

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.

RECEIVED

SUBMIT IN TRIPLICATE - Other instructions on page 2

5. Lease Serial No.
M119271

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.
20702 HARROUN RANCH FEDERAL CO 4H

2. Name of Operator
BTA OIL PRODUCERS LLC
Contact: KATY REDDELL
E-Mail: KREDDELL@BTAOIL.COM

9. API Well No.
30-015-43414

3a. Address
104 SOUTH PECOS STREET
MIDLAND, TX 79701

3b. Phone No. (include area code)
Ph: 432-682-3753 Ext: 139

10. Field and Pool or Exploratory Area
PURPLE SAGE, WOLFCAMP

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
Sec 20 T23S R29E 160FSL 2493FWL

11. County or Parish, State
EDDY COUNTY, NM

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

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Hydraulic Fracturing	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input checked="" type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	Change to Original A
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal	PD

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 recompleate 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 recompleation 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.

BTA Oil Producers, LLC respectfully request the following changes to the original APD, as approved:

Original: Laguna Salado; Bone Spring
Change to: Purple Sage; Wolfcamp

Original SHL: 200' FSL and 1700' FEL; Sec. 20, T-23-S, R-29-E
Change to: 160' FSL and 2493' FWL; Sec 20, T-23-S, R-29-E. Moving surface hole location to be on the same pad as the 20702 HARROUN RANCH FEDERAL COM #3H. There will not be any changes to the pad.

Original BHL: 210' FNL and 1900' FEL; Sec. 20, T-23-S, R-29-E
Change to: 50' FNL and 1980' FEL; Sec. 17, T-23-S, R-29-E

1/28/2018: Engineering review completed by M Hague

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

APD was approved under the:
DOI-BLM-NM-P010-2015-1243-EA
Same EDA's apply.

OK Per Bob Ballard 1-16-18

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

Electronic Submission #398471 verified by the BLM Well Information System
For BTA OIL PRODUCERS LLC, sent to the Carlsbad
Committed to AFMSS for processing by CHARLES NIMMER on 12/19/2017 ()

Name (Printed/Typed) KATY REDDELL

Title REGULATORY ANALYST

Signature (Electronic Submission)

Date 12/19/2017

NM OIL CONSERVATION
ARTESIA DISTRICT

JAN 22 2018

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

RECEIVED

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)

** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED **

RWP. 1-23-18

Additional data for EC transaction #398471 that would not fit on the form

32. Additional remarks, continued

Original: OD Casing 9-5/8"
Change to: OD Casing 7"

Original: No liner
Change to: 6-1/8" hole size and 4-1/2" liner. Liner will be set at 10,300' to 21,111' TVD

Original cement program for production casing Lead: 700 sx 50:50 Class H 2.92 ft/sk; 11.3 ppg. Tail 950 sx 50:50 Class H 1.22 ft/sk; 14.4 ppg.
Change to: 460 sx TXI 2.87 ft/sk; 10.5 ppg; Tail: 200 sx Class H 1.18 ft/sk; 15.6 ppg

Original Cement program for liner: none
Change to: 4 1/2" production liner lead: 730 sx Class H 1.57 ft/sk; 13.2 ppg.

Original Pressure Control Equipment: 3M system with double ram type of 3000 psi WP.
Change to: 5M system with double ram type of 5000 psi WP.

Original Mud program: 2,847 to TD
Change to: 2847' to 10,924 MD; 10,924 MD to TD. TD 12.0 ppg-12.8 ppg OBM

Original Drill Stem tests will be based on geological sample shows.
Change to: No drill stem tests.

Original Estimated BHP in paragraph 9 is 3,800 psi.
Change Estimated BHP to 7062 psi.

Original BHT: 125 degrees.
Change BHT: 167 degrees.

NM OIL CONSERVATION ARTESIA DISTRICT

JAN 22 2018

Phone: (505) 334-6176 Fax: (505) 334-6170
DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

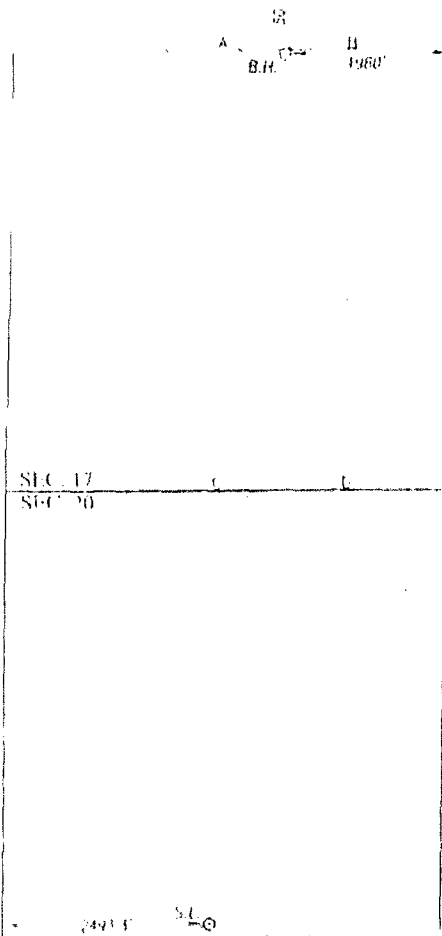
Santa Fe, New Mexico 87505

AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-43414		Pool Code 98220		Pool Name PURPLE SAGE; WOLF CAMP	
Property Code 260297		Property Name 20702 HARROUN RANCH FEDERAL COM		Well Number 4H	
OGRID No. 260297		Operator Name BTA OIL PRODUCERS		Elevation 2987'	
Surface Location					
UL or lot No N	Section 20	Township 23-S	Range 29-E	Lot Idn 160	Feet from the 160
		North/South line SOUTH		Feet from the 2493.3	
		East/West line WEST		County EDDY	
Bottom Hole Location If Different From Surface					
UL or lot No B	Section 17	Township 23-S	Range 29-E	Lot Idn 50	Feet from the 50
		North/South line NORTH		Feet from the 1980	
		East/West line EAST		County EDDY	
Dedicated Acres 640		Joint or Infill		Consolidation Code	
		Order No.			

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



SCALE: 1"=2000'

BOTTOM HOLE LOCATION	BOTTOM HOLE LOCATION
NAD 83 NME	NAD 27 NME
Y= 477499.6 N	Y= 477440.0 N
X= 642886.0 E	X= 601703.0 E
LAT.=32.312291° N	LAT.=32.312169° N
LONG.=104.004627° W	LONG.=104.004134° W

CORNER COORDINATES TABLE

NAD 27 NME

A - Y= 477483.9 N, X= 601051.2 E
B - Y= 477496.1 N, X= 602367.2 E
C - Y= 472180.9 N, X= 600996.0 E
D - Y= 472185.4 N, X= 602319.5 E
E - Y= 466841.9 N, X= 599669.7 E
F - Y= 466853.3 N, X= 600973.0 E
G - Y= 466863.5 N, X= 602303.2 E

CORNER COORDINATES TABLE

NAD 83 NME

A - Y= 477543.6 N, X= 642234.1 E
B - Y= 477555.8 N, X= 643550.1 E
C - Y= 472240.4 N, X= 642179.1 E
D - Y= 472244.9 N, X= 643502.6 E
E - Y= 466901.3 N, X= 640852.9 E
F - Y= 466912.7 N, X= 642156.3 E
G - Y= 466922.9 N, X= 643486.5 E

GEODETIC COORDINATES

NAD 83 NME
SURFACE LOCATION
Y= 467071.7 N
X= 642041.7 E
LAT.=32.283634° N
LONG.=104.007462° W

GEODETIC COORDINATES

NAD 27 NME
SURFACE LOCATION
Y= 467012.3 N
X= 600858.5 E
LAT.=32.283512° N
LONG.=104.006977° W

OPERATOR CERTIFICATION

I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order.

Signature

Date

Printed Name

Printed Address

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

AUGUST 30, 2017

Date of Survey

Signature & Seal of Well Location Surveyor

Certificate Number

12641

ACK

W.S. WO. 11110866



Haque, Mustafa <mhaque@blm.gov>

Variance to Sundry for 20702 Harroun Ranch Federal Com #4H

Katy W. Reddell <KReddell@btaoil.com>

Wed, Jan 3, 2018 at 8:22 AM

To: "Haque, Mustafa" <mhaque@blm.gov>

Cc: "cnimmer@blm.gov" <cnimmer@blm.gov>, "Banos, Fernando" <fbanos@blm.gov>

FTP – 477 FSL & 2310 FEL

LTP – 330 FNL & 1980 FEL

Thank you,

Katy

From: Haque, Mustafa [mailto:mhaque@blm.gov]

