Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NMOCD
Hobbs

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2

HOBBS OCD
DEC 27 2016
RECEIVED

5. Lease Serial No.
NMLC029405B

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
RUBY FEDERAL 100H

2. Name of Operator
CONOCOPHILLIPS COMPANY
Contact: SUSAN B MAUNDER
E-Mail: Susan.B.Maunder@conocophillips.com

9. API Well No.
30-025-43370-00-X1

3a. Address
MIDLAND, TX 79710

3b. Phone No. (include area code)
Ph: 281-206-5281

10. Field and Pool or Exploratory Area
MALJAMAR-GRAYBURG SA

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 18 T17S R32E NWNE 990FNL 2260FEL

11. County or Parish, State
LEA COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other Change to Original APD
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

ConocoPhillips Company respectfully submits this notice of intent to change the approved plan for this well. Adjustments have been made to the bottom hole location, target depth, and directional path. We intend to utilize a different rig, from our original plan. Thus, a variance from Onshore Order 2, III.A.2.b is requested in the event this rig is equipped with flexible hose between the BOP and choke manifold.

Updated bottom hole location is:
821? FNL and 2315? FEL; B-17-17S-32E

If there is any additional surface disturbance admiton different sundry.

Updated TVD/MD is: 6055? TVD/11,218? MD

Updated surface use plans include the following and will not result in any additional surface

SEE ATTACHED FOR CONDITIONS OF APPROVAL

ONLY Downhole changes approved.

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #359854 verified by the BLM Well Information System
For CONOCOPHILLIPS COMPANY, sent to the Hobbs
Committed to AFMSS for processing by JENNIFER SANCHEZ on 12/13/2016 (17JAS0105SE)

Name *(Printed/Typed)* SUSAN B MAUNDER — Title SENIOR REGULATORY COORDINATOR

Signature (Electronic Submission) — Date 12/05/2016

APPROVED
DEC 15 2016
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By _____ Title _____ Date _____

Conditions of approval, if any, are attached. Approval of this notice 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. Office

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.

(Instructions on page 2)

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

Additional data for EC transaction #359854 that would not fit on the form

32. Additional remarks, continued

disturbance:
Using either polyline or fiberspar as an all surface flowline.
Temporary production test equipment may be used at well location or Ruby S18 CTB.
Temporary tanks for completion operations may be staged on adjacent well pad.
An additional water source may be used; Rockhouse Ranch, 1108 W. Carlsbad, NM 88220.

submit any changes on different sundry.

The supporting documents, attached to this request are listed below.
Updated C-102
Drill Plan
Planning Report
Plan View
Yeso Horizontal Wellbore Schematic
Wellhead Assembly
BOPe Arrangement-Note the request for a variance to use flexhose is on these schematics
Choke Manifold Arrangement
H2S Contingency Plan
Gas Capture Plan-as required by NMOCD

Drill Plan
ConocoPhillips, Ruby Federal 100H API # 30-025-43370

1. Geologic Formations

TVD of target	6055'	Pilot hole depth	NA
MD at TD:	11218'	Deepest expected fresh water:	710'

Basin

Formation	TVD (ft)
Rustler	710
Salado	890
Tansill	1915
Yates	2070
Seven Rivers	2370
Queen	3010
Grayburg	3445
San Andres	3780
Glorieta	5290
Paddock	5365
Blinebry	5700
TD	6055

2. Casing Program

3 strings casing design									
Hole Size	Casing Interval From	Casing Interval To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17.5"	0	~~750~~ 780'	13.375"	54.5	J55	STC/BTC	3.41	8.24	12.6
12.25"	0	2000	9.625"	40	J55	LTC/BTC	2.47	3.8	6.5
8.75	0	5200	7"	29	L80	LTC/BTC	2.88	3.35	3.89
8.75"	5200	11218	5.5"	17	L80	LTC/BTC	2.22	2.73	3.44
				BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet

See COA

- Bring cement from 5-1-2" casing shoe to lap inside 9-5/8" casing shoe.
- XO from 7" to 5-1/2" in 8-3/4" OH for minimum of 0.422in clearance per Onshore Oil and Gas Order #2 III.B.
- Notify BLM if an Annulus Casing Packer and Stage Tool with 2-Stage Cement or Remediate with Bradenhead Squeeze will be necessary.

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Must have table for contingency casing

Drill Plan
ConocoPhillips, Ruby Federal 100H API # 30-025-43370

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	YES
Does casing meet API specifications? If no, attach casing specification sheet.	YES
Is premium or uncommon casing planned? If yes attach casing specification sheet.	YES
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	YES
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	N/A
Is well located within Capitan Reef?	NO
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	NO
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	NO
If yes, are the first three strings cemented to surface?	
Is 2nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	NO
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	NO
If yes, are there three strings cemented to surface?	

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	Yld ft3/ sack	H_20 gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	500	13.5	1.68	8.94	7	Lead: Class C + 4.0% Bentonite + 0.2% Anti-Foam + 2.0% CaCl2 +0.125lb/sk LCM + 0.1% Dispersant
	400	14.8	1.35	6.38	7	Tail: Class C + 0.2% Anti-Foam + 0.1% Lost Circ Control + 2 lbs/bbl CemNET (losses Control)
Inter.	450	11.5	2.29	10.72	17	Lead: Class C + 10.0% Bentonite + 0.2% Anti-Foam + 2.0% Expanding + 0.15% Viscosifier + 1.3% Retarder.
	300	13.5	1.29	4.81	7	Tail: Class C + 1% Extender + 3 lb/sk Extender + 0.2% Anti-Foam + 0.1% Dispersant + 13 lb/sk LCM + 0.5% Fluid Loss + 0.7% Retarder
Prod.	650	11.5	3.2	19.25	17	Lead: Class C + 6% Extender + 10% Gas Migration Control + 2% Sodium Metasilicate (dry) + 1% Cement Bonding Agent + 3% Aluminum Silicate + 0.125 lb/sx Cello Flake + 3 lb/sx LCM-1
	1400	14.0	1.37	6.48	7	Tail: Class C + 3lb/sk LCM + 1.5% Fluid Loss + 0.1% + 1% Sodium Metasilicate (dry) + 1.5% Fluid Loss Control

DV tool depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. If it cannot be set below the shoe, a CBL shall be run to verify cement coverage.

Lab reports with recipe and the 500 psi compressive strength time for the cement will be onsite for review.

3 strings casing cement design		
Casing String	TOC	% Excess
Surface	0'	>100%
Intermediate	0'	>100%
Production	1500'	>30%

Cement excess will be adjusted based on actual hole condition like losses or fluid caliper data if have.

4. Pressure Control Equipment

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
8-3/4"	13-5/8" or 11"	3M	Annular	x	50% of working pressure
			Blind Ram		1,500 psi
			Pipe Ram		
			Double Ram	x	
			Other*		

See COA

*Specify if additional ram is utilized.
Note: A 11" or 13-5/8" BOPE will be utilize in the 8-3/4" hole section depending on availability and Rig Substructure Clearance.

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

X	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.	
X	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. If yes, specs and hydrostatic test certification will be available in the company man's trailer and on the rig floor.	
	N	Are anchors required by manufacturer?
X	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. See attached schematic.	

