

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Artesia

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

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.

5. Lease Serial No.
NMNM119271

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

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 FEDERAL COM 2H

2. Name of Operator
BTA OIL PRODUCERS, LLC

Contact: KAYLA MCCONNELL
E-Mail: kmccconnell@btaoil.com

9. API Well No.
30-015-43360

3a. Address
104 SOUTH PECOS
MIDLAND, TX 79701

3b. Phone No. (include area code)
Ph: 432-682-3753 Ext: 106

10. Field and Pool, or Exploratory
WC-015 G-07 S232932A

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
Sec 20 T23S R29E 680FSL 180FWL

11. County or Parish, and State
EDDY COUNTY COUNTY, NM

12. CHECK 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"/> Fracture Treat	<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 PD
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> 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 shall 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 shall be filed once testing has been completed. Final Abandonment Notices shall 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:

NM OIL CONSERVATION
ARTESIA DISTRICT

NOV 19 2015

Original: 96721 Laguna Salado; Bone Spring
Change to: 98113 WC-015 G-07 S232932A; Upper wolcamp

Original: 8500' TVD
Change to: 10,848' TVD

Original: 13,438' MD
Change to: 15,731' MD

Original: 3000 BOP

**SEE ATTACHED FOR
CONDITIONS OF APPROVAL**

RECEIVED

(PD) 11/20/15
Accepted for record
NMOCD

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

Electronic Submission #322476 verified by the BLM Well Information System
For BTA OIL PRODUCERS, LLC, sent to the Carlsbad
Committed to AFMSS for processing by KENNETH RENNICK on 11/10/2015 ()

Name (Printed/Typed) KAYLA MCCONNELL

Title REGULATORY ANALYST

Signature (Electronic Submission)

Date 11/04/2015

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By _____

Title _____

Date _____

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office _____

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

APPROVED
PETROLEUM ENGINEER
NOV 13 2015
Kenneth Rennick

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

**BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE**

NOV 19 2015

RECEIVED

**PECOS DISTRICT
CONDITIONS OF APPROVAL**

**HARROUN RANCH FEDERAL COM 2H
API: 30-015-43360
BTA OIL PRODUCERS
Section 20, T. 23 S., R 29 E.
Eddy County**

Original COA still applies except for the replacement of cement filled and fluid filled requirements under the Casing Section. Also the replacement of the Pressure Control Requirements Section, and the addition of the Drilling Mud Section. Please see the following:

A. CASING

1. The 13 3/8 inch surface casing shall be set at approximately 360 feet and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**
 - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
 - d. If cement falls back, remedial cementing will be done prior to drilling out that string.

Formation below the 13 3/8 inch shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

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 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.**

Formation below the 9 5/8 inch shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

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

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

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

Formation below the 7 inch shoe to be tested according to Onshore Order 2.III.B.1.i. Test to be done as a mud equivalency test using the mud weight necessary for the pore pressure of the formation below the shoe (not the mud weight required to prevent dissolving the salt formation) and the mud weight for the bottom of the hole. Report results to BLM office.

The production liner shall be kept fluid filled to avoid approaching the collapse pressure rating of the casing.

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

- Cement tie-back is appropriate as proposed. Operator shall provide method of verification. **Additional cement may be required since excess was calculated to be 25%.**

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 53.
2. 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. 5M 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.**
 - a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.
3. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
 - b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer.**
 - c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
 - d. The results of the test shall be reported to the appropriate BLM office.
 - e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

- f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.
- g. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the **3rd Bone Springs** 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 **3rd Bone Springs and Wolfcamp** formation, and shall be used until production casing is run and cemented.

Proposed mud weight may not be adequate for drilling through **3rd Bone Springs and Wolfcamp**.

Approved for aerated mud, but not air drilling.

KGR 11132015

Additional data for EC transaction #322476 that would not fit on the form

32. Additional remarks, continued

Change to: 5000 BOP

Hole Size OD Casing Setting from Depth to Weight Grade Joint
Original: Prod Csg 8-3/4" 5-1/2" 0 13438' 17# P110 LTC
Change to: Prod Csg 8-3/4" 7" 0 10700' 29# P110 LTC

Add: Prod Liner 6-1/8" 4-1/2" 10300' 15731' 11.6# P110 LTC

Revised Directional Plan attached.

Amended Drilling Program, BOP schematic and copy of C-102 attached.



Rennick, Kenneth <krennick@blm.gov>

**WIS Sundry Notice - Identifier # 00852-00312 - EC Transaction #322476 - 20702
Harroun Ranch Fed Com #2H - Addition to Production Liner**

1 message

Kayla McConnell <KMcConnell@btaoil.com>
To: "Rennick, Kenneth" <krennick@blm.gov>

Tue, Nov 10, 2015 at 3:00 PM

Mr. Rennick,

BTA Oil Producers, LLC request for the Drilling Program attached to the Sundry Notice of Intent for 20702 Harroun Ranch Federal Com #2H, that there shall be an addition that the Production Liner **"shall be kept fluid filled to avoid approaching the collapse pressure rating of the casing."**

Thank you,

Kayla McConnell

BTA Oil Producers LLC

Office: 432-682-3753

Fax: 432-683-0325





Rennick, Kenneth <krennick@blm.gov>

WIS Sundry Notice - Identifier # 00852-00312 - EC Transaction #322476 - 20702 Harroun Ranch Fed Com #2H

7 messages

Kayla McConnell <KMcConnell@btaoil.com>
To: "Rennick, Kenneth" <krennick@blm.gov>

Wed, Nov 4, 2015 at 9:00 AM

Good morning, Kenneth.

I submitted a sundry notice this morning and after routing the sundry I realized I forgot to attach the 5K BOP schematic. I'm not sure if there is any way I could do that on my side. I was wondering if you could attach this to the sundry referenced above? Please let me know if you have any questions or if you would like for me to send the attachment a different way. Thank you for your time in this matter.

Kayla

Kayla McConnell

BTA Oil Producers LLC

Office: 432-682-3753

Fax: 432-683-0325



20702 Harroun Ranch Fed Com #2H BLM 5k BOP and Choke Schematic.pdf
1163K

Rennick, Kenneth <krennick@blm.gov>
To: Kayla McConnell <KMcConnell@btaoil.com>

Wed, Nov 4, 2015 at 1:25 PM

Hello Ms. Kayla McConnell!

I hope all is well!

It will be no problem for me to add the attachment. This is appropriate as is.

By the way, I am going to be out of the office for most of Thursday and entire Friday. So when do you need this

notification to be reviewed and approved?

Best Regards,

Kenneth Rennick

[Quoted text hidden]

--
Kenneth Rennick

Petroleum Engineer
Bureau of Land Management
Carlsbad Field Office
(575) 234-5964
krennick@blm.gov

Kayla McConnell <KMcConnell@btaoil.com>
To: "Rennick, Kenneth" <krennick@blm.gov>

Wed, Nov 4, 2015 at 1:53 PM

Thank you, I appreciate it. All is well over here in Texas.

