Form 3160-5
(June 2015)

12-27-17

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Artesia

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

5. Lease Serial No.
NMNM119271

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.
HARROUN RANCH FED COM 20702 3H

2. Name of Operator
BTA OIL PRODUCERS
Contact: KATY REDDELL
E-Mail: kreddell@btaoil.com

9. API Well No.
30-015-43438-00-X1

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
~~LAGUNA SA~~LADO
Purple Sage Wolfcamp 98220

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 20 T23S R29E SESW 170FSL 2465FWL (Unit N)

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			
☒ 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.

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: OD casing 8-3/4"
Change to: OD casing 7"

Original: 13,431 TVD with 5 1/2" casing
Change to: 10,843 TVD with 7" casing

BC 12-22-17
Accepted for record - NMOCD

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

NM OIL CONSERVATION
ARTESIA DISTRICT
DEC 19 2017
RECEIVED

Send C102 updating to Purple Sage WC to OCD-Artesia

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

Electronic Submission #397803 verified by the BLM Well Information System
For BTA OIL PRODUCERS, sent to the Carlsbad
Committed to AFMSS for processing by CHARLES NIMMER on 12/14/2017 (18CN0016SE)

Name *(Printed/Typed)* KATY REDDELL — Title REGULATORY ANALYST

Signature (Electronic Submission) — Date 12/12/2017

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By CHARLES NIMMER — Title PETROLEUM ENGINEER — Date 12/14/2017

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 Carlsbad

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 ****

RW 12-22-17

Additional data for EC transaction #397803 that would not fit on the form

32. Additional remarks, continued

Original: No liner
Change to: 6-1/8" hole size and 4-1/2" Liner. Liner will be set at 10,380' to 10,872' TVD.
10,400' to 21,147' MD.

Original Cement Program for Production casing Lead: 700 sx 50:50 class H 2.92 ft/sk, 11.3 PPG. Tail with 950 sx 50:50 Class H. 1.22 ft/sk. 14.4 ppg.
Change to: Lead: 460 SX TXI. 2.87 ft/sk. 10.5 ppg. Tail with 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 Mud program: 2,847 to TD
Change to: 2847' to 10,924 MD 10,924 MD TO TD 12.0 ppg-12.8 ppg OBM.

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

Original Estimated BHP in paragraph 9 is 3800.
Change Estimated BHP to 7062

Original BHT: 125 degrees
Change BHT: 167 degrees

APPLICATION FOR DRILLING

BTA OIL PRODUCERS, LLC
#3H, Harroun Ranch Federal Com, 20702
170' FSL & 2465' FWL
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	212	
Top of Salt	563	
Base Salt	2568	
Delaware	2862	
Cherry Canyon	3692	
Brushy Canyon	4883	Oil
Bone Spring LM	6483	
1st Bone Spring Sand	7582	Oil/Gas
2nd Bone Spring Sand	8332	Oil/Gas
Wolfcamp	9,847	

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 360' and circulating cement back to surface. Potash/fresh water sands will be protected by setting 9-5/8" csg at 2,815' and circulating cement back to surface. The Delaware and Bone Spring intervals will be isolated by setting 7"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	360'	54.5#	J55	STC
12-1/4"	9-5/8"	0	2815'	36#	J55	STC
8-3/4"	7"	0	10,997'	29#	P110	BTC
6 1/8"	4 1/2"	10,400'	21,147'	135#	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 ft^3/sk; 13.5 ppg
- Tail: 200 sx Class – C.
  - 1.34 ft^3/sk; 14.8 ppg
- Cement circulated to surface. 100% Excess.

II. Intermediate Casing:
- Lead: 510 sx 35:65 Poz-C
  - 1.94 ft^3/sk; 12.7 ppg
- Tail: 250 sx Class– C
  - 1.33 ft^3/sk; 14.8 ppg
- Cement circulated to surface. 60% excess of open hole (will run fluid caliper to determine lead volume).

Production Casing:
- Lead: 460 sx TXI

  - 2.87 ft^3/sk; 10.5 ppg
- Tail: 200 sx Class H
  - 1.18 ft^3/sk; 15.6 ppg
- 4 ½" Production Liner Cmnt: Lead: 730 SX Class H
- - 1.57 ft/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 5000 psi WP rating.

6. Mud Program:

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

320' to 2,815': 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.

2,815' to 10,997MD: 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.
10,997MD 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:

   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 H_2S 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.

BTA Oil Producers, LLC

WELL DETAILS: Harroun Ranch #3H

Ground Level: 2987.0

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude
0.0	0.0	467081.50	642013.44	32° 17' 1.179 N	104° 0' 27.193 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	
2900.0	0.00	0.00	2900.0	0.0	0.0	0.00	0.00	0.0	
3555.7	0.00	0.00	3555.7	0.0	0.0	0.00	0.00	0.0	
3780.7	4.50	251.74	3780.5	-2.8	-8.4	2.00	251.74	-1.8	
10064.8	4.50	251.74	10045.2	-157.2	-476.6	0.00	0.00	-100.6	
10289.8	0.00	0.00	10270.0	-160.0	-485.0	2.00	180.00	-102.3	
10414.4	0.00	0.00	10394.5	-160.0	-485.0	0.00	0.00	-102.3	
11164.4	90.00	0.46	10872.0	317.4	-481.1	12.00	0.46	371.4	
21147.5	90.00	0.46	10872.0	10300.2	-400.3	0.00	0.00	10276.6	

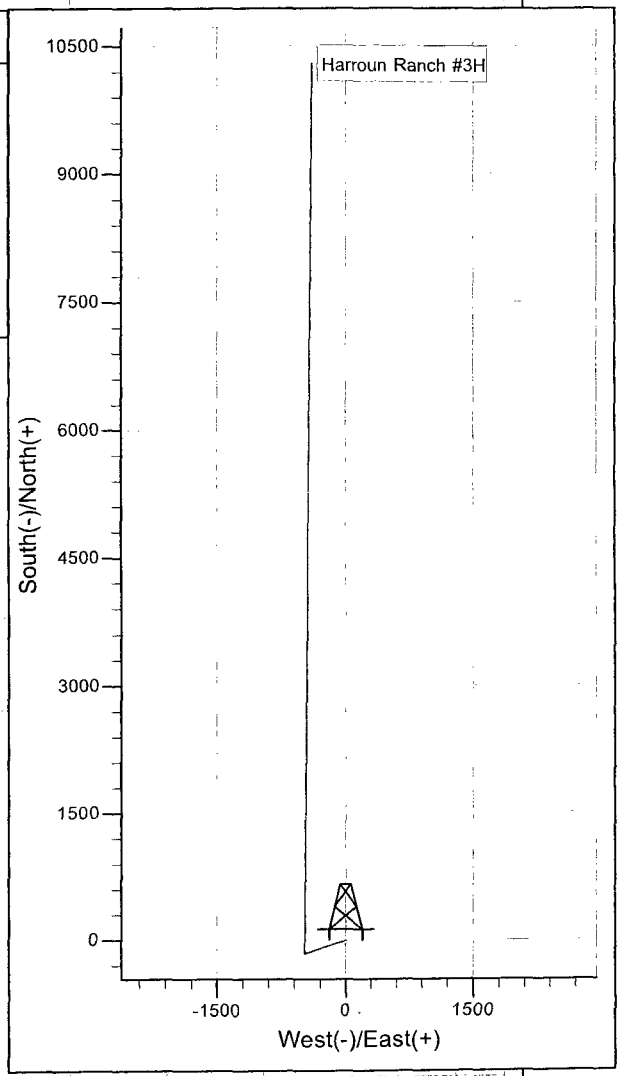
PROJECT DETAILS: Eddy County, NM (NAD 83)

