

District I

1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720

District II

811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720

District III

1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170

District IV

1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

Form C-101
August 1, 2011

Permit 351065

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1. Operator Name and Address BTA OIL PRODUCERS, LLC 104 S Pecos Midland, TX 79701		2. OGRID Number 260297
		3. API Number 30-025-52027
4. Property Code 333408	5. Property Name VINDICATOR CANYON STATE UNIT	6. Well No. 320H

7. Surface Location

UL - Lot M	Section 20	Township 17S	Range 36E	Lot Idn M	Feet From 420	N/S Line S	Feet From 1320	E/W Line W	County Lea
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8. Proposed Bottom Hole Location

UL - Lot M	Section 32	Township 17S	Range 36E	Lot Idn M	Feet From 50	N/S Line S	Feet From 660	E/W Line W	County Lea
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9. Pool Information

WC-025 G-09 S173615C;UPPER PENN	98333
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Additional Well Information

11. Work Type New Well	12. Well Type OIL	13. Cable/Rotary	14. Lease Type State	15. Ground Level Elevation 3872
16. Multiple N	17. Proposed Depth 12120	18. Formation Upper Pennsylvanian Undesignated	19. Contractor	20. Spud Date 1/10/2024
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water

☒ We will be using a closed-loop system in lieu of lined pits

21. Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	17.5	13.375	54.5	1987	1585	0
Int1	12.25	9.625	40	5003	1685	0
Liner1	8.75	7.625	29.7	11172	385	4943
Prod	6.75	5.5	20	10972	0	10175
Prod	6.75	5	18	21955	1145	10972

Casing/Cement Program: Additional Comments

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22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Annular	14000	5000	

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief.
I further certify I have complied with 19.15.14.9 (A) NMAC ☒ and/or 19.15.14.9 (B) NMAC ☒ if applicable.

Signature:

Printed Name: Electronically filed by Katy Reddell

Title:

Email Address: kreddell@btaoil.com

Date: 9/28/2023

Phone: 432-682-3753

OIL CONSERVATION DIVISION

Approved By: Paul F Kautz

Title: Geologist

Approved Date: 9/28/2023

Expiration Date: 9/28/2025

Conditions of Approval Attached

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Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102 Revised August 1, 2011
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number		2 Pool Code		3 Pool Name	
				WC025 G09 S173615C; UPPER PENN	
4 Property Code		5 Property Name			6 Well Number
		VINDICATOR CANYON STATE UNIT			320H
7 OGRID No.		8 Operator Name			9 Elevation
260297		BTA OIL PRODUCERS, LLC			3872'

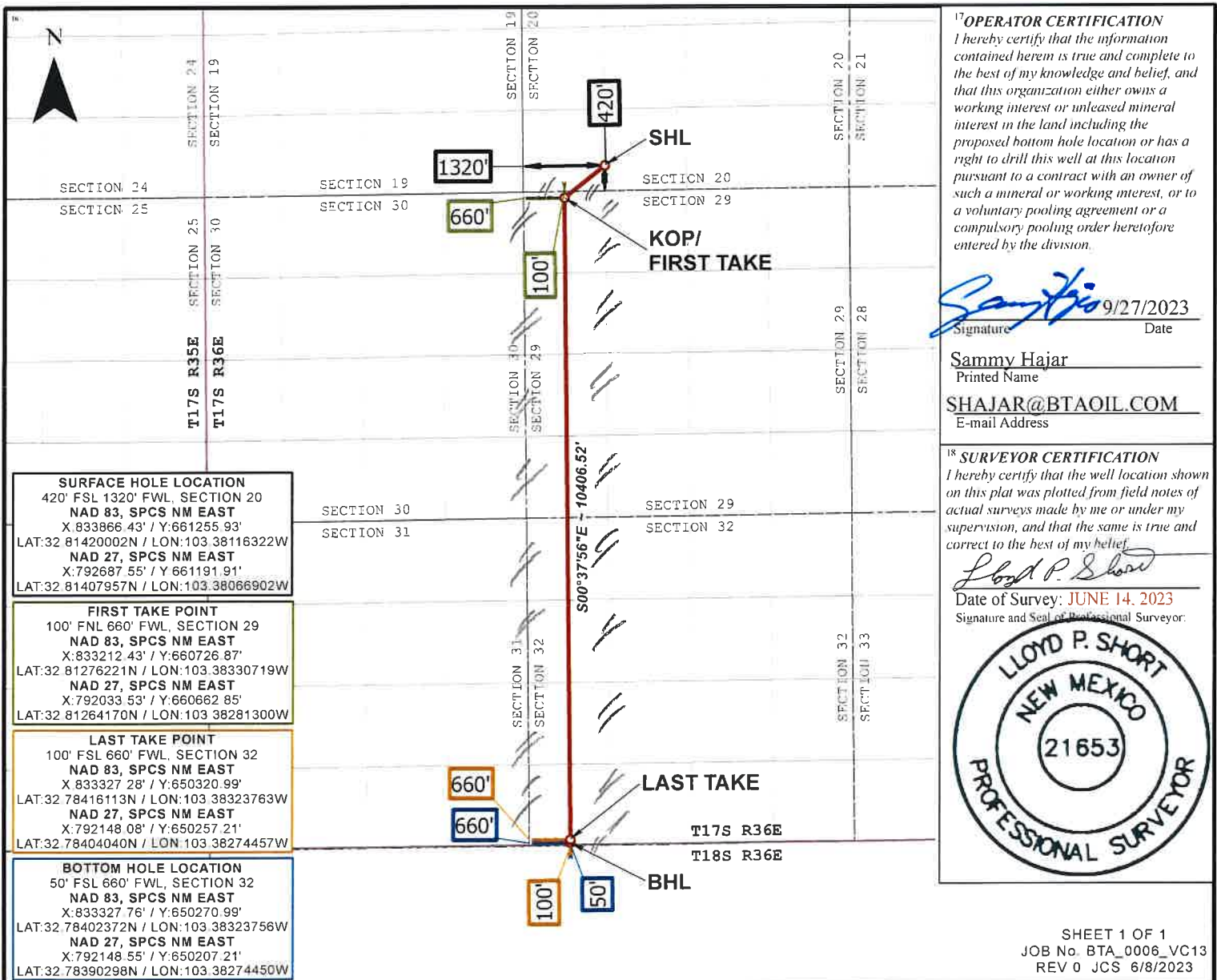
10 Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	20	17S	36E		420	South	1320	West	LEA

11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	32	17S	36E		50	South	660	West	LEA
12 Dedicated Acres		13 Joint or Infill		14 Consolidation Code		15 Order No.			
320									

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



SHEET 1 OF 1
JOB No. BTA_0006_VC13
REV 0 JCS 6/8/2023

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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

Form APD Conditions

Permit 351065

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address: BTA OIL PRODUCERS, LLC [260297] 104 S Pecos Midland, TX 79701	API Number: 30-025-52027
	Well: VINDICATOR CANYON STATE UNIT #320H

OCD Reviewer	Condition
pkautz	Notify OCD 24 hours prior to casing & cement
pkautz	Will require a File As Drilled C-102 and a Directional Survey with the C-104
pkautz	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
pkautz	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system
pkautz	Cement is required to circulate on both surface and intermediate1 strings of casing
pkautz	If cement does not circulate on any string , a CBL is required for that string of casing.
pkautz	The Operator is to notify NMOCD by sundry (Form C-103) within ten (10) days of the well being spud