Whenever is most convenient for you. Please let me know if you need any more information.

Kayla McConnell

BTA Oil Producers, LLC

432-682-3753

From: Rennick, Kenneth [mailto:krennick@blm.gov]
Sent: Wednesday, November 04, 2015 2:25 PM
To: Kayla McConnell <KMcConnell@btaoil.com>
Subject: Re: WIS Sundry Notice - Identifier # 00852-00312 - EC Transaction #322476 - 20702 Harroun Ranch Fed Com #2H

[Quoted text hidden]

Rennick, Kenneth <krennick@blm.gov>
To: Kayla McConnell <KMcConnell@btaoil.com>

Tue, Nov 10, 2015 at 9:23 AM

Hello Again Ms. Kayla McConnell,

I am reviewing the updated Drilling Program for the subject well. For the 4 1/2-inch Production Liner, I am calculating a Collapse Design Factor of 1.08 which does meet the minimum requirements of 1.125. This is due to the True Vertical Depth of the Liner as well as the proposed maximum Mud Weight of 12.5-ppg. Because of this, I cordially request that BTA reviews the design for the Production Liner to address this issue.

Feel free to contact me if you have any questions.

Best Regards,

Kenneth Rennick

[Quoted text hidden]

Kayla McConnell <KMcConnell@btaoil.com>
To: "Rennick, Kenneth" <krennick@blm.gov>

Tue, Nov 10, 2015 at 10:04 AM

Good morning, Mr. Rennick.

I have forward this information to our Drilling Manager, Nick Eaton. As soon as he gives me the revisions I will send them to you.

Thank you,

Kayla McConnell

From: Rennick, Kenneth [mailto:krennick@blm.gov]

Sent: Tuesday, November 10, 2015 10:24 AM

[Quoted text hidden]

[Quoted text hidden]

Kayla McConnell <KMcConnell@btaoil.com>
To: "Rennick, Kenneth" <krennick@blm.gov>

Tue, Nov 10, 2015 at 12:57 PM

Mr. Rennick,

In conversation with my co-worker Pam Inskeep, I wanted to cover all bases with you to make sure that the TVD 10,848' was used for the calculations instead of the MD 15,731'. Our drilling engineer (Nick Eaton) used TVD 10,848' in his calculations to meet the requirements. I attached his collapse design he used to meet criteria. He said for you to give him a call on his cell (432-260-7841) if you would like to discuss it with him.

Sincerely,

Kayla McConnell

From: Rennick, Kenneth [mailto:krennick@blm.gov]

Sent: Tuesday, November 10, 2015 10:24 AM

[Quoted text hidden]

[Quoted text hidden]

 **4 5 inch collapse discussion.pdf**
101K

Rennick, Kenneth <krennick@blm.gov>
To: Kayla McConnell <KMcConnell@btaoil.com>

Tue, Nov 10, 2015 at 1:35 PM

My calculations do not assume that the liner would be kept fluid filled. That is why we are having two different answers.

Since I do not see a statement indicating the the Production Liner will be kept fluid filled in the submitted Drilling Program with the notification, may you please send a request via email for that addition. The wording should be something like the following:

BTA Oil Producers request for the Drilling Program attached to the Sundry Notice of Intent for Harroun Ranch Federal Com 2H, that there shall be an addition that the Production Liner "shall be kept fluid filled to avoid approaching the collapse pressure rating of the casing."

Thank You!!!

Kenneth Rennick
[Quoted text hidden]

4-1/2" production liner collapse design

4-1/2" 11.6# P110 LTC collapse 7,580 psi

Worst case collapse scenario: liner on bottom at 10848' TVD, 12.5 ppg mud in annulus, gas kick (0.2 psi/ft) has filled liner and drill pipe to surface.

$$P_{annulus} = 0.052(12.5 \text{ ppg mud})(10848') = 7052 \text{ PSI}$$

$$P_{in \text{ casing}} = (0.2 \text{ psi/ft})(10848') = 2169 \text{ PSI}$$

$$P_{differential} = (7052 \text{ psi}) - (2169 \text{ psi}) = 4883 \text{ PSI}$$

Collapse design factor = $\frac{\text{Collapse rating of csg}}{\text{pressure differential at worst case scenario}}$

$$\text{Collapse design factor} = \frac{7580 \text{ psi}}{4883 \text{ psi}} = 1.55$$

Collapse design requirement = 1.125 < 1.55. Collapse requirement satisfied.

While running all casing strings, the pipe will be kept a minimum of 1/3 full at all times to avoid approaching the collapse pressure of casing.

APPLICATION FOR DRILLING

BTA OIL PRODUCERS
#2H, Harroun Ranch Federal Com, 20702
SHL: 680' FSL & 180' FWL UL: M
BHL: 330' FNL & 430' FWL UL: D
Sec. 20, T23S, R29E
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	433'	
Top of Salt	563'	
Base Salt	2,568'	
Delaware	2,783'	
Cherry Canyon	3,603'	
Brushy Canyon	4,883'	Oil
Bone Spring LM	6,483'	
1 st Bone Spring Sand	7,533'	Oil/Gas
2 nd Bone Spring Sand	8,293'	Oil/Gas
3 rd Bone Spring Sand	9,478'	Oil/Gas
Wolfcamp	9,953'	Oil/Gas
Target TVD (Wolfcamp)	10,848'	Oil/Gas

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 2750' and circulating cement back to surface. The Delaware and Bone Spring intervals will be isolated by setting 7" csg into the Wolfcamp and circulating cement 500' 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.

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	2,750'	36#	J55	STC
8-3/4"	7"	0	10,700'	29#	P110	LTC
6-1/8"	4-1/2"	10,300'	15,731'	11.6#	P110	LTC

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: 500 sx 50:50 Class H
 - 2.92 ft³/sk; 11.3 ppg
- Tail: 200 sx 50:50 Class H
 - 1.22 ft³/sk; 14.4 ppg
- Cement calculated to tie back 500 ft into intermediate casing. 30% open hole excess.

IV. Production Liner:

- Tail: 500 sx 50:50 Class H
 - 1.29 ft³/sk; 14.2 ppg
- Cement calculated to circulate. 25% 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 5" x 4" 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.

360' to 2,750': 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.

2,750' to 10,700': 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.

10,700' to TD': 10.5 to 12.5 ppg OBM. Will adjust fluid weight as required using barite as wellbore conditions dictate.

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: 6600 psi. Estimated BHT: 170° 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 has been conducted.

