RUBBER Industrial Kft.	No: QC-DB- 45 / 2012
	Page: 9 / 50

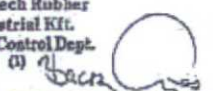


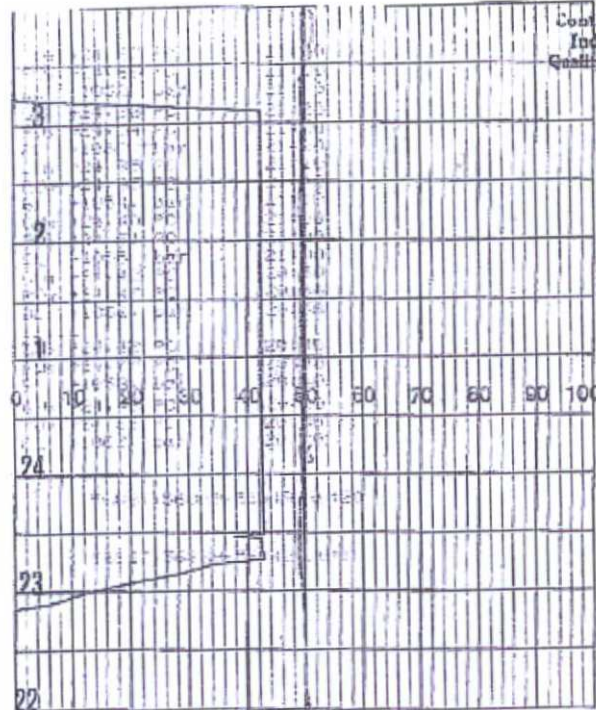
Hose Data Sheet

CRI Order No.	516273
Customer	ContiTech Beattie Co.
Customer Order No	PO5438 STOCK
Item No.	3
Hose Type	Flexible Hose
Standard	API SPEC 16 C
Inside dia in inches	3
Length	35 ft
Type of coupling one end	FLANGE 4 1/16" API SPEC 6A TYPE 6BX FOR 10000 PSIBX155 RING GROOVE
Type of coupling other end	FLANGE 4 1/16" API SPEC 6A TYPE 6BX FOR 10000 PSI BX155 RING GROOVE
H2S service NACE MR0175	Yes
Working Pressure	10 000 psi
Design Pressure	10 000 psi
Test Pressure	15 000 psi
Safety Factor	2,25
Marking	USUAL PHOENIX
Cover	NOT FIRE RESISTANT
Outside protection	St. steel outer wrap
Internal stripwound tube	No
Lining	OIL RESISTANT
Safety clamp	No
Lifting collar	No
Element C	No
Safety chain	No
Safety wire rope	No
Max. design temperature [°C]	100
Min. design temperature [°C]	-20
MBR operating [m]	1,60
MBR storage [m]	1,40
Type of packing	WOODEN CRATE ISPM-15

Quality Document

453.369-001

QUALITY CONTROL INSPECTION AND TEST CERTIFICATE				CERT. N°: 1098	
PURCHASER: ContiTech Beattie Co.				P.O. N°: 004452	
CONTITECH ORDER N°: 482598		HOSE TYPE: 3" ID		Choke and Kill Hose	
HOSE SERIAL N°: 56839		NOMINAL / ACTUAL LENGTH: 10,67 m / 10,69 m			
W.P. 68,9 MPa 10000 psi		T.P. 103,4 MPa 15000 psi		Duration: 60 min.	
Pressure test with water at ambient temperature					
See attachment. (1 page)					
↑ 10 mm = 10 Min. → 10 mm = 25 MPa					
COUPLINGS Type		Serial N°		Heat N°	
3" coupling with 4 1/16" Flange end		8436 1882		16837 31296 31501	
				AISI 4130 AISI 4130	
API Spec 16 C Temperature rate: "B"					
All metal parts are flawless					
WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER INSPECTED AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.					
STATEMENT OF CONFORMITY: We hereby certify that the above items/equipment supplied by us are in conformity with the terms, conditions and specifications of the above Purchaser Order and that these items/equipment were fabricated inspected and tested in accordance with the referenced standards, codes and specifications and meet the relevant acceptance criteria and design requirements.					
COUNTRY OF ORIGIN HUNGARY/EU					
Date: 02. November 2010.		Inspector		Quality Control ContiTech Rubber Industrial Kit. Quality Control Dept.  	