State of New Mexico
Energy, Minerals and Natural Resources Department

Submit Electronically
Via E-permitting

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

Section 1 – Plan Description

Effective May 25, 2021

I. Operator: BTA Oil Producers, LLC **OGRID:** 260297 **Date:** 9 / 27 / 2023

II. Type: ☒ Original ☐ Amendment due to ☐ 19.15.27.9.D(6)(a) NMAC ☐ 19.15.27.9.D(6)(b) NMAC ☐ Other.

If Other, please describe: _____

III. Well(s): Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
VINDICATOR CANYON		M-20-17S-36E	420 FSL, 1320 FWL	+/- 800	+/- 2000	+/- 1200
STATE UNIT 320H						

IV. Central Delivery Point Name: VINDICATOR CTB [See 19.15.27.9(D)(1) NMAC]

V. Anticipated Schedule: Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
VINDICATOR CANYON		1/10/2024	1/30/2024	2/13/2024	3/5/2024	4/4/2024
STATE UNIT 320H						

VI. Separation Equipment: ☒ Attach a complete description of how Operator will size separation equipment to optimize gas capture.

VII. Operational Practices: ☒ Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

VIII. Best Management Practices: ☒ Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

Section 2 – Enhanced Plan**EFFECTIVE APRIL 1, 2022**

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

☒ Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

IX. Anticipated Natural Gas Production:

Well	API	Anticipated Average Natural Gas Rate MCF/D	Anticipated Volume of Natural Gas for the First Year MCF

X. Natural Gas Gathering System (NGGS):

Operator	System	ULSTR of Tie-in	Anticipated Gathering Start Date	Available Maximum Daily Capacity of System Segment Tie-in

XI. Map. ☐ Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

XII. Line Capacity. The natural gas gathering system ☐ will ☐ will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

XIII. Line Pressure. Operator ☐ does ☐ does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

☐ Attach Operator's plan to manage production in response to the increased line pressure.

XIV. Confidentiality: ☐ Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

Section 3 - Certifications

Effective May 25, 2021

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

☒ Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

☐ Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system.

If Operator checks this box, Operator will select one of the following:

Well Shut-In. ☐ Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

Venting and Flaring Plan. ☐ Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- (a) power generation on lease;
- (b) power generation for grid;
- (c) compression on lease;
- (d) liquids removal on lease;
- (e) reinjection for underground storage;
- (f) reinjection for temporary storage;
- (g) reinjection for enhanced oil recovery;
- (h) fuel cell production; and
- (i) other alternative beneficial uses approved by the division.

Section 4 - Notices

1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature: 
Printed Name: Sammy Hajar
Title: Regulatory Analyst
E-mail Address: SHAJAR@BTAOIL.COM
Date: 9/27/2023
Phone: 432-682-3753
OIL CONSERVATION DIVISION (Only applicable when submitted as a standalone form)
Approved By:
Title:
Approval Date:
Conditions of Approval:

VI. Separation Equipment: Attach a complete description of how Operator will size separation equipment to optimize gas capture.

- Separation equipment will be sized to provide adequate separation for anticipated rates.
- Separation equipment will allow for adequate retention time to allow gas and liquids to separate.
- Separation equipment will separate all three phases (Oil, Water, and Gas).
- Collection systems are appropriately sized to handle facility production rates on all (3) phases.
- Ancillary equipment and metering is selected to be serviced without flow interruptions or the need to release gas from the well.

VII. Operational Practices: Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F 19.15.27.8 NMAC.

Drilling Operations

- All flare stacks will be properly sized. The flare stacks will be located at a minimum 100' from the nearest surface hole location on the pad.
- All natural gas produced during drilling operations will be flared, unless there is an equipment malfunction and/or to avoid risk of an immediate and substantial adverse impact on safety and the environment, at which point the gas will be vented.

Completions/Recompletions Operations

- New wells will not be flowed back until they are connected to a properly sized gathering system.
- The facility will be built/sized for maximum anticipated flowrates and pressures to minimize waste.
- For flowback operations, multiple stages of separation will be used as well as VRU and blowers to make sure waste is minimized off the storage tanks and facility.
- During initial flowback, the well stream will be routed to separation equipment.
- At an existing facility, when necessary, post separation natural gas will be flared until it meets pipeline specifications, at which point it will be turned into a collection system.
- At a new facility, post separation natural gas will be vented until storage tanks can safely function, at which point it will be flared until it meets pipeline spec.

Production Operations

- Weekly AVOs will be performed on all facilities that produce more than 60 MCFD.
- Leaking thief hatches and pressure safety valves found during AVOs will be cleaned and properly re-sealed.
- All flares will be equipped with auto-ignition systems and continuous pilot operations.
- After a well is stabilized from liquid unloading, the well will be turned back into the collection system.
- All gas lift systems will be optimized to limit the amount of waste.
- All tanks will have automatic gauging equipment installed.

Performance Standards

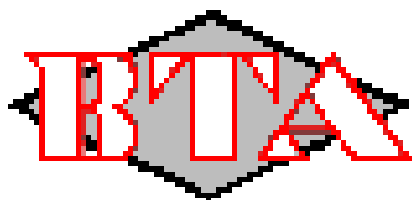
- Production equipment will be designed to handle maximum anticipated rates and pressure.
- All flared gas will be combusted in a flare stack that is properly sized and designed to ensure proper combustion.
- All gas will have multiple points of separation to ensure no liquids enter flares, combustors, or gas sales line.
- Weekly AVOs will be performed on all wells and facilities that produce more than 60 MCFD.
- All OOOOa facilities will be filmed with an Optical Gas Imaging Thermographer camera once per month to check for fugitive emissions.

Measurement & Estimation

- All volume that is flared and vented that is not measured will be estimated.
- All measurement equipment for flared volumes will conform to API 14.10.
- All meters will be calibrated at regular intervals according to meter manufacturer recommendations.
- When metering is not practical due to low pressure/low rate, the vented or flared volume will be estimated.

VIII. Best Management Practices: Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

- During downhole well maintenance, BTA will use best management practices to vent as minimally as possible.
- Prior to the commencement of any maintenance, the tank or vessel will be isolated from the rest of the facilities.
- All valves upstream of the equipment will be closed and isolated.
- After equipment has been isolated, the equipment will be blown down to as low a pressure as possible into the collection system.
- If the equipment being maintained cannot be relieved into the collection system, it shall be released to a tank where the vapor can either be captured or combusted if possible.
- After downhole well maintenance, natural gas will be flared until it reaches pipeline specification.