NM OIL CONSERVATION
ARTESIA DISTRICT

NOV 19 2015

RECEIVED

BTA Oil Producers, LLC

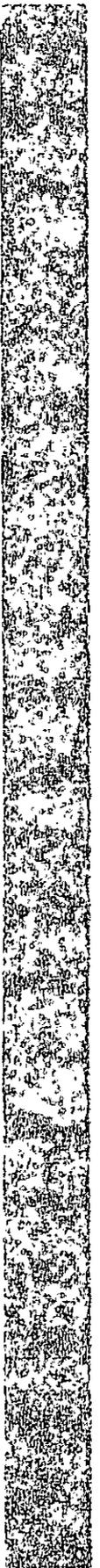
**Eddy County
Harroun Ranch
Harroun Ranch #2H**

Wellbore #1

Plan: Design #1

Standard Planning Report - Geographic

03 November, 2015



BTA
 Planning Report - Geographic

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Harroun Ranch #2H
Company:	BTA Oil Producers, LLC	TVD Reference:	GL @ 2965.0usft (Original Well Elev)
Project:	Eddy County	MD Reference:	GL @ 2965.0usft (Original Well Elev)
Site:	Harroun Ranch	North Reference:	Grid
Well:	Harroun Ranch #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project:	Eddy County		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Ground Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		Using geodetic scale factor

Site:	Harroun Ranch				
Site Position:	Northing:	467,011.30 usft	Latitude:	32° 17' 0.701 N	
From: Map	Easting:	598,545.80 usft	Longitude:	104° 0' 52.034 W	
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.17 °

Well:	Harroun Ranch #2H					
Well Position	+N-S	0.0 usft	Northing:	467,511.90 usft	Latitude:	32° 17' 5.655 N
	+E-W	0.0 usft	Easting:	598,543.80 usft	Longitude:	104° 0' 52.040 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	2,965.0 usft	

Wellbore:	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF200510	12/31/2009	7.96	60.22	48,783
			(°)	(°)	(nT)

Design:	Design #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N-S	+E-W	Direction:
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	3.05

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	
3,169.8	0.00	0.00	3,169.8	0.0	0.0	0.00	0.00	0.00	0.00	
3,469.8	6.00	166.41	3,469.3	-15.3	3.7	2.00	2.00	0.00	166.41	
9,635.1	6.00	166.41	9,600.7	-641.7	155.1	0.00	0.00	0.00	0.00	
10,035.1	0.00	0.00	10,000.0	-662.0	160.0	1.50	-1.50	0.00	180.00	
10,310.1	0.00	0.00	10,275.0	-662.0	160.0	0.00	0.00	0.00	0.00	
11,210.1	90.00	0.86	10,848.0	-89.1	168.6	10.00	10.00	0.00	0.86	
15,731.5	90.00	0.86	10,848.0	4,431.8	236.1	0.00	0.00	0.00	0.00	Harroun Ranch #2H E

BTA
 Planning Report - Geographic

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Harroun Ranch #2H
Company:	BTA Oil Producers, LLC	TVD Reference:	GL @ 2965.0usft (Original Well Elev)
Project:	Eddy County	MDI Reference:	GL @ 2965.0usft (Original Well Elev)
Site:	Harroun Ranch	North Reference:	Grid
Well:	Harroun Ranch #2H	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	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
100.0	0.00	0.00	100.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
200.0	0.00	0.00	200.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
300.0	0.00	0.00	300.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
360.0	0.00	0.00	360.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
13-3/8"										
400.0	0.00	0.00	400.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
500.0	0.00	0.00	500.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
600.0	0.00	0.00	600.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
700.0	0.00	0.00	700.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
800.0	0.00	0.00	800.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
900.0	0.00	0.00	900.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
1,300.0	0.00	0.00	1,300.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
1,400.0	0.00	0.00	1,400.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
1,600.0	0.00	0.00	1,600.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
1,700.0	0.00	0.00	1,700.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
1,900.0	0.00	0.00	1,900.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
2,100.0	0.00	0.00	2,100.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
2,200.0	0.00	0.00	2,200.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
2,300.0	0.00	0.00	2,300.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
2,400.0	0.00	0.00	2,400.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
2,600.0	0.00	0.00	2,600.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
2,700.0	0.00	0.00	2,700.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
2,750.0	0.00	0.00	2,750.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
9-5/8"										
2,800.0	0.00	0.00	2,800.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
2,900.0	0.00	0.00	2,900.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
3,100.0	0.00	0.00	3,100.0	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
3,169.8	0.00	0.00	3,169.8	0.0	0.0	467,511.90	598,543.80	32° 17' 5.655 N	104° 0' 52.040 W	
3,200.0	0.60	166.41	3,200.0	-0.2	0.0	467,511.75	598,543.84	32° 17' 5.654 N	104° 0' 52.039 W	
3,300.0	2.60	166.41	3,300.0	-2.9	0.7	467,509.03	598,544.50	32° 17' 5.627 N	104° 0' 52.032 W	
3,400.0	4.60	166.41	3,399.8	-9.0	2.2	467,502.92	598,545.97	32° 17' 5.566 N	104° 0' 52.015 W	
3,469.8	6.00	166.41	3,469.3	-15.3	3.7	467,496.65	598,547.49	32° 17' 5.504 N	104° 0' 51.997 W	
3,500.0	6.00	166.41	3,499.3	-18.3	4.4	467,493.58	598,548.23	32° 17' 5.474 N	104° 0' 51.989 W	
3,600.0	6.00	166.41	3,598.7	-28.5	6.9	467,483.42	598,550.69	32° 17' 5.373 N	104° 0' 51.960 W	
3,700.0	6.00	166.41	3,698.2	-38.6	9.3	467,473.26	598,553.14	32° 17' 5.273 N	104° 0' 51.932 W	
3,800.0	6.00	166.41	3,797.6	-48.8	11.8	467,463.10	598,555.60	32° 17' 5.172 N	104° 0' 51.904 W	
3,900.0	6.00	166.41	3,897.1	-59.0	14.3	467,452.94	598,558.05	32° 17' 5.071 N	104° 0' 51.876 W	
4,000.0	6.00	166.41	3,996.5	-69.1	16.7	467,442.78	598,560.51	32° 17' 4.971 N	104° 0' 51.847 W	
4,100.0	6.00	166.41	4,096.0	-79.3	19.2	467,432.62	598,562.96	32° 17' 4.870 N	104° 0' 51.819 W	
4,200.0	6.00	166.41	4,195.5	-89.4	21.6	467,422.46	598,565.42	32° 17' 4.770 N	104° 0' 51.791 W	
4,300.0	6.00	166.41	4,294.9	-99.6	24.1	467,412.30	598,567.87	32° 17' 4.669 N	104° 0' 51.763 W	
4,400.0	6.00	166.41	4,394.4	-109.8	26.5	467,402.15	598,570.33	32° 17' 4.568 N	104° 0' 51.734 W	
4,500.0	6.00	166.41	4,493.8	-119.9	29.0	467,391.99	598,572.79	32° 17' 4.468 N	104° 0' 51.706 W	
4,600.0	6.00	166.41	4,593.3	-130.1	31.4	467,381.83	598,575.24	32° 17' 4.367 N	104° 0' 51.678 W	
4,700.0	6.00	166.41	4,692.7	-140.2	33.9	467,371.67	598,577.70	32° 17' 4.267 N	104° 0' 51.650 W	