Closed Loop System Design, Operating and Maintenance, and Closure Plan

ConocoPhillips Company

Well: BATTLE AXE 27 FEDERAL COM W3 1H

Location: Sec. 27, T26S, R32E

Date: 6/4/2014

ConocoPhillips proposes the following plan for design, operating and maintenance, and closure of our proposed closed loop system for the above named well:

1. We propose to use a closed loop system with steel pits, haul-off bins, and frac tanks for containing all cuttings, solids, mud, water, brine, and liquids. We will not dig a pit, nor will we use a drying pad, nor will we build an earth pit above ground level, nor will we dispose of or bury any waste on location.

All drilling waste and all drilling fluids (fresh water, brine, mud, cuttings, drill solids, cement returns, and any other liquid or solid that may be involved) will be contained on location in the rig's steel pits or in haul-off bins or in frac tanks as needed. The intent is as follows:

- We propose to use the rigs' steel pits for containing and maintaining the drilling fluids.
- We propose to remove cuttings and drilled solids from the mud by using solids control equipment and to contain such cuttings and drilled solids on location in haul-off bins.
- We propose that any excess water that may need to be stored on location will be stored in tanks.

The closed loop system components will be inspected daily by each tour and any needed repairs will be made immediately. Any leak in the system will be repaired immediately, and any spilled liquids and/or solids will be cleaned immediately, and the area where any such spill occurred will be remediated immediately.

2. Cuttings and solids will be removed from location in haul-off bins by an authorized contractor and disposed of at an authorized facility. For this well, we propose the following disposal facility:

R-360 Inc.

4507 West Carlsbad Hwy, Hobbs, NM 88240,

P.O. Box 388; Hobbs, New Mexico 88241

Toll Free Phone: 877.505.4274, Local Phone Number: 432.638.4076

The physical address for the plant where the disposal facility is located is Highway 62/180 at mile marker 66 (33 miles East of Hobbs, NM and 32 miles West of Carlsbad, NM).

The Permit Number for R-360 is NM-01-0006.

A photograph showing the type of haul-off bins that will be used is attached.

3. Mud will be transported by vacuum truck and disposed of at R-360 Inc. at the facility described above.
4. Fresh Water and Brine will be hauled off by vacuum truck and disposed of at an authorized salt water disposal well. We propose the following for disposal of fresh water and brine as needed:
 - Nabors Well Services Company, 3221 NW County Rd; Hobbs, NM 88240, PO 5208 Hobbs, NM, 88241, Permit SWD 092. (Well Location: **Section 3, T19S R37E**)
 - Basic Energy Services, P.O. Box 1869; Eunice, NM 88231 Phone Number: 575.394.2545, Facility located at Hwy 18, Mile Marker 19; Eunice, NM.