BTA Oil Producers, LLC

Lea County, NM (NAD 83)

Vindicator Canyon State

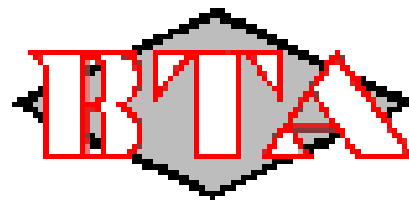
Vindicator Canyon State #320H

Wellbore #1

Plan: Design #1

Standard Planning Report - Geographic

27 September, 2023





Microsoft
Planning Report - Geographic



Database:	EDM16	Local Co-ordinate Reference:	Well Vindicator Canyon State #320H
Company:	BTA Oil Producers, LLC	TVD Reference:	GL @ 3872.0usft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL @ 3872.0usft
Site:	Vindicator Canyon State	North Reference:	Grid
Well:	Vindicator Canyon State #320H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	Lea County, NM (NAD 83), Lea County, NM		
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		Vindicator Canyon State			
Site Position:		Northing:	663,864.19 usft	Latitude:	32° 49' 15.966 N
From:	Map	Easting:	844,436.41 usft	Longitude:	103° 20' 48.060 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "		

Well	Vindicator Canyon State #320H					
Well Position	+N/-S	0.0 usft	Northing:	661,255.93 usft	Latitude:	32° 48' 51.120 N
	+E/-W	0.0 usft	Easting:	833,866.43 usft	Longitude:	103° 22' 52.188 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,872.0 usft
Grid Convergence:		0.52 °				

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/31/2009	7.70	60.82	49,166.95874113

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	182.81

Plan Survey Tool Program	Date	9/27/2023		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.0	21,955.0 Design #1 (Wellbore #1)		



Microsoft
Planning Report - Geographic



Database:	EDM16	Local Co-ordinate Reference:	Well Vindicator Canyon State #320H
Company:	BTA Oil Producers, LLC	TVD Reference:	GL @ 3872.0usft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL @ 3872.0usft
Site:	Vindicator Canyon State	North Reference:	Grid
Well:	Vindicator Canyon State #320H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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	
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,500.0	8.00	231.03	2,498.7	-17.5	-21.7	2.00	2.00	0.00	231.03	
8,143.6	8.00	231.03	8,087.4	-511.5	-632.3	0.00	0.00	0.00	0.00	
8,543.6	0.00	0.00	8,486.1	-529.1	-654.0	2.00	-2.00	0.00	180.00	
11,121.5	0.00	0.00	11,064.0	-529.1	-654.0	0.00	0.00	0.00	0.00	Vindicator Canyon State
11,171.6	0.00	0.00	11,114.0	-529.1	-654.0	0.00	0.00	0.00	0.00	
12,071.6	90.00	179.37	11,687.0	-1,102.0	-647.7	10.00	10.00	0.00	179.37	
21,955.0	90.00	179.37	11,687.0	-10,984.9	-538.7	0.00	0.00	0.00	0.00	Vindicator Canyon State



Microsoft
Planning Report - Geographic



Database:	EDM16	Local Co-ordinate Reference:	Well Vindicator Canyon State #320H
Company:	BTA Oil Producers, LLC	TVD Reference:	GL @ 3872.0usft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL @ 3872.0usft
Site:	Vindicator Canyon State	North Reference:	Grid
Well:	Vindicator Canyon State #320H	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	661,255.93	833,866.43	32° 48' 51.120 N	103° 22' 52.188 W
100.0	0.00	0.00	100.0	0.0	0.0	661,255.93	833,866.43	32° 48' 51.120 N	103° 22' 52.188 W
200.0	0.00	0.00	200.0	0.0	0.0	661,255.93	833,866.43	32° 48' 51.120 N	103° 22' 52.188 W
300.0	0.00	0.00	300.0	0.0	0.0	661,255.93	833,866.43	32° 48' 51.120 N	103° 22' 52.188 W
400.0	0.00	0.00	400.0	0.0	0.0	661,255.93	833,866.43	32° 48' 51.120 N	103° 22' 52.188 W
500.0	0.00	0.00	500.0	0.0	0.0	661,255.93	833,866.43	32° 48' 51.120 N	103° 22' 52.188 W
600.0	0.00	0.00	600.0	0.0	0.0	661,255.93	833,866.43	32° 48' 51.120 N	103° 22' 52.188 W
700.0	0.00	0.00	700.0	0.0	0.0	661,255.93	833,866.43	32° 48' 51.120 N	103° 22' 52.188 W
800.0	0.00	0.00	800.0	0.0	0.0	661,255.93	833,866.43	32° 48' 51.120 N	103° 22' 52.188 W
900.0	0.00	0.00	900.0	0.0	0.0	661,255.93	833,866.43	32° 48' 51.120 N	103° 22' 52.188 W
1,000.0	0.00	0.00	1,000.0	0.0	0.0	661,255.93	833,866.43	32° 48' 51.120 N	103° 22' 52.188 W
1,100.0	0.00	0.00	1,100.0	0.0	0.0	661,255.93	833,866.43	32° 48' 51.120 N	103° 22' 52.188 W
1,200.0	0.00	0.00	1,200.0	0.0	0.0	661,255.93	833,866.43	32° 48' 51.120 N	103° 22' 52.188 W