BTA
Planning Report - Geographic

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Company:	BTA Oil Producers, LLC	TVD Reference:	GL @ 2965.0usft (Original Well Elev)
Project:	Eddy County	MD Reference:	GL @ 2965.0usft (Original Well Elev)
Site:	Harroun Ranch	North Reference:	Grid
Well:	Harroun Ranch #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey									
Measured			Vertical			Map		Map	
Depth (usft)	Inclination (°)	Azimuth (°)	Depth (usft)	N/S (usft)	E/W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
4,800.0	6.00	166.41	4,792.2	-150.4	36.4	467,361.51	598,580.15	32° 17' 4.166 N	104° 0' 51.621 W
4,900.0	6.00	166.41	4,891.6	-160.6	38.8	467,351.35	598,582.61	32° 17' 4.065 N	104° 0' 51.593 W
5,000.0	6.00	166.41	4,991.1	-170.7	41.3	467,341.19	598,585.06	32° 17' 3.965 N	104° 0' 51.565 W
5,100.0	6.00	166.41	5,090.5	-180.9	43.7	467,331.03	598,587.52	32° 17' 3.864 N	104° 0' 51.537 W
5,200.0	6.00	166.41	5,190.0	-191.0	46.2	467,320.87	598,589.97	32° 17' 3.763 N	104° 0' 51.508 W
5,300.0	6.00	166.41	5,289.4	-201.2	48.6	467,310.71	598,592.43	32° 17' 3.663 N	104° 0' 51.480 W
5,400.0	6.00	166.41	5,388.9	-211.4	51.1	467,300.55	598,594.88	32° 17' 3.562 N	104° 0' 51.452 W
5,500.0	6.00	166.41	5,488.3	-221.5	53.5	467,290.39	598,597.34	32° 17' 3.462 N	104° 0' 51.424 W
5,600.0	6.00	166.41	5,587.8	-231.7	56.0	467,280.23	598,599.80	32° 17' 3.361 N	104° 0' 51.395 W
5,700.0	6.00	166.41	5,687.2	-241.8	58.5	467,270.07	598,602.25	32° 17' 3.260 N	104° 0' 51.367 W
5,800.0	6.00	166.41	5,786.7	-252.0	60.9	467,259.91	598,604.71	32° 17' 3.160 N	104° 0' 51.339 W
5,900.0	6.00	166.41	5,886.1	-262.2	63.4	467,249.75	598,607.16	32° 17' 3.059 N	104° 0' 51.311 W
6,000.0	6.00	166.41	5,985.6	-272.3	65.8	467,239.59	598,609.62	32° 17' 2.959 N	104° 0' 51.282 W
6,100.0	6.00	166.41	6,085.0	-282.5	68.3	467,229.43	598,612.07	32° 17' 2.858 N	104° 0' 51.254 W
6,200.0	6.00	166.41	6,184.5	-292.6	70.7	467,219.27	598,614.53	32° 17' 2.757 N	104° 0' 51.226 W
6,300.0	6.00	166.41	6,283.9	-302.8	73.2	467,209.12	598,616.98	32° 17' 2.657 N	104° 0' 51.198 W
6,400.0	6.00	166.41	6,383.4	-313.0	75.6	467,198.96	598,619.44	32° 17' 2.556 N	104° 0' 51.169 W
6,500.0	6.00	166.41	6,482.9	-323.1	78.1	467,188.80	598,621.90	32° 17' 2.456 N	104° 0' 51.141 W
6,600.0	6.00	166.41	6,582.3	-333.3	80.6	467,178.64	598,624.35	32° 17' 2.355 N	104° 0' 51.113 W
6,700.0	6.00	166.41	6,681.8	-343.5	83.0	467,168.48	598,626.81	32° 17' 2.254 N	104° 0' 51.085 W
6,800.0	6.00	166.41	6,781.2	-353.6	85.5	467,158.32	598,629.26	32° 17' 2.154 N	104° 0' 51.056 W
6,900.0	6.00	166.41	6,880.7	-363.8	87.9	467,148.16	598,631.72	32° 17' 2.053 N	104° 0' 51.028 W
7,000.0	6.00	166.41	6,980.1	-373.9	90.4	467,138.00	598,634.17	32° 17' 1.952 N	104° 0' 51.000 W
7,100.0	6.00	166.41	7,079.6	-384.1	92.8	467,127.84	598,636.63	32° 17' 1.852 N	104° 0' 50.972 W
7,200.0	6.00	166.41	7,179.0	-394.3	95.3	467,117.68	598,639.08	32° 17' 1.751 N	104° 0' 50.943 W
7,300.0	6.00	166.41	7,278.5	-404.4	97.7	467,107.52	598,641.54	32° 17' 1.651 N	104° 0' 50.915 W
7,400.0	6.00	166.41	7,377.9	-414.6	100.2	467,097.36	598,643.99	32° 17' 1.550 N	104° 0' 50.887 W
7,500.0	6.00	166.41	7,477.4	-424.7	102.7	467,087.20	598,646.45	32° 17' 1.449 N	104° 0' 50.859 W
7,600.0	6.00	166.41	7,576.8	-434.9	105.1	467,077.04	598,648.91	32° 17' 1.349 N	104° 0' 50.830 W
7,700.0	6.00	166.41	7,676.3	-445.1	107.6	467,066.88	598,651.36	32° 17' 1.248 N	104° 0' 50.802 W
7,800.0	6.00	166.41	7,775.7	-455.2	110.0	467,056.72	598,653.82	32° 17' 1.148 N	104° 0' 50.774 W
7,900.0	6.00	166.41	7,875.2	-465.4	112.5	467,046.56	598,656.27	32° 17' 1.047 N	104° 0' 50.746 W
8,000.0	6.00	166.41	7,974.6	-475.5	114.9	467,036.40	598,658.73	32° 17' 0.946 N	104° 0' 50.717 W
8,100.0	6.00	166.41	8,074.1	-485.7	117.4	467,026.24	598,661.18	32° 17' 0.846 N	104° 0' 50.689 W
8,200.0	6.00	166.41	8,173.5	-495.9	119.8	467,016.08	598,663.64	32° 17' 0.745 N	104° 0' 50.661 W
8,300.0	6.00	166.41	8,273.0	-506.0	122.3	467,005.93	598,666.09	32° 17' 0.645 N	104° 0' 50.633 W
8,400.0	6.00	166.41	8,372.4	-516.2	124.8	466,995.77	598,668.55	32° 17' 0.544 N	104° 0' 50.604 W
8,500.0	6.00	166.41	8,471.9	-526.3	127.2	466,985.61	598,671.00	32° 17' 0.443 N	104° 0' 50.576 W
8,600.0	6.00	166.41	8,571.3	-536.5	129.7	466,975.45	598,673.46	32° 17' 0.343 N	104° 0' 50.548 W
8,700.0	6.00	166.41	8,670.8	-546.7	132.1	466,965.29	598,675.92	32° 17' 0.242 N	104° 0' 50.520 W
8,800.0	6.00	166.41	8,770.3	-556.8	134.6	466,955.13	598,678.37	32° 17' 0.141 N	104° 0' 50.491 W
8,900.0	6.00	166.41	8,869.7	-567.0	137.0	466,944.97	598,680.83	32° 17' 0.041 N	104° 0' 50.463 W
9,000.0	6.00	166.41	8,969.2	-577.1	139.5	466,934.81	598,683.28	32° 16' 59.940 N	104° 0' 50.435 W
9,100.0	6.00	166.41	9,068.6	-587.3	141.9	466,924.65	598,685.74	32° 16' 59.840 N	104° 0' 50.407 W
9,200.0	6.00	166.41	9,168.1	-597.5	144.4	466,914.49	598,688.19	32° 16' 59.739 N	104° 0' 50.378 W
9,300.0	6.00	166.41	9,267.5	-607.6	146.9	466,904.33	598,690.65	32° 16' 59.638 N	104° 0' 50.350 W
9,400.0	6.00	166.41	9,367.0	-617.8	149.3	466,894.17	598,693.10	32° 16' 59.538 N	104° 0' 50.322 W
9,500.0	6.00	166.41	9,466.4	-627.9	151.8	466,884.01	598,695.56	32° 16' 59.437 N	104° 0' 50.294 W
9,600.0	6.00	166.41	9,565.9	-638.1	154.2	466,873.85	598,698.01	32° 16' 59.337 N	104° 0' 50.265 W
9,635.1	6.00	166.41	9,600.7	-641.7	155.1	466,870.29	598,698.88	32° 16' 59.301 N	104° 0' 50.255 W
9,700.0	5.03	166.41	9,665.4	-647.7	156.5	466,864.23	598,700.34	32° 16' 59.241 N	104° 0' 50.239 W
9,800.0	3.53	166.41	9,765.1	-655.0	158.3	466,856.98	598,702.09	32° 16' 59.169 N	104° 0' 50.218 W
9,900.0	2.03	166.41	9,865.0	-659.7	159.4	466,852.27	598,703.23	32° 16' 59.123 N	104° 0' 50.205 W
10,000.0	0.53	166.41	9,964.9	-661.8	160.0	466,850.11	598,703.75	32° 16' 59.101 N	104° 0' 50.199 W
10,035.1	0.00	0.00	10,000.0	-662.0	160.0	466,849.95	598,703.79	32° 16' 59.100 N	104° 0' 50.199 W