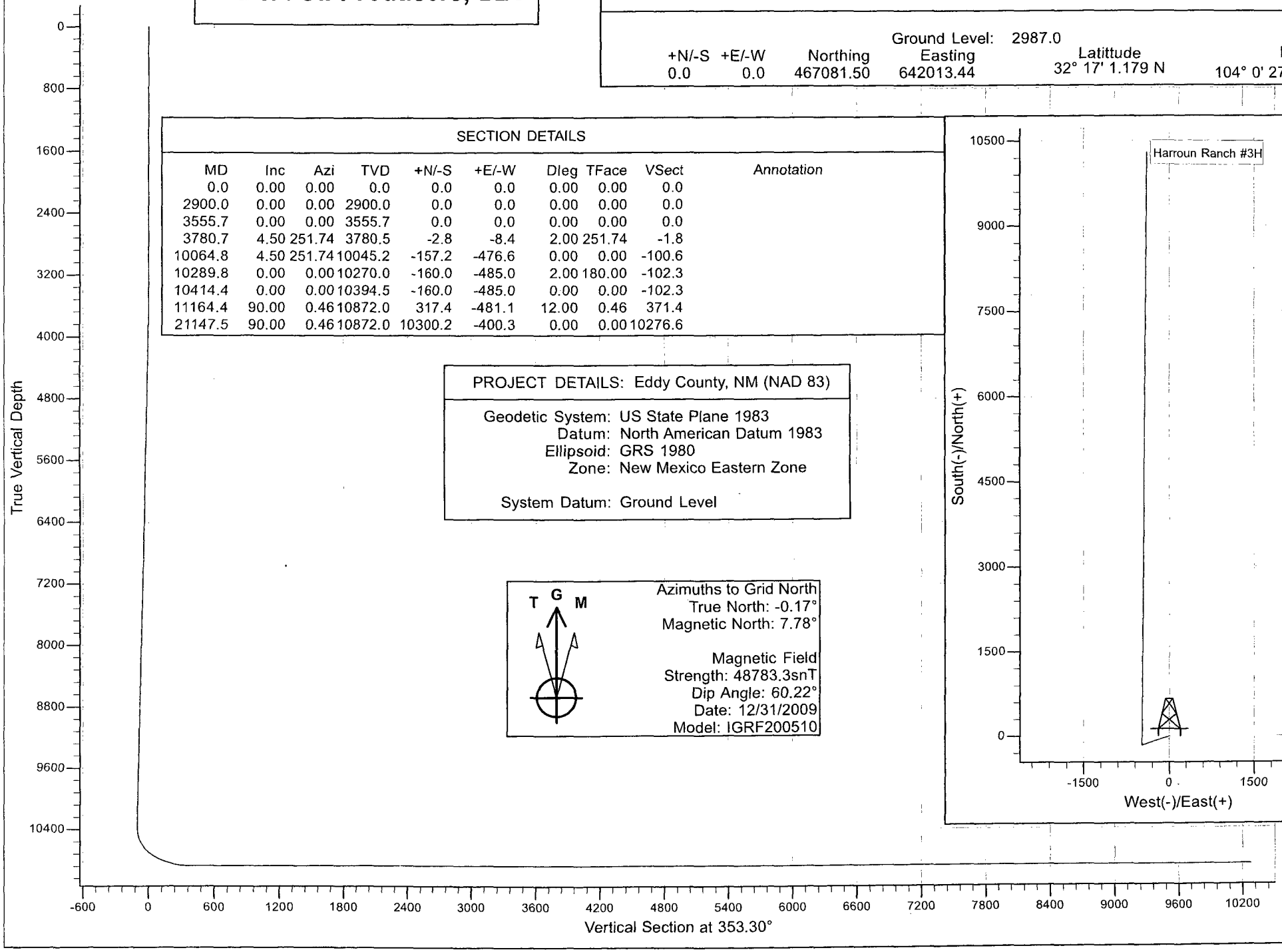
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone

System Datum: Ground Level

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

Magnetic Field
Strength: 48783.3snT
Dip Angle: 60.22°
Date: 12/31/2009
Model: IGRF200510





BTA Oil Producers, LLC

Eddy County, NM (NAD 83)
Harroun Ranch
Harroun Ranch #3H

Wellbore #1

Plan: Design #1

Standard Planning Report - Geographic

06 December, 2017

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Harroun Ranch #3H
Company:	BTA Oil Producers, LLC	**TVD Reference:**	GL @ 2986.0usft (Original Well Elev)
Project:	Eddy County, NM (NAD 83)	**MD Reference:**	GL @ 2986.0usft (Original Well Elev)
Site:	Harroun Ranch	**North Reference:**	Grid
Well:	Harroun Ranch #3H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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 #3H

Well Position	**+N/-S**	0.0 usft	**Northing:**	467,081.50 usft	**Latitude:**	32° 17' 1.179 N
	+E/-W	0.0 usft	**Easting:**	642,013.44 usft	**Longitude:**	104° 0' 27.193 W
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	353.30

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	
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,555.7	0.00	0.00	3,555.7	0.0	0.0	0.00	0.00	0.00	0.00	
3,780.7	4.50	251.74	3,780.5	-2.8	-8.4	2.00	2.00	0.00	251.74	
10,064.8	4.50	251.74	10,045.2	-157.2	-476.6	0.00	0.00	0.00	0.00	
10,289.8	0.00	0.00	10,270.0	-160.0	-485.0	2.00	-2.00	0.00	180.00	
10,414.4	0.00	0.00	10,394.5	-160.0	-485.0	0.00	0.00	0.00	0.00	
11,164.4	90.00	0.46	10,872.0	317.4	-481.1	12.00	12.00	0.00	0.46	
21,147.5	90.00	0.46	10,872.0	10,300.2	-400.3	0.00	0.00	0.00	0.00	HR #3H BHL 2 mile