1,300.0	0.00	0.00	1,300.0	0.0	0.0	661,255.93	833,866.43	32° 48' 51.120 N	103° 22' 52.188 W
1,400.0	0.00	0.00	1,400.0	0.0	0.0	661,255.93	833,866.43	32° 48' 51.120 N	103° 22' 52.188 W
1,500.0	0.00	0.00	1,500.0	0.0	0.0	661,255.93	833,866.43	32° 48' 51.120 N	103° 22' 52.188 W
1,600.0	0.00	0.00	1,600.0	0.0	0.0	661,255.93	833,866.43	32° 48' 51.120 N	103° 22' 52.188 W
1,700.0	0.00	0.00	1,700.0	0.0	0.0	661,255.93	833,866.43	32° 48' 51.120 N	103° 22' 52.188 W
1,800.0	0.00	0.00	1,800.0	0.0	0.0	661,255.93	833,866.43	32° 48' 51.120 N	103° 22' 52.188 W
1,900.0	0.00	0.00	1,900.0	0.0	0.0	661,255.93	833,866.43	32° 48' 51.120 N	103° 22' 52.188 W
2,000.0	0.00	0.00	2,000.0	0.0	0.0	661,255.93	833,866.43	32° 48' 51.120 N	103° 22' 52.188 W
2,100.0	0.00	0.00	2,100.0	0.0	0.0	661,255.93	833,866.43	32° 48' 51.120 N	103° 22' 52.188 W
2,200.0	2.00	231.03	2,200.0	-1.1	-1.4	661,254.84	833,865.07	32° 48' 51.109 N	103° 22' 52.204 W
2,300.0	4.00	231.03	2,299.8	-4.4	-5.4	661,251.55	833,861.00	32° 48' 51.077 N	103° 22' 52.252 W
2,400.0	6.00	231.03	2,399.5	-9.9	-12.2	661,246.06	833,854.23	32° 48' 51.024 N	103° 22' 52.332 W
2,500.0	8.00	231.03	2,498.7	-17.5	-21.7	661,238.40	833,844.75	32° 48' 50.949 N	103° 22' 52.443 W
2,600.0	8.00	231.03	2,597.7	-26.3	-32.5	661,229.65	833,833.93	32° 48' 50.863 N	103° 22' 52.571 W
2,700.0	8.00	231.03	2,696.8	-35.0	-43.3	661,220.89	833,823.11	32° 48' 50.777 N	103° 22' 52.699 W
2,800.0	8.00	231.03	2,795.8	-43.8	-54.1	661,212.14	833,812.29	32° 48' 50.692 N	103° 22' 52.827 W
2,900.0	8.00	231.03	2,894.8	-52.5	-65.0	661,203.39	833,801.47	32° 48' 50.606 N	103° 22' 52.954 W
3,000.0	8.00	231.03	2,993.8	-61.3	-75.8	661,194.63	833,790.65	32° 48' 50.520 N	103° 22' 53.082 W
3,100.0	8.00	231.03	3,092.9	-70.1	-86.6	661,185.88	833,779.83	32° 48' 50.435 N	103° 22' 53.210 W
3,200.0	8.00	231.03	3,191.9	-78.8	-97.4	661,177.13	833,769.01	32° 48' 50.349 N	103° 22' 53.337 W
3,300.0	8.00	231.03	3,290.9	-87.6	-108.2	661,168.38	833,758.19	32° 48' 50.263 N	103° 22' 53.465 W
3,400.0	8.00	231.03	3,389.9	-96.3	-119.1	661,159.62	833,747.37	32° 48' 50.178 N	103° 22' 53.593 W
3,500.0	8.00	231.03	3,489.0	-105.1	-129.9	661,150.87	833,736.55	32° 48' 50.092 N	103° 22' 53.720 W
3,600.0	8.00	231.03	3,588.0	-113.8	-140.7	661,142.12	833,725.73	32° 48' 50.007 N	103° 22' 53.848 W
3,700.0	8.00	231.03	3,687.0	-122.6	-151.5	661,133.36	833,714.91	32° 48' 49.921 N	103° 22' 53.976 W
3,800.0	8.00	231.03	3,786.0	-131.3	-162.3	661,124.61	833,704.09	32° 48' 49.835 N	103° 22' 54.104 W
3,900.0	8.00	231.03	3,885.1	-140.1	-173.2	661,115.86	833,693.27	32° 48' 49.750 N	103° 22' 54.231 W
4,000.0	8.00	231.03	3,984.1	-148.8	-184.0	661,107.10	833,682.45	32° 48' 49.664 N	103° 22' 54.359 W
4,100.0	8.00	231.03	4,083.1	-157.6	-194.8	661,098.35	833,671.63	32° 48' 49.578 N	103° 22' 54.487 W
4,200.0	8.00	231.03	4,182.2	-166.3	-205.6	661,089.60	833,660.81	32° 48' 49.493 N	103° 22' 54.614 W
4,300.0	8.00	231.03	4,281.2	-175.1	-216.4	661,080.84	833,649.99	32° 48' 49.407 N	103° 22' 54.742 W
4,400.0	8.00	231.03	4,380.2	-183.8	-227.3	661,072.09	833,639.17	32° 48' 49.321 N	103° 22' 54.870 W
4,500.0	8.00	231.03	4,479.2	-192.6	-238.1	661,063.34	833,628.35	32° 48' 49.236 N	103° 22' 54.997 W
4,600.0	8.00	231.03	4,578.3	-201.3	-248.9	661,054.58	833,617.53	32° 48' 49.150 N	103° 22' 55.125 W
4,700.0	8.00	231.03	4,677.3	-210.1	-259.7	661,045.83	833,606.71	32° 48' 49.065 N	103° 22' 55.253 W
4,800.0	8.00	231.03	4,776.3	-218.9	-270.5	661,037.08	833,595.89	32° 48' 48.979 N	103° 22' 55.380 W
4,900.0	8.00	231.03	4,875.3	-227.6	-281.4	661,028.33	833,585.07	32° 48' 48.893 N	103° 22' 55.508 W
5,000.0	8.00	231.03	4,974.4	-236.4	-292.2	661,019.57	833,574.25	32° 48' 48.808 N	103° 22' 55.636 W
5,100.0	8.00	231.03	5,073.4	-245.1	-303.0	661,010.82	833,563.43	32° 48' 48.722 N	103° 22' 55.764 W
5,200.0	8.00	231.03	5,172.4	-253.9	-313.8	661,002.07	833,552.61	32° 48' 48.636 N	103° 22' 55.891 W
5,300.0	8.00	231.03	5,271.5	-262.6	-324.6	660,993.31	833,541.79	32° 48' 48.551 N	103° 22' 56.019 W
5,400.0	8.00	231.03	5,370.5	-271.4	-335.5	660,984.56	833,530.97	32° 48' 48.465 N	103° 22' 56.147 W