See COA

See COA

5. Mud Program

3 strings casing mud program						
Depth		Type	Weight (ppg)	Viscosity	Water Loss	PH
From	To					
0	Surf. shoe	FW Gel	8.5-9.0	28-40	N/C	N.C.
Surf. Shoe	Inter. shoe	Saturated Brine	10.0	28-32	N/C	9-10.5
Inter. shoe	TD	Cut-Brine	8.6-10.0	28-40	N/C	9-10.5

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring

6. Logging and Testing Procedures

Logging, Coring and Testing.	
X	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No Logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain
	Coring? If yes, explain

Additional logs planned		Interval
	Resistivity	
	Density, GR, BHC	
	CBL	
X	Mud log	
	PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	2815 psi
Abnormal Temperature	No

- Mitigation measure for abnormal conditions - Loss of circulation is a possibility in the horizons below the Top of Grayburg. We expect that normal Loss of Circulation Material will be successful in healing any such loss of circulation events.

Gas detection equipment and pit level flow monitoring equipment will be on location. A flow paddle will be installed in the flow line to monitor relative amount of mud flowing in the non-pressurized return line. Mud probes will be installed in the individual tanks to monitor pit volumes of the drilling fluid with a pit volume totalizer. Gas detecting equipment and H2S monitor alarm will be installed in the mud return system and will be monitored. A mud gas separator will be installed and operable before drilling out from the Surface Casing. The gases shall be piped into the flare system. Drilling mud containing H2S shall be degassed in accordance with API RP-49, item 5.14. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
X	H2S is present
X	H2S Plan attached

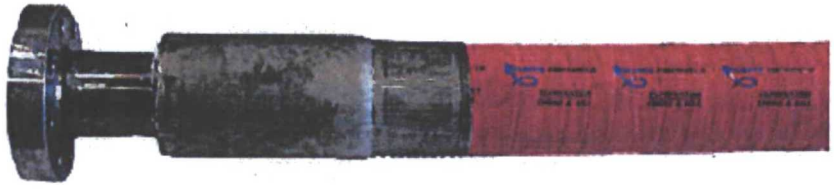
8. Other facets of operation

Is this a walking operation? If yes, describe. NO.
Will be pre-setting casing? If yes, describe. NO.

Attachments:

Attachment#1: Directional Plan
Attachment#2: Wellbore Casing & Cementing Schematic
Attachment#3: Wellhead Schematic
Attachment #4: BOP Schematics
Attachment #5: Choke Schematic
Attachment #6: Rig Layout
Attachment #7: H2S Contingency Plan

Choke & Kill



Reliance Eliminator Choke & Kill

This hose can be used as a choke hose which connects the BOP stack to the b manifold or a kill hose which connects the mud stand pipe to the BOP kill valve.

The Reliance Eliminator Choke & Kill hose contains a specially bonded compounded cover that replaces rubber covered Asbestos, Fibreglass and other fire retardant materials which are prone to damage. This high cut and gouge resistant cover overcomes costly repairs and downtime associated with older designs.

The Reliance Eliminator Choke & Kill hose has been verified by an independent engineer to meet and exceed EUB Directive °G6 fq706 minutes)

Nom. ID		Nom OD		Weight		Min Bend Radius		Max WP	
in.	mm.	in.	mm	lb/ft	kg/m	in.	mm.	psi	Mpa
3	76.2	5.11	129.79	14.5	21.46	48	1219.2	5000	34.47
3-1/2	88.9	5.79	147.06	20.14	29.80	54	1371.6	5000	34.47

End Connections

Fittings	Flanges	Hammer Unions	Other
RC4X5055	R35 - 3-1/8 5000# API Type 6B	All Union Configurations	LP Threaded (
RC3X5055	R31 - 3-1/8 3000# API Type 6B		Graylock
RC4X5575			Custom Ends

MICK

RELIANCE Industrial Products USA, Ltd.

Please remit payment to:
606 - 19 Avenue, Nisku, AB
Canada T9E 7W1

WORK ORDER

Greeley, CO 80631
Ph: 970-346-3751
Fax: 970-353-3168
2030E 8th Street, Suite B

Bossier City, LA 71111
Ph: 318-687-5486
Fax: 318-687-5491
1001 M&O Drive

San Antonio, TX 78217
Ph: 210-650-3636
Fax: 210-650-3133
4327 Centergate Street

Williston, ND 58801
Ph: 701-572-7035
Fax: 701-572-7030
4970 Hwy 85

Midland, TX 79706
Ph: 432-689-0102
Fax: 432-699-4898
2904 SCR 1250

Houston, TX 77388
Ph: 281-288-9720
4115 Kreinhop Rd Suite B

BILL TO	CUSTOMER NO.	SALESMAN NO.	SHIP TO	CUSTOMER NO.	SALESMAN NO.
	003054	HSE		003054	HSE

PG 1 OF 1

TRINIDAD DRILLING LP
15015 VICKERY DR
HOUSTON, TX 77032

TRINIDAD DRILLING
RIG# 435

(713)439-1670

003054013482

ORDER STATUS
OPEN ORDER

BRANCH	SHD	BOX	BAG	COIL	PC	TOTAL	TAX ID #20-8174221	REFERENCE NUMBER
Reliance - Midland								105-013482

MO. DAY YR.	WRITTEN BY	YOUR ORDER NO	TERMS	SHIP VIA	C	PP
11/04/16	RWB	11/04/16 5709 PO22132	NET 30 DAYS	DELIVERY RWB		

QTY ORDERED	QTY SHIPPED	BACK ORDERED	PART NUMBER AND DESCRIPTION	CODE	LIST PRICE	NET PRICE	UNIT	NET AMOUNT
			**********SHIPPING DETAIL**********					
			11/4/16 .....ORDER TO BE COMPLETED BY					
			DELIVER TO YARD .....SHIPPING INSTRUCTIONS					
			. .....SPECIAL INSTRUCTIONS					
			ATTN: IAN RIG# 435 .....CUSTOMER CONTACT					
			PARTS[ ] API HOSE[ ] HYD HOSE[ ] IND HOSE[ ] ...ORDER COMPONENTS					
			**********					
1	1		KIT MATERIALS MATERIALS	T		4806.980	EA	4806.98
			<********** Components for above item are listed below **********					
2.00			LAB RKSWAGE GRADE C & D SWAGE				EA	
1.00			LAB T-100 TESTING CHARGES				EA	
1			PTC P930012 ID TAG 2.5X1.5 SS	J 2C			EA	
2			PTC P930022 CABLE TIE SS 20.50L	J 2C			EA	
9			KBD RFG500056 3 1/2"FIREGUARD CHOKE HOSE				EA	
1			RSK 7K-FR35X5KRCD56 FLOATING FLANGE COUPLING	M 1E			EA	
1			RSK 7K-R35X5KRCD56 GRADE C/D R35 FLANGE COUPL	M 1E			EA	
2			API OVERFERRULE96 6" SS OVERFERRULE	M 2F			EA	
15			HDW 3X116 3" X 1/16" FIBERGLASS TAPE	Q 1C			FT	
			1 - 3.5" X 8'6" 5K F/G CHOKE HOSE W/ R35 FIXED X FLOATING FLANGE					
			TESTED TO 10000 PSI FOR 10 MINUTES					
			HYDRO-TEST AND NACE CERTIFICATIONS PROVIDED					
			<**********					
			IF ORDERED TODAY BUY 2PM WE CAN HAVE THIS BUILT TOMORROW					
			IF ORDERED LATER THAN 2PM IT WILL BE MONDAY DELIVERY					

Sign: [signature]

Print Name: Ethan Wood

Date: 11-22-16

PICKED BY	ASSEMB BY	TESTED BY
	IB	IB
INSPEC BY	INSPEC BY	INSPEC BY

TERMS: NET 30 DAYS FROM DATE OF INVOICE. Interest of 2% PER MONTH (24% PER ANNUM) charged on overdue accounts. The terms of the contract between Reliance Industrial Products Ltd. ("Reliance") and the customer are on the reverse of this document.