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Harroun Ranch #3H
Company:	BTA Oil Producers, LLC	**TVD Reference:**	GL @ 2986.0usft (Original Well Elev)
Project:	Eddy County, NM (NAD 83)	**MD Reference:**	GL @ 2986.0usft (Original Well Elev)
Site:	Harroun Ranch	**North Reference:**	Grid
Well:	Harroun Ranch #3H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
100.0	0.00	0.00	100.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
200.0	0.00	0.00	200.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
300.0	0.00	0.00	300.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
400.0	0.00	0.00	400.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
500.0	0.00	0.00	500.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
600.0	0.00	0.00	600.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
700.0	0.00	0.00	700.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
800.0	0.00	0.00	800.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
900.0	0.00	0.00	900.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
1,000.0	0.00	0.00	1,000.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
1,100.0	0.00	0.00	1,100.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
1,200.0	0.00	0.00	1,200.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
1,300.0	0.00	0.00	1,300.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
1,400.0	0.00	0.00	1,400.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
1,500.0	0.00	0.00	1,500.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
1,600.0	0.00	0.00	1,600.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
1,700.0	0.00	0.00	1,700.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
1,800.0	0.00	0.00	1,800.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
1,900.0	0.00	0.00	1,900.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
2,000.0	0.00	0.00	2,000.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
2,100.0	0.00	0.00	2,100.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
2,200.0	0.00	0.00	2,200.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
2,300.0	0.00	0.00	2,300.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
2,400.0	0.00	0.00	2,400.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
2,500.0	0.00	0.00	2,500.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
2,600.0	0.00	0.00	2,600.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
2,700.0	0.00	0.00	2,700.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
2,800.0	0.00	0.00	2,800.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
2,900.0	0.00	0.00	2,900.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
3,000.0	0.00	0.00	3,000.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
3,100.0	0.00	0.00	3,100.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
3,200.0	0.00	0.00	3,200.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
3,300.0	0.00	0.00	3,300.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
3,400.0	0.00	0.00	3,400.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
3,500.0	0.00	0.00	3,500.0	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
3,555.7	0.00	0.00	3,555.7	0.0	0.0	467,081.50	642,013.44	32° 17' 1.179 N	104° 0' 27.193 W
3,600.0	0.89	251.74	3,600.0	-0.1	-0.3	467,081.39	642,013.12	32° 17' 1.178 N	104° 0' 27.197 W
3,700.0	2.89	251.74	3,699.9	-1.1	-3.5	467,080.36	642,009.99	32° 17' 1.168 N	104° 0' 27.233 W
3,780.7	4.50	251.74	3,780.5	-2.8	-8.4	467,078.73	642,005.06	32° 17' 1.152 N	104° 0' 27.291 W
3,800.0	4.50	251.74	3,799.7	-3.2	-9.8	467,078.26	642,003.62	32° 17' 1.147 N	104° 0' 27.307 W
3,900.0	4.50	251.74	3,899.4	-5.7	-17.3	467,075.80	641,996.17	32° 17' 1.123 N	104° 0' 27.394 W
4,000.0	4.50	251.74	3,999.1	-8.2	-24.7	467,073.34	641,988.72	32° 17' 1.099 N	104° 0' 27.481 W
4,100.0	4.50	251.74	4,098.8	-10.6	-32.2	467,070.88	641,981.27	32° 17' 1.075 N	104° 0' 27.568 W
4,200.0	4.50	251.74	4,198.5	-13.1	-39.6	467,068.43	641,973.82	32° 17' 1.051 N	104° 0' 27.655 W
4,300.0	4.50	251.74	4,298.2	-15.5	-47.1	467,065.97	641,966.37	32° 17' 1.027 N	104° 0' 27.742 W
4,400.0	4.50	251.74	4,397.9	-18.0	-54.5	467,063.51	641,958.92	32° 17' 1.003 N	104° 0' 27.829 W
4,500.0	4.50	251.74	4,497.6	-20.4	-62.0	467,061.05	641,951.47	32° 17' 0.979 N	104° 0' 27.915 W
4,600.0	4.50	251.74	4,597.2	-22.9	-69.4	467,058.59	641,944.01	32° 17' 0.955 N	104° 0' 28.002 W
4,700.0	4.50	251.74	4,696.9	-25.4	-76.9	467,056.14	641,936.56	32° 17' 0.931 N	104° 0' 28.089 W
4,800.0	4.50	251.74	4,796.6	-27.8	-84.3	467,053.68	641,929.11	32° 17' 0.907 N	104° 0' 28.176 W
4,900.0	4.50	251.74	4,896.3	-30.3	-91.8	467,051.22	641,921.66	32° 17' 0.882 N	104° 0' 28.263 W
5,000.0	4.50	251.74	4,996.0	-32.7	-99.2	467,048.76	641,914.21	32° 17' 0.858 N	104° 0' 28.350 W
5,100.0	4.50	251.74	5,095.7	-35.2	-106.7	467,046.31	641,906.76	32° 17' 0.834 N	104° 0' 28.437 W
5,200.0	4.50	251.74	5,195.4	-37.7	-114.1	467,043.85	641,899.31	32° 17' 0.810 N	104° 0' 28.524 W