Jason Levinson

Drilling Engineer

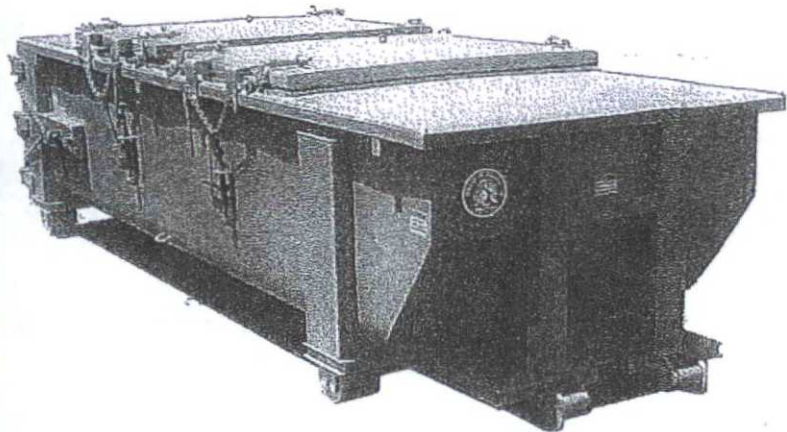
Office: 281-206-5334

Cell: 281-682-2783

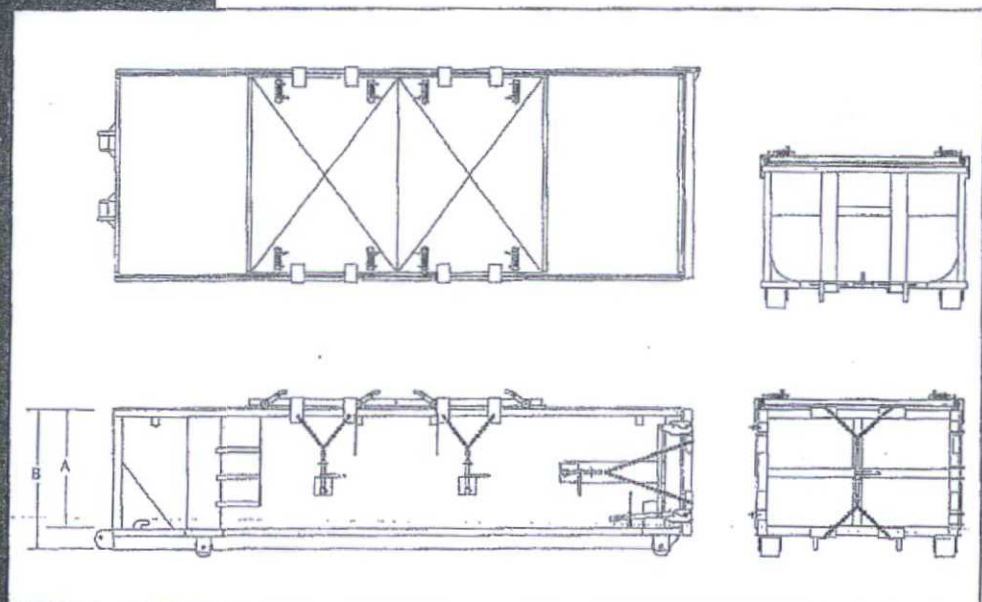
SPECIFICATIONS

Heavy Duty Split Metal Rolling Lid

FLOOR: 3/16" PL one piece
 CROSS MEMBER: 3 x 4.1 channel 16" on center
 WALLS: 3/16" PL solid welded with tubing top, inside liner hooks
 DOOR: 3/16" PL with tubing frame
 FRONT: 3/16" PL slant formed
 PICK UP: Standard cable with 2" x 6" x 1/4" rails, gusset at each crossmember
 WHEELS: 10 DIA x 9 long with rease fittings
 DOOR LATCH: 3 Independent ratchet binders with chains, vertical second latch
 GASKE TS: Extruded rubber seal with metal retainers
 WELDS: All welds continuous except sub-structure crossmembers
 FINISH: Coated inside and out with direct to metal, rust inhibiting acrylic enamel color coat
 HYDROTESTING: Full capacity static test
 DIMENSIONS: 22'-11" long (21'-8" inside), 99" wide (88" inside), see drawing for height
 OPTIONS: Steel grit blast and special paint, Ampliroll, Hell and Dino pickup
 ROOF: 3/16" PL roof panels with tubing and channel support frame
 LIDS: (2) 68" x 90" metal rolling lids spring loaded, self raising
 ROLLERS: 4" V-groove rollers with delrin bearings and grease fittings
 OPENING: (2) 60" x 82" openings with 8" divider centered on container
 LATCH: (2) independent ratchet binders with chains per lid
 GASKETS: Extruded rubber seal with metal retainers



CONT.	A	B
20 YD	41	53
25 YD	53	65
30 YD	65	77



SKID / BATCH DRILLING OPERATIONS – “QUAD PAD”

SKID / BATCH DRILLING OPERATION PLAN FOR “QUAD PAD”:

1. ALL SURFACE CASINGS PRE-SET (Pre-set with “Spudder Rig”).
 2. WELL 1 / WolfCamp 3. 9-5/8” CASING – WBM.
 3. WELL 2 / WolfCamp 2. 9-5/8” CASING – WBM.
 4. WELL 3 / WolfCamp 1. 9-5/8” CASING – WBM.
 5. WELL 4 / BS 3rd Carb. 9-5/8” CASING – WBM.
 6. WELL 4 / BS 3rd Carb. 5-1/2” CASING – WBM.
 7. WELL 3 / WolfCamp 1. 7-5/8” CASING – WBM.
 8. WELL 2 / WolfCamp 2. 7-5/8” CASING – WBM.
 9. WELL 1 / WolfCamp 3. 7-5/8” CASING – WBM.
 10. WELL 1 / WolfCamp 3. 5”x4-1/2” CASING – OBM.
 11. WELL 2 / WolfCamp 2. 5”x4-1/2” CASING – OBM.
 12. WELL 1 / WolfCamp 1. 5”x4-1/2” CASING – OBM.
 13. RIG RELEASE.
- “INTERMEDIATE 1” BATCH**
- “INTERMEDIATE 2” BATCH**
- “PRODUCTION” BATCH**



T130XD

A heavy duty, heavy hoist carrier mounted drill rig. The T130XD utilizes innovative Telemast technology to achieve Range III pipe capability in a compact over the road package.

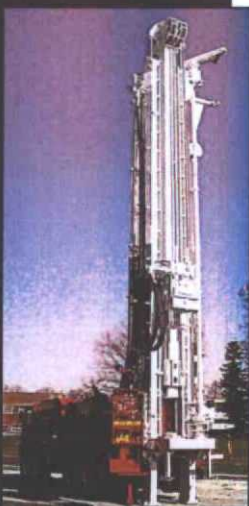
- Equipped with Schramm Telemast
- 50' head travel handles Range III casing
- 43' transport length with less than 6' overhang
- 130,000 lbs hoist
- No sub-structure required
- Mast slides to clear BOP

ROTADRILL



CARRIER MOUNTED RIG EQUIPPED WITH TELEMAST

T130XD ROTADRILL SPECIFICATIONS



Engine

Detroit Diesel DDC/MTU 12V-2000TA DDEC
760 bhp (567 kw) @ 1800 rpm

Standard Compressor

Variable volume two-stage, oil flooded
rotary screw
1350 cfm @ 350 psi (38.0 cu. m/min @ 24.1 bar),
up to 1150 cfm @ 500 psi (32.6 cu. m/min @
35.5 bar)

Cooling

Three core, side by side type
130°F (54.4°C) ambient design temp.

Dimensions

OA length, transport - 42' 9" (13 m)
OA width - 8' 6" (2.6 m)
OA height, transport - 13' 6" (4.1 m)
Weight std. rig - 92,000 lb (41,723 kg)

Carrier

CCC 8x4 Carrier
Cat C-13, 410 hp @ 2100 rpm engine
44,000 lb (19,955 kg) front axles
21,500 lb (9,750 kg) pusher axle
52,000 lb (23,587 kg) rear axles
117,500 lb (53,298 kg) GVWR

Top Head Rotation

Ductile iron, single reduction oil bath gearbox
with two disc valve type hydraulic motors.
Infinitely variable rotation speed.
3.5:1 Reduction Gear
3" diameter (76.2 mm) spindle thru hole
0-143 rpm, infinitely variable
106,600 in-lb (12,045 N·m) torque

Feed System

Top head is driven by hydraulic traverse
cylinders through special wire rope and large
diameter Nylatron sheaves. As top head is raised,
the inner mast section extends by a ratio of 1:2
until it reaches its fully extended position at 50'
of clear head travel.