GOODS RECEIVED BY (PLEASE PRINT)

INITIAL 11:25

SUB-TOTAL	4806.98
TAX	0.00
TOTAL	4806.98

RELIANCE
Industrial Products Ltd.

2904 SCR 1250
MIDLAND, TX
79706

TEST CERTIFICATE

Customer Information

Customer:	TRINIDAD DRILLING
P.O. #:	PO22132
Rig #	RIG# 435
Cust Tracking #	

Material Information

Hose Type	3.1/2" FIREGUARD H
Hose ID	3.1/2"
Assembly Length	8'.6"
Fireguard Yes/No	YES

Test Information

Cert No.:	105-013482/001	H-01
Date: (YYYY-MM-DD)	#2016-11-11#	
Working Pressure :	5000 PSI	
Test Pressure:	10000 PSI	
Duration (mins):	20	

Material Tracking - Coupling #1

Coupling #1:	R35 FIXD FLANGE
MTR# - Stem	
MTR# - Shell	
NACE#	

Material Tracking - Coupling #2

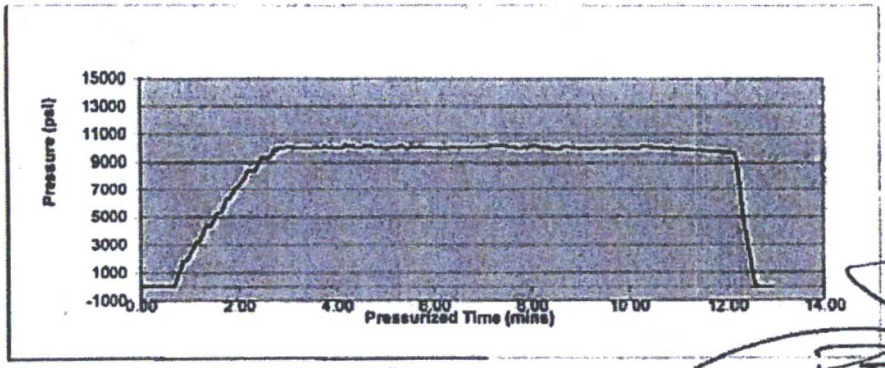
Coupling #2:	R35 FLOATING FLAI
MTR# - Stem	
MTR# - Shell	
NACE#	

Traceability

☑ NEW
☐ RECERT 13482 H-01
Previous Reference #

Comments

TESTED AND CERTIFIED @ 10000 PSI FOR 10 MINUTES CERT TAG SN# 13482-H01



☑ Acceptable
☐ Not Acceptable

ISIDRO SANCHEZ
Test Technician (Print Name)

Test Technician Signature

Supervisor Signature

RIP-HAFM 006
VER II

ConocoPhillips MCBU

Permian Basin Region - New Mexico (3001)
Ruby Federal 100H
Ruby Federal 100 H

Original Hole

Plan: Prelim Design v4

Standard Planning Report

13 October, 2016

Database:	EDM Central Planning	**Local Co-ordinate Reference:**	Site Ruby Federal 100H
Company:	ConocoPhillips MCBU	**TVD Reference:**	WELL @ 3993.4usft (Original Well Elev)
Project:	Permian Basin Region - New Mexico (3001)	**MD Reference:**	WELL @ 3993.4usft (Original Well Elev)
Site:	Ruby Federal 100H	**North Reference:**	Grid
Well:	Ruby Federal 100 H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	Prelim Design v4		

Project	Permian Basin Region - New Mexico (3001), South East New Mexico - Lea/Eddy Counties		
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	Ruby Federal 100H, Section 17 and 18				
Site Position:		**Northing:**	669,382.38 usft	**Latitude:**	32° 50' 20.755 N
From:	Map	**Easting:**	662,558.79 usft	**Longitude:**	103° 48' 14.644 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.29 °

Well	Ruby Federal 100 H, Development - Horizontal					
Well Position	**+N/-S**	0.0 usft	**Northing:**	669,382.38 usft	**Latitude:**	32° 50' 20.755 N
	+E/-W	0.0 usft	**Easting:**	662,558.79 usft	**Longitude:**	103° 48' 14.644 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	0.0 usft	**Ground Level:**	3,979.4 usft

Wellbore	Original Hole				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	BGGM2016	10/1/2016	7.21	60.64	48,438

Design	Prelim Design v4				
Audit Notes:					
Version:	4	**Phase:**	PLAN	**Tie On Depth:**	0.0
Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**	
	0.0	0.0	0.0	88.88	

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	
2,770.0	0.00	0.00	2,770.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,103.3	5.00	300.00	3,102.9	7.3	-12.6	1.50	1.50	0.00	300.00	
5,103.3	5.00	300.00	5,095.3	94.4	-163.5	0.00	0.00	0.00	0.00	
5,436.7	0.00	0.00	5,428.2	101.7	-176.1	1.50	-1.50	0.00	180.00	
5,490.7	0.00	0.00	5,482.2	101.7	-176.1	0.00	0.00	0.00	0.00	
6,390.7	90.00	90.00	6,055.2	101.7	396.8	10.00	10.00	10.00	90.00	
11,217.8	90.00	90.00	6,055.0	102.0	5,224.0	0.00	0.00	0.00	0.00	RF_100H_v2

Database:	EDM Central Planning	**Local Co-ordinate Reference:**	Site Ruby Federal 100H
Company:	ConocoPhillips MCBU	**TVD Reference:**	WELL @ 3993.4usft (Original Well Elev)
Project:	Permian Basin Region - New Mexico (3001)	**MD Reference:**	WELL @ 3993.4usft (Original Well Elev)
Site:	Ruby Federal 100H	**North Reference:**	Grid
Well:	Ruby Federal 100 H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	Prelim Design v4		

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	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,770.0	0.00	0.00	2,770.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.45	300.00	2,800.0	0.1	-0.1	-0.1	1.50	1.50	0.00
2,900.0	1.95	300.00	2,900.0	1.1	-1.9	-1.9	1.50	1.50	0.00
3,000.0	3.45	300.00	2,999.9	3.5	-6.0	-5.9	1.50	1.50	0.00
3,100.0	4.95	300.00	3,099.6	7.1	-12.3	-12.2	1.50	1.50	0.00
3,103.3	5.00	300.00	3,102.9	7.3	-12.6	-12.4	1.50	1.50	0.00
3,200.0	5.00	300.00	3,199.2	11.5	-19.9	-19.7	0.00	0.00	0.00
3,300.0	5.00	300.00	3,298.8	15.8	-27.4	-27.1	0.00	0.00	0.00
3,400.0	5.00	300.00	3,398.4	20.2	-35.0	-34.6	0.00	0.00	0.00
3,500.0	5.00	300.00	3,498.1	24.6	-42.5	-42.0	0.00	0.00	0.00
3,600.0	5.00	300.00	3,597.7	28.9	-50.1	-49.5	0.00	0.00	0.00
3,700.0	5.00	300.00	3,697.3	33.3	-57.6	-57.0	0.00	0.00	0.00
3,800.0	5.00	300.00	3,796.9	37.6	-65.2	-64.4	0.00	0.00	0.00
3,900.0	5.00	300.00	3,896.5	42.0	-72.7	-71.9	0.00	0.00	0.00
4,000.0	5.00	300.00	3,996.2	46.3	-80.3	-79.3	0.00	0.00	0.00
4,100.0	5.00	300.00	4,095.8	50.7	-87.8	-86.8	0.00	0.00	0.00
4,200.0	5.00	300.00	4,195.4	55.1	-95.4	-94.3	0.00	0.00	0.00
4,300.0	5.00	300.00	4,295.0	59.4	-102.9	-101.7	0.00	0.00	0.00
4,400.0	5.00	300.00	4,394.6	63.8	-110.5	-109.2	0.00	0.00	0.00
4,500.0	5.00	300.00	4,494.3	68.1	-118.0	-116.7	0.00	0.00	0.00
4,600.0	5.00	300.00	4,593.9	72.5	-125.6	-124.1	0.00	0.00	0.00
4,700.0	5.00	300.00	4,693.5	76.8	-133.1	-131.6	0.00	0.00	0.00
4,800.0	5.00	300.00	4,793.1	81.2	-140.7	-139.0	0.00	0.00	0.00
4,900.0	5.00	300.00	4,892.7	85.6	-148.2	-146.5	0.00	0.00	0.00
5,000.0	5.00	300.00	4,992.4	89.9	-155.7	-154.0	0.00	0.00	0.00
5,100.0	5.00	300.00	5,092.0	94.3	-163.3	-161.4	0.00	0.00	0.00