BTA
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Project:	Eddy County	MD Reference:	GL @ 2965.0usft (Original Well Elev)
Site:	Harroun Ranch	North Reference:	Grid
Well:	Harroun Ranch #2H	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	
10,100.0	0.00	0.00	10,064.9	-662.0	160.0	466,849.95	598,703.79	32° 16' 59.100 N	104° 0' 50.199 W	
10,200.0	0.00	0.00	10,164.9	-662.0	160.0	466,849.95	598,703.79	32° 16' 59.100 N	104° 0' 50.199 W	
10,300.0	0.00	0.00	10,264.9	-662.0	160.0	466,849.95	598,703.79	32° 16' 59.100 N	104° 0' 50.199 W	
10,310.1	0.00	0.00	10,275.0	-662.0	160.0	466,849.95	598,703.79	32° 16' 59.100 N	104° 0' 50.199 W	
10,400.0	8.99	0.86	10,364.6	-655.0	160.1	466,856.99	598,703.90	32° 16' 59.170 N	104° 0' 50.197 W	
10,500.0	18.99	0.86	10,461.5	-630.8	160.5	466,881.13	598,704.26	32° 16' 59.408 N	104° 0' 50.192 W	
10,600.0	28.99	0.86	10,552.7	-590.2	161.1	466,921.73	598,704.86	32° 16' 59.810 N	104° 0' 50.184 W	
10,700.0	38.99	0.86	10,635.5	-534.4	161.9	466,977.56	598,705.70	32° 17' 0.363 N	104° 0' 50.172 W	
7"										
10,800.0	48.99	0.86	10,707.4	-465.0	162.9	467,046.91	598,706.73	32° 17' 1.049 N	104° 0' 50.158 W	
10,900.0	58.99	0.86	10,766.1	-384.2	164.2	467,127.68	598,707.94	32° 17' 1.848 N	104° 0' 50.141 W	
11,000.0	68.99	0.86	10,809.9	-294.5	165.5	467,217.42	598,709.28	32° 17' 2.736 N	104° 0' 50.122 W	
11,100.0	78.99	0.86	10,837.5	-198.5	166.9	467,313.40	598,710.72	32° 17' 3.686 N	104° 0' 50.102 W	
11,200.0	88.99	0.86	10,847.9	-99.2	168.4	467,412.71	598,712.20	32° 17' 4.669 N	104° 0' 50.081 W	
11,210.1	90.00	0.86	10,848.0	-89.1	168.6	467,422.80	598,712.35	32° 17' 4.769 N	104° 0' 50.079 W	
11,300.0	90.00	0.86	10,848.0	0.8	169.9	467,512.69	598,713.69	32° 17' 5.658 N	104° 0' 50.060 W	
11,400.0	90.00	0.86	10,848.0	100.8	171.4	467,612.67	598,715.19	32° 17' 6.648 N	104° 0' 50.040 W	
11,500.0	90.00	0.86	10,848.0	200.8	172.9	467,712.65	598,716.68	32° 17' 7.637 N	104° 0' 50.019 W	
11,600.0	90.00	0.86	10,848.0	300.8	174.4	467,812.63	598,718.18	32° 17' 8.626 N	104° 0' 49.998 W	
11,700.0	90.00	0.86	10,848.0	400.7	175.9	467,912.61	598,719.67	32° 17' 9.616 N	104° 0' 49.977 W	
11,800.0	90.00	0.86	10,848.0	500.7	177.4	468,012.59	598,721.16	32° 17' 10.605 N	104° 0' 49.956 W	
11,900.0	90.00	0.86	10,848.0	600.7	178.9	468,112.57	598,722.66	32° 17' 11.594 N	104° 0' 49.935 W	
12,000.0	90.00	0.86	10,848.0	700.7	180.4	468,212.56	598,724.15	32° 17' 12.584 N	104° 0' 49.914 W	
12,100.0	90.00	0.86	10,848.0	800.7	181.9	468,312.54	598,725.65	32° 17' 13.573 N	104° 0' 49.894 W	
12,200.0	90.00	0.86	10,848.0	900.7	183.4	468,412.52	598,727.14	32° 17' 14.563 N	104° 0' 49.873 W	
12,300.0	90.00	0.86	10,848.0	1,000.7	184.8	468,512.50	598,728.63	32° 17' 15.552 N	104° 0' 49.852 W	
12,400.0	90.00	0.86	10,848.0	1,100.7	186.3	468,612.48	598,730.13	32° 17' 16.541 N	104° 0' 49.831 W	
12,500.0	90.00	0.86	10,848.0	1,200.7	187.8	468,712.46	598,731.62	32° 17' 17.531 N	104° 0' 49.810 W	
12,600.0	90.00	0.86	10,848.0	1,300.6	189.3	468,812.44	598,733.12	32° 17' 18.520 N	104° 0' 49.789 W	
12,700.0	90.00	0.86	10,848.0	1,400.6	190.8	468,912.42	598,734.61	32° 17' 19.509 N	104° 0' 49.768 W	
12,800.0	90.00	0.86	10,848.0	1,500.6	192.3	469,012.40	598,736.11	32° 17' 20.499 N	104° 0' 49.747 W	
12,900.0	90.00	0.86	10,848.0	1,600.6	193.8	469,112.38	598,737.60	32° 17' 21.488 N	104° 0' 49.727 W	
13,000.0	90.00	0.86	10,848.0	1,700.6	195.3	469,212.36	598,739.09	32° 17' 22.478 N	104° 0' 49.706 W	
13,100.0	90.00	0.86	10,848.0	1,800.6	196.8	469,312.34	598,740.59	32° 17' 23.467 N	104° 0' 49.685 W	
13,200.0	90.00	0.86	10,848.0	1,900.6	198.3	469,412.33	598,742.08	32° 17' 24.456 N	104° 0' 49.664 W	
13,300.0	90.00	0.86	10,848.0	2,000.6	199.8	469,512.31	598,743.58	32° 17' 25.446 N	104° 0' 49.643 W	
13,400.0	90.00	0.86	10,848.0	2,100.6	201.3	469,612.29	598,745.07	32° 17' 26.435 N	104° 0' 49.622 W	
13,500.0	90.00	0.86	10,848.0	2,200.5	202.8	469,712.27	598,746.56	32° 17' 27.424 N	104° 0' 49.601 W	
13,600.0	90.00	0.86	10,848.0	2,300.5	204.3	469,812.25	598,748.06	32° 17' 28.414 N	104° 0' 49.580 W	
13,700.0	90.00	0.86	10,848.0	2,400.5	205.8	469,912.23	598,749.55	32° 17' 29.403 N	104° 0' 49.559 W	
13,800.0	90.00	0.86	10,848.0	2,500.5	207.3	470,012.21	598,751.05	32° 17' 30.393 N	104° 0' 49.539 W	
13,900.0	90.00	0.86	10,848.0	2,600.5	208.8	470,112.19	598,752.54	32° 17' 31.382 N	104° 0' 49.518 W	
14,000.0	90.00	0.86	10,848.0	2,700.5	210.2	470,212.17	598,754.03	32° 17' 32.371 N	104° 0' 49.497 W	
14,100.0	90.00	0.86	10,848.0	2,800.5	211.7	470,312.15	598,755.53	32° 17' 33.361 N	104° 0' 49.476 W	
14,200.0	90.00	0.86	10,848.0	2,900.5	213.2	470,412.13	598,757.02	32° 17' 34.350 N	104° 0' 49.455 W	
14,300.0	90.00	0.86	10,848.0	3,000.5	214.7	470,512.12	598,758.52	32° 17' 35.339 N	104° 0' 49.434 W	
14,400.0	90.00	0.86	10,848.0	3,100.4	216.2	470,612.10	598,760.01	32° 17' 36.329 N	104° 0' 49.413 W	
14,500.0	90.00	0.86	10,848.0	3,200.4	217.7	470,712.08	598,761.50	32° 17' 37.318 N	104° 0' 49.392 W	
14,600.0	90.00	0.86	10,848.0	3,300.4	219.2	470,812.06	598,763.00	32° 17' 38.308 N	104° 0' 49.372 W	
14,700.0	90.00	0.86	10,848.0	3,400.4	220.7	470,912.04	598,764.49	32° 17' 39.297 N	104° 0' 49.351 W	
14,800.0	90.00	0.86	10,848.0	3,500.4	222.2	471,012.02	598,765.99	32° 17' 40.286 N	104° 0' 49.330 W	
14,900.0	90.00	0.86	10,848.0	3,600.4	223.7	471,112.00	598,767.48	32° 17' 41.276 N	104° 0' 49.309 W	
15,000.0	90.00	0.86	10,848.0	3,700.4	225.2	471,211.98	598,768.97	32° 17' 42.265 N	104° 0' 49.288 W	
15,100.0	90.00	0.86	10,848.0	3,800.4	226.7	471,311.96	598,770.47	32° 17' 43.255 N	104° 0' 49.267 W	