42' 9" (13 m) OA height (retracted)
69' 9" (21.65 m) OA height (extended)
50' (15.24 m) top head travel
130,000 lb (59,090 kg) pullup
8 fpm (2.44 mpm) pullup speed-slow feed
125 fpm (38.1 mpm) pullup speed-rapid feed
32,000 lb (14,545 kg) pulldown capacity
26 fpm (7.92 mpm) pulldown speed-slow feed
270 fpm (82.3 mpm) pulldown speed-rapid feed
52' 10" (16.1 m) working clearance mast spindle
to table (sub removed)
48' 10" (14.9 m) working clearance mast sub to
table

Drill Pipe & Casing

30' x 4-1/2" OD x 2-7/8" IF breakout style drill pipe,
range III casing
28" (711 mm) max. diameter through slipbox

Mast

Telescoping construction permits long head travel
and working height, yet short OA length in
transport position.

32" (813 mm) cylinder operated slide
Free-standing mast
hydraulically operated adjustable mast feet
hydraulically retracted slip box
20" (508 mm) table opening w/o slips

Winch

Planetary with spring applied hydraulic
release brake
9,600 lb (4,354 kg) bare drum line pull
151 fpm (46 mpm) bare drum line speed

Hydraulic System

Open loop load sensing system
7 micron filtration
200 gallon (760 l) system capacity

Water Injection System

25 gpm (95 lpm) water pump
Electric foam pump

Outriggers

Front - (1) 5" bore x 41" stroke
(127 mm x 1.4 m)
Rear - (2) 5" bore x 41" stroke
(127 mm x 1.4 m)

Tool Lubricator

Positive displacement, air pump operated
piston type pump variable to 5.0 gph
(18.9 lph)

Lighting & Electrical System - 24 Volt

Mast - (4) 60 watt floodlights
Control Panel - (2) 60 watt gauge floodlights
Work - (3) 70 watt halogen

Accessories

Pipe handling sling, 60" breakout wrench,
and 50 hour maintenance kit.

Optional Equipment

Many modifications are available including:
Third driving axle
Reverse circulation package
Tilt-out top head
High capacity top head
Single pipe loading arm
Auxiliary winch controls
Auxiliary air supply

These specifications are based on theoretical calculations and industry standards. Performance will vary according to actual drilling conditions. Schramm, Inc. continuously improves its products and reserves the right to change specifications, design, prices and terms at any time without notification or obligation. These specifications do not extend any warranty, expressed or implied, nor do they or Schramm, Inc. make or imply any representation of the machine's merchantability or fitness for a particular purpose.



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January 28 2014



Connection: Wedge 523™
Casing/Tubing: CAS

Size: 7.625 in.
Wall: 0.375 in.
Weight: 29.70 lbs/ft
Grade: P110
Min. Wall Thickness: 87.5 %

PIPE BODY DATA

GEOMETRY			
Nominal OD	7.625 in.	Nominal Weight	29.70 lbs/ft
Nominal ID	6.875 in.	Wall Thickness	0.375 in.
Plain End Weight	29.06 lbs/ft	Standard Drift Diameter	6.750 in.
		Special Drift Diameter	N/A

PERFORMANCE

Body Yield Strength	940 x 1000 lbs	Internal Yield	9470 psi
Collapse	5350 psi	SMYS	110000 psi

WEDGE 523™ CONNECTION DATA

GEOMETRY			
Connection OD	7.752 in.	Connection ID	6.800 in.
Critical Section Area	6.021 sq. in.	Make-Up Loss	4.420 in.
		Threads per in.	3.29

PERFORMANCE

Tension Efficiency	70.5 %	Joint Yield Strength	663 x 1000 lbs
Compression Strength	768 x 1000 lbs	Internal Pressure Capacity	9470 psi
External Pressure Capacity	5350 psi	Compression Efficiency	81.7 %
		Bending	47 °/100 ft

MAKE-UP TORQUES

Minimum	9900 ft-lbs	Target	11900 ft-lbs
		Maximum (L)	17300 ft-lbs

OPERATIONAL LIMIT TORQUES

Operating Torque	52000 ft-lbs	Yield Torque	78000 ft-lbs
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BLANKING DIMENSIONS

Blanking Dimensions			
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* If you need to use torque values that are higher than the maximum indicated, please contact a local Tenaris technical sales representative.