Microsoft
Planning Report - Geographic



Database:	EDM16	Local Co-ordinate Reference:	Well Vindicator Canyon State #320H
Company:	BTA Oil Producers, LLC	TVD Reference:	GL @ 3872.0usft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL @ 3872.0usft
Site:	Vindicator Canyon State	North Reference:	Grid
Well:	Vindicator Canyon State #320H	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	
5,500.0	8.00	231.03	5,469.5	-280.1	-346.3	660,975.81	833,520.15	32° 48' 48.379 N	103° 22' 56.274 W	
5,600.0	8.00	231.03	5,568.5	-288.9	-357.1	660,967.05	833,509.33	32° 48' 48.294 N	103° 22' 56.402 W	
5,700.0	8.00	231.03	5,667.6	-297.6	-367.9	660,958.30	833,498.51	32° 48' 48.208 N	103° 22' 56.530 W	
5,800.0	8.00	231.03	5,766.6	-306.4	-378.7	660,949.55	833,487.69	32° 48' 48.123 N	103° 22' 56.657 W	
5,900.0	8.00	231.03	5,865.6	-315.1	-389.6	660,940.79	833,476.87	32° 48' 48.037 N	103° 22' 56.785 W	
6,000.0	8.00	231.03	5,964.6	-323.9	-400.4	660,932.04	833,466.05	32° 48' 47.951 N	103° 22' 56.913 W	
6,100.0	8.00	231.03	6,063.7	-332.6	-411.2	660,923.29	833,455.23	32° 48' 47.866 N	103° 22' 57.041 W	
6,200.0	8.00	231.03	6,162.7	-341.4	-422.0	660,914.53	833,444.40	32° 48' 47.780 N	103° 22' 57.168 W	
6,300.0	8.00	231.03	6,261.7	-350.2	-432.8	660,905.78	833,433.58	32° 48' 47.694 N	103° 22' 57.296 W	
6,400.0	8.00	231.03	6,360.7	-358.9	-443.7	660,897.03	833,422.76	32° 48' 47.609 N	103° 22' 57.424 W	
6,500.0	8.00	231.03	6,459.8	-367.7	-454.5	660,888.28	833,411.94	32° 48' 47.523 N	103° 22' 57.551 W	
6,600.0	8.00	231.03	6,558.8	-376.4	-465.3	660,879.52	833,401.12	32° 48' 47.437 N	103° 22' 57.679 W	
6,700.0	8.00	231.03	6,657.8	-385.2	-476.1	660,870.77	833,390.30	32° 48' 47.352 N	103° 22' 57.807 W	
6,800.0	8.00	231.03	6,756.9	-393.9	-486.9	660,862.02	833,379.48	32° 48' 47.266 N	103° 22' 57.934 W	
6,900.0	8.00	231.03	6,855.9	-402.7	-497.8	660,853.26	833,368.66	32° 48' 47.180 N	103° 22' 58.062 W	
7,000.0	8.00	231.03	6,954.9	-411.4	-508.6	660,844.51	833,357.84	32° 48' 47.095 N	103° 22' 58.190 W	
7,100.0	8.00	231.03	7,053.9	-420.2	-519.4	660,835.76	833,347.02	32° 48' 47.009 N	103° 22' 58.317 W	
7,200.0	8.00	231.03	7,153.0	-428.9	-530.2	660,827.00	833,336.20	32° 48' 46.924 N	103° 22' 58.445 W	
7,300.0	8.00	231.03	7,252.0	-437.7	-541.0	660,818.25	833,325.38	32° 48' 46.838 N	103° 22' 58.573 W	
7,400.0	8.00	231.03	7,351.0	-446.4	-551.9	660,809.50	833,314.56	32° 48' 46.752 N	103° 22' 58.701 W	
7,500.0	8.00	231.03	7,450.0	-455.2	-562.7	660,800.74	833,303.74	32° 48' 46.667 N	103° 22' 58.828 W	
7,600.0	8.00	231.03	7,549.1	-463.9	-573.5	660,791.99	833,292.92	32° 48' 46.581 N	103° 22' 58.956 W	
7,700.0	8.00	231.03	7,648.1	-472.7	-584.3	660,783.24	833,282.10	32° 48' 46.495 N	103° 22' 59.084 W	
7,800.0	8.00	231.03	7,747.1	-481.4	-595.1	660,774.48	833,271.28	32° 48' 46.410 N	103° 22' 59.211 W	
7,900.0	8.00	231.03	7,846.1	-490.2	-606.0	660,765.73	833,260.46	32° 48' 46.324 N	103° 22' 59.339 W	
8,000.0	8.00	231.03	7,945.2	-499.0	-616.8	660,756.98	833,249.64	32° 48' 46.238 N	103° 22' 59.467 W	
8,100.0	8.00	231.03	8,044.2	-507.7	-627.6	660,748.23	833,238.82	32° 48' 46.153 N	103° 22' 59.594 W	
8,143.6	8.00	231.03	8,087.4	-511.5	-632.3	660,744.41	833,234.10	32° 48' 46.115 N	103° 22' 59.650 W	
8,200.0	6.87	231.03	8,143.3	-516.1	-638.0	660,739.82	833,228.43	32° 48' 46.071 N	103° 22' 59.717 W	
8,300.0	4.87	231.03	8,242.8	-522.5	-645.9	660,733.38	833,220.48	32° 48' 46.008 N	103° 22' 59.811 W	
8,400.0	2.87	231.03	8,342.5	-526.8	-651.2	660,729.14	833,215.23	32° 48' 45.966 N	103° 22' 59.873 W	
8,500.0	0.87	231.03	8,442.5	-528.8	-653.7	660,727.08	833,212.69	32° 48' 45.946 N	103° 22' 59.903 W	
8,543.6	0.00	0.00	8,486.1	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
8,600.0	0.00	0.00	8,542.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
8,700.0	0.00	0.00	8,642.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
8,800.0	0.00	0.00	8,742.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
8,900.0	0.00	0.00	8,842.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
9,000.0	0.00	0.00	8,942.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
9,100.0	0.00	0.00	9,042.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
9,200.0	0.00	0.00	9,142.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
9,300.0	0.00	0.00	9,242.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
9,400.0	0.00	0.00	9,342.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
9,500.0	0.00	0.00	9,442.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
9,600.0	0.00	0.00	9,542.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
9,700.0	0.00	0.00	9,642.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
9,800.0	0.00	0.00	9,742.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
9,900.0	0.00	0.00	9,842.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
10,000.0	0.00	0.00	9,942.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
10,100.0	0.00	0.00	10,042.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
10,200.0	0.00	0.00	10,142.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
10,300.0	0.00	0.00	10,242.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
10,400.0	0.00	0.00	10,342.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
10,500.0	0.00	0.00	10,442.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
10,600.0	0.00	0.00	10,542.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
10,700.0	0.00	0.00	10,642.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	