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Harroun Ranch #3H
Company:	BTA Oil Producers, LLC	**TVD Reference:**	GL @ 2986.0usft (Original Well Elev)
Project:	Eddy County, NM (NAD 83)	**MD Reference:**	GL @ 2986.0usft (Original Well Elev)
Site:	Harroun Ranch	**North Reference:**	Grid
Well:	Harroun Ranch #3H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,300.0	4.50	251.74	5,295.1	-40.1	-121.6	467,041.39	641,891.86	32° 17' 0.786 N	104° 0' 28.610 W
5,400.0	4.50	251.74	5,394.8	-42.6	-129.0	467,038.93	641,884.41	32° 17' 0.762 N	104° 0' 28.697 W
5,500.0	4.50	251.74	5,494.5	-45.0	-136.5	467,036.47	641,876.96	32° 17' 0.738 N	104° 0' 28.784 W
5,600.0	4.50	251.74	5,594.2	-47.5	-143.9	467,034.02	641,869.51	32° 17' 0.714 N	104° 0' 28.871 W
5,700.0	4.50	251.74	5,693.9	-49.9	-151.4	467,031.56	641,862.06	32° 17' 0.690 N	104° 0' 28.958 W
5,800.0	4.50	251.74	5,793.5	-52.4	-158.8	467,029.10	641,854.61	32° 17' 0.666 N	104° 0' 29.045 W
5,900.0	4.50	251.74	5,893.2	-54.9	-166.3	467,026.64	641,847.16	32° 17' 0.641 N	104° 0' 29.132 W
6,000.0	4.50	251.74	5,992.9	-57.3	-173.7	467,024.18	641,839.71	32° 17' 0.617 N	104° 0' 29.219 W
6,100.0	4.50	251.74	6,092.6	-59.8	-181.2	467,021.73	641,832.26	32° 17' 0.593 N	104° 0' 29.305 W
6,200.0	4.50	251.74	6,192.3	-62.2	-188.6	467,019.27	641,824.81	32° 17' 0.569 N	104° 0' 29.392 W
6,300.0	4.50	251.74	6,292.0	-64.7	-196.1	467,016.81	641,817.36	32° 17' 0.545 N	104° 0' 29.479 W
6,400.0	4.50	251.74	6,391.7	-67.2	-203.5	467,014.35	641,809.91	32° 17' 0.521 N	104° 0' 29.566 W
6,500.0	4.50	251.74	6,491.4	-69.6	-211.0	467,011.90	641,802.46	32° 17' 0.497 N	104° 0' 29.653 W
6,600.0	4.50	251.74	6,591.1	-72.1	-218.5	467,009.44	641,795.01	32° 17' 0.473 N	104° 0' 29.740 W
6,700.0	4.50	251.74	6,690.8	-74.5	-225.9	467,006.98	641,787.56	32° 17' 0.449 N	104° 0' 29.827 W
6,800.0	4.50	251.74	6,790.5	-77.0	-233.4	467,004.52	641,780.11	32° 17' 0.425 N	104° 0' 29.914 W
6,900.0	4.50	251.74	6,890.2	-79.4	-240.8	467,002.06	641,772.66	32° 17' 0.400 N	104° 0' 30.000 W
7,000.0	4.50	251.74	6,989.8	-81.9	-248.3	466,999.61	641,765.21	32° 17' 0.376 N	104° 0' 30.087 W
7,100.0	4.50	251.74	7,089.5	-84.4	-255.7	466,997.15	641,757.76	32° 17' 0.352 N	104° 0' 30.174 W
7,200.0	4.50	251.74	7,189.2	-86.8	-263.2	466,994.69	641,750.31	32° 17' 0.328 N	104° 0' 30.261 W
7,300.0	4.50	251.74	7,288.9	-89.3	-270.6	466,992.23	641,742.86	32° 17' 0.304 N	104° 0' 30.348 W
7,400.0	4.50	251.74	7,388.6	-91.7	-278.1	466,989.78	641,735.41	32° 17' 0.280 N	104° 0' 30.435 W
7,500.0	4.50	251.74	7,488.3	-94.2	-285.5	466,987.32	641,727.96	32° 17' 0.256 N	104° 0' 30.522 W
7,600.0	4.50	251.74	7,588.0	-96.6	-293.0	466,984.86	641,720.50	32° 17' 0.232 N	104° 0' 30.609 W
7,700.0	4.50	251.74	7,687.7	-99.1	-300.4	466,982.40	641,713.05	32° 17' 0.208 N	104° 0' 30.695 W
7,800.0	4.50	251.74	7,787.4	-101.6	-307.9	466,979.94	641,705.60	32° 17' 0.184 N	104° 0' 30.782 W
7,900.0	4.50	251.74	7,887.1	-104.0	-315.3	466,977.49	641,698.15	32° 17' 0.159 N	104° 0' 30.869 W
8,000.0	4.50	251.74	7,986.8	-106.5	-322.8	466,975.03	641,690.70	32° 17' 0.135 N	104° 0' 30.956 W
8,100.0	4.50	251.74	8,086.5	-108.9	-330.2	466,972.57	641,683.25	32° 17' 0.111 N	104° 0' 31.043 W
8,200.0	4.50	251.74	8,186.1	-111.4	-337.7	466,970.11	641,675.80	32° 17' 0.087 N	104° 0' 31.130 W
8,300.0	4.50	251.74	8,285.8	-113.9	-345.1	466,967.65	641,668.35	32° 17' 0.063 N	104° 0' 31.217 W
8,400.0	4.50	251.74	8,385.5	-116.3	-352.6	466,965.20	641,660.90	32° 17' 0.039 N	104° 0' 31.304 W
8,500.0	4.50	251.74	8,485.2	-118.8	-360.0	466,962.74	641,653.45	32° 17' 0.015 N	104° 0' 31.390 W
8,600.0	4.50	251.74	8,584.9	-121.2	-367.5	466,960.28	641,646.00	32° 16' 59.991 N	104° 0' 31.477 W
8,700.0	4.50	251.74	8,684.6	-123.7	-374.9	466,957.82	641,638.55	32° 16' 59.967 N	104° 0' 31.564 W
8,800.0	4.50	251.74	8,784.3	-126.1	-382.4	466,955.37	641,631.10	32° 16' 59.943 N	104° 0' 31.651 W
8,900.0	4.50	251.74	8,884.0	-128.6	-389.8	466,952.91	641,623.65	32° 16' 59.918 N	104° 0' 31.738 W
9,000.0	4.50	251.74	8,983.7	-131.1	-397.3	466,950.45	641,616.20	32° 16' 59.894 N	104° 0' 31.825 W
9,100.0	4.50	251.74	9,083.4	-133.5	-404.7	466,947.99	641,608.75	32° 16' 59.870 N	104° 0' 31.912 W
9,200.0	4.50	251.74	9,183.1	-136.0	-412.2	466,945.53	641,601.30	32° 16' 59.846 N	104° 0' 31.999 W
9,300.0	4.50	251.74	9,282.8	-138.4	-419.6	466,943.08	641,593.85	32° 16' 59.822 N	104° 0' 32.085 W
9,400.0	4.50	251.74	9,382.4	-140.9	-427.1	466,940.62	641,586.40	32° 16' 59.798 N	104° 0' 32.172 W
9,500.0	4.50	251.74	9,482.1	-143.3	-434.5	466,938.16	641,578.95	32° 16' 59.774 N	104° 0' 32.259 W
9,600.0	4.50	251.74	9,581.8	-145.8	-442.0	466,935.70	641,571.50	32° 16' 59.750 N	104° 0' 32.346 W
9,700.0	4.50	251.74	9,681.5	-148.3	-449.4	466,933.24	641,564.05	32° 16' 59.726 N	104° 0' 32.433 W
9,800.0	4.50	251.74	9,781.2	-150.7	-456.9	466,930.79	641,556.60	32° 16' 59.702 N	104° 0' 32.520 W
9,900.0	4.50	251.74	9,880.9	-153.2	-464.3	466,928.33	641,549.15	32° 16' 59.677 N	104° 0' 32.607 W
10,000.0	4.50	251.74	9,980.6	-155.6	-471.8	466,925.87	641,541.70	32° 16' 59.653 N	104° 0' 32.694 W
10,064.8	4.50	251.74	10,045.2	-157.2	-476.6	466,924.28	641,536.87	32° 16' 59.638 N	104° 0' 32.750 W
10,100.0	3.80	251.74	10,080.3	-158.0	-479.0	466,923.48	641,534.45	32° 16' 59.630 N	104° 0' 32.778 W
10,200.0	1.80	251.74	10,180.2	-159.6	-483.7	466,921.95	641,529.82	32° 16' 59.615 N	104° 0' 32.832 W
10,289.8	0.00	0.00	10,270.0	-160.0	-485.0	466,921.51	641,528.48	32° 16' 59.611 N	104° 0' 32.848 W
10,300.0	0.00	0.00	10,280.2	-160.0	-485.0	466,921.51	641,528.48	32° 16' 59.611 N	104° 0' 32.848 W
10,400.0	0.00	0.00	10,380.2	-160.0	-485.0	466,921.51	641,528.48	32° 16' 59.611 N	104° 0' 32.848 W
10,414.4	0.00	0.00	10,394.5	-160.0	-485.0	466,921.51	641,528.48	32° 16' 59.611 N	104° 0' 32.848 W