Database:	EDM Central Planning	**Local Co-ordinate Reference:**	Site Ruby Federal 100H
Company:	ConocoPhillips MCBU	**TVD Reference:**	WELL @ 3993.4usft (Original Well Elev)
Project:	Permian Basin Region - New Mexico (3001)	**MD Reference:**	WELL @ 3993.4usft (Original Well Elev)
Site:	Ruby Federal 100H	**North Reference:**	Grid
Well:	Ruby Federal 100 H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	Prelim Design v4		

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)
5,103.3	5.00	300.00	5,095.3	94.4	-163.5	-161.7	0.00	0.00	0.00
5,200.0	3.55	300.00	5,191.7	98.0	-169.8	-167.8	1.50	-1.50	0.00
5,300.0	2.05	300.00	5,291.6	100.5	-174.0	-172.0	1.50	-1.50	0.00
5,400.0	0.55	300.00	5,391.5	101.6	-176.0	-174.0	1.50	-1.50	0.00
5,436.7	0.00	0.00	5,428.2	101.7	-176.1	-174.1	1.50	-1.50	0.00
5,490.7	0.00	0.00	5,482.2	101.7	-176.1	-174.1	0.00	0.00	0.00
5,500.0	0.93	90.00	5,491.5	101.7	-176.1	-174.0	10.00	10.00	0.00
5,600.0	10.93	90.00	5,590.9	101.7	-165.7	-163.7	10.00	10.00	0.00
5,700.0	20.93	90.00	5,686.9	101.7	-138.3	-136.3	10.00	10.00	0.00
5,800.0	30.93	90.00	5,776.7	101.7	-94.6	-92.6	10.00	10.00	0.00
5,900.0	40.93	90.00	5,857.6	101.7	-36.0	-34.0	10.00	10.00	0.00
6,000.0	50.93	90.00	5,927.1	101.7	35.7	37.7	10.00	10.00	0.00
6,100.0	60.93	90.00	5,983.0	101.7	118.5	120.4	10.00	10.00	0.00
6,200.0	70.93	90.00	6,023.7	101.7	209.7	211.6	10.00	10.00	0.00
6,300.0	80.93	90.00	6,048.0	101.7	306.5	308.5	10.00	10.00	0.00
6,390.7	90.00	90.00	6,055.2	101.7	396.8	398.8	10.00	10.00	0.00
6,400.0	90.00	90.00	6,055.2	101.7	406.2	408.1	0.00	0.00	0.00
6,500.0	90.00	90.00	6,055.2	101.7	506.2	508.0	0.00	0.00	0.00
6,600.0	90.00	90.00	6,055.2	101.7	606.2	608.0	0.00	0.00	0.00
6,700.0	90.00	90.00	6,055.2	101.7	706.2	708.0	0.00	0.00	0.00
6,800.0	90.00	90.00	6,055.2	101.7	806.2	808.0	0.00	0.00	0.00
6,900.0	90.00	90.00	6,055.2	101.8	906.2	908.0	0.00	0.00	0.00
7,000.0	90.00	90.00	6,055.1	101.8	1,006.2	1,008.0	0.00	0.00	0.00
7,100.0	90.00	90.00	6,055.1	101.8	1,106.2	1,107.9	0.00	0.00	0.00
7,200.0	90.00	90.00	6,055.1	101.8	1,206.2	1,207.9	0.00	0.00	0.00
7,300.0	90.00	90.00	6,055.1	101.8	1,306.2	1,307.9	0.00	0.00	0.00
7,400.0	90.00	90.00	6,055.1	101.8	1,406.2	1,407.9	0.00	0.00	0.00
7,500.0	90.00	90.00	6,055.1	101.8	1,506.2	1,507.9	0.00	0.00	0.00
7,600.0	90.00	90.00	6,055.1	101.8	1,606.2	1,607.8	0.00	0.00	0.00
7,700.0	90.00	90.00	6,055.1	101.8	1,706.2	1,707.8	0.00	0.00	0.00
7,800.0	90.00	90.00	6,055.1	101.8	1,806.2	1,807.8	0.00	0.00	0.00
7,900.0	90.00	90.00	6,055.1	101.8	1,906.2	1,907.8	0.00	0.00	0.00
8,000.0	90.00	90.00	6,055.1	101.8	2,006.2	2,007.8	0.00	0.00	0.00
8,100.0	90.00	90.00	6,055.1	101.8	2,106.2	2,107.7	0.00	0.00	0.00
8,200.0	90.00	90.00	6,055.1	101.8	2,206.2	2,207.7	0.00	0.00	0.00
8,300.0	90.00	90.00	6,055.1	101.8	2,306.2	2,307.7	0.00	0.00	0.00
8,400.0	90.00	90.00	6,055.1	101.8	2,406.2	2,407.7	0.00	0.00	0.00
8,500.0	90.00	90.00	6,055.1	101.8	2,506.2	2,507.7	0.00	0.00	0.00
8,600.0	90.00	90.00	6,055.1	101.9	2,606.2	2,607.6	0.00	0.00	0.00
8,700.0	90.00	90.00	6,055.1	101.9	2,706.2	2,707.6	0.00	0.00	0.00
8,800.0	90.00	90.00	6,055.1	101.9	2,806.2	2,807.6	0.00	0.00	0.00
8,900.0	90.00	90.00	6,055.1	101.9	2,906.2	2,907.6	0.00	0.00	0.00
9,000.0	90.00	90.00	6,055.1	101.9	3,006.2	3,007.6	0.00	0.00	0.00
9,100.0	90.00	90.00	6,055.1	101.9	3,106.2	3,107.6	0.00	0.00	0.00
9,200.0	90.00	90.00	6,055.1	101.9	3,206.2	3,207.5	0.00	0.00	0.00
9,300.0	90.00	90.00	6,055.1	101.9	3,306.2	3,307.5	0.00	0.00	0.00
9,400.0	90.00	90.00	6,055.1	101.9	3,406.2	3,407.5	0.00	0.00	0.00
9,500.0	90.00	90.00	6,055.1	101.9	3,506.2	3,507.5	0.00	0.00	0.00
9,600.0	90.00	90.00	6,055.1	101.9	3,606.2	3,607.5	0.00	0.00	0.00
9,700.0	90.00	90.00	6,055.1	101.9	3,706.2	3,707.4	0.00	0.00	0.00
9,800.0	90.00	90.00	6,055.0	101.9	3,806.2	3,807.4	0.00	0.00	0.00
9,900.0	90.00	90.00	6,055.0	101.9	3,906.2	3,907.4	0.00	0.00	0.00
10,000.0	90.00	90.00	6,055.0	101.9	4,006.2	4,007.4	0.00	0.00	0.00
10,100.0	90.00	90.00	6,055.0	101.9	4,106.2	4,107.4	0.00	0.00	0.00