Sent: Thursday, December 28, 2017 9:49 AM

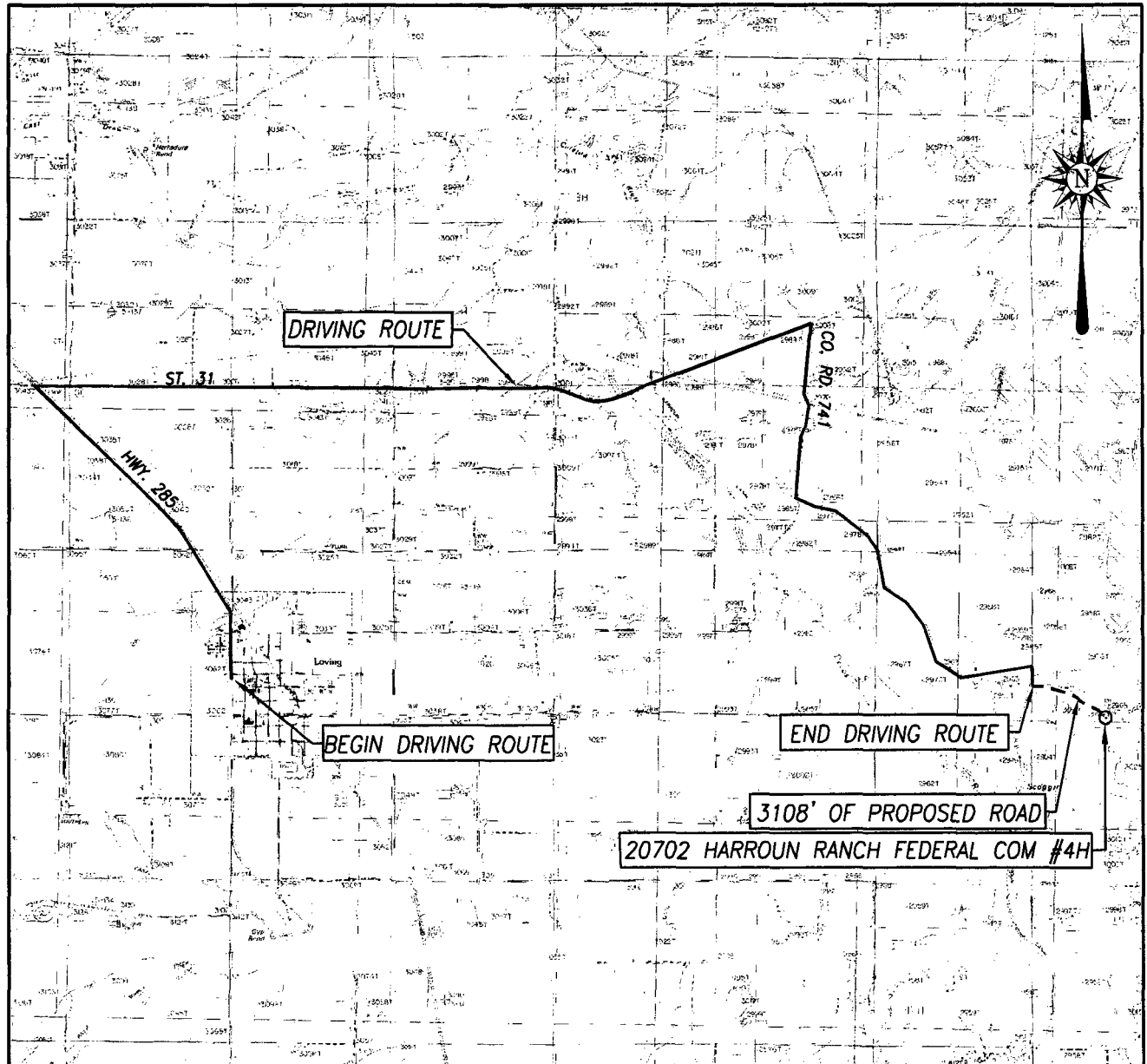
To: Katy W. Reddell

Cc: cnimmer@blm.gov; Banos, Fernando

Subject: Re: Variance to Sundry for 20702 Harroun Ranch Federal Com #4H

[Quoted text hidden]

TOPOGRAPHICAL AND ACCESS ROAD MAP



SCALE: 1" = 1 MILE

CONTOUR INTERVAL:
LOVING, N.M. - 10'

SEC. 20 TWP. 23-S RGE. 29-E

SURVEY N.M.P.M.

COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 160' FSL & 2493.3' FWL

ELEVATION 2987.4'

OPERATOR BTA OIL PRODUCERS

LEASE 20702 HARROUN RANCH FEDERAL COM

U.S.G.S. TOPOGRAPHIC MAP
LOVING, N.M.

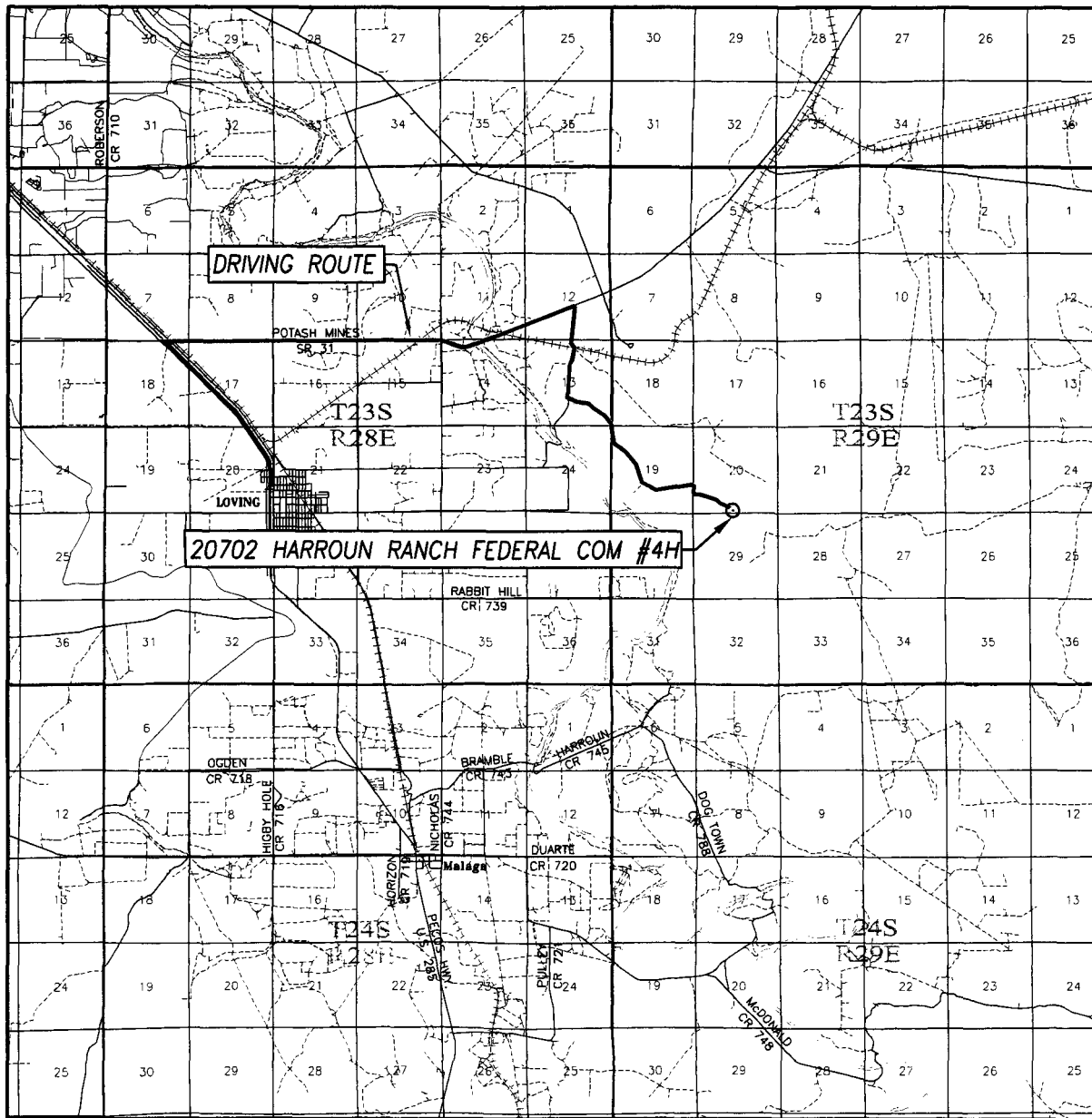
DIRECTIONS TO LOCATION:

FROM LOVING N.M. GO NORTHWEST ON U.S. HWY. 285 APPROX. 2.3 MILES, TURN RIGHT ON ST. HWY. 31 AND GO EAST 3.0 MILES, THEN NORTHEAST 2 MILES TO CO. RD. 741, TURN RIGHT ON CO. RD. 741 AND GO APPROX. 1.1 MILES TO END OF ROUTE, TURN LEFT AND GO SOUTHEAST APPROX. 2.1 MILES TO A STAKED ROAD, FOLLOW ROAD SOUTH APPROX. 0.1 MILE; TURN LEFT AND GO SOUTHEAST APPROX. 0.5 MILES TO THE NORTHWEST CORNER OF THIS WELL PAD. THIS LOCATION IS APPROX. 207 FEET SOUTHEAST.



PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz
TBPLS# 10021000

VICINITY MAP



SCALE: 1" = 2 MILES

DRIVING ROUTE: SEE TOPOGRAPHICAL AND ACCESS ROAD MAP

SEC. 20 TWP. 23-S RGE. 29-E

SURVEY N.M.P.M.


COUNTY EDDY STATE NEW MEXICO

DESCRIPTION 160' FSL & 2493.3' FWL

ELEVATION 2987'