BTA
Planning Report - Geographic

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Harroun Ranch #2H
Company:	BTA Oil Producers, LLC	TVD Reference:	GL @ 2965.0usft (Original Well Elev)
Project:	Eddy County	MD Reference:	GL @ 2965.0usft (Original Well Elev)
Site:	Harroun Ranch	North Reference:	Grid
Well:	Harroun Ranch #2H	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
15,200.0	90.00	0.86	10,848.0	3,900.4	228.2	471,411.94	598,771.96	32° 17' 44.244 N	104° 0' 49.246 W
15,300.0	90.00	0.86	10,848.0	4,000.3	229.7	471,511.92	598,773.48	32° 17' 45.233 N	104° 0' 49.225 W
15,400.0	90.00	0.86	10,848.0	4,100.3	231.2	471,611.90	598,774.95	32° 17' 46.223 N	104° 0' 49.205 W
15,500.0	90.00	0.86	10,848.0	4,200.3	232.7	471,711.89	598,776.45	32° 17' 47.212 N	104° 0' 49.184 W
15,600.0	90.00	0.86	10,848.0	4,300.3	234.2	471,811.87	598,777.94	32° 17' 48.201 N	104° 0' 49.163 W
15,700.0	90.00	0.86	10,848.0	4,400.3	235.6	471,911.85	598,779.43	32° 17' 49.191 N	104° 0' 49.142 W
15,731.5	90.00	0.86	10,848.0	4,431.8	236.1	471,943.30	598,779.90	32° 17' 49.502 N	104° 0' 49.135 W
Harroun Ranch #2H BHL									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	N/S (usft)	E/W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
Hit/miss target									
Shape									
Harroun Ranch #2H BHL	0.00	0.00	10,848.0	4,431.8	236.1	471,943.30	598,779.90	32° 17' 49.502 N	104° 0' 49.135 W
- plan hits target center									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
360.0	360.0	13-3/8"	13-3/8	17-1/2	
2,750.0	2,750.0	9-5/8"	9-5/8	12-1/4	
10,700.0	10,635.5	7"	7	8-3/4	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
433.0	433.0	Anhydrite		0.00	
563.0	563.0	Top of salt		0.00	
2,568.0	2,568.0	Bottom of salt		0.00	
2,783.0	2,783.0	Delaware		0.00	
4,891.3	4,883.0	Brushy canyon		0.00	
6,500.1	6,483.0	Bonespring lime		0.00	
7,555.9	7,533.0	1st Bone spring sand		0.00	
8,320.1	8,293.0	2nd Bone spring sand		0.00	
9,511.6	9,478.0	3rd Bone Spring sand		0.00	
9,988.1	9,953.0	Wolfcamp		0.00	
11,210.1	10,848.0	Target TVD (WC)		0.00	