Database:	EDM Central Planning	**Local Co-ordinate Reference:**	Site Ruby Federal 100H
Company:	ConocoPhillips MCBU	**TVD Reference:**	WELL @ 3993.4usft (Original Well Elev)
Project:	Permian Basin Region - New Mexico (3001)	**MD Reference:**	WELL @ 3993.4usft (Original Well Elev)
Site:	Ruby Federal 100H	**North Reference:**	Grid
Well:	Ruby Federal 100 H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	Prelim Design v4		

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)
10,200.0	90.00	90.00	6,055.0	101.9	4,206.2	4,207.3	0.00	0.00	0.00
10,300.0	90.00	90.00	6,055.0	101.9	4,306.2	4,307.3	0.00	0.00	0.00
10,400.0	90.00	90.00	6,055.0	102.0	4,406.2	4,407.3	0.00	0.00	0.00
10,500.0	90.00	90.00	6,055.0	102.0	4,506.2	4,507.3	0.00	0.00	0.00
10,600.0	90.00	90.00	6,055.0	102.0	4,606.2	4,607.3	0.00	0.00	0.00
10,700.0	90.00	90.00	6,055.0	102.0	4,706.2	4,707.3	0.00	0.00	0.00
10,800.0	90.00	90.00	6,055.0	102.0	4,806.2	4,807.2	0.00	0.00	0.00
10,900.0	90.00	90.00	6,055.0	102.0	4,906.2	4,907.2	0.00	0.00	0.00
11,000.0	90.00	90.00	6,055.0	102.0	5,006.2	5,007.2	0.00	0.00	0.00
11,100.0	90.00	90.00	6,055.0	102.0	5,106.2	5,107.2	0.00	0.00	0.00
11,200.0	90.00	90.00	6,055.0	102.0	5,206.2	5,207.2	0.00	0.00	0.00
11,217.8	90.00	90.00	6,055.0	102.0	5,224.0	5,225.0	0.00	0.00	0.00

Design 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
RF_100H_v2 - plan hits target center - Point	0.00	0.01	6,055.0	102.0	5,224.0	669,484.38	667,782.75	32° 50' 21.501 N	103° 47' 13.410 W

ConocoPhillips

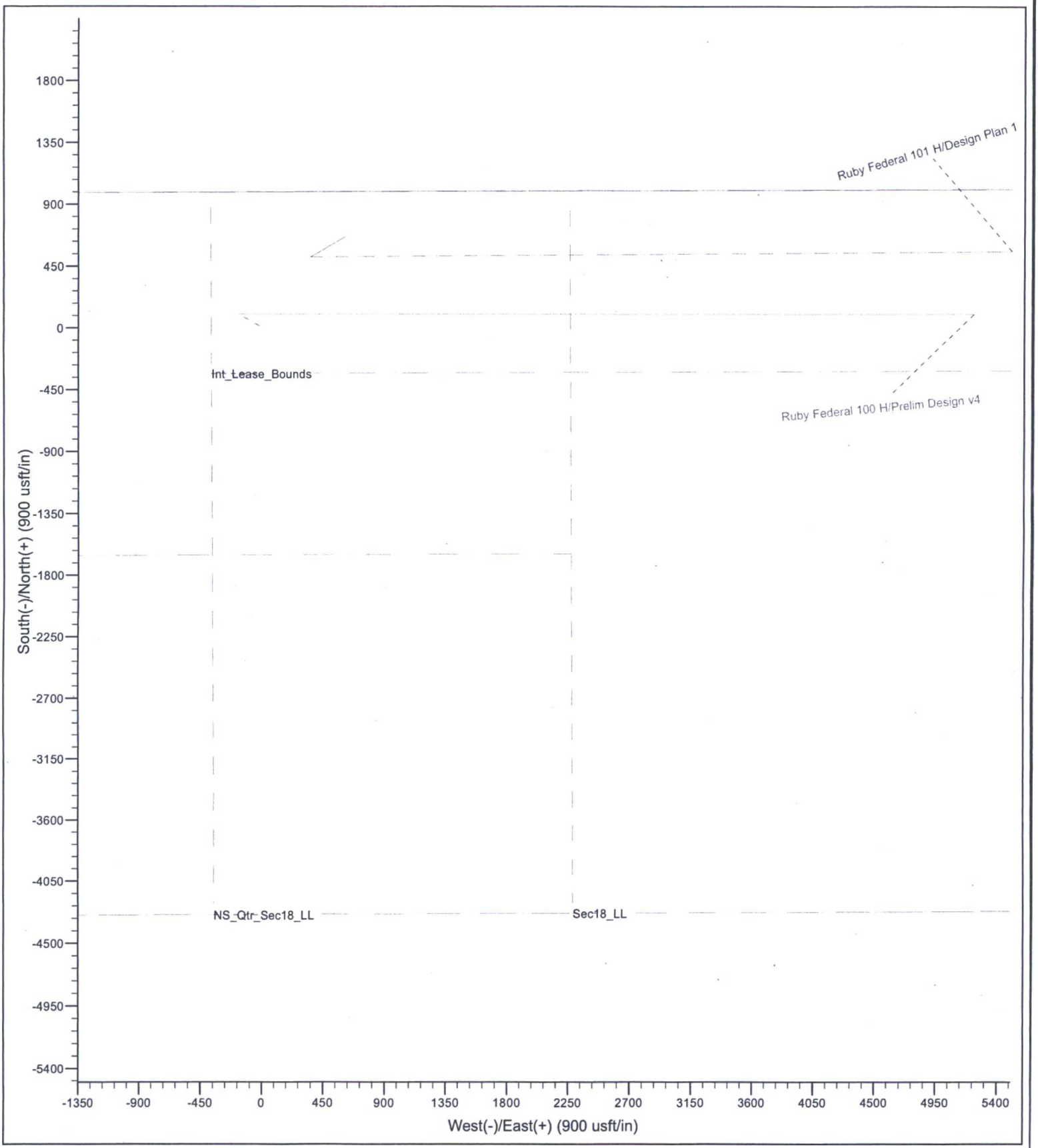
Plan View-Both 100H and 101H wells

ConocoPhillips MCBU
Permian Basin Region - New Mexico (3001)
Ruby Federal 100H
Ruby Federal 100 H
Original Hole
Plan: Prelim Design v4 (Ruby Federal 100 H/Original Hole)
WELL @ 3993.4usft (Original Well Elev)
US State Plane 1927 (Exact solution)
NAD 1927 (NADCON CONUS)
Clarke 1866
New Mexico East 3001

T G M

Azimuths to Grid North
True North: -0.29°
Magnetic North: 6.92°

Magnetic Field
Strength: 48438.1snT
Dip Angle: 60.64°
Date: 10/1/2016
Model: BGGM2016