OPERATOR BTA OIL PRODUCERS

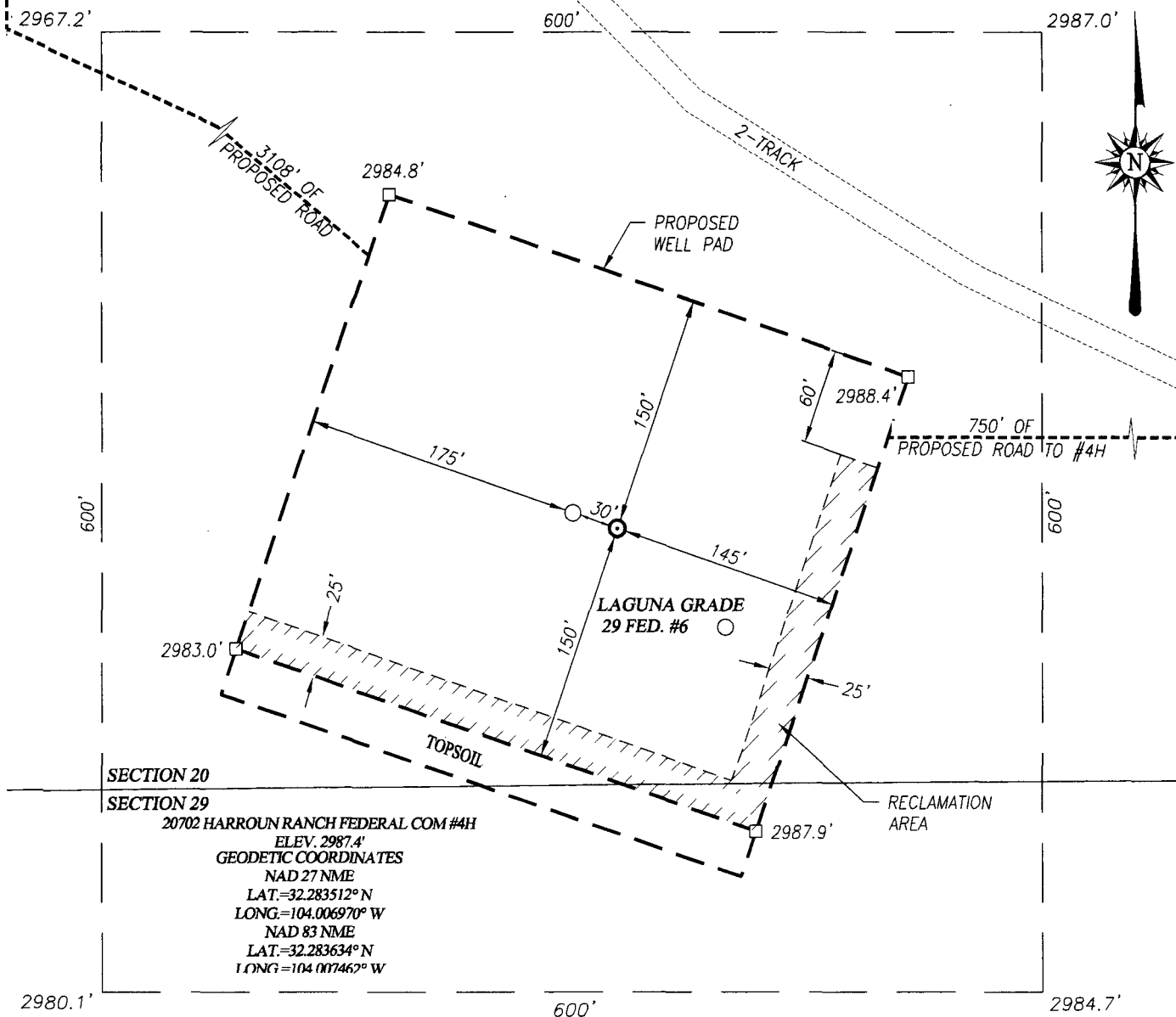
LEASE 20702 HARROUN RANCH FEDERAL COM



PROVIDING SURVEYING SERVICES
SINCE 1946

JOHN WEST SURVEYING COMPANY

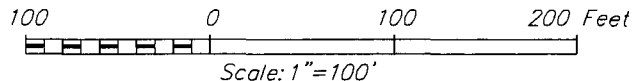
412 N. DAL PASO HOBBS, N.M. 88240
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TBPLS# 10021000



NOTE:
SEE "TOPOGRAPHICAL AND ACCESS ROAD
MAP" FOR PROPOSED ROAD LOCATION.

DIRECTIONS TO LOCATION:

FROM LOVING N.M. GO NORTHWEST ON U.S. HWY. 285 APPROX.
2.3 MILES, TURN RIGHT ON ST. HWY. 31 AND GO EAST 3.0 MILES,
THEN NORTHEAST 2 MILES TO CO. RD. 741, TURN RIGHT ON
CO. RD. 741 AND GO APPROX. 1.1 MILES TO END OF ROUTE, TURN
LEFT AND GO SOUTHEAST APPROX. 2.1 MILES TO A STAKED ROAD,
FOLLOW ROAD SOUTH APPROX. 0.1 MILE; TURN LEFT AND GO
SOUTHEAST APPROX. 0.5 MILES TO THE NORTHWEST CORNER OF
THIS WELL PAD. THIS LOCATION IS APPROX. 207 FEET SOUTHEAST.



BTA OIL PRODUCERS

20702 HARROUN RANCH FEDERAL COM #4H WELL
LOCATED 160 FEET FROM THE SOUTH LINE
AND 249.3 FEET FROM THE WEST LINE OF SECTION 20,
TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO



PROVIDING SURVEYING SERVICES
SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO HOBBS, N.M. 88240
(575) 393-3117 www.jwsc.biz
TBPLS# 10021000

Survey Date: 8/30/17	CAD Date: 8/30/17	Drawn By: ACK
W.O. No.: 17110866	Rev. :	Rel. W.O.:14110863

Sheet 1 of 1

Harroun Ranch 3H/4H batch drilling process

- Spud #4H
- Drill and set 13-3/8", 9-5/8" & 7" casing strings
- Install/test TA cap
- Walk over #3H
- Spud #3H
- Drill and set 13-3/8", 9-5/8" & 7" casing string.
- Swap to oil based mud system
- Drill and set 4-1/2" production liner on #3H
- Install/test permanent tubing head
- Walk to back to #4H
- Drill and set 4-1/2" production liner on #4H
- Install/test permanent tubing head
- Move off pad, drilling complete

BTA Oil Producers, LLC

Eddy County, NM (NAD 83)

Harroun Ranch

Harroun Ranch #4H

Wellbore #1

Plan: Design #1

Standard Planning Report - Geographic

06 December, 2017

BTA

Planning Report - Geographic

Database: EDM 5000.1 Single User Db
Company: BTA Oil Producers, LLC
Project: Eddy County, NM (NAD 83)
Site: Harroun Ranch
Well: Harroun Ranch #4H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well Harroun Ranch #4H
TVD Reference: WELL @ 2987.0usft (Original Well Elev)
MD Reference: WELL @ 2987.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project	Eddy County, NM (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Ground Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone	Using geodetic scale factor	

Site	Harroun Ranch			
Site Position:		Northing:	467,070.67 usft	Latitude: 32° 17' 1.140 N
From:	Map	Easting:	639,729.01 usft	Longitude: 104° 0' 53.805 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.17 °

Well	Harroun Ranch #4H			
Well Position	+N/-S	0.0 usft	Northing:	467,071.70 usft
	+E/-W	0.0 usft	Easting:	642,041.00 usft
Position Uncertainty	0.0 usft		Wellhead Elevation:	0.0 usft
			Ground Level:	2,987.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/31/2009	7.95	60.22	48,783

Design	Design #1			
Audit Notes:				
Version:	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	5.96

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	
2,815.0	0.00	0.00	2,815.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,045.4	0.00	0.00	4,045.4	0.0	0.0	0.00	0.00	0.00	0.00	
4,345.4	6.00	104.04	4,344.8	-3.8	15.2	2.00	2.00	0.00	104.04	
9,911.8	6.00	104.04	9,880.7	-144.9	579.7	0.00	0.00	0.00	0.00	
10,311.8	0.00	0.00	10,280.0	-150.0	600.0	1.50	-1.50	0.00	180.00	
10,323.8	0.00	0.00	10,292.0	-150.0	600.0	0.00	0.00	0.00	0.00	
11,223.8	90.00	2.60	10,865.0	422.4	626.0	10.00	10.00	0.00	2.60	
21,111.6	90.00	2.60	10,865.0	10,300.0	1,075.0	0.00	0.00	0.00	0.00	

BTA

Planning Report - Geographic

Database: EDM 5000.1 Single User Db
Company: BTA Oil Producers, LLC
Project: Eddy County, NM (NAD 83)
Site: Harroun Ranch
Well: Harroun Ranch #4H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well Harroun Ranch #4H
TVD Reference: WELL @ 2987.0usft (Original Well Elev)
MD Reference: WELL @ 2987.0usft (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)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
100.0	0.00	0.00	100.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
200.0	0.00	0.00	200.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
300.0	0.00	0.00	300.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
400.0	0.00	0.00	400.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
500.0	0.00	0.00	500.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
600.0	0.00	0.00	600.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
700.0	0.00	0.00	700.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
800.0	0.00	0.00	800.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
900.0	0.00	0.00	900.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
1,000.0	0.00	0.00	1,000.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
1,100.0	0.00	0.00	1,100.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
1,200.0	0.00	0.00	1,200.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
1,300.0	0.00	0.00	1,300.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
1,400.0	0.00	0.00	1,400.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
1,500.0	0.00	0.00	1,500.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
1,600.0	0.00	0.00	1,600.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
1,700.0	0.00	0.00	1,700.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
1,800.0	0.00	0.00	1,800.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
1,900.0	0.00	0.00	1,900.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
2,000.0	0.00	0.00	2,000.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
2,100.0	0.00	0.00	2,100.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
2,200.0	0.00	0.00	2,200.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
2,300.0	0.00	0.00	2,300.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
2,400.0	0.00	0.00	2,400.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
2,500.0	0.00	0.00	2,500.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
2,600.0	0.00	0.00	2,600.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
2,700.0	0.00	0.00	2,700.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
2,800.0	0.00	0.00	2,800.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
2,815.0	0.00	0.00	2,815.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
2,900.0	0.00	0.00	2,900.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
3,000.0	0.00	0.00	3,000.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
3,100.0	0.00	0.00	3,100.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
3,200.0	0.00	0.00	3,200.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
3,300.0	0.00	0.00	3,300.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
3,400.0	0.00	0.00	3,400.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
3,500.0	0.00	0.00	3,500.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
3,600.0	0.00	0.00	3,600.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
3,700.0	0.00	0.00	3,700.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
3,800.0	0.00	0.00	3,800.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
3,900.0	0.00	0.00	3,900.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
4,000.0	0.00	0.00	4,000.0	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
4,045.4	0.00	0.00	4,045.4	0.0	0.0	467,071.70	642,041.00	32° 17' 1.081 N	104° 0' 26.872 W
4,100.0	1.09	104.04	4,100.0	-0.1	0.5	467,071.57	642,041.51	32° 17' 1.080 N	104° 0' 26.866 W
4,200.0	3.09	104.04	4,199.9	-1.0	4.0	467,070.69	642,045.05	32° 17' 1.071 N	104° 0' 26.825 W
4,300.0	5.09	104.04	4,299.7	-2.7	11.0	467,068.96	642,051.97	32° 17' 1.054 N	104° 0' 26.744 W
4,345.4	6.00	104.04	4,344.8	-3.8	15.2	467,067.89	642,056.23	32° 17' 1.043 N	104° 0' 26.695 W
4,400.0	6.00	104.04	4,399.2	-5.2	20.8	467,066.51	642,061.77	32° 17' 1.029 N	104° 0' 26.630 W
4,500.0	6.00	104.04	4,498.6	-7.7	30.9	467,063.97	642,071.91	32° 17' 1.004 N	104° 0' 26.512 W
4,600.0	6.00	104.04	4,598.1	-10.3	41.0	467,061.44	642,082.05	32° 17' 0.979 N	104° 0' 26.394 W
4,700.0	6.00	104.04	4,697.5	-12.8	51.2	467,058.90	642,092.19	32° 17' 0.953 N	104° 0' 26.276 W
4,800.0	6.00	104.04	4,797.0	-15.3	61.3	467,056.37	642,102.33	32° 17' 0.928 N	104° 0' 26.158 W
4,900.0	6.00	104.04	4,896.4	-17.9	71.5	467,053.83	642,112.47	32° 17' 0.903 N	104° 0' 26.040 W
5,000.0	6.00	104.04	4,995.9	-20.4	81.6	467,051.30	642,122.61	32° 17' 0.877 N	104° 0' 25.922 W
5,100.0	6.00	104.04	5,095.3	-22.9	91.8	467,048.76	642,132.75	32° 17' 0.852 N	104° 0' 25.804 W