Microsoft
Planning Report - Geographic



Database:	EDM16	Local Co-ordinate Reference:	Well Vindicator Canyon State #320H
Company:	BTA Oil Producers, LLC	TVD Reference:	GL @ 3872.0usft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL @ 3872.0usft
Site:	Vindicator Canyon State	North Reference:	Grid
Well:	Vindicator Canyon State #320H	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	
10,800.0	0.00	0.00	10,742.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
10,900.0	0.00	0.00	10,842.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
11,000.0	0.00	0.00	10,942.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
11,100.0	0.00	0.00	11,042.5	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
11,121.5	0.00	0.00	11,064.0	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
11,171.6	0.00	0.00	11,114.0	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
11,200.0	2.84	179.37	11,142.5	-529.8	-654.0	660,726.17	833,212.44	32° 48' 45.937 N	103° 22' 59.906 W	
11,300.0	12.84	179.37	11,241.4	-543.4	-653.8	660,712.54	833,212.59	32° 48' 45.802 N	103° 22' 59.906 W	
11,400.0	22.84	179.37	11,336.5	-574.0	-653.5	660,681.94	833,212.92	32° 48' 45.499 N	103° 22' 59.905 W	
11,500.0	32.84	179.37	11,424.8	-620.6	-653.0	660,635.29	833,213.44	32° 48' 45.038 N	103° 22' 59.904 W	
11,600.0	42.84	179.37	11,503.7	-681.9	-652.3	660,574.02	833,214.11	32° 48' 44.432 N	103° 22' 59.902 W	
11,700.0	52.84	179.37	11,570.7	-755.9	-651.5	660,499.99	833,214.93	32° 48' 43.699 N	103° 22' 59.900 W	
11,800.0	62.84	179.37	11,623.8	-840.5	-650.6	660,415.44	833,215.86	32° 48' 42.862 N	103° 22' 59.898 W	
11,900.0	72.84	179.37	11,661.5	-933.0	-649.5	660,322.95	833,216.88	32° 48' 41.947 N	103° 22' 59.896 W	
12,000.0	82.84	179.37	11,682.5	-1,030.6	-648.5	660,225.32	833,217.96	32° 48' 40.981 N	103° 22' 59.894 W	
12,071.6	90.00	179.37	11,687.0	-1,102.0	-647.7	660,153.95	833,218.75	32° 48' 40.275 N	103° 22' 59.892 W	
12,100.0	90.00	179.37	11,687.0	-1,130.4	-647.4	660,125.51	833,219.06	32° 48' 39.994 N	103° 22' 59.892 W	
12,200.0	90.00	179.37	11,687.0	-1,230.4	-646.3	660,025.52	833,220.16	32° 48' 39.004 N	103° 22' 59.889 W	
12,300.0	90.00	179.37	11,687.0	-1,330.4	-645.2	659,925.52	833,221.27	32° 48' 38.015 N	103° 22' 59.887 W	
12,400.0	90.00	179.37	11,687.0	-1,430.4	-644.1	659,825.53	833,222.37	32° 48' 37.025 N	103° 22' 59.884 W	
12,500.0	90.00	179.37	11,687.0	-1,530.4	-643.0	659,725.53	833,223.47	32° 48' 36.036 N	103° 22' 59.882 W	
12,600.0	90.00	179.37	11,687.0	-1,630.4	-641.8	659,625.54	833,224.58	32° 48' 35.046 N	103° 22' 59.880 W	
12,700.0	90.00	179.37	11,687.0	-1,730.4	-640.7	659,525.54	833,225.68	32° 48' 34.057 N	103° 22' 59.877 W	
12,800.0	90.00	179.37	11,687.0	-1,830.4	-639.6	659,425.55	833,226.78	32° 48' 33.068 N	103° 22' 59.875 W	
12,900.0	90.00	179.37	11,687.0	-1,930.4	-638.5	659,325.55	833,227.89	32° 48' 32.078 N	103° 22' 59.872 W	
13,000.0	90.00	179.37	11,687.0	-2,030.4	-637.4	659,225.56	833,228.99	32° 48' 31.089 N	103° 22' 59.870 W	
13,100.0	90.00	179.37	11,687.0	-2,130.4	-636.3	659,125.57	833,230.09	32° 48' 30.099 N	103° 22' 59.868 W	
13,200.0	90.00	179.37	11,687.0	-2,230.3	-635.2	659,025.57	833,231.19	32° 48' 29.110 N	103° 22' 59.865 W	
13,300.0	90.00	179.37	11,687.0	-2,330.3	-634.1	658,925.58	833,232.30	32° 48' 28.121 N	103° 22' 59.863 W	
13,400.0	90.00	179.37	11,687.0	-2,430.3	-633.0	658,825.58	833,233.40	32° 48' 27.131 N	103° 22' 59.860 W	
13,500.0	90.00	179.37	11,687.0	-2,530.3	-631.9	658,725.59	833,234.50	32° 48' 26.142 N	103° 22' 59.858 W	
13,600.0	90.00	179.37	11,687.0	-2,630.3	-630.8	658,625.59	833,235.61	32° 48' 25.152 N	103° 22' 59.856 W	
13,700.0	90.00	179.37	11,687.0	-2,730.3	-629.7	658,525.60	833,236.71	32° 48' 24.163 N	103° 22' 59.853 W	
13,800.0	90.00	179.37	11,687.0	-2,830.3	-628.6	658,425.60	833,237.81	32° 48' 23.173 N	103° 22' 59.851 W	
13,900.0	90.00	179.37	11,687.0	-2,930.3	-627.5	658,325.61	833,238.91	32° 48' 22.184 N	103° 22' 59.848 W	
14,000.0	90.00	179.37	11,687.0	-3,030.3	-626.4	658,225.61	833,240.02	32° 48' 21.195 N	103° 22' 59.846 W	
14,100.0	90.00	179.37	11,687.0	-3,130.3	-625.3	658,125.62	833,241.12	32° 48' 20.205 N	103° 22' 59.844 W	
14,200.0	90.00	179.37	11,687.0	-3,230.3	-624.2	658,025.62	833,242.22	32° 48' 19.216 N	103° 22' 59.841 W	
14,300.0	90.00	179.37	11,687.0	-3,330.3	-623.1	657,925.63	833,243.33	32° 48' 18.226 N	103° 22' 59.839 W	
14,400.0	90.00	179.37	11,687.0	-3,430.3	-622.0	657,825.63	833,244.43	32° 48' 17.237 N	103° 22' 59.836 W	
14,500.0	90.00	179.37	11,687.0	-3,530.3	-620.9	657,725.64	833,245.53	32° 48' 16.247 N	103° 22' 59.834 W	
14,600.0	90.00	179.37	11,687.0	-3,630.3	-619.8	657,625.65	833,246.64	32° 48' 15.258 N	103° 22' 59.832 W	
14,700.0	90.00	179.37	11,687.0	-3,730.3	-618.7	657,525.65	833,247.74	32° 48' 14.269 N	103° 22' 59.829 W	
14,800.0	90.00	179.37	11,687.0	-3,830.3	-617.6	657,425.66	833,248.84	32° 48' 13.279 N	103° 22' 59.827 W	
14,900.0	90.00	179.37	11,687.0	-3,930.2	-616.5	657,325.66	833,249.94	32° 48' 12.290 N	103° 22' 59.824 W	
15,000.0	90.00	179.37	11,687.0	-4,030.2	-615.4	657,225.67	833,251.05	32° 48' 11.300 N	103° 22' 59.822 W	
15,100.0	90.00	179.37	11,687.0	-4,130.2	-614.3	657,125.67	833,252.15	32° 48' 10.311 N	103° 22' 59.820 W	
15,200.0	90.00	179.37	11,687.0	-4,230.2	-613.2	657,025.68	833,253.25	32° 48' 9.321 N	103° 22' 59.817 W	
15,300.0	90.00	179.37	11,687.0	-4,330.2	-612.1	656,925.68	833,254.36	32° 48' 8.332 N	103° 22' 59.815 W	
15,400.0	90.00	179.37	11,687.0	-4,430.2	-611.0	656,825.69	833,255.46	32° 48' 7.343 N	103° 22' 59.812 W	
15,500.0	90.00	179.37	11,687.0	-4,530.2	-609.9	656,725.69	833,256.56	32° 48' 6.353 N	103° 22' 59.810 W	
15,600.0	90.00	179.37	11,687.0	-4,630.2	-608.8	656,625.70	833,257.67	32° 48' 5.364 N	103° 22' 59.808 W	
15,700.0	90.00	179.37	11,687.0	-4,730.2	-607.7	656,525.70	833,258.77	32° 48' 4.374 N	103° 22' 59.805 W	
15,800.0	90.00	179.37	11,687.0	-4,830.2	-606.6	656,425.71	833,259.87	32° 48' 3.385 N	103° 22' 59.803 W	
15,900.0	90.00	179.37	11,687.0	-4,930.2	-605.5	656,325.72	833,260.97	32° 48' 2.396 N	103° 22' 59.800 W	