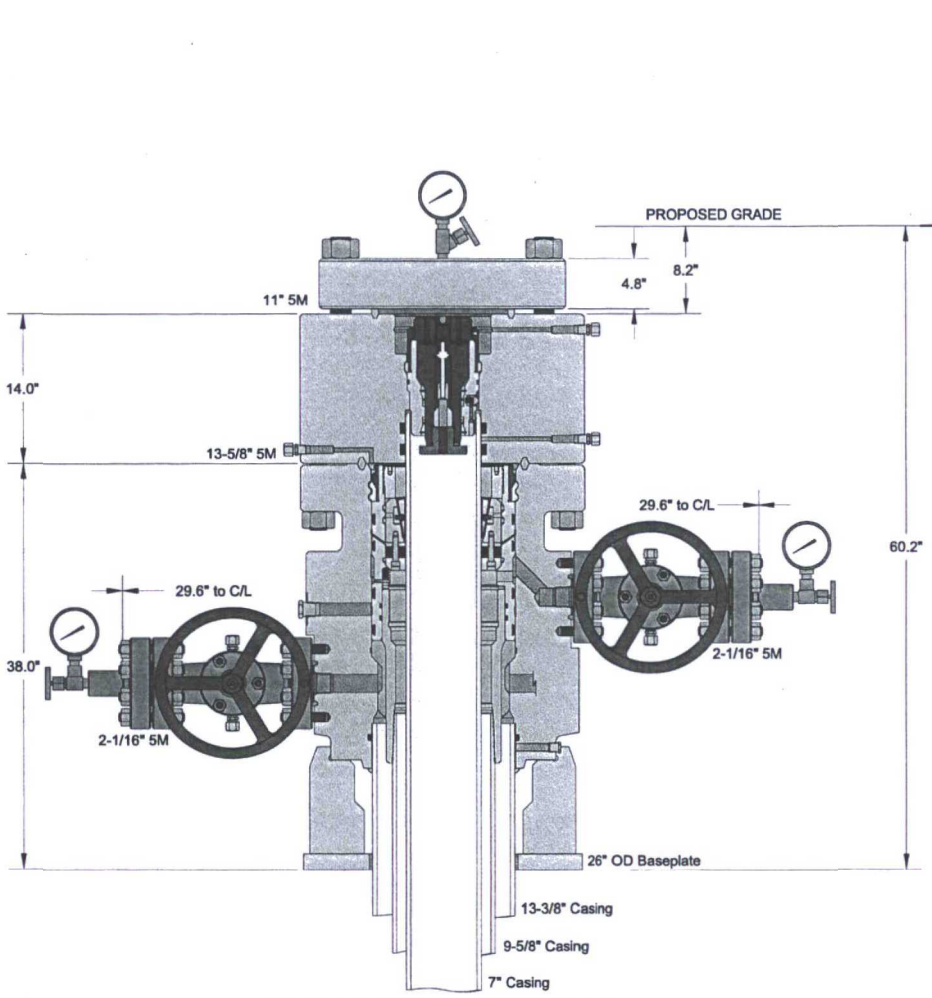
Date: 12:35, October 13 2016

ConocoPhillips

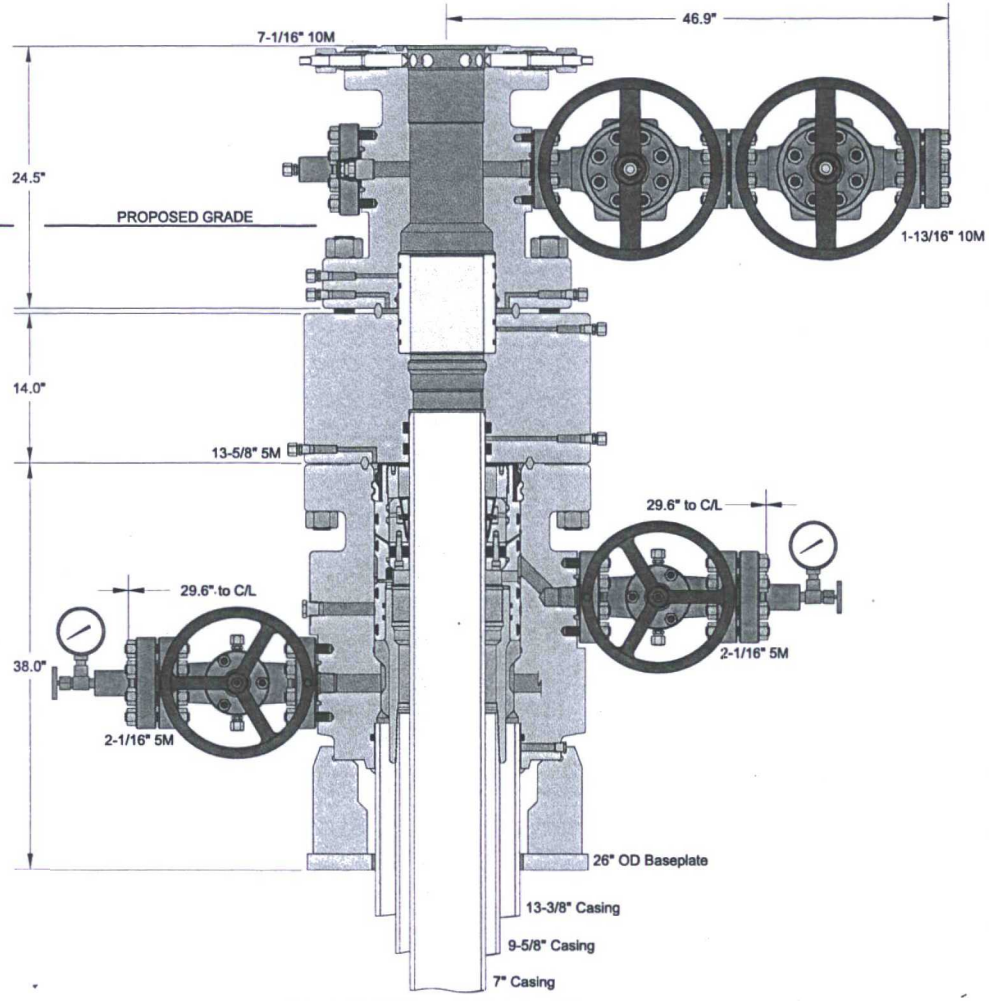
YESO HZ WELLBORE CASING & CEMENTING SCHEMATIC

Ruby Federal 100H API # 30-025-43370

Wellbore Section	Mud Properties		Wellbore Design		
	Type	PPG	Hole Size	Casing Profile	Casing / Cement / Directional Plan Details
COND					20" Conductor Set @ 85' MD / TVD
SURFACE	Native	8.6 PPG	17-1/2"		13-3/8" Surface Casing 13-3/8" 54.5# J-55 STC Set @ 750' MD / TVD Surface Cement 13.5 ppg Lead 14.8 ppg Tail
INTERM	Brine	10.0 PPG	12-1/4"		9-5/8" Intermediate Casing 9-5/8" 40# J-55 LTC Set @ 2,000' MD / TVD Intermediate Cement 11.5 ppg Lead 13.5 ppg Tail
PRODUCTION	Cut Brine	8.6 PPG - 9.0 PPG	V = 8-3/4" C = 8-3/4" L = 7-7/8"		7" Production Casing 7" 29# L-80 LTC Set @ 5,200' MD / TVD KOP ~5,500' MD / TVD XO 7" x 5-1/2" @ 5,200' MD 5-1/2" Production Casing 5-1/2" 17# L-80 LTC Set @ ~11,218' MD / ~6,055' TVD Production Cement 11.5 ppg Lead 14.0 ppg Tail



DRILL AND SKID CONFIGURATION



PRODUCTION CONFIGURATION

CACTUS WELLHEAD LLC

Permian Basin

13-3/8" x 9-5/8" x 7" 5M MBU-2LR Wellhead Assembly With 13-5/8" 5M x 11" 5M DBLHPS DSPA With 6-3/4" Type LR BPV Profile and11" 5M x 7-1/16" 10M CTH-HPS-F Tubing Head