BTA

Planning Report - Geographic

Database: EDM 5000.1 Single User Db
Company: BTA Oil Producers, LLC
Project: Eddy County, NM (NAD 83)
Site: Harroun Ranch
Well: Harroun Ranch #4H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well Harroun Ranch #4H
TVD Reference: WELL @ 2987.0usft (Original Well Elev)
MD Reference: WELL @ 2987.0usft (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)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
5,200.0	6.00	104.04	5,194.8	-25.5	101.9	467,046.23	642,142.89	32° 17' 0.826 N	104° 0' 25.686 W	
5,300.0	6.00	104.04	5,294.2	-28.0	112.0	467,043.69	642,153.03	32° 17' 0.801 N	104° 0' 25.568 W	
5,400.0	6.00	104.04	5,393.7	-30.5	122.2	467,041.16	642,163.17	32° 17' 0.776 N	104° 0' 25.450 W	
5,500.0	6.00	104.04	5,493.1	-33.1	132.3	467,038.62	642,173.31	32° 17' 0.750 N	104° 0' 25.332 W	
5,600.0	6.00	104.04	5,592.6	-35.6	142.5	467,036.09	642,183.45	32° 17' 0.725 N	104° 0' 25.214 W	
5,700.0	6.00	104.04	5,692.0	-38.1	152.6	467,033.55	642,193.59	32° 17' 0.699 N	104° 0' 25.096 W	
5,800.0	6.00	104.04	5,791.5	-40.7	162.7	467,031.02	642,203.73	32° 17' 0.674 N	104° 0' 24.978 W	
5,900.0	6.00	104.04	5,890.9	-43.2	172.9	467,028.48	642,213.87	32° 17' 0.649 N	104° 0' 24.860 W	
6,000.0	6.00	104.04	5,990.4	-45.8	183.0	467,025.95	642,224.01	32° 17' 0.623 N	104° 0' 24.742 W	
6,100.0	6.00	104.04	6,089.8	-48.3	193.2	467,023.41	642,234.15	32° 17' 0.598 N	104° 0' 24.624 W	
6,200.0	6.00	104.04	6,189.3	-50.8	203.3	467,020.88	642,244.29	32° 17' 0.572 N	104° 0' 24.506 W	
6,300.0	6.00	104.04	6,288.7	-53.4	213.4	467,018.34	642,254.43	32° 17' 0.547 N	104° 0' 24.388 W	
6,400.0	6.00	104.04	6,388.2	-55.9	223.6	467,015.81	642,264.57	32° 17' 0.522 N	104° 0' 24.270 W	
6,500.0	6.00	104.04	6,487.6	-58.4	233.7	467,013.27	642,274.71	32° 17' 0.496 N	104° 0' 24.152 W	
6,600.0	6.00	104.04	6,587.1	-61.0	243.9	467,010.74	642,284.85	32° 17' 0.471 N	104° 0' 24.034 W	
6,700.0	6.00	104.04	6,686.6	-63.5	254.0	467,008.20	642,294.99	32° 17' 0.445 N	104° 0' 23.916 W	
6,800.0	6.00	104.04	6,786.0	-66.0	264.1	467,005.67	642,305.13	32° 17' 0.420 N	104° 0' 23.798 W	
6,900.0	6.00	104.04	6,885.5	-68.6	274.3	467,003.13	642,315.27	32° 17' 0.395 N	104° 0' 23.679 W	
7,000.0	6.00	104.04	6,984.9	-71.1	284.4	467,000.60	642,325.41	32° 17' 0.369 N	104° 0' 23.561 W	
7,100.0	6.00	104.04	7,084.4	-73.6	294.6	466,998.06	642,335.55	32° 17' 0.344 N	104° 0' 23.443 W	
7,200.0	6.00	104.04	7,183.8	-76.2	304.7	466,995.53	642,345.69	32° 17' 0.319 N	104° 0' 23.325 W	
7,300.0	6.00	104.04	7,283.3	-78.7	314.8	466,993.00	642,355.83	32° 17' 0.293 N	104° 0' 23.207 W	
7,400.0	6.00	104.04	7,382.7	-81.2	325.0	466,990.46	642,365.97	32° 17' 0.268 N	104° 0' 23.089 W	
7,500.0	6.00	104.04	7,482.2	-83.8	335.1	466,987.93	642,376.11	32° 17' 0.242 N	104° 0' 22.971 W	
7,600.0	6.00	104.04	7,581.6	-86.3	345.3	466,985.39	642,386.25	32° 17' 0.217 N	104° 0' 22.853 W	
7,700.0	6.00	104.04	7,681.1	-88.9	355.4	466,982.86	642,396.39	32° 17' 0.192 N	104° 0' 22.735 W	
7,800.0	6.00	104.04	7,780.5	-91.4	365.6	466,980.32	642,406.53	32° 17' 0.166 N	104° 0' 22.617 W	
7,900.0	6.00	104.04	7,880.0	-93.9	375.7	466,977.79	642,416.67	32° 17' 0.141 N	104° 0' 22.499 W	
8,000.0	6.00	104.04	7,979.4	-96.5	385.8	466,975.25	642,426.81	32° 17' 0.115 N	104° 0' 22.381 W	
8,100.0	6.00	104.04	8,078.9	-99.0	396.0	466,972.72	642,436.95	32° 17' 0.090 N	104° 0' 22.263 W	
8,200.0	6.00	104.04	8,178.3	-101.5	406.1	466,970.18	642,447.09	32° 17' 0.065 N	104° 0' 22.145 W	
8,300.0	6.00	104.04	8,277.8	-104.1	416.3	466,967.65	642,457.23	32° 17' 0.039 N	104° 0' 22.027 W	
8,400.0	6.00	104.04	8,377.2	-106.6	426.4	466,965.11	642,467.37	32° 17' 0.014 N	104° 0' 21.909 W	
8,500.0	6.00	104.04	8,476.7	-109.1	436.5	466,962.58	642,477.51	32° 16' 59.988 N	104° 0' 21.791 W	
8,600.0	6.00	104.04	8,576.1	-111.7	446.7	466,960.04	642,487.65	32° 16' 59.963 N	104° 0' 21.673 W	
8,700.0	6.00	104.04	8,675.6	-114.2	456.8	466,957.51	642,497.79	32° 16' 59.938 N	104° 0' 21.555 W	
8,800.0	6.00	104.04	8,775.0	-116.7	467.0	466,954.97	642,507.93	32° 16' 59.912 N	104° 0' 21.437 W	
8,900.0	6.00	104.04	8,874.5	-119.3	477.1	466,952.44	642,518.07	32° 16' 59.887 N	104° 0' 21.319 W	
9,000.0	6.00	104.04	8,974.0	-121.8	487.2	466,949.90	642,528.21	32° 16' 59.861 N	104° 0' 21.201 W	
9,100.0	6.00	104.04	9,073.4	-124.3	497.4	466,947.37	642,538.35	32° 16' 59.836 N	104° 0' 21.083 W	
9,200.0	6.00	104.04	9,172.9	-126.9	507.5	466,944.83	642,548.49	32° 16' 59.811 N	104° 0' 20.965 W	
9,300.0	6.00	104.04	9,272.3	-129.4	517.7	466,942.30	642,558.62	32° 16' 59.785 N	104° 0' 20.847 W	
9,400.0	6.00	104.04	9,371.8	-132.0	527.8	466,939.76	642,568.76	32° 16' 59.760 N	104° 0' 20.729 W	
9,500.0	6.00	104.04	9,471.2	-134.5	537.9	466,937.23	642,578.90	32° 16' 59.735 N	104° 0' 20.611 W	
9,600.0	6.00	104.04	9,570.7	-137.0	548.1	466,934.69	642,589.04	32° 16' 59.709 N	104° 0' 20.493 W	
9,700.0	6.00	104.04	9,670.1	-139.6	558.2	466,932.16	642,599.18	32° 16' 59.684 N	104° 0' 20.375 W	
9,800.0	6.00	104.04	9,769.6	-142.1	568.4	466,929.62	642,609.32	32° 16' 59.658 N	104° 0' 20.257 W	
9,900.0	6.00	104.04	9,869.0	-144.6	578.5	466,927.09	642,619.46	32° 16' 59.633 N	104° 0' 20.139 W	
9,911.8	6.00	104.04	9,880.7	-144.9	579.7	466,926.79	642,620.66	32° 16' 59.630 N	104° 0' 20.125 W	
10,000.0	4.68	104.04	9,968.6	-146.9	587.7	466,924.80	642,628.62	32° 16' 59.610 N	104° 0' 20.032 W	
10,100.0	3.18	104.04	10,068.3	-148.6	594.3	466,923.14	642,635.26	32° 16' 59.593 N	104° 0' 19.955 W	
10,200.0	1.68	104.04	10,168.2	-149.6	598.4	466,922.11	642,639.37	32° 16' 59.583 N	104° 0' 19.907 W	
10,300.0	0.18	104.04	10,268.2	-150.0	600.0	466,921.72	642,640.94	32° 16' 59.579 N	104° 0' 19.889 W	
10,311.8	0.00	0.00	10,280.0	-150.0	600.0	466,921.71	642,640.96	32° 16' 59.579 N	104° 0' 19.888 W	
10,323.8	0.00	0.00	10,292.0	-150.0	600.0	466,921.71	642,640.96	32° 16' 59.579 N	104° 0' 19.888 W	