T G M

Azimuths to Grid North
 True North: -0.17°
 Magnetic North: 7.79°

Magnetic Field
 Strength: 48783.4snT
 Dip Angle: 60.22°
 Date: 12/31/2009
 Model: IGRF200510

WELL DETAILS: Harroun Ranch #2H

+N/-S +E/-W Ground Level: 2955.0
 0.0 0.0 Easting 598543.80

Northing 467511.90 Latitude 32° 17' 5.655 N

Longitude 104° 0' 52.040 W

SITE DETAILS: Harroun Ranch

Site Centre Northing: 467011.30
 Easting: 598545.80

Positional Uncertainty: 0.0
 Convergence: 0.17
 Local North: Grid

CASING DETAILS

TVD	MD	Name	Size
360.0	360.0	13-3/8"	13-3/8
2750.0	2750.0	9-5/8"	9-5/8
10635.50700.0		7"	7"

BTA Oil Producers, LLC

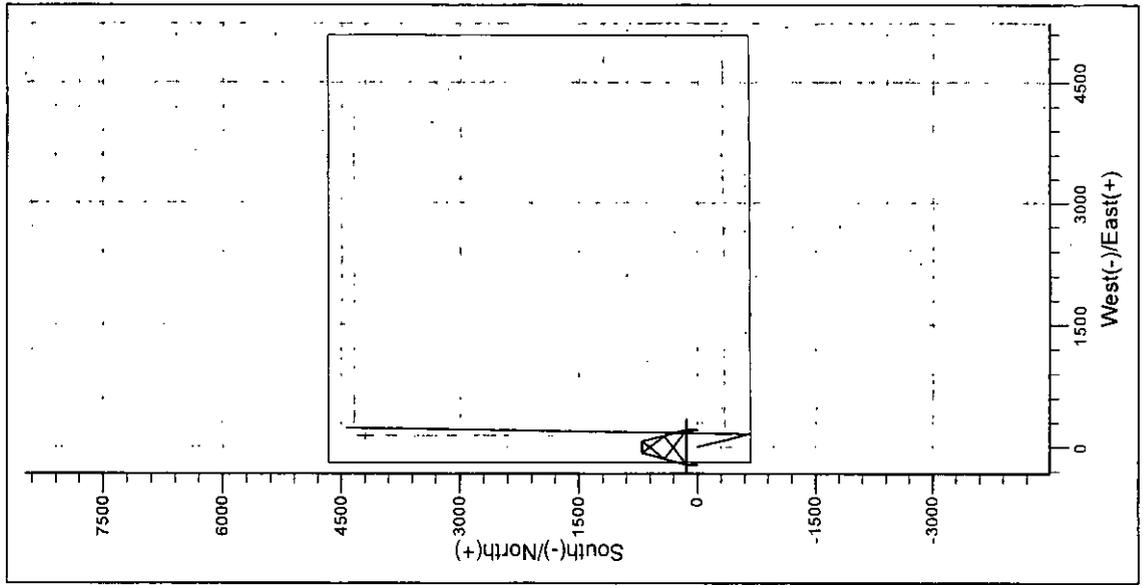
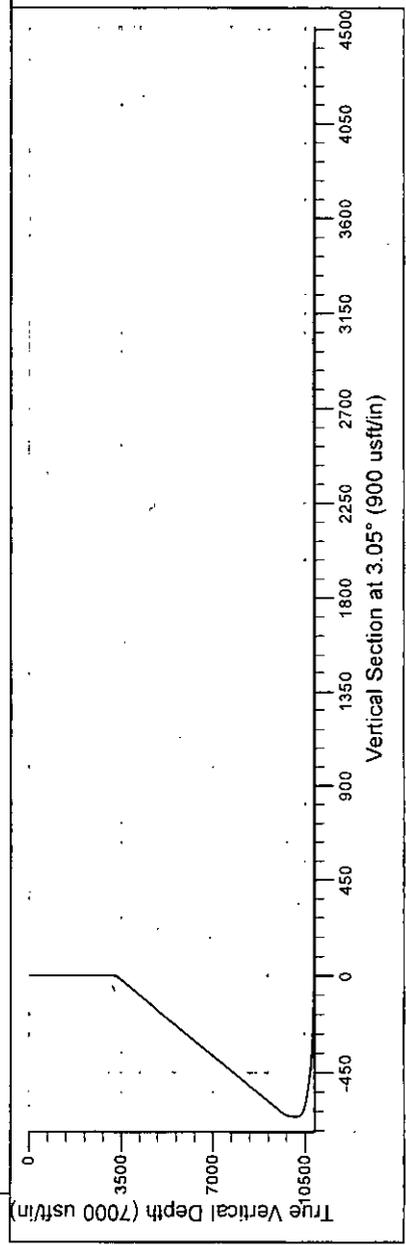
PROJECT DETAILS: Eddy County

Geodetic System: US State Plane 1927 (Exact solution)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone: New Mexico East 3001