Microsoft
Planning Report - Geographic



Database:	EDM16	Local Co-ordinate Reference:	Well Vindicator Canyon State #320H
Company:	BTA Oil Producers, LLC	TVD Reference:	GL @ 3872.0usft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL @ 3872.0usft
Site:	Vindicator Canyon State	North Reference:	Grid
Well:	Vindicator Canyon State #320H	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	
16,000.0	90.00	179.37	11,687.0	-5,030.2	-604.3	656,225.72	833,262.08	32° 48' 1.406 N	103° 22' 59.798 W	
16,100.0	90.00	179.37	11,687.0	-5,130.2	-603.2	656,125.73	833,263.18	32° 48' 0.417 N	103° 22' 59.796 W	
16,200.0	90.00	179.37	11,687.0	-5,230.2	-602.1	656,025.73	833,264.28	32° 47' 59.427 N	103° 22' 59.793 W	
16,300.0	90.00	179.37	11,687.0	-5,330.2	-601.0	655,925.74	833,265.39	32° 47' 58.438 N	103° 22' 59.791 W	
16,400.0	90.00	179.37	11,687.0	-5,430.2	-599.9	655,825.74	833,266.49	32° 47' 57.448 N	103° 22' 59.788 W	
16,500.0	90.00	179.37	11,687.0	-5,530.1	-598.8	655,725.75	833,267.59	32° 47' 56.459 N	103° 22' 59.786 W	
16,600.0	90.00	179.37	11,687.0	-5,630.1	-597.7	655,625.75	833,268.69	32° 47' 55.470 N	103° 22' 59.784 W	
16,700.0	90.00	179.37	11,687.0	-5,730.1	-596.6	655,525.76	833,269.80	32° 47' 54.480 N	103° 22' 59.781 W	
16,800.0	90.00	179.37	11,687.0	-5,830.1	-595.5	655,425.76	833,270.90	32° 47' 53.491 N	103° 22' 59.779 W	
16,900.0	90.00	179.37	11,687.0	-5,930.1	-594.4	655,325.77	833,272.00	32° 47' 52.501 N	103° 22' 59.776 W	
17,000.0	90.00	179.37	11,687.0	-6,030.1	-593.3	655,225.77	833,273.11	32° 47' 51.512 N	103° 22' 59.774 W	
17,100.0	90.00	179.37	11,687.0	-6,130.1	-592.2	655,125.78	833,274.21	32° 47' 50.522 N	103° 22' 59.772 W	
17,200.0	90.00	179.37	11,687.0	-6,230.1	-591.1	655,025.79	833,275.31	32° 47' 49.533 N	103° 22' 59.769 W	
17,300.0	90.00	179.37	11,687.0	-6,330.1	-590.0	654,925.79	833,276.42	32° 47' 48.544 N	103° 22' 59.767 W	
17,400.0	90.00	179.37	11,687.0	-6,430.1	-588.9	654,825.80	833,277.52	32° 47' 47.554 N	103° 22' 59.764 W	
17,500.0	90.00	179.37	11,687.0	-6,530.1	-587.8	654,725.80	833,278.62	32° 47' 46.565 N	103° 22' 59.762 W	
17,600.0	90.00	179.37	11,687.0	-6,630.1	-586.7	654,625.81	833,279.72	32° 47' 45.575 N	103° 22' 59.760 W	
17,700.0	90.00	179.37	11,687.0	-6,730.1	-585.6	654,525.81	833,280.83	32° 47' 44.586 N	103° 22' 59.757 W	
17,800.0	90.00	179.37	11,687.0	-6,830.1	-584.5	654,425.82	833,281.93	32° 47' 43.596 N	103° 22' 59.755 W	
17,900.0	90.00	179.37	11,687.0	-6,930.1	-583.4	654,325.82	833,283.03	32° 47' 42.607 N	103° 22' 59.752 W	
18,000.0	90.00	179.37	11,687.0	-7,030.1	-582.3	654,225.83	833,284.14	32° 47' 41.618 N	103° 22' 59.750 W	
18,100.0	90.00	179.37	11,687.0	-7,130.1	-581.2	654,125.83	833,285.24	32° 47' 40.628 N	103° 22' 59.748 W	
18,200.0	90.00	179.37	11,687.0	-7,230.0	-580.1	654,025.84	833,286.34	32° 47' 39.639 N	103° 22' 59.745 W	
18,300.0	90.00	179.37	11,687.0	-7,330.0	-579.0	653,925.84	833,287.45	32° 47' 38.649 N	103° 22' 59.743 W	
18,400.0	90.00	179.37	11,687.0	-7,430.0	-577.9	653,825.85	833,288.55	32° 47' 37.660 N	103° 22' 59.740 W	
18,500.0	90.00	179.37	11,687.0	-7,530.0	-576.8	653,725.86	833,289.65	32° 47' 36.670 N	103° 22' 59.738 W	
18,600.0	90.00	179.37	11,687.0	-7,630.0	-575.7	653,625.86	833,290.75	32° 47' 35.681 N	103° 22' 59.736 W	
18,700.0	90.00	179.37	11,687.0	-7,730.0	-574.6	653,525.87	833,291.86	32° 47' 34.692 N	103° 22' 59.733 W	
18,800.0	90.00	179.37	11,687.0	-7,830.0	-573.5	653,425.87	833,292.96	32° 47' 33.702 N	103° 22' 59.731 W	
18,900.0	90.00	179.37	11,687.0	-7,930.0	-572.4	653,325.88	833,294.06	32° 47' 32.713 N	103° 22' 59.728 W	
19,000.0	90.00	179.37	11,687.0	-8,030.0	-571.3	653,225.88	833,295.17	32° 47' 31.723 N	103° 22' 59.726 W	
19,100.0	90.00	179.37	11,687.0	-8,130.0	-570.2	653,125.89	833,296.27	32° 47' 30.734 N	103° 22' 59.724 W	
19,200.0	90.00	179.37	11,687.0	-8,230.0	-569.1	653,025.89	833,297.37	32° 47' 29.744 N	103° 22' 59.721 W	
19,300.0	90.00	179.37	11,687.0	-8,330.0	-567.9	652,925.90	833,298.47	32° 47' 28.755 N	103° 22' 59.719 W	
19,400.0	90.00	179.37	11,687.0	-8,430.0	-566.8	652,825.90	833,299.58	32° 47' 27.766 N	103° 22' 59.716 W	
19,500.0	90.00	179.37	11,687.0	-8,530.0	-565.7	652,725.91	833,300.68	32° 47' 26.776 N	103° 22' 59.714 W	
19,600.0	90.00	179.37	11,687.0	-8,630.0	-564.6	652,625.91	833,301.78	32° 47' 25.787 N	103° 22' 59.712 W	
19,700.0	90.00	179.37	11,687.0	-8,730.0	-563.5	652,525.92	833,302.89	32° 47' 24.797 N	103° 22' 59.709 W	
19,800.0	90.00	179.37	11,687.0	-8,829.9	-562.4	652,425.93	833,303.99	32° 47' 23.808 N	103° 22' 59.707 W	
19,900.0	90.00	179.37	11,687.0	-8,929.9	-561.3	652,325.93	833,305.09	32° 47' 22.819 N	103° 22' 59.704 W	
20,000.0	90.00	179.37	11,687.0	-9,029.9	-560.2	652,225.94	833,306.20	32° 47' 21.829 N	103° 22' 59.702 W	
20,100.0	90.00	179.37	11,687.0	-9,129.9	-559.1	652,125.94	833,307.30	32° 47' 20.840 N	103° 22' 59.700 W	
20,200.0	90.00	179.37	11,687.0	-9,229.9	-558.0	652,025.95	833,308.40	32° 47' 19.850 N	103° 22' 59.697 W	
20,300.0	90.00	179.37	11,687.0	-9,329.9	-556.9	651,925.95	833,309.50	32° 47' 18.861 N	103° 22' 59.695 W	
20,400.0	90.00	179.37	11,687.0	-9,429.9	-555.8	651,825.96	833,310.61	32° 47' 17.871 N	103° 22' 59.692 W	
20,500.0	90.00	179.37	11,687.0	-9,529.9	-554.7	651,725.96	833,311.71	32° 47' 16.882 N	103° 22' 59.690 W	
20,600.0	90.00	179.37	11,687.0	-9,629.9	-553.6	651,625.97	833,312.81	32° 47' 15.893 N	103° 22' 59.688 W	
20,700.0	90.00	179.37	11,687.0	-9,729.9	-552.5	651,525.97	833,313.92	32° 47' 14.903 N	103° 22' 59.685 W	
20,800.0	90.00	179.37	11,687.0	-9,829.9	-551.4	651,425.98	833,315.02	32° 47' 13.914 N	103° 22' 59.683 W	
20,900.0	90.00	179.37	11,687.0	-9,929.9	-550.3	651,325.98	833,316.12	32° 47' 12.924 N	103° 22' 59.680 W	
21,000.0	90.00	179.37	11,687.0	-10,029.9	-549.2	651,225.99	833,317.22	32° 47' 11.935 N	103° 22' 59.678 W	
21,100.0	90.00	179.37	11,687.0	-10,129.9	-548.1	651,125.99	833,318.33	32° 47' 10.945 N	103° 22' 59.676 W	
21,200.0	90.00	179.37	11,687.0	-10,229.9	-547.0	651,026.00	833,319.43	32° 47' 9.956 N	103° 22' 59.673 W	
21,300.0	90.00	179.37	11,687.0	-10,329.9	-545.9	650,926.01	833,320.53	32° 47' 8.967 N	103° 22' 59.671 W	
21,400.0	90.00	179.37	11,687.0	-10,429.8	-544.8	650,826.01	833,321.64	32° 47' 7.977 N	103° 22' 59.668 W	