BTA

Planning Report - Geographic

Database: EDM 5000.1 Single User Db
Company: BTA Oil Producers, LLC
Project: Eddy County, NM (NAD 83)
Site: Harroun Ranch
Well: Harroun Ranch #4H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well Harroun Ranch #4H
TVD Reference: WELL @ 2987.0usft (Original Well Elev)
MD Reference: WELL @ 2987.0usft (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)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
10,400.0	7.62	2.60	10,368.0	-144.9	600.2	466,926.76	642,641.19	32° 16' 59.629 N	104° 0' 19.886 W	
10,500.0	17.62	2.60	10,465.5	-123.2	601.2	466,948.56	642,642.18	32° 16' 59.845 N	104° 0' 19.873 W	
10,600.0	27.62	2.60	10,557.7	-84.8	603.0	466,986.93	642,643.92	32° 17' 0.224 N	104° 0' 19.852 W	
10,700.0	37.62	2.60	10,641.8	-31.0	605.4	467,040.70	642,646.37	32° 17' 0.756 N	104° 0' 19.821 W	
10,800.0	47.62	2.60	10,715.3	36.6	608.5	467,108.25	642,649.44	32° 17' 1.425 N	104° 0' 19.783 W	
10,900.0	57.62	2.60	10,775.9	115.8	612.1	467,187.53	642,653.04	32° 17' 2.209 N	104° 0' 19.738 W	
11,000.0	67.62	2.60	10,821.8	204.4	616.1	467,276.11	642,657.07	32° 17' 3.086 N	104° 0' 19.688 W	
11,100.0	77.62	2.60	10,851.7	299.6	620.4	467,371.32	642,661.39	32° 17' 4.028 N	104° 0' 19.634 W	
11,200.0	87.62	2.60	10,864.5	398.6	624.9	467,470.25	642,665.89	32° 17' 5.007 N	104° 0' 19.578 W	
11,223.8	90.00	2.60	10,865.0	422.4	626.0	467,494.03	642,666.97	32° 17' 5.242 N	104° 0' 19.565 W	
11,300.0	90.00	2.60	10,865.0	498.5	629.5	467,570.13	642,670.43	32° 17' 5.995 N	104° 0' 19.522 W	
11,400.0	90.00	2.60	10,865.0	598.4	634.0	467,670.02	642,674.97	32° 17' 6.983 N	104° 0' 19.465 W	
11,500.0	90.00	2.60	10,865.0	698.3	638.6	467,769.91	642,679.51	32° 17' 7.972 N	104° 0' 19.409 W	
11,600.0	90.00	2.60	10,865.0	798.2	643.1	467,869.80	642,684.05	32° 17' 8.960 N	104° 0' 19.353 W	
11,700.0	90.00	2.60	10,865.0	898.1	647.6	467,969.69	642,688.59	32° 17' 9.948 N	104° 0' 19.296 W	
11,800.0	90.00	2.60	10,865.0	998.0	652.2	468,069.58	642,693.13	32° 17' 10.937 N	104° 0' 19.240 W	
11,900.0	90.00	2.60	10,865.0	1,097.9	656.7	468,169.47	642,697.67	32° 17' 11.925 N	104° 0' 19.183 W	
12,000.0	90.00	2.60	10,865.0	1,197.8	661.3	468,269.36	642,702.21	32° 17' 12.913 N	104° 0' 19.127 W	
12,100.0	90.00	2.60	10,865.0	1,297.6	665.8	468,369.25	642,706.75	32° 17' 13.902 N	104° 0' 19.070 W	
12,200.0	90.00	2.60	10,865.0	1,397.5	670.3	468,469.14	642,711.29	32° 17' 14.890 N	104° 0' 19.014 W	
12,300.0	90.00	2.60	10,865.0	1,497.4	674.9	468,569.02	642,715.83	32° 17' 15.878 N	104° 0' 18.957 W	
12,400.0	90.00	2.60	10,865.0	1,597.3	679.4	468,668.91	642,720.38	32° 17' 16.867 N	104° 0' 18.901 W	
12,500.0	90.00	2.60	10,865.0	1,697.2	684.0	468,768.80	642,724.92	32° 17' 17.855 N	104° 0' 18.845 W	
12,600.0	90.00	2.60	10,865.0	1,797.1	688.5	468,868.69	642,729.46	32° 17' 18.843 N	104° 0' 18.788 W	
12,700.0	90.00	2.60	10,865.0	1,897.0	693.0	468,968.58	642,734.00	32° 17' 19.832 N	104° 0' 18.732 W	
12,800.0	90.00	2.60	10,865.0	1,996.9	697.6	469,068.47	642,738.54	32° 17' 20.820 N	104° 0' 18.675 W	
12,900.0	90.00	2.60	10,865.0	2,096.8	702.1	469,168.36	642,743.08	32° 17' 21.808 N	104° 0' 18.619 W	
13,000.0	90.00	2.60	10,865.0	2,196.7	706.7	469,268.25	642,747.62	32° 17' 22.797 N	104° 0' 18.562 W	
13,100.0	90.00	2.60	10,865.0	2,296.6	711.2	469,368.14	642,752.16	32° 17' 23.785 N	104° 0' 18.506 W	
13,200.0	90.00	2.60	10,865.0	2,396.5	715.8	469,468.02	642,756.70	32° 17' 24.773 N	104° 0' 18.449 W	
13,300.0	90.00	2.60	10,865.0	2,496.4	720.3	469,567.91	642,761.24	32° 17' 25.762 N	104° 0' 18.393 W	
13,400.0	90.00	2.60	10,865.0	2,596.3	724.8	469,667.80	642,765.78	32° 17' 26.750 N	104° 0' 18.336 W	
13,500.0	90.00	2.60	10,865.0	2,696.2	729.4	469,767.69	642,770.32	32° 17' 27.738 N	104° 0' 18.280 W	
13,600.0	90.00	2.60	10,865.0	2,796.1	733.9	469,867.58	642,774.86	32° 17' 28.727 N	104° 0' 18.223 W	
13,700.0	90.00	2.60	10,865.0	2,896.0	738.5	469,967.47	642,779.40	32° 17' 29.715 N	104° 0' 18.167 W	
13,800.0	90.00	2.60	10,865.0	2,995.9	743.0	470,067.36	642,783.94	32° 17' 30.703 N	104° 0' 18.111 W	
13,900.0	90.00	2.60	10,865.0	3,095.8	747.5	470,167.25	642,788.48	32° 17' 31.692 N	104° 0' 18.054 W	
14,000.0	90.00	2.60	10,865.0	3,195.7	752.1	470,267.14	642,793.02	32° 17' 32.680 N	104° 0' 17.998 W	
14,100.0	90.00	2.60	10,865.0	3,295.6	756.6	470,367.03	642,797.56	32° 17' 33.669 N	104° 0' 17.941 W	
14,200.0	90.00	2.60	10,865.0	3,395.5	761.2	470,466.91	642,802.10	32° 17' 34.657 N	104° 0' 17.885 W	
14,300.0	90.00	2.60	10,865.0	3,495.4	765.7	470,566.80	642,806.64	32° 17' 35.645 N	104° 0' 17.828 W	
14,400.0	90.00	2.60	10,865.0	3,595.3	770.2	470,666.69	642,811.18	32° 17' 36.634 N	104° 0' 17.772 W	
14,500.0	90.00	2.60	10,865.0	3,695.2	774.8	470,766.58	642,815.72	32° 17' 37.622 N	104° 0' 17.715 W	
14,600.0	90.00	2.60	10,865.0	3,795.1	779.3	470,866.47	642,820.26	32° 17' 38.610 N	104° 0' 17.659 W	
14,700.0	90.00	2.60	10,865.0	3,895.0	783.9	470,966.36	642,824.80	32° 17' 39.599 N	104° 0' 17.602 W	
14,800.0	90.00	2.60	10,865.0	3,994.9	788.4	471,066.25	642,829.34	32° 17' 40.587 N	104° 0' 17.546 W	
14,900.0	90.00	2.60	10,865.0	4,094.8	792.9	471,166.14	642,833.89	32° 17' 41.575 N	104° 0' 17.490 W	
15,000.0	90.00	2.60	10,865.0	4,194.7	797.5	471,266.03	642,838.43	32° 17' 42.564 N	104° 0' 17.433 W	
15,100.0	90.00	2.60	10,865.0	4,294.6	802.0	471,365.91	642,842.97	32° 17' 43.552 N	104° 0' 17.377 W	
15,200.0	90.00	2.60	10,865.0	4,394.5	806.6	471,465.80	642,847.51	32° 17' 44.540 N	104° 0' 17.320 W	
15,300.0	90.00	2.60	10,865.0	4,494.3	811.1	471,565.69	642,852.05	32° 17' 45.529 N	104° 0' 17.264 W	
15,400.0	90.00	2.60	10,865.0	4,594.2	815.6	471,665.58	642,856.59	32° 17' 46.517 N	104° 0' 17.207 W	
15,500.0	90.00	2.60	10,865.0	4,694.1	820.2	471,765.47	642,861.13	32° 17' 47.505 N	104° 0' 17.151 W	
15,600.0	90.00	2.60	10,865.0	4,794.0	824.7	471,865.36	642,865.67	32° 17' 48.494 N	104° 0' 17.094 W	
15,700.0	90.00	2.60	10,865.0	4,893.9	829.3	471,965.25	642,870.21	32° 17' 49.482 N	104° 0' 17.038 W	