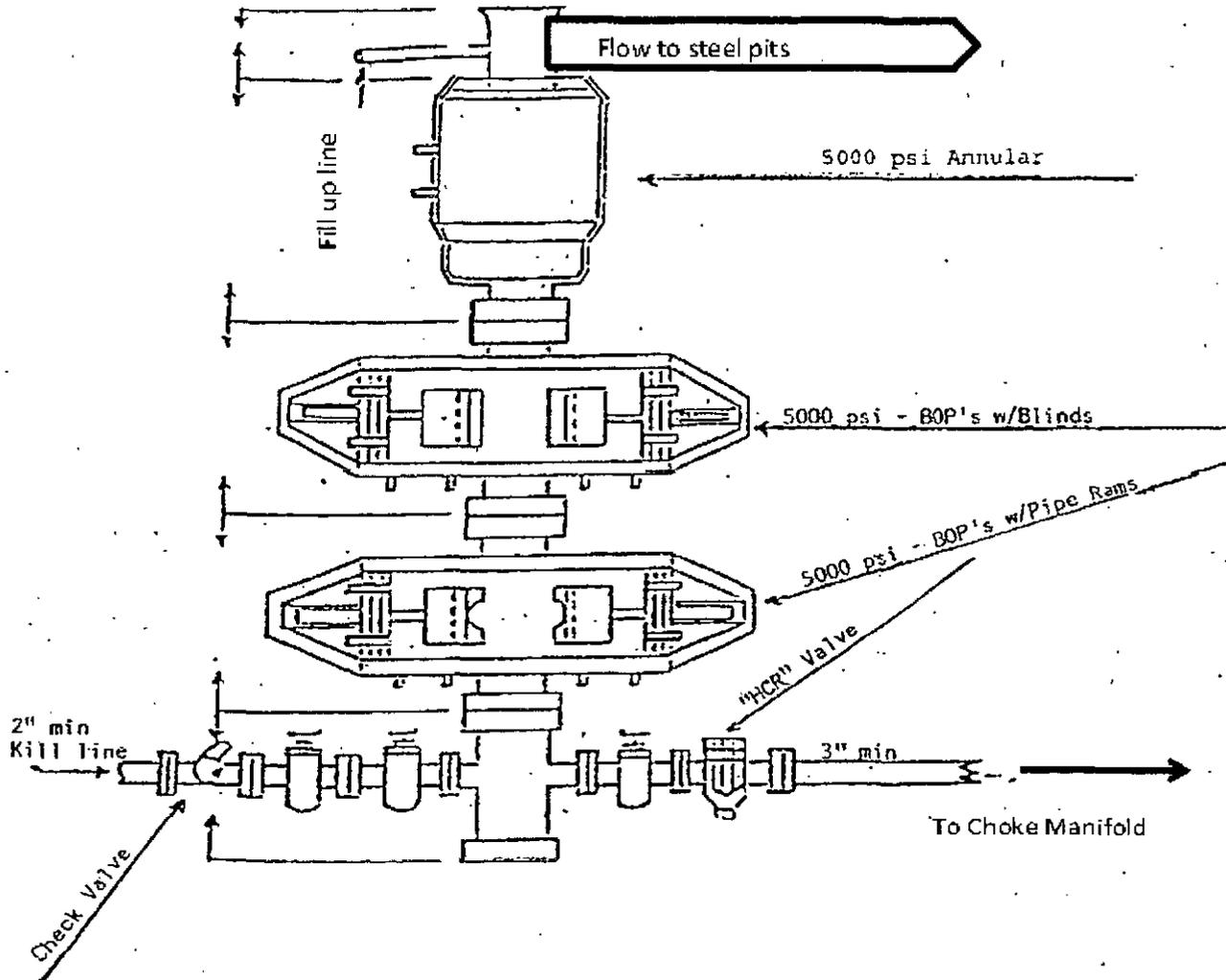
System Datum: Ground Level

SECTION DETAILS

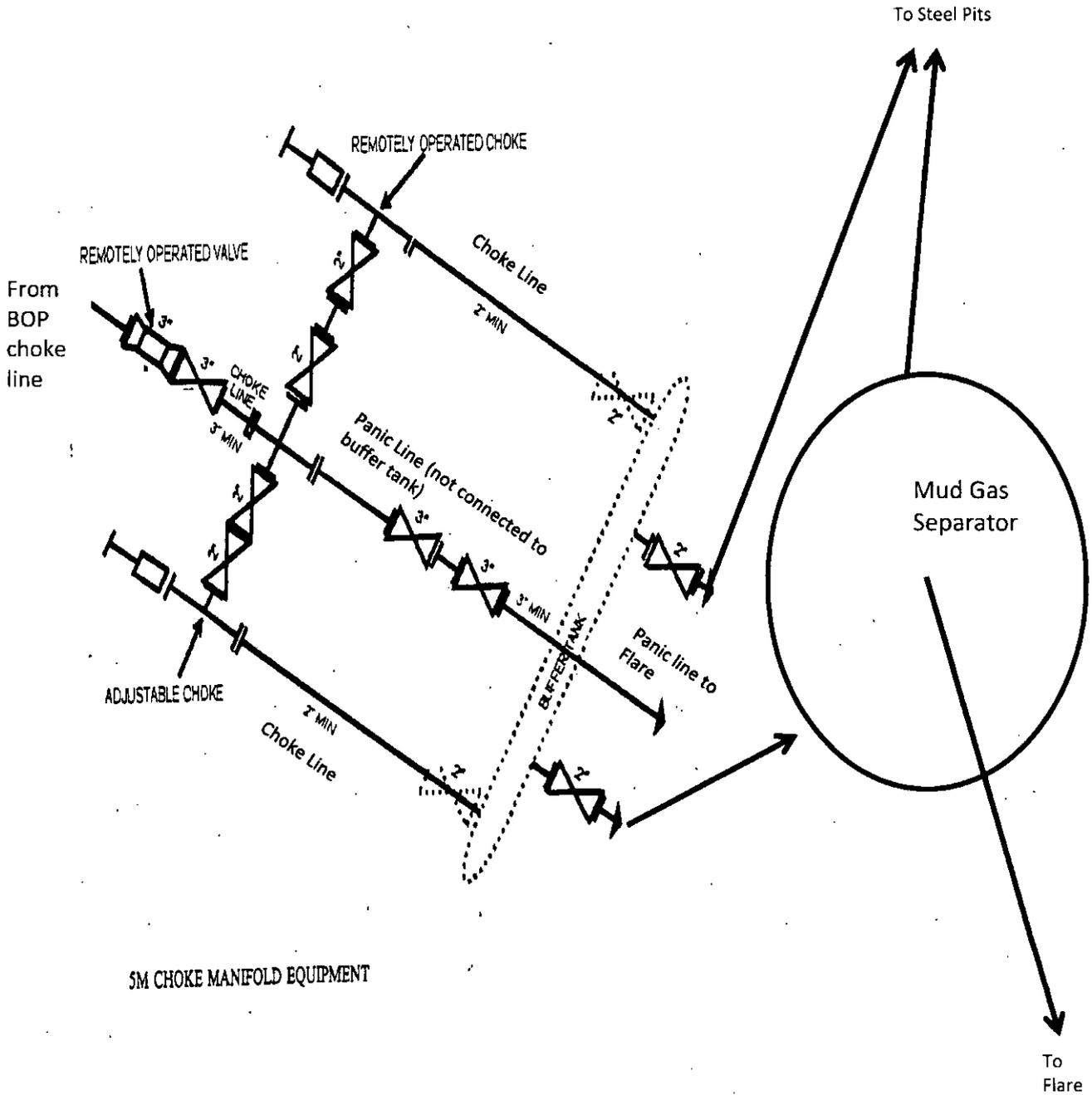
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2900.0	0.00	0.00	2900.0	0.0	0.0	0.00	0.00	0.0	
3169.8	0.00	0.00	3169.8	0.0	0.0	0.00	0.00	0.0	
3469.8	6.00	166.41	3469.3	-15.3	3.7	2.00	166.41	-15.0	
9635.1	6.00	166.41	9600.7	-641.7	155.1	0.00	0.00	-632.5	
10035.1	0.00	0.00	10000.0	-662.0	160.0	1.50	180.00	-652.5	
10310.1	0.00	0.00	10275.0	-662.0	160.0	0.00	0.00	-652.5	
11210.1	90.00	0.86	10848.0	-89.1	168.6	10.00	0.86	-80.0	
15731.5	90.00	0.86	10848.0	4431.8	236.1	0.00	0.00	4438.0	Harroun Ranch #2H BHL



13-5/8" 5,000 PSI BOP



BTA OIL PRODUCERS, LLC
20702 Harroun Ranch Fed Com #2H
Attachment to APD



BTA OIL PRODUCERS, LLC
 20702 Harroun Ranch Fed Com #2H
 Attachment to APD