October 21 2014



Connection: Blue®
Casing/Tubing: CAS
Coupling Option: REGULAR

Size: 5.000 in.
Wall: 0.362 in.
Weight: 18.00 lbs/ft
Grade: P110
Min. Wall Thickness: 87.5 %

PIPE BODY DATA

GEOMETRY			
Nominal OD	5.000 in.	Nominal Weight	18.00 lbs/ft
Nominal ID	4.276 in.	Wall Thickness	0.362 in.
Plain End Weight	17.95 lbs/ft	Standard Drift Diameter	4.151 in.
		Special Drift Diameter	N/A
PERFORMANCE			
Body Yield Strength	580 x 1000 lbs	Internal Yield	13940 psi
Collapse	13470 psi	SMYS	110000 psi

BLUE® CONNECTION DATA

GEOMETRY			
Connection OD	5.630 in.	Coupling Length	10.551 in.
Critical Section Area	5.275 sq. in.	Make-Up Loss	4.579 in.
		Connection ID	4.264 in.
		Threads per in.	5.00
PERFORMANCE			
Tension Efficiency	100 %	Joint Yield Strength	580 x 1000 lbs
Compression Efficiency	100 %	Compression Strength	580 x 1000 lbs
External Pressure Capacity	13470 psi	Internal Pressure Capacity	13940 psi
		Bending	101 °/100 ft

MAKE-UP TORQUES

Minimum	6400 ft-lbs	Target	7110 ft-lbs	Maximum	7820 ft-lbs
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OPERATIONAL LIMIT TORQUES

Operating Torque	ASK	Yield Torque	17600 ft-lbs
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SHOULDER TORQUES

Minimum	1070 ft-lbs	Maximum	6040 ft-lbs
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BLANKING DIMENSIONS

Blanking Dimensions

Datasheet is also valid for Special Bevel option when applicable.

December 18 2014



Connection: TenarisXP™ BTC
Casing/Tubing: CAS
Coupling Option: REGULAR

Size: 5.000 in.
Wall: 0.362 in.
Weight: 18.00 lbs/ft
Grade: P110
Min. Wall Thickness: 87.5 %

PIPE BODY DATA					
GEOMETRY					
Nominal OD	5.000 in.	Nominal Weight	18.00 lbs/ft	Standard Drift Diameter	4.151 in.
Nominal ID	4.276 in.	Wall Thickness	0.362 in.	Special Drift Diameter	N/A
Plain End Weight	17.95 lbs/ft				
PERFORMANCE					
Body Yield Strength	580 x 1000 lbs	Internal Yield	13940 psi	SMYS	110000 psi
Collapse	13470 psi				
TENARISXP™ BTC CONNECTION DATA					
GEOMETRY					
Connection OD	5.720 in.	Coupling Length	9.325 in.	Connection ID	4.264 in.
Critical Section Area	5.275 sq. in.	Threads per in.	5.00	Make-Up Loss	4.141 in.
PERFORMANCE					
Tension Efficiency	100 %	Joint Yield Strength	580 x 1000 lbs	Internal Pressure Capacity ⁽¹⁾	13940 psi
Structural Compression Efficiency	100 %	Structural Compression Strength	580 x 1000 lbs	Structural Bending ⁽²⁾	101 °/100 ft
External Pressure Capacity	13470 psi				
ESTIMATED MAKE-UP TORQUES ⁽³⁾					
Minimum	N/A ft-lbs	Target	N/A ft-lbs	Maximum	N/A ft-lbs
OPERATIONAL LIMIT TORQUES					
Operating Torque	ASK	Yield Torque	N/A ft-lbs		
BLANKING DIMENSIONS					

Blanking Dimensions

(1) Internal Pressure Capacity related to structural resistance only. Internal pressure leak resistance as per section 10.3 API 5C3 / ISO 10400 - 2007.