BTA

Planning Report - Geographic

Database: EDM 5000.1 Single User Db
Company: BTA Oil Producers, LLC
Project: Eddy County, NM (NAD 83)
Site: Harroun Ranch
Well: Harroun Ranch #4H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well Harroun Ranch #4H
TVD Reference: WELL @ 2987.0usft (Original Well Elev)
MD Reference: WELL @ 2987.0usft (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)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
15,800.0	90.00	2.60	10,865.0	4,993.8	833.8	472,065.14	642,874.75	32° 17' 50.470 N	104° 0' 16.981 W
15,900.0	90.00	2.60	10,865.0	5,093.7	838.4	472,165.03	642,879.29	32° 17' 51.459 N	104° 0' 16.925 W
16,000.0	90.00	2.60	10,865.0	5,193.6	842.9	472,264.91	642,883.83	32° 17' 52.447 N	104° 0' 16.868 W
16,100.0	90.00	2.60	10,865.0	5,293.5	847.4	472,364.80	642,888.37	32° 17' 53.435 N	104° 0' 16.812 W
16,200.0	90.00	2.60	10,865.0	5,393.4	852.0	472,464.69	642,892.91	32° 17' 54.424 N	104° 0' 16.755 W
16,300.0	90.00	2.60	10,865.0	5,493.3	856.5	472,564.58	642,897.45	32° 17' 55.412 N	104° 0' 16.699 W
16,400.0	90.00	2.60	10,865.0	5,593.2	861.1	472,664.47	642,901.99	32° 17' 56.400 N	104° 0' 16.643 W
16,500.0	90.00	2.60	10,865.0	5,693.1	865.6	472,764.36	642,906.53	32° 17' 57.389 N	104° 0' 16.586 W
16,600.0	90.00	2.60	10,865.0	5,793.0	870.1	472,864.25	642,911.07	32° 17' 58.377 N	104° 0' 16.530 W
16,700.0	90.00	2.60	10,865.0	5,892.9	874.7	472,964.14	642,915.61	32° 17' 59.365 N	104° 0' 16.473 W
16,800.0	90.00	2.60	10,865.0	5,992.8	879.2	473,064.03	642,920.15	32° 18' 0.354 N	104° 0' 16.417 W
16,900.0	90.00	2.60	10,865.0	6,092.7	883.8	473,163.92	642,924.69	32° 18' 1.342 N	104° 0' 16.360 W
17,000.0	90.00	2.60	10,865.0	6,192.6	888.3	473,263.80	642,929.23	32° 18' 2.330 N	104° 0' 16.304 W
17,100.0	90.00	2.60	10,865.0	6,292.5	892.8	473,363.69	642,933.77	32° 18' 3.319 N	104° 0' 16.247 W
17,200.0	90.00	2.60	10,865.0	6,392.4	897.4	473,463.58	642,938.31	32° 18' 4.307 N	104° 0' 16.191 W
17,300.0	90.00	2.60	10,865.0	6,492.3	901.9	473,563.47	642,942.85	32° 18' 5.295 N	104° 0' 16.134 W
17,400.0	90.00	2.60	10,865.0	6,592.2	906.5	473,663.36	642,947.40	32° 18' 6.284 N	104° 0' 16.078 W
17,500.0	90.00	2.60	10,865.0	6,692.1	911.0	473,763.25	642,951.94	32° 18' 7.272 N	104° 0' 16.021 W
17,600.0	90.00	2.60	10,865.0	6,792.0	915.5	473,863.14	642,956.48	32° 18' 8.260 N	104° 0' 15.965 W
17,700.0	90.00	2.60	10,865.0	6,891.9	920.1	473,963.03	642,961.02	32° 18' 9.249 N	104° 0' 15.908 W
17,800.0	90.00	2.60	10,865.0	6,991.8	924.6	474,062.92	642,965.56	32° 18' 10.237 N	104° 0' 15.852 W
17,900.0	90.00	2.60	10,865.0	7,091.7	929.2	474,162.80	642,970.10	32° 18' 11.226 N	104° 0' 15.795 W
18,000.0	90.00	2.60	10,865.0	7,191.6	933.7	474,262.69	642,974.64	32° 18' 12.214 N	104° 0' 15.739 W
18,100.0	90.00	2.60	10,865.0	7,291.5	938.2	474,362.58	642,979.18	32° 18' 13.202 N	104° 0' 15.683 W
18,200.0	90.00	2.60	10,865.0	7,391.4	942.8	474,462.47	642,983.72	32° 18' 14.191 N	104° 0' 15.626 W
18,300.0	90.00	2.60	10,865.0	7,491.3	947.3	474,562.36	642,988.26	32° 18' 15.179 N	104° 0' 15.570 W
18,400.0	90.00	2.60	10,865.0	7,591.2	951.9	474,662.25	642,992.80	32° 18' 16.167 N	104° 0' 15.513 W
18,500.0	90.00	2.60	10,865.0	7,691.0	956.4	474,762.14	642,997.34	32° 18' 17.156 N	104° 0' 15.457 W
18,600.0	90.00	2.60	10,865.0	7,790.9	961.0	474,862.03	643,001.88	32° 18' 18.144 N	104° 0' 15.400 W
18,700.0	90.00	2.60	10,865.0	7,890.8	965.5	474,961.92	643,006.42	32° 18' 19.132 N	104° 0' 15.344 W
18,800.0	90.00	2.60	10,865.0	7,990.7	970.0	475,061.81	643,010.96	32° 18' 20.121 N	104° 0' 15.287 W
18,900.0	90.00	2.60	10,865.0	8,090.6	974.6	475,161.69	643,015.50	32° 18' 21.109 N	104° 0' 15.231 W
19,000.0	90.00	2.60	10,865.0	8,190.5	979.1	475,261.58	643,020.04	32° 18' 22.097 N	104° 0' 15.174 W
19,100.0	90.00	2.60	10,865.0	8,290.4	983.7	475,361.47	643,024.58	32° 18' 23.086 N	104° 0' 15.118 W
19,200.0	90.00	2.60	10,865.0	8,390.3	988.2	475,461.36	643,029.12	32° 18' 24.074 N	104° 0' 15.061 W
19,300.0	90.00	2.60	10,865.0	8,490.2	992.7	475,561.25	643,033.66	32° 18' 25.062 N	104° 0' 15.005 W
19,400.0	90.00	2.60	10,865.0	8,590.1	997.3	475,661.14	643,038.20	32° 18' 26.051 N	104° 0' 14.948 W
19,500.0	90.00	2.60	10,865.0	8,690.0	1,001.8	475,761.03	643,042.74	32° 18' 27.039 N	104° 0' 14.892 W
19,600.0	90.00	2.60	10,865.0	8,789.9	1,006.4	475,860.92	643,047.28	32° 18' 28.027 N	104° 0' 14.835 W
19,700.0	90.00	2.60	10,865.0	8,889.8	1,010.9	475,960.81	643,051.82	32° 18' 29.016 N	104° 0' 14.779 W
19,800.0	90.00	2.60	10,865.0	8,989.7	1,015.4	476,060.69	643,056.37	32° 18' 30.004 N	104° 0' 14.722 W
19,900.0	90.00	2.60	10,865.0	9,089.6	1,020.0	476,160.58	643,060.91	32° 18' 30.992 N	104° 0' 14.666 W
20,000.0	90.00	2.60	10,865.0	9,189.5	1,024.5	476,260.47	643,065.45	32° 18' 31.981 N	104° 0' 14.609 W
20,100.0	90.00	2.60	10,865.0	9,289.4	1,029.1	476,360.36	643,069.99	32° 18' 32.969 N	104° 0' 14.553 W
20,200.0	90.00	2.60	10,865.0	9,389.3	1,033.6	476,460.25	643,074.53	32° 18' 33.957 N	104° 0' 14.496 W
20,300.0	90.00	2.60	10,865.0	9,489.2	1,038.1	476,560.14	643,079.07	32° 18' 34.946 N	104° 0' 14.440 W
20,400.0	90.00	2.60	10,865.0	9,589.1	1,042.7	476,660.03	643,083.61	32° 18' 35.934 N	104° 0' 14.383 W
20,500.0	90.00	2.60	10,865.0	9,689.0	1,047.2	476,759.92	643,088.15	32° 18' 36.922 N	104° 0' 14.327 W
20,600.0	90.00	2.60	10,865.0	9,788.9	1,051.8	476,859.81	643,092.69	32° 18' 37.911 N	104° 0' 14.271 W
20,700.0	90.00	2.60	10,865.0	9,888.8	1,056.3	476,959.69	643,097.23	32° 18' 38.899 N	104° 0' 14.214 W
20,800.0	90.00	2.60	10,865.0	9,988.7	1,060.8	477,059.58	643,101.77	32° 18' 39.887 N	104° 0' 14.158 W
20,900.0	90.00	2.60	10,865.0	10,088.6	1,065.4	477,159.47	643,106.31	32° 18' 40.876 N	104° 0' 14.101 W
21,000.0	90.00	2.60	10,865.0	10,188.5	1,069.9	477,259.36	643,110.85	32° 18' 41.864 N	104° 0' 14.045 W
21,100.0	90.00	2.60	10,865.0	10,288.4	1,074.5	477,359.25	643,115.39	32° 18' 42.852 N	104° 0' 13.988 W
21,111.6	90.00	2.60	10,865.0	10,300.0	1,075.0	477,370.88	643,115.92	32° 18' 42.967 N	104° 0' 13.982 W

BTA

Planning Report - Geographic

Database: EDM 5000.1 Single User Db
Company: BTA Oil Producers, LLC
Project: Eddy County, NM (NAD 83)
Site: Harroun Ranch
Well: Harroun Ranch #4H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well Harroun Ranch #4H
TVD Reference: WELL @ 2987.0usft (Original Well Elev)
MD Reference: WELL @ 2987.0usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Ground Level: 2987.0
+N/-S +E/-W Northing Easting Latitude Longitude
0.0 0.0 467071.70 642041.00 2° 17' 1.08114° 0' 26.872 W