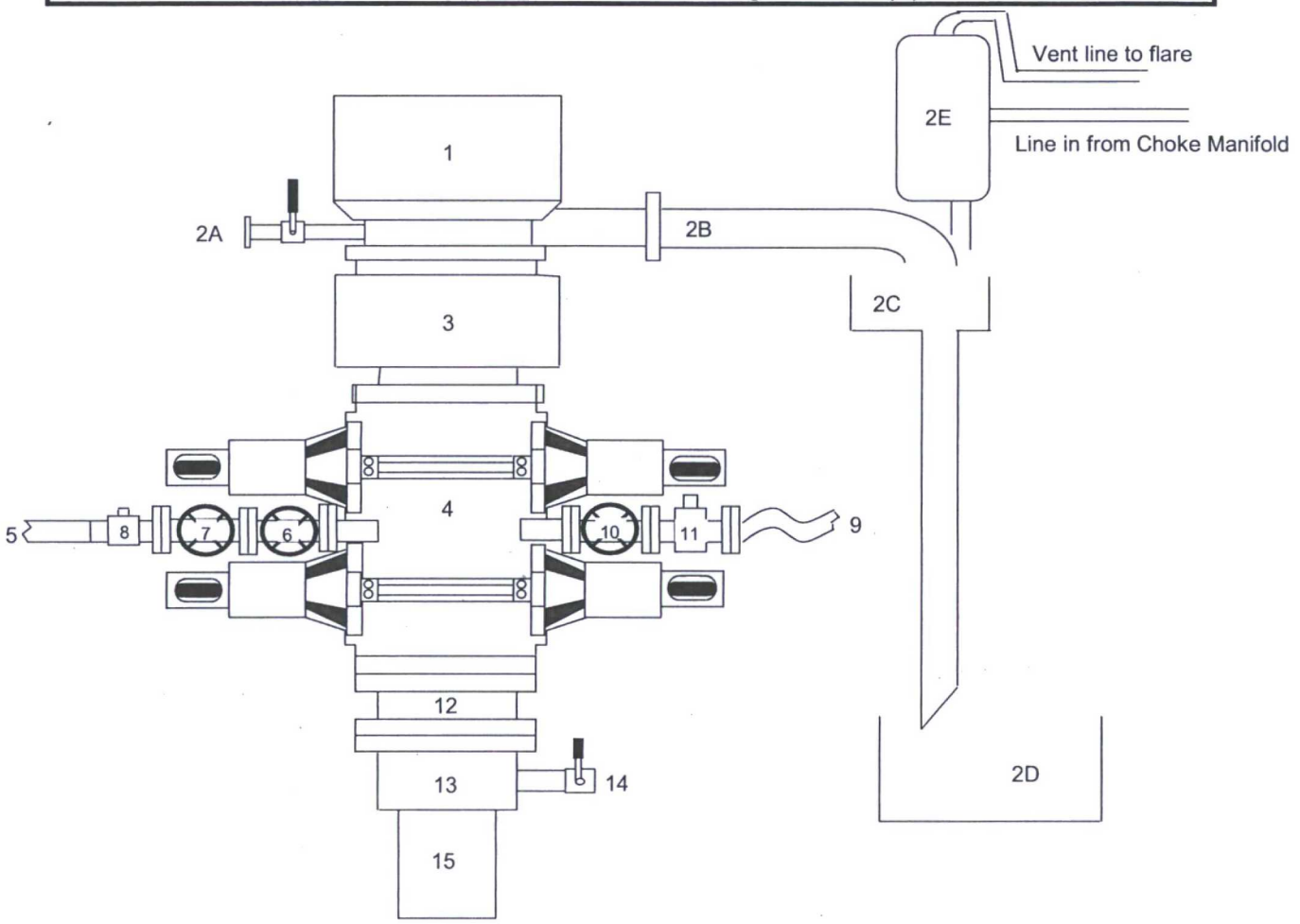
DRAWN	THH	26JUL15
APPRV		
DRAWING NO.	ODE0000716	

Ruby Federal 100H API#30-025-43370

Attachment #4.1

Ruby Federal 100H API#30-025-43370

BLOWOUT PREVENTER ARRANGEMENT - 13-5/8" 3M BOPE
per Onshore Oil and Gas Order No. 2 utilizing 5M Rated Equipment