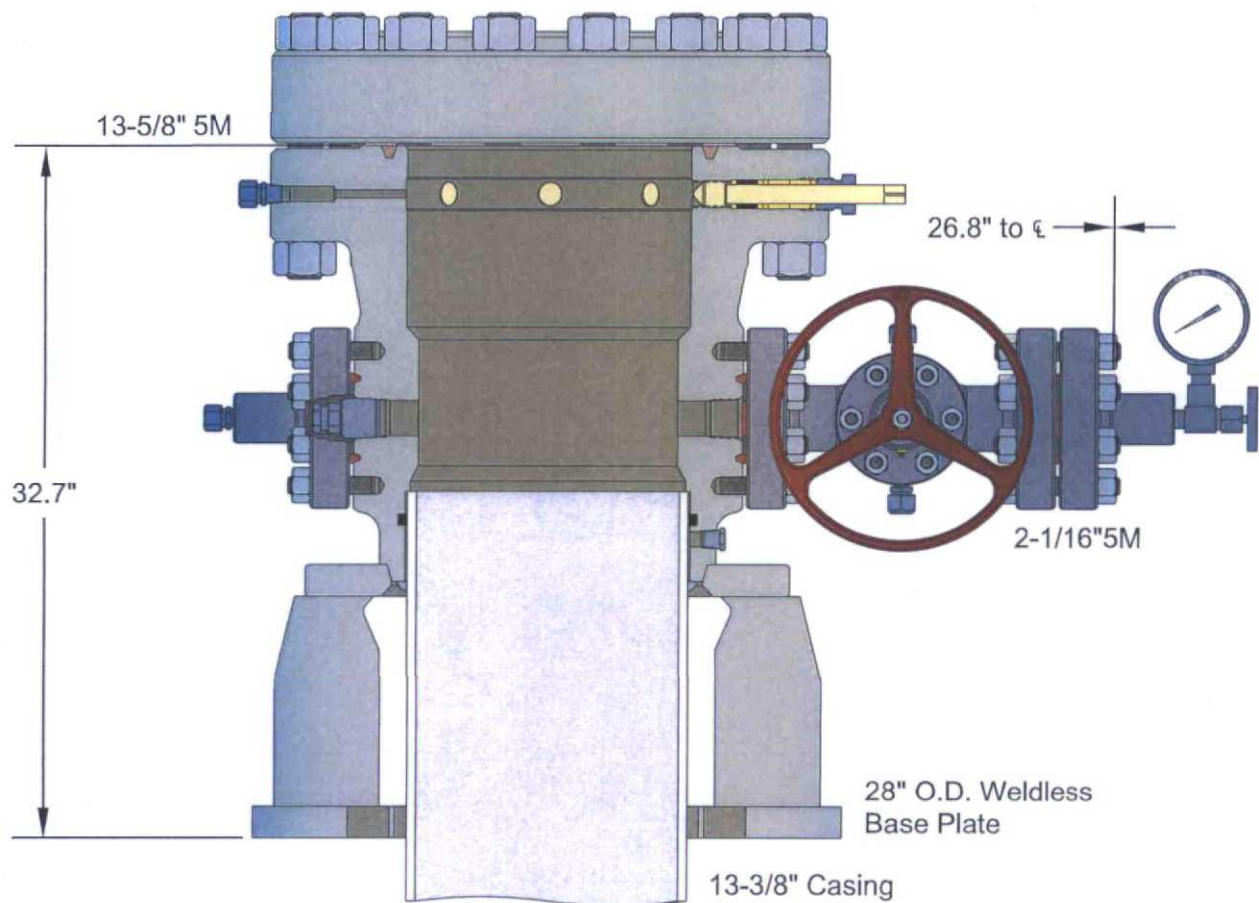
(2) Structural rating, pure bending to yield (i.e no other loads applied)

(3) Torque values calculated for API Modified thread compounds with Friction Factor=1. For other thread compounds please contact us at licensees@oilfield.tenaris.com. Torque values may be further reviewed.