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2815.0	0.00	0.00	2815.0	0.0	0.0	0.00	0.00	0.0	
4045.4	0.00	0.00	4045.4	0.0	0.0	0.00	0.00	0.0	
4345.4	6.00	104.04	4344.8	-3.8	15.2	2.00	104.04	-2.2	
9911.8	6.00	104.04	9880.7	-144.9	579.7	0.00	0.00	-84.0	
10311.8	0.00	0.00	10280.0	-150.0	600.0	1.50	180.00	-86.9	
10323.8	0.00	0.00	10292.0	-150.0	600.0	0.00	0.00	-86.9	
11223.8	90.00	2.60	10865.0	422.4	626.0	10.00	2.60	485.1	
21111.6	90.00	2.60	10865.0	10300.0	1075.0	0.00	0.00	10355.9	

PROJECT DETAILS: Eddy County, NM (NAD 83)

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone

System Datum: Ground Level

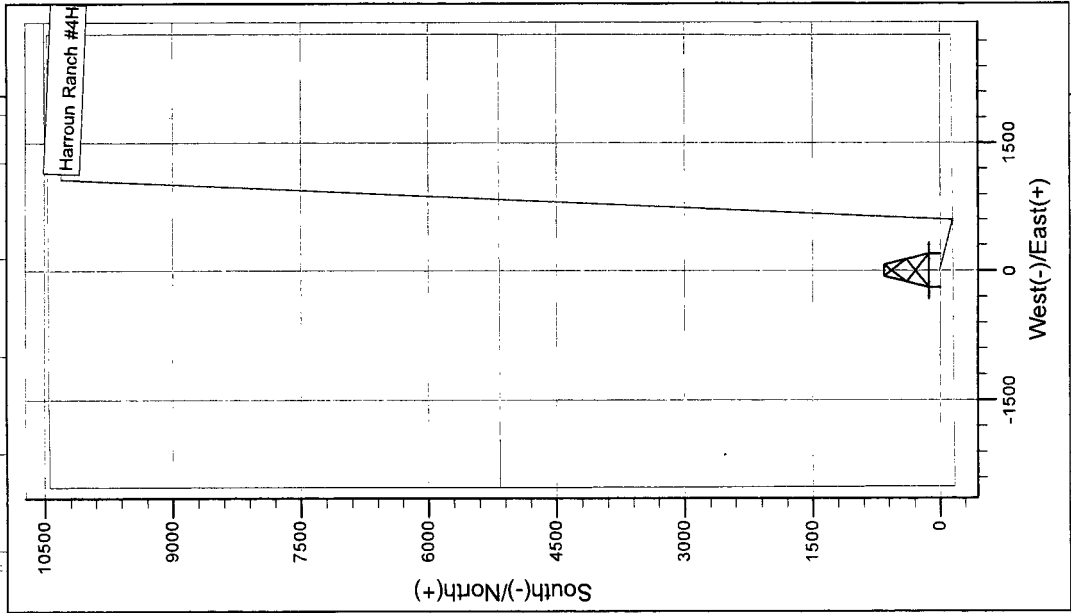
T

G

M

Azimuths to Grid North
True North: -0.17°
Magnetic North: 7.78°

Magnetic Field
Strength: 48783.2snT
Dip Angle: 60.22°
Date: 12/31/2009
Model: IGRF200510



Vertical Section at 5.96°

APPLICATION FOR DRILLING

BTA OIL PRODUCERS, LLC
#4H, Harroun Ranch Federal Com, 20702
200' FSL & 1700' FEL
Sec. 20, T23S, R29E Surface
Eddy County, New Mexico

In conjunction with Form 3160-3, Application for Permit to Drill, BTA Oil Producers submits the following 10 items for pertinent information in accordance with BLM requirements:

1. Geologic surface formation is Quaternary.
2. Estimated top of geologic markers & depths of anticipated fresh water, oil or gas:

Anhydrite	200'	
Top of Salt	429'	
Base Salt	2,729'	
Delaware	2869'	
Brushy Canyon	4,974'	Oil
Bone Spring LM	6,559'	
2 nd Bone Spring Sand	8359'	Oil/Gas
Wolfcamp	9857'	

No other formations are expected to yield oil, gas, or fresh water in measurable volumes. The surface fresh water sands will be protected by setting 13-3/8" csg at ~~370'~~^{360'} and circulating cement back to surface. Potash/fresh water sands will be protected by setting 9-5/8" csg at ~~2926'~~^{2851'} and circulating cement back to surface. The Delaware and Bone Spring intervals will be isolated by setting 5-1/2" csg to total depth and circulating cement above the base of the 9-5/8" casing.

All shows of fresh water and minerals will be reported and protected. A sample will be taken of any water flows and furnished to the BLM, Division of Minerals. All oil and gas shows will be adequately tested for commercial possibilities, reported and protected.

Note: The first and last take will be no closer than 330' to the nearest section line.

3. Proposed Casing and Cementing Program:

Hole Size	OD Casing	Setting from	Depth to	Weight	Grade	Joint
17-1/2"	13-3/8"	0	335' 360'	54.5#	J55	STC
12-1/4"	9-5/8"	0	2,847'	36#	J55	STC
8-3/4"	7"	0	10,924'	29#	P110	BTC
6-1/8"	4-1/2"	10,300'	21,111'	13.5#	P110	BTC

Minimum Casing Design Factors:

Collapse	1.125
Burst	1.0
Tensile	1.8

Depending upon availability at the time that the casing is run, equivalent weights and grades may be substituted.

All casing will be new.

4. Cement Program:

I. Surface Casing:

- Lead: 220 sx Class-C.
 - 1.75 ft³/sk; 13.5 ppg
- Tail: 200 sx Class – C.
 - 1.34 ft³/sk; 14.8 ppg
- Cement circulated to surface. 100% Excess.

II. Intermediate Casing:

- Lead: 510 sx 35:65 Poz-C
 - 1.94 ft³/sk; 12.7 ppg
- Tail: 250 sx Class– C
 - 1.33 ft³/sk; 14.8 ppg
- Cement circulated to surface. 60% excess of open hole (will run fluid caliper to determine lead volume).

III. Production Casing:

- Lead: 460 sx TXI
 - 2.87 ft³/sk; 10.5 ppg
- Tail: 200 sx Class H *→ Low Cement SEE CoA*
 - 1.18 ft³/sk; 15.6 ppg
- 4 ½ Production Liner CMT
 - Lead: 730 SX Class H *→ Low Cement SEE CoA*
 - 1.57 ft³/sk; 13.2 ppg
- Cement calculated to tie back 500 ft into intermediate casing. 20% open hole excess.

Note: All casing strings will be pressure tested to 0.22 psi/ft. of setting depth or 1500 psi (whichever is greater) after cementing and prior to drill out.

5. Pressure Control Equipment:

The blowout preventer equipment (BOP) shown in Exhibit A will consist of a (5M system) double ram type (5000 psi WP) preventer and a bag-type (Hydril) preventer (5000 psi WP). Both units will be hydraulically operated and the ram type preventer will be equipped with blind rams on top and 4-½" drill pipe rams on bottom. The BOP's will be installed on the 13-3/8" surface casing and utilized continuously until

TD is reached. All BOP's and associated equipment will be tested as per BLM drilling Operations Order No. 2.

Pipe rams will be operated and checked each 24-hour period and each time the drill pipe is out of the hole. These functional tests will be documented on the daily driller's log. A 2" kill line and 3" choke line will be incorporated in the drilling spool below the ram-type BOP. Other accessory BOP equipment will include a Kelly cock, floor safety valve, choke lines, and choke manifold having a 3000 psi WP rating.

6. Mud Program:

Surface to ^{360'}335': 8.5 to 8.8 ppg fresh water spud with 35 to 45 sec/1000 cc viscosity.

335' to 2,847': Brine water. Will use lime for pH control in range 10 to 11. Will sweep hole with gel slugs as required for hole cleaning. Mud wt = 10 ppg.

2,847' to 10,924'MD: 8.6 to 9.2 ppg controlled brine water. Will use lime for pH control
in range 10 to 11. Will sweep hole with salt gel slugs as required for hole cleaning. Will use paper for seepage losses. Will adjust fluid weight as required using brine water.

10,924'MD TO TD: 12.0 ppg – 12.8 ppg OBM

7. Auxiliary Equipment:

- a) Upper Kelly cock valve with handle available.
- b) Lower Kelly cock valve with handle available.
- c) Safety valves and subs to fit all drill string connections in use.
- d) Monitoring of mud system will be mechanical.

8. Testing Logging and Coring Program:

Drill Stem Tests will be based on geological sample shows.

Open electrical logging program will be:

- i. TD to Surface: Gamma Ray
- ii. No coring program is planned.