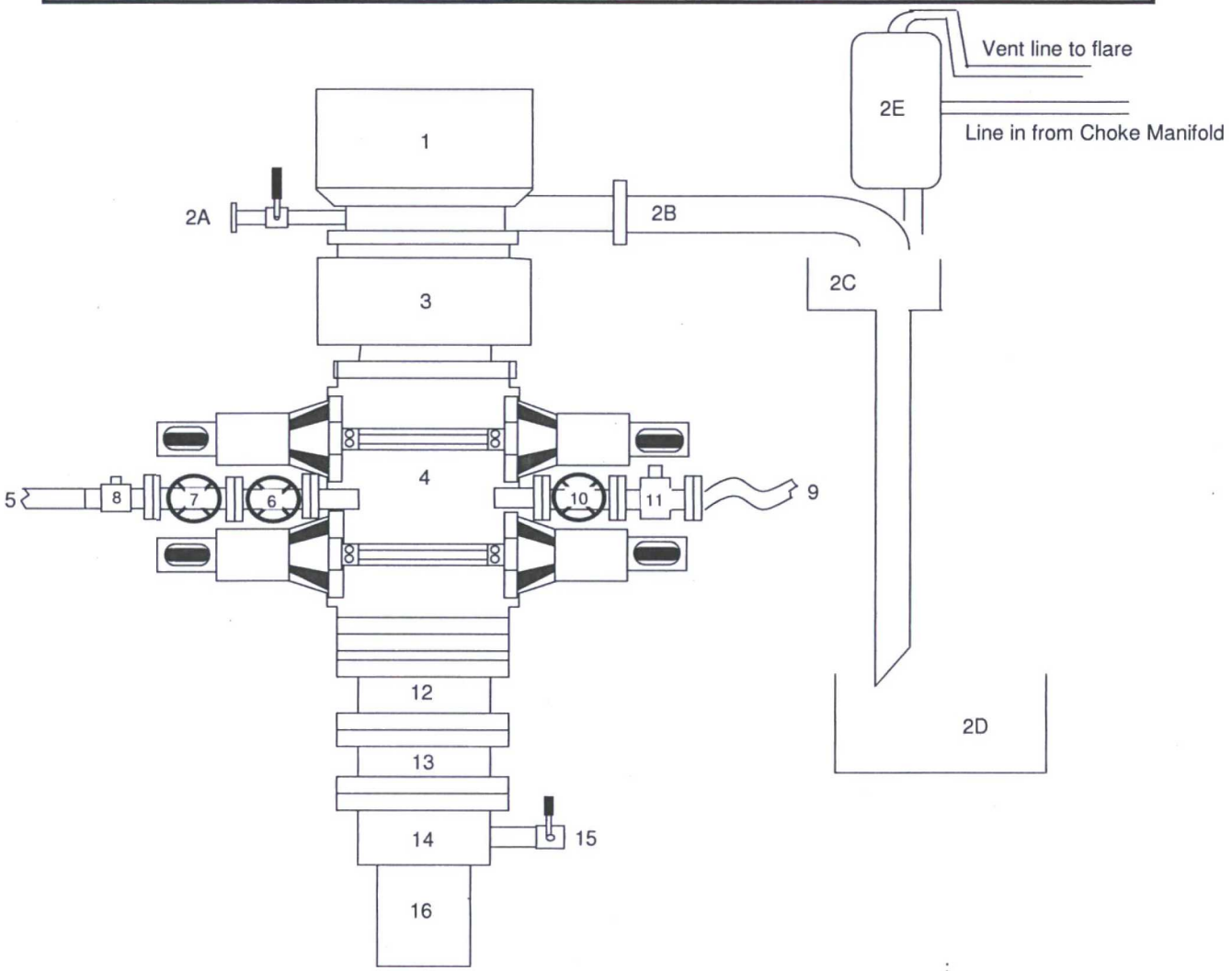


Item	Description
1	Rotating Head, 13-5/8"
2A	Fill up Line and Valve
2B	Flow Line (10")
2C	Shale Shakers and Solids Settling Tank
2D	Cuttings Bins for Zero Discharge
2E	Rental Mud Gas Separator with vent line to flare and return line to mud system
3	Annular BOP (13-5/8", 5M)
4	Double Ram (13-5/8", 5M, Blind Ram top x Pipe Ram bottom)
5	Kill Line (2" flexible hose, 3M)
6	Kill Line Valve, Inner (2-1/16", 5M)
7	Kill Line Valve, Outer (2-1/16", 5M)
8	Kill Line Check Valve (2-1/16", 5M)
9	Choke Line (3-1/8", 3M Coflex Line)
10	Choke Line Valve, Inner (3-1/8", 5M)
11	Choke Line Valve, Outer (3-1/8", Hydraulically operated, 5M)
12	Spacer Spool (13-5/8", 5M)
13	Casing Head (13-5/8" 5M)
14	Ball Valve and Threaded Nipple on Casing Head Outlet, 2" 5M
15	Surface Casing

A variance is requested to permit the use of flexible hose. The testing certificate for the specific hose will be available on the rig prior to commencing drilling operations.

BLOWOUT PREVENTER ARRANGEMENT - 11" 3M BOPE

per Onshore Oil and Gas Order No. 2 utilizing 3M Rated Equipment

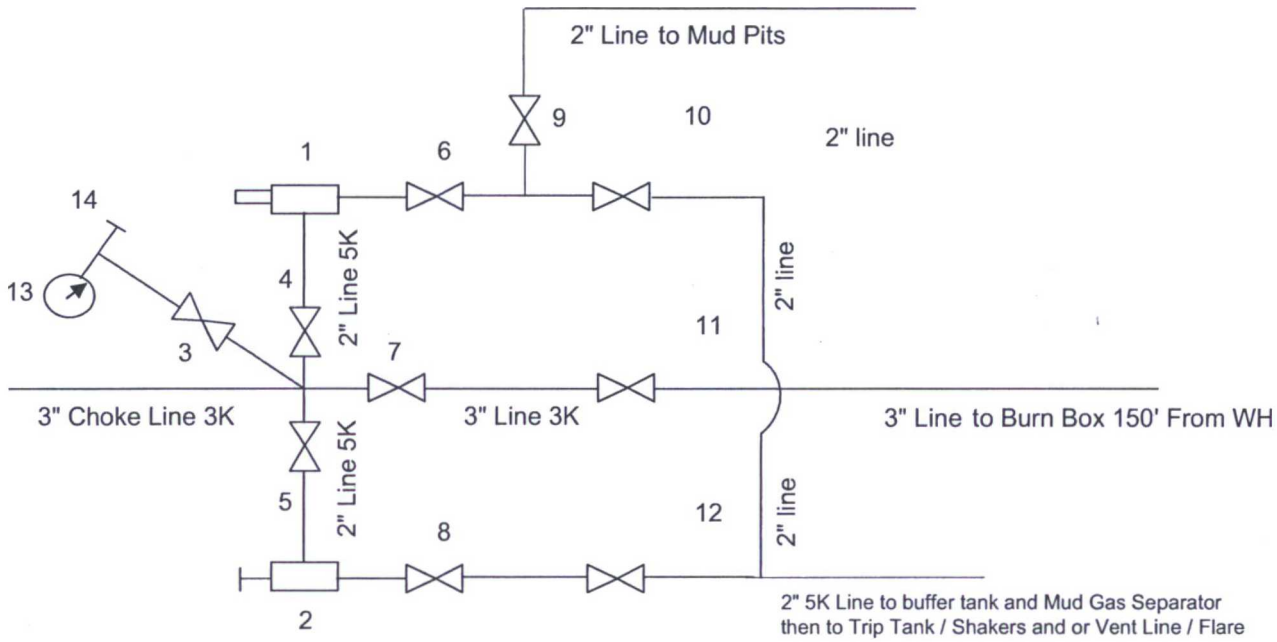


Item	Description
1	Rotating Head, 11"
2A	Fill up Line and Valve
2B	Flow Line (10")
2C	Shale Shakers and Solids Settling Tank
2D	Cuttings Bins for Zero Discharge
2E	Rental Mud Gas Separator with vent line to flare and return line to mud system
3	Annular BOP (11", 3M)
4	Double Ram (11", 3M, Blind Ram top x Pipe Ram bottom)
5	Kill Line (2" flexible hose, 3M)
6	Kill Line Valve, Inner (2-1/16", 3M)
7	Kill Line Valve, Outer (2-1/16", 3M)
8	Kill Line Check Valve (2-1/16", 3M)
9	Choke Line (3-1/8" 3M Coflex Line)
10	Choke Line Valve, Inner (3-1/8", 3M)
11	Choke Line Valve, Outer, (3-1/8", Hydraulically operated, 3M)
12	Adapter Flange (11" 5M to 11" 3M)
13	Spacer Spool (11", 5M)
14	Casing Head (11" 5M)
15	Ball Valve and Threaded Nipple on Casing Head Outlet, 2" 5M
16	Surface Casing

A variance is requested to permit the use of flexible hose. The testing certificate for the specific hose will be available on the rig prior to commencing drilling operations.

CHOKE MANIFOLD ARRANGEMENT - 3M Choke

per Onshore Oil and Gas Order No. 2 utilizing 3M/5M Equipment



All Tees must be Targeted

Item	Description
1	Remote Controlled Hydraulically Operated Adjustable Choke, 2-1/16", 3M
2	Manual Adjustable Choke, 2-1/16", 3M
3	Gate Valve, 2-1/16" 5M
4	Gate Valve, 2-1/16" 5M
5	Gate Valve, 2-1/16" 5M
6	Gate Valve, 2-1/16" 5M
7	Gate Valve, 3-1/8" 3M
8	Gate Valve, 2-1/16" 5M
9	Gate Valve, 2-1/16" 5M
10	Gate Valve, 2-1/16" 5M
11	Gate Valve, 3-1/8" 3M
12	Gate Valve, 2-1/16" 5M
13	Pressure Gauge
14	2" hammer union tie-in point for BOP Tester

The 3M Choke Manifold & Valves will be tested to rated working pressure.

4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) for Water Basin:
After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.

Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Possibility of water flows in the Artesia Group and Salado.
Possibility of lost circulation in the Rustler, San Andres, and Grayburg.

1. The **13-3/8** inch surface casing shall be set at approximately **780** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

    ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

3. The minimum required fill of cement behind the **7 X 5-1/2** inch production casing is:

    ☒ Cement should tie-back at least 500 feet into previous casing string as proposed by operator. Operator shall provide method of verification.

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API 53.

2. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

3. **Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 3000 (3M) psi.**
    a. **Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.**
    b. **If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.**
    c. **Manufacturer representative shall install the test plug for the initial BOP test.**
    d. **Operator shall perform the intermediate casing integrity test to 70% of the casing burst. This will test the multi-bowl seals.**
    e. **If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.**

4. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

    b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

d. The results of the test shall be reported to the appropriate BLM office.

e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

E. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

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