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Harroun Ranch #3H
Company:	BTA Oil Producers, LLC	**TVD Reference:**	GL @ 2986.0usft (Original Well Elev)
Project:	Eddy County, NM (NAD 83)	**MD Reference:**	GL @ 2986.0usft (Original Well Elev)
Site:	Harroun Ranch	**North Reference:**	Grid
Well:	Harroun Ranch #3H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,500.0	10.28	0.46	10,479.7	-152.3	-484.9	466,929.17	641,528.54	32° 16' 59.686 N	104° 0' 32.847 W
10,600.0	22.28	0.46	10,575.5	-124.4	-484.7	466,957.14	641,528.77	32° 16' 59.963 N	104° 0' 32.843 W
10,700.0	34.28	0.46	10,663.4	-77.1	-484.3	467,004.42	641,529.15	32° 17' 0.431 N	104° 0' 32.837 W
10,800.0	46.28	0.46	10,739.6	-12.6	-483.8	467,068.94	641,529.67	32° 17' 1.069 N	104° 0' 32.829 W
10,900.0	58.28	0.46	10,800.7	66.4	-483.2	467,147.88	641,530.31	32° 17' 1.851 N	104° 0' 32.818 W
11,000.0	70.28	0.46	10,844.0	156.3	-482.4	467,237.80	641,531.04	32° 17' 2.740 N	104° 0' 32.807 W
11,100.0	82.28	0.46	10,867.7	253.3	-481.7	467,334.75	641,531.83	32° 17' 3.700 N	104° 0' 32.794 W
11,164.4	90.00	0.46	10,872.0	317.4	-481.1	467,398.92	641,532.35	32° 17' 4.335 N	104° 0' 32.786 W
11,200.0	90.00	0.46	10,872.0	353.1	-480.8	467,434.55	641,532.63	32° 17' 4.687 N	104° 0' 32.781 W
11,300.0	90.00	0.46	10,872.0	453.1	-480.0	467,534.54	641,533.44	32° 17' 5.677 N	104° 0' 32.768 W
11,400.0	90.00	0.46	10,872.0	553.1	-479.2	467,634.53	641,534.25	32° 17' 6.666 N	104° 0' 32.755 W
11,500.0	90.00	0.46	10,872.0	653.1	-478.4	467,734.52	641,535.06	32° 17' 7.656 N	104° 0' 32.742 W
11,600.0	90.00	0.46	10,872.0	753.1	-477.6	467,834.50	641,535.87	32° 17' 8.645 N	104° 0' 32.729 W
11,700.0	90.00	0.46	10,872.0	853.1	-476.8	467,934.49	641,536.68	32° 17' 9.635 N	104° 0' 32.717 W
11,800.0	90.00	0.46	10,872.0	953.1	-476.0	468,034.48	641,537.49	32° 17' 10.624 N	104° 0' 32.704 W
11,900.0	90.00	0.46	10,872.0	1,053.1	-475.2	468,134.47	641,538.30	32° 17' 11.614 N	104° 0' 32.691 W
12,000.0	90.00	0.46	10,872.0	1,153.1	-474.4	468,234.46	641,539.11	32° 17' 12.603 N	104° 0' 32.678 W
12,100.0	90.00	0.46	10,872.0	1,253.0	-473.6	468,334.45	641,539.92	32° 17' 13.592 N	104° 0' 32.665 W
12,200.0	90.00	0.46	10,872.0	1,353.0	-472.7	468,434.44	641,540.73	32° 17' 14.582 N	104° 0' 32.652 W
12,300.0	90.00	0.46	10,872.0	1,453.0	-471.9	468,534.43	641,541.54	32° 17' 15.571 N	104° 0' 32.639 W
12,400.0	90.00	0.46	10,872.0	1,553.0	-471.1	468,634.41	641,542.35	32° 17' 16.561 N	104° 0' 32.626 W
12,500.0	90.00	0.46	10,872.0	1,653.0	-470.3	468,734.40	641,543.16	32° 17' 17.550 N	104° 0' 32.613 W
12,600.0	90.00	0.46	10,872.0	1,753.0	-469.5	468,834.39	641,543.97	32° 17' 18.540 N	104° 0' 32.600 W
12,700.0	90.00	0.46	10,872.0	1,853.0	-468.7	468,934.38	641,544.78	32° 17' 19.529 N	104° 0' 32.587 W
12,800.0	90.00	0.46	10,872.0	1,953.0	-467.9	469,034.37	641,545.59	32° 17' 20.519 N	104° 0' 32.574 W
12,900.0	90.00	0.46	10,872.0	2,053.0	-467.1	469,134.36	641,546.40	32° 17' 21.508 N	104° 0' 32.561 W