For additional information, please contact us at contact-tenarishydril@tenaris.com



GE Oil & Gas



ALL DIMENSIONS ARE APPROXIMATE

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HSG,WG,SH2-LWR,13-5/8 5M X 13-3/8 SOW,W/2 2-1/16 5M FP
BASEPLATE,WELDLESS,28 OD
FLANGE,BLIND, 13-5/8 5M

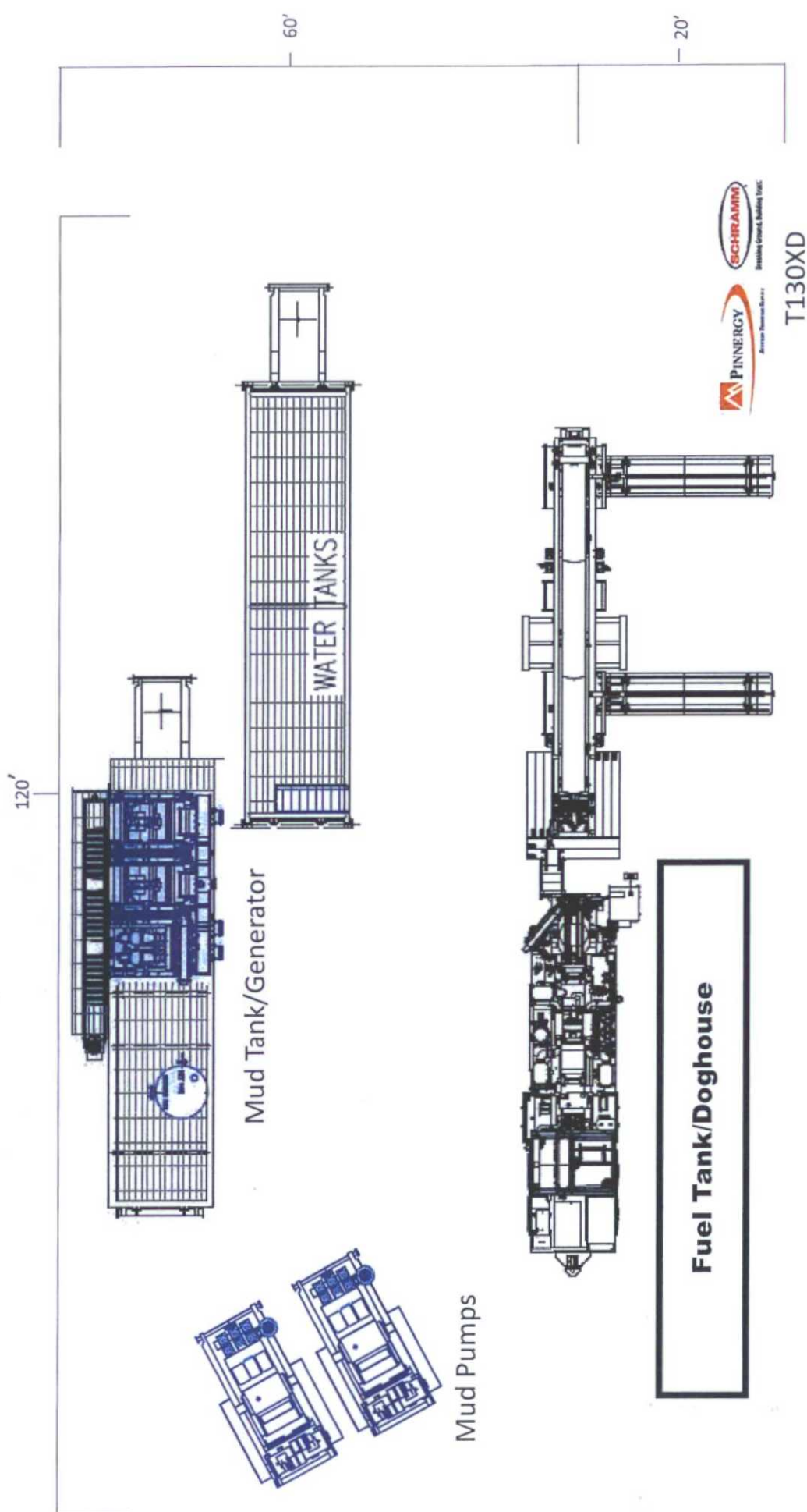
CONOCOPHILLIPS
SPUDDER RIG

DRAWN	VJK	19AUG14
APPRV	KN	16AUG14

FOR REFERENCE ONLY

DRAWING NO.

PE00624



T130XD

"Pinnergy #1" Spudder Rig Layout