9. Potential Hazards:

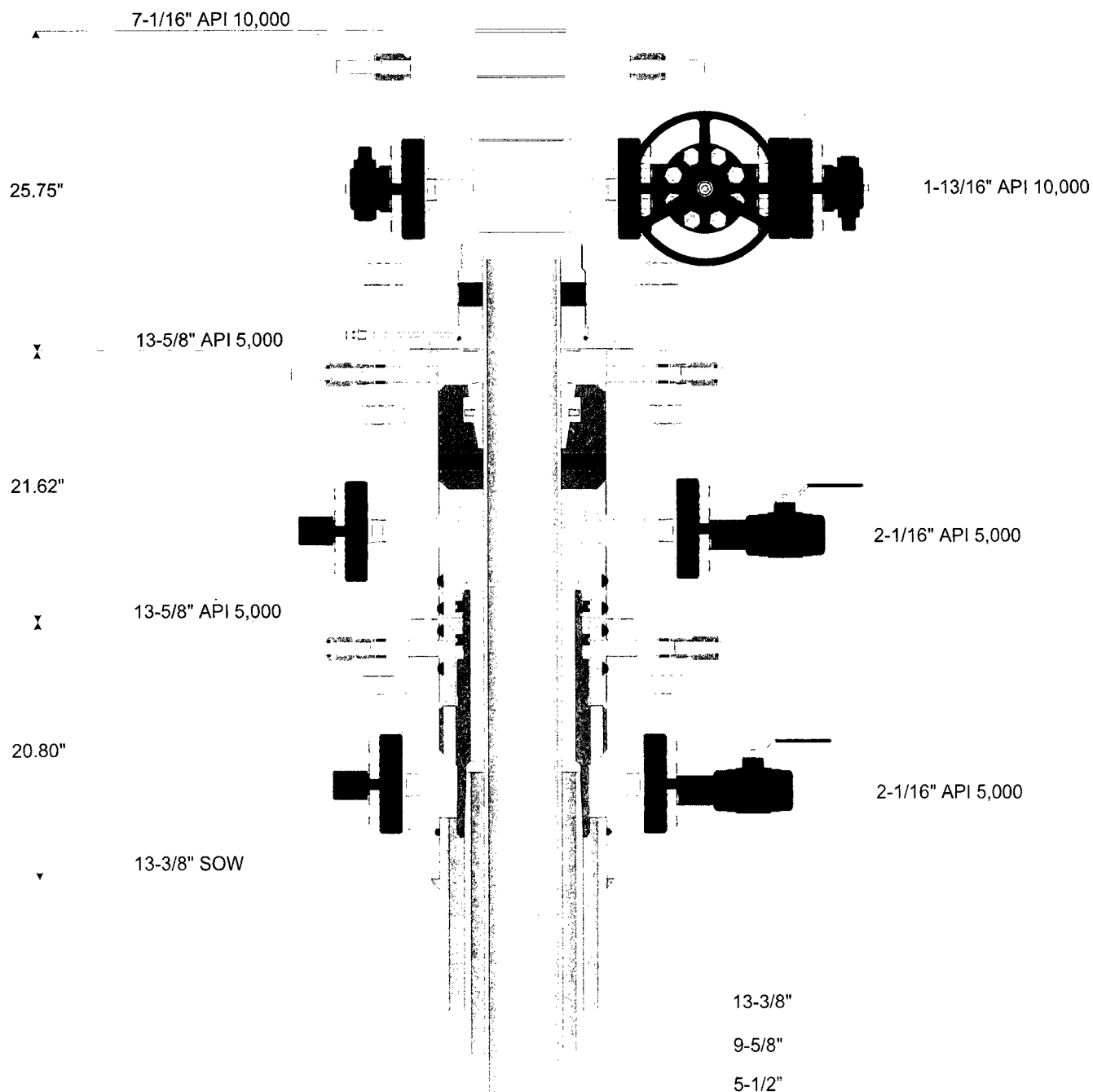
No abnormal pressures or temperatures are anticipated. If H₂S is encountered, the operator will comply with the provisions of Onshore Oil and Gas Order No. 6. No lost circulation is expected to occur. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Estimated BHP: 7062 psi. Estimated BHT: 167° F. No H₂S is anticipated to be encountered.

10. Anticipated Starting Date and Duration of Operations:

Road and location construction will begin after the BLM has approved the APD. Anticipated spud date will be as soon as possible after BLM approval and as soon as a rig is available. Move in operations and drilling is expected to take 25 days. If production casing is run, an additional 30 days will be needed to complete the well and construct surface facilities and/or lay flow lines to place the well on production.

Note: BLM onsite was conducted on November 25th, 2014 by Indra Dahal. An agreement has been entered into with CEHMM to prepare the EA.

NOTE: THIS DRAWING IS NOT TO SCALE. THE DIMENSIONS REFLECTED ON THIS DRAWING ARE ESTIMATED DIMENSIONS AND ARE FOR REFERENCE ONLY.



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Customer: BTA OIL PRODUCERS	Project No.: 146245	Quote No.: 291545 v2
Project Name: WEST TEXAS	Date: 07/06/16	Drawn By: JL

**QUALITY CONTROL
INSPECTION AND TEST CERTIFICATE**

CERT N° 1592

PURCHASER: ContiTech Oil & Marine Corp.

P.O. N° 4500461753

CONTITECH ORDER N° 539225

HOSE TYPE: 3" ID

Choke & Kill Hose

HOSE SERIAL N°

NOMINAL / ACTUAL LENGTH:

7,62 m / 7,66 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 Min.
↑ 50 MPa

COUPLINGS Type	Serial N°	Quality	Heat N°
3" coupling with 4 1/16" 10K API Swivel Flange end Hub	2574 5533	AISI 4130 AISI 4130 AISI 4130	A1582N H8572 58855 A1199N A'423N

Not Designed For Well Testing

API Spec 46 C

Fire Rated

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

Date:

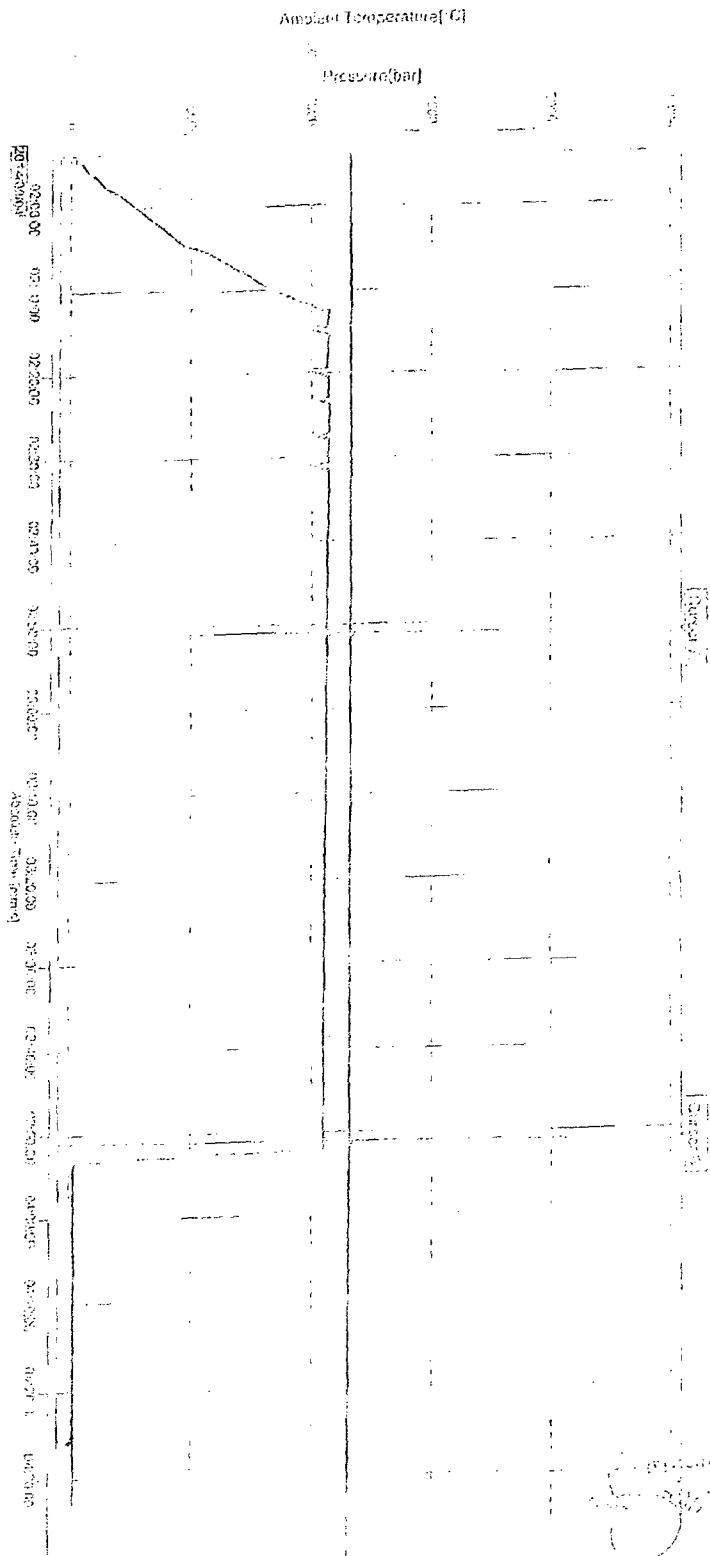
Inspector

Quality Control

04 September 2014.

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1.000 sec
2014/03/04 01:50:59.000
2014/03/04 01:50:59.000
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5/10/2004



PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	BTA Oil Producers, LLC
LEASE NO.:	NMNM-119271
WELL NAME & NO.:	Harroun Ranch Fed Com 20702 4H
SURFACE HOLE FOOTAGE:	0160' FSL & 2493.3' FWL
BOTTOM HOLE FOOTAGE	0050' FNL & 1980' FEL
LOCATION:	Section 20, T. 23 S., R 29 E., NMPM
COUNTY:	Eddy County, New Mexico

All previous COAs still apply except the following:

A. 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.

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

Medium Cave/Karst

Possible water flows in the Salado and Castile.

Possible lost circulation in the Rustler and Delaware.

Abnormal pressures may be encountered when penetrating the 3rd Bone Spring Sandstone and all subsequent formations.

1. The 13-3/8 inch surface casing shall be set at approximately 360 feet (in a competent bed below the Magenta Dolomite, which is a Member of the Rustler, and if salt is encountered, set casing at least 25 feet above the salt) and cemented to the surface.

- 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 A.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

If cement does not circulate to surface on the intermediate casing, the cement on the production casing must come to surface.

3. The minimum required fill of cement behind the 7 inch production casing is:
 - ☒ Cement should tie-back at least **500** feet into previous casing string. Operator shall provide method of verification. **Excess calculates to 19% - additional cement might be required.**
4. The minimum required fill of cement behind the 4 1/2 inch production liner is:
 - ☒ Cement should tie-back at least **100** feet into previous casing string. Operator shall provide method of verification. **Excess calculates to 12% - additional cement might be required.**
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.

B. 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 RP 53 Sec. 17.

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.

Option 1:

- i. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 13 3/8 inch surface casing shoe shall be **5000 (5M) psi.**

Option 2:

- i. **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 5000 (5M) 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. **Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.**
 - 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. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- 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.
- g. BOP/BOPE must be tested by an independent service company within **500** feet of the top of the **Wolfcamp** formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the **Wolfcamp** formation, and shall be used until production casing is run and cemented.

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