13,000.0	90.00	0.46	10,872.0	2,153.0	-466.3	469,234.35	641,547.21	32° 17' 22.497 N	104° 0' 32.548 W
13,100.0	90.00	0.46	10,872.0	2,253.0	-465.5	469,334.34	641,548.02	32° 17' 23.487 N	104° 0' 32.535 W
13,200.0	90.00	0.46	10,872.0	2,353.0	-464.6	469,434.32	641,548.83	32° 17' 24.476 N	104° 0' 32.522 W
13,300.0	90.00	0.46	10,872.0	2,453.0	-463.8	469,534.31	641,549.64	32° 17' 25.466 N	104° 0' 32.509 W
13,400.0	90.00	0.46	10,872.0	2,553.0	-463.0	469,634.30	641,550.45	32° 17' 26.455 N	104° 0' 32.496 W
13,500.0	90.00	0.46	10,872.0	2,653.0	-462.2	469,734.29	641,551.26	32° 17' 27.445 N	104° 0' 32.483 W
13,600.0	90.00	0.46	10,872.0	2,753.0	-461.4	469,834.28	641,552.07	32° 17' 28.434 N	104° 0' 32.470 W
13,700.0	90.00	0.46	10,872.0	2,853.0	-460.6	469,934.27	641,552.88	32° 17' 29.424 N	104° 0' 32.457 W
13,800.0	90.00	0.46	10,872.0	2,953.0	-459.8	470,034.26	641,553.69	32° 17' 30.413 N	104° 0' 32.444 W
13,900.0	90.00	0.46	10,872.0	3,053.0	-459.0	470,134.25	641,554.50	32° 17' 31.402 N	104° 0' 32.432 W
14,000.0	90.00	0.46	10,872.0	3,153.0	-458.2	470,234.24	641,555.31	32° 17' 32.392 N	104° 0' 32.419 W
14,100.0	90.00	0.46	10,872.0	3,253.0	-457.4	470,334.22	641,556.12	32° 17' 33.381 N	104° 0' 32.406 W
14,200.0	90.00	0.46	10,872.0	3,353.0	-456.6	470,434.21	641,556.93	32° 17' 34.371 N	104° 0' 32.393 W
14,300.0	90.00	0.46	10,872.0	3,453.0	-455.7	470,534.20	641,557.74	32° 17' 35.360 N	104° 0' 32.380 W
14,400.0	90.00	0.46	10,872.0	3,553.0	-454.9	470,634.19	641,558.55	32° 17' 36.350 N	104° 0' 32.367 W
14,500.0	90.00	0.46	10,872.0	3,653.0	-454.1	470,734.18	641,559.36	32° 17' 37.339 N	104° 0' 32.354 W
14,600.0	90.00	0.46	10,872.0	3,753.0	-453.3	470,834.17	641,560.17	32° 17' 38.329 N	104° 0' 32.341 W
14,700.0	90.00	0.46	10,872.0	3,853.0	-452.5	470,934.16	641,560.97	32° 17' 39.318 N	104° 0' 32.328 W
14,800.0	90.00	0.46	10,872.0	3,953.0	-451.7	471,034.15	641,561.78	32° 17' 40.307 N	104° 0' 32.315 W
14,900.0	90.00	0.46	10,872.0	4,053.0	-450.9	471,134.13	641,562.59	32° 17' 41.297 N	104° 0' 32.302 W
15,000.0	90.00	0.46	10,872.0	4,153.0	-450.1	471,234.12	641,563.40	32° 17' 42.286 N	104° 0' 32.289 W
15,100.0	90.00	0.46	10,872.0	4,253.0	-449.3	471,334.11	641,564.21	32° 17' 43.276 N	104° 0' 32.276 W
15,200.0	90.00	0.46	10,872.0	4,352.9	-448.5	471,434.10	641,565.02	32° 17' 44.265 N	104° 0' 32.263 W
15,300.0	90.00	0.46	10,872.0	4,452.9	-447.6	471,534.09	641,565.83	32° 17' 45.255 N	104° 0' 32.250 W
15,400.0	90.00	0.46	10,872.0	4,552.9	-446.8	471,634.08	641,566.64	32° 17' 46.244 N	104° 0' 32.237 W
15,500.0	90.00	0.46	10,872.0	4,652.9	-446.0	471,734.07	641,567.45	32° 17' 47.234 N	104° 0' 32.224 W
15,600.0	90.00	0.46	10,872.0	4,752.9	-445.2	471,834.06	641,568.26	32° 17' 48.223 N	104° 0' 32.211 W
15,700.0	90.00	0.46	10,872.0	4,852.9	-444.4	471,934.04	641,569.07	32° 17' 49.212 N	104° 0' 32.198 W
15,800.0	90.00	0.46	10,872.0	4,952.9	-443.6	472,034.03	641,569.88	32° 17' 50.202 N	104° 0' 32.185 W

Database:	EDM 5000.1 Single User Db	***Local Co-ordinate Reference:***	Well Harroun Ranch #3H
Company:	BTA Oil Producers, LLC	**TVD Reference:**	GL @ 2986.0usft (Original Well Elev)
Project:	Eddy County, NM (NAD 83)	**MD Reference:**	GL @ 2986.0usft (Original Well Elev)
Site:	Harroun Ranch	**North Reference:**	Grid
Well:	Harroun Ranch #3H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
15,900.0	90.00	0.46	10,872.0	5,052.9	-442.8	472,134.02	641,570.69	32° 17' 51.191 N	104° 0' 32.172 W
16,000.0	90.00	0.46	10,872.0	5,152.9	-442.0	472,234.01	641,571.50	32° 17' 52.181 N	104° 0' 32.159 W
16,100.0	90.00	0.46	10,872.0	5,252.9	-441.2	472,334.00	641,572.31	32° 17' 53.170 N	104° 0' 32.146 W
16,200.0	90.00	0.46	10,872.0	5,352.9	-440.4	472,433.99	641,573.12	32° 17' 54.160 N	104° 0' 32.133 W
16,300.0	90.00	0.46	10,872.0	5,452.9	-439.5	472,533.98	641,573.93	32° 17' 55.149 N	104° 0' 32.121 W
16,400.0	90.00	0.46	10,872.0	5,552.9	-438.7	472,633.97	641,574.74	32° 17' 56.139 N	104° 0' 32.108 W
16,500.0	90.00	0.46	10,872.0	5,652.9	-437.9	472,733.96	641,575.55	32° 17' 57.128 N	104° 0' 32.095 W
16,600.0	90.00	0.46	10,872.0	5,752.9	-437.1	472,833.94	641,576.36	32° 17' 58.117 N	104° 0' 32.082 W
16,700.0	90.00	0.46	10,872.0	5,852.9	-436.3	472,933.93	641,577.17	32° 17' 59.107 N	104° 0' 32.069 W
16,800.0	90.00	0.46	10,872.0	5,952.9	-435.5	473,033.92	641,577.98	32° 18' 0.096 N	104° 0' 32.056 W
16,900.0	90.00	0.46	10,872.0	6,052.9	-434.7	473,133.91	641,578.79	32° 18' 1.086 N	104° 0' 32.043 W
17,000.0	90.00	0.46	10,872.0	6,152.9	-433.9	473,233.90	641,579.60	32° 18' 2.075 N	104° 0' 32.030 W
17,100.0	90.00	0.46	10,872.0	6,252.9	-433.1	473,333.89	641,580.41	32° 18' 3.065 N	104° 0' 32.017 W
17,200.0	90.00	0.46	10,872.0	6,352.9	-432.3	473,433.88	641,581.22	32° 18' 4.054 N	104° 0' 32.004 W
17,300.0	90.00	0.46	10,872.0	6,452.9	-431.4	473,533.87	641,582.03	32° 18' 5.044 N	104° 0' 31.991 W
17,400.0	90.00	0.46	10,872.0	6,552.9	-430.6	473,633.85	641,582.84	32° 18' 6.033 N	104° 0' 31.978 W
17,500.0	90.00	0.46	10,872.0	6,652.9	-429.8	473,733.84	641,583.65	32° 18' 7.022 N	104° 0' 31.965 W
17,600.0	90.00	0.46	10,872.0	6,752.9	-429.0	473,833.83	641,584.46	32° 18' 8.012 N	104° 0' 31.952 W
17,700.0	90.00	0.46	10,872.0	6,852.9	-428.2	473,933.82	641,585.27	32° 18' 9.001 N	104° 0' 31.939 W
17,800.0	90.00	0.46	10,872.0	6,952.9	-427.4	474,033.81	641,586.08	32° 18' 9.991 N	104° 0' 31.926 W
17,900.0	90.00	0.46	10,872.0	7,052.9	-426.6	474,133.80	641,586.89	32° 18' 10.980 N	104° 0' 31.913 W
18,000.0	90.00	0.46	10,872.0	7,152.9	-425.8	474,233.79	641,587.70	32° 18' 11.970 N	104° 0' 31.900 W
18,100.0	90.00	0.46	10,872.0	7,252.9	-425.0	474,333.78	641,588.51	32° 18' 12.959 N	104° 0' 31.887 W
18,200.0	90.00	0.46	10,872.0	7,352.8	-424.2	474,433.76	641,589.31	32° 18' 13.949 N	104° 0' 31.874 W
18,300.0	90.00	0.46	10,872.0	7,452.8	-423.4	474,533.75	641,590.12	32° 18' 14.938 N	104° 0' 31.861 W
18,400.0	90.00	0.46	10,872.0	7,552.8	-422.5	474,633.74	641,590.93	32° 18' 15.927 N	104° 0' 31.848 W
18,500.0	90.00	0.46	10,872.0	7,652.8	-421.7	474,733.73	641,591.74	32° 18' 16.917 N	104° 0' 31.835 W
18,600.0	90.00	0.46	10,872.0	7,752.8	-420.9	474,833.72	641,592.55	32° 18' 17.906 N	104° 0' 31.822 W
18,700.0	90.00	0.46	10,872.0	7,852.8	-420.1	474,933.71	641,593.36	32° 18' 18.896 N	104° 0' 31.809 W
18,800.0	90.00	0.46	10,872.0	7,952.8	-419.3	475,033.70	641,594.17	32° 18' 19.885 N	104° 0' 31.797 W
18,900.0	90.00	0.46	10,872.0	8,052.8	-418.5	475,133.69	641,594.98	32° 18' 20.875 N	104° 0' 31.784 W
19,000.0	90.00	0.46	10,872.0	8,152.8	-417.7	475,233.67	641,595.79	32° 18' 21.864 N	104° 0' 31.771 W
19,100.0	90.00	0.46	10,872.0	8,252.8	-416.9	475,333.66	641,596.60	32° 18' 22.853 N	104° 0' 31.758 W
19,200.0	90.00	0.46	10,872.0	8,352.8	-416.1	475,433.65	641,597.41	32° 18' 23.843 N	104° 0' 31.745 W
19,300.0	90.00	0.46	10,872.0	8,452.8	-415.3	475,533.64	641,598.22	32° 18' 24.832 N	104° 0' 31.732 W
19,400.0	90.00	0.46	10,872.0	8,552.8	-414.4	475,633.63	641,599.03	32° 18' 25.822 N	104° 0' 31.719 W
19,500.0	90.00	0.46	10,872.0	8,652.8	-413.6	475,733.62	641,599.84	32° 18' 26.811 N	104° 0' 31.706 W
19,600.0	90.00	0.46	10,872.0	8,752.8	-412.8	475,833.61	641,600.65	32° 18' 27.801 N	104° 0' 31.693 W
19,700.0	90.00	0.46	10,872.0	8,852.8	-412.0	475,933.60	641,601.46	32° 18' 28.790 N	104° 0' 31.680 W
19,800.0	90.00	0.46	10,872.0	8,952.8	-411.2	476,033.59	641,602.27	32° 18' 29.780 N	104° 0' 31.667 W
19,900.0	90.00	0.46	10,872.0	9,052.8	-410.4	476,133.57	641,603.08	32° 18' 30.769 N	104° 0' 31.654 W
20,000.0	90.00	0.46	10,872.0	9,152.8	-409.6	476,233.56	641,603.89	32° 18' 31.758 N	104° 0' 31.641 W
20,100.0	90.00	0.46	10,872.0	9,252.8	-408.8	476,333.55	641,604.70	32° 18' 32.748 N	104° 0' 31.628 W
20,200.0	90.00	0.46	10,872.0	9,352.8	-408.0	476,433.54	641,605.51	32° 18' 33.737 N	104° 0' 31.615 W
20,300.0	90.00	0.46	10,872.0	9,452.8	-407.2	476,533.53	641,606.32	32° 18' 34.727 N	104° 0' 31.602 W
20,400.0	90.00	0.46	10,872.0	9,552.8	-406.3	476,633.52	641,607.13	32° 18' 35.716 N	104° 0' 31.589 W
20,500.0	90.00	0.46	10,872.0	9,652.8	-405.5	476,733.51	641,607.94	32° 18' 36.706 N	104° 0' 31.576 W
20,600.0	90.00	0.46	10,872.0	9,752.8	-404.7	476,833.50	641,608.75	32° 18' 37.695 N	104° 0' 31.563 W
20,700.0	90.00	0.46	10,872.0	9,852.8	-403.9	476,933.48	641,609.56	32° 18' 38.685 N	104° 0' 31.550 W
20,800.0	90.00	0.46	10,872.0	9,952.8	-403.1	477,033.47	641,610.37	32° 18' 39.674 N	104° 0' 31.537 W
20,900.0	90.00	0.46	10,872.0	10,052.8	-402.3	477,133.46	641,611.18	32° 18' 40.663 N	104° 0' 31.524 W
21,000.0	90.00	0.46	10,872.0	10,152.8	-401.5	477,233.45	641,611.99	32° 18' 41.653 N	104° 0' 31.511 W
21,100.0	90.00	0.46	10,872.0	10,252.8	-400.7	477,333.44	641,612.80	32° 18' 42.642 N	104° 0' 31.498 W
21,147.5	90.00	0.46	10,872.0	10,300.2	-400.3	477,380.92	641,613.18	32° 18' 43.112 N	104° 0' 31.492 W

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Harroun Ranch #3H
Company:	BTA Oil Producers, LLC	**TVD Reference:**	GL @ 2986.0usft (Original Well Elev)
Project:	Eddy County, NM (NAD 83)	**MD Reference:**	GL @ 2986.0usft (Original Well Elev)
Site:	Harroun Ranch	**North Reference:**	Grid
Well:	Harroun Ranch #3H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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
Harroun Ranch #3H BHl - plan misses target center by 2376.0usft at 15792.7usft MD (10872.0 TVD, 4945.6 N, -443.7 E) - Point	0.00	0.07	8,500.0	4,946.7	-581.1	472,027.81	641,432.40	32° 17' 50.144 N	104° 0' 33.787 W
HR #3H BHL 2 mile - plan hits target center - Point	0.00	0.07	10,872.0	10,300.2	-400.3	477,380.92	641,613.18	32° 18' 43.112 N	104° 0' 31.492 W

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

QUALITY CONTROL INSPECTION AND TEST CERTIFICATE

CERT. Nº	1592		
PURCHASER:	ContiTech Oil & Marine Corp.	P.O. Nº:	4500461753
CONTITECH ORDER Nº	539225	HOSE TYPE: 3" ID	Choke & Kill Hose
HOSE SERIAL Nº		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 Nº		Quality	Heat Nº
3" coupling with	2574	5533	AISI 4130	A1582N H8572
4 1/16' 10K API Swivel Flange end			AISI 4130	58855
Hub			AISI 4130	A1199N A1423N

Not Designed For Well Testing

API Spec 16 C

Fire Rated

Temperature rate:"B"

All metal parts are flawless

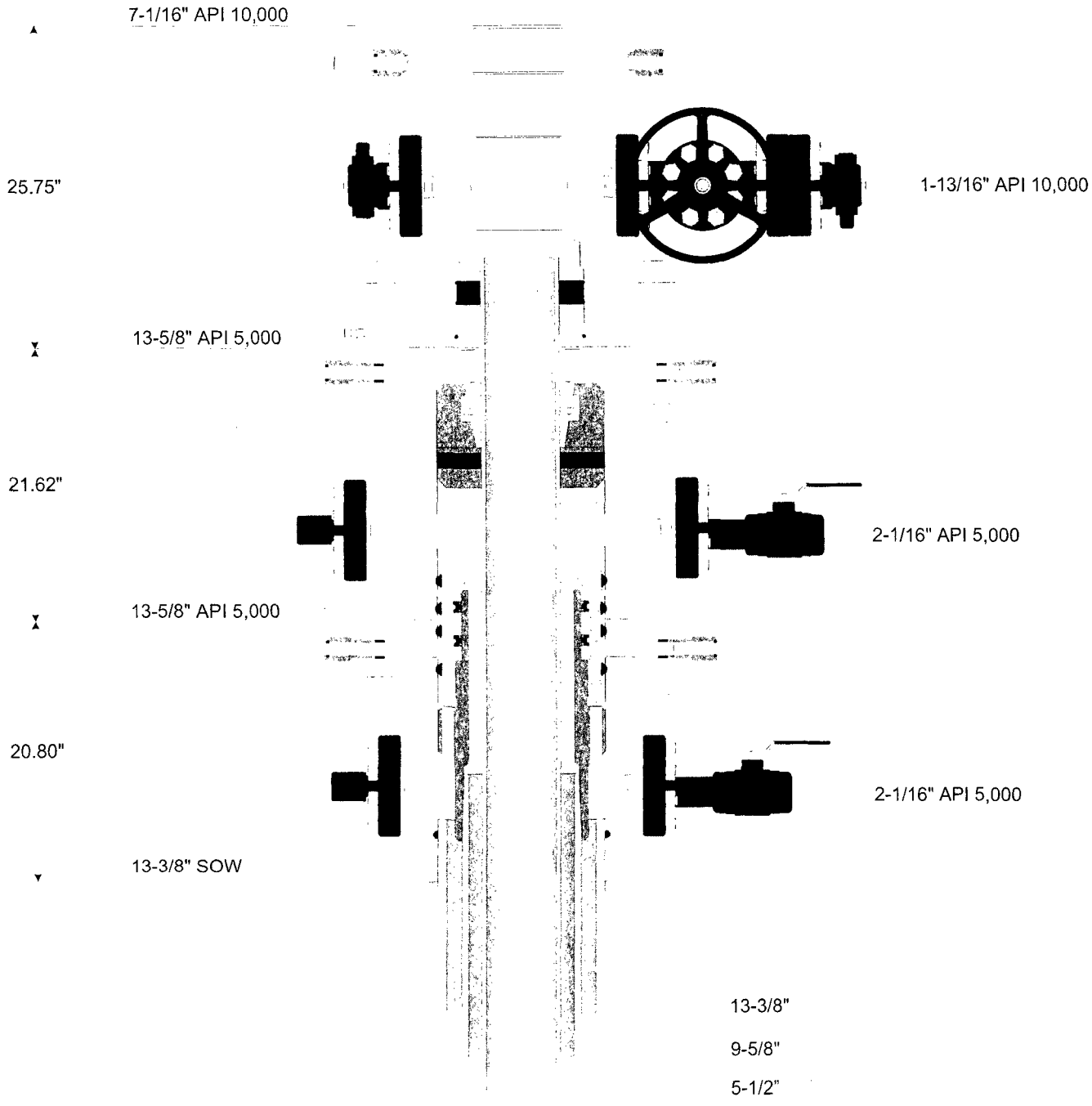
WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER INSPECTED AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.

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.		

ATTACHMENT OF QUALITY CONTROL INSPECTION AND TEST CERTIFICATE No. 1586, 1590, 1592

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



Weatherford®

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

GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ Chaves and Roosevelt Counties
Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
During office hours call (575) 627-0272.
After office hours call (575)

☒ Eddy County
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 393-3612

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
   a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
   b. When the operator proposes to set surface casing with Spudder Rig
      - Notify the BLM when moving in and removing the Spudder Rig.
      - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
      - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

3. 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.

A. CASING

1. 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.

2. Wait on cement (WOC) for Potash Areas: 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 for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

3. 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. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

4. 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.

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

6. 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. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

7. 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.

8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

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. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. 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.

3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
    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. 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.
    e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

5. 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. In potash areas, 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. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

c. The tests shall be done by an independent service company utilizing a test plug. The results of the test shall be reported to the appropriate BLM office.

d. 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.

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. 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.

D. 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.

Waste Minimization Plan (WMP)

In the interest of resource development, submission of additional well gas capture development plan information is deferred but may be required by the BLM Authorized Officer at a later date.

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**BTA Oil Producers, LLC**
LEASE NO.:	**NMNM-119271**
WELL NAME & NO.:	**Harroun Ranch Fed Com 3H**
SURFACE HOLE FOOTAGE:	**0170' FSL & 2465' FWL**
BOTTOM HOLE FOOTAGE	**0210' FNL & 1900' FWL**
LOCATION:	**Section 20, T. 23 S., R 29 E., NMPM**
COUNTY:	**Eddy County, New Mexico**

A. Hydrogen Sulfide

1. Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

B. CASING

1. The 13 3/8 inch surface casing shall be set at approximately 360 feet (a minimum of 25 feet into the Rustler Anhydrite and 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 will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

    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.

❖ In Medium/High Cave/Karst Areas if cement does not circulate to surface on the first two casing strings , the cement on the 3rd casing string must come to surface.

3. The minimum required fill of cement behind the 7 inch production casing is:

    - Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

4. The minimum required fill of cement behind the 4 1/2 inch production liner is:

    - Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be radily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9 5/8** intermediate casing shoe shall be **5000 (5M)** psi.

*See attached for General Requirements

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