Microsoft
Planning Report - Geographic

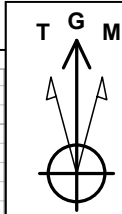


Database:	EDM16	Local Co-ordinate Reference:	Well Vindicator Canyon State #320H
Company:	BTA Oil Producers, LLC	TVD Reference:	GL @ 3872.0usft
Project:	Lea County, NM (NAD 83)	MD Reference:	GL @ 3872.0usft
Site:	Vindicator Canyon State	North Reference:	Grid
Well:	Vindicator Canyon State #320H	Survey 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	
21,500.0	90.00	179.37	11,687.0	-10,529.8	-543.7	650,726.02	833,322.74	32° 47' 6.988 N	103° 22' 59.666 W	
21,600.0	90.00	179.37	11,687.0	-10,629.8	-542.6	650,626.02	833,323.84	32° 47' 5.998 N	103° 22' 59.664 W	
21,700.0	90.00	179.37	11,687.0	-10,729.8	-541.5	650,526.03	833,324.95	32° 47' 5.009 N	103° 22' 59.661 W	
21,800.0	90.00	179.37	11,687.0	-10,829.8	-540.4	650,426.03	833,326.05	32° 47' 4.019 N	103° 22' 59.659 W	
21,900.0	90.00	179.37	11,687.0	-10,929.8	-539.3	650,326.04	833,327.15	32° 47' 3.030 N	103° 22' 59.656 W	
21,955.0	90.00	179.37	11,687.0	-10,984.9	-538.7	650,270.99	833,327.76	32° 47' 2.485 N	103° 22' 59.655 W	

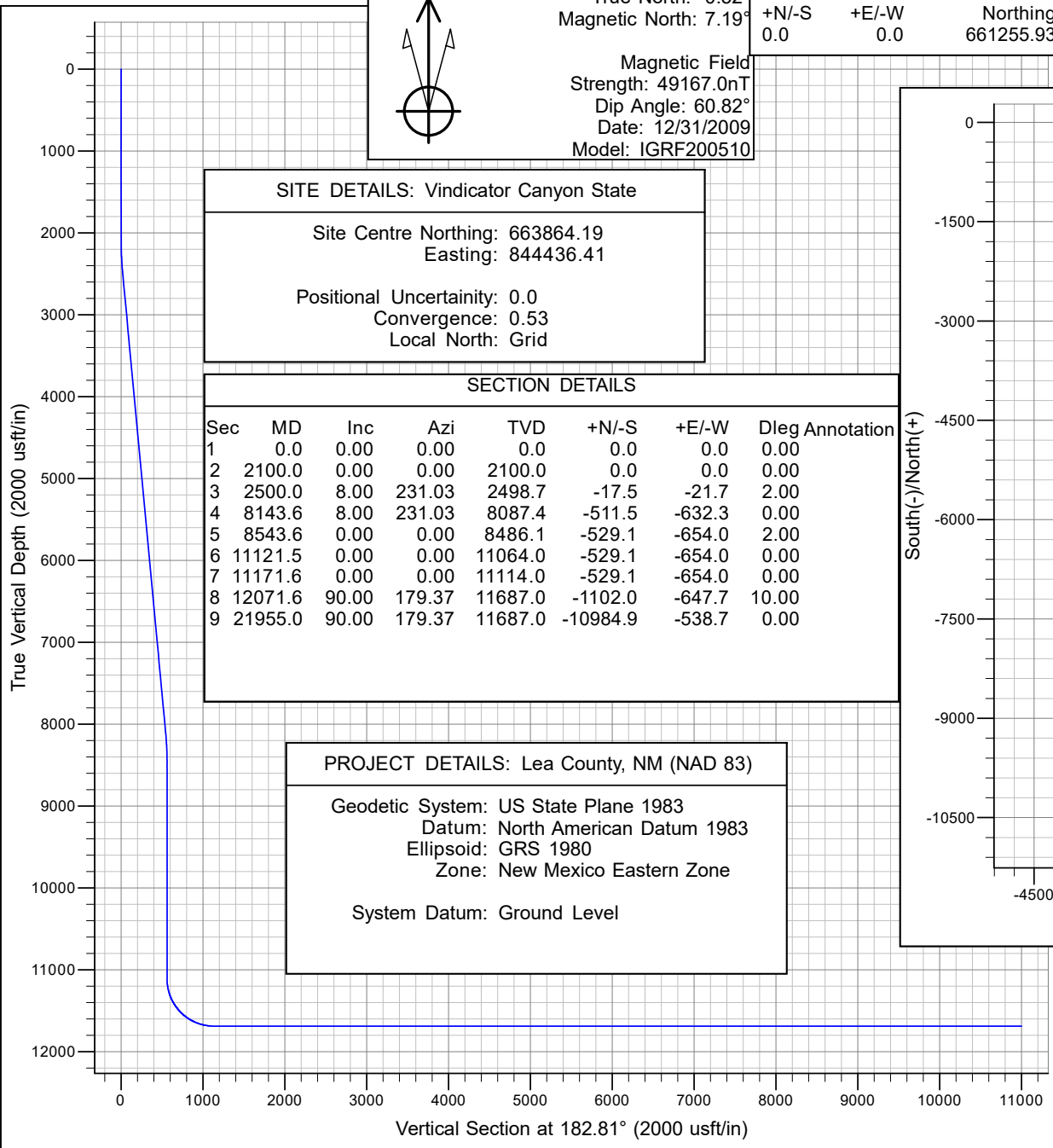
Design Targets										
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
Vindicator Canyon State - plan hits target center - Point	0.00	0.00	11,064.0	-529.1	-654.0	660,726.87	833,212.43	32° 48' 45.944 N	103° 22' 59.906 W	
Vindicator Canyon State - plan hits target center - Point	0.00	0.00	11,687.0	-10,984.9	-538.7	650,270.99	833,327.76	32° 47' 2.485 N	103° 22' 59.655 W	

BTA Oil Producers, LLC



Azimuths to Grid North
True North: -0.52°
Magnetic North: 7.19°

Magnetic Field
Strength: 49167.0nT
Dip Angle: 60.82°
Date: 12/31/2009
Model: IGRF200510



SITE DETAILS: Vindicator Canyon State

Site Centre Northing: 663864.19
Easting: 844436.41

Positional Uncertainty: 0.0
Convergence: 0.53
Local North: Grid

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	
2	2100.0	0.00	0.00	2100.0	0.0	0.0	0.00	
3	2500.0	8.00	231.03	2498.7	-17.5	-21.7	2.00	
4	8143.6	8.00	231.03	8087.4	-511.5	-632.3	0.00	
5	8543.6	0.00	0.00	8486.1	-529.1	-654.0	2.00	
6	11121.5	0.00	0.00	11064.0	-529.1	-654.0	0.00	
7	11171.6	0.00	0.00	11114.0	-529.1	-654.0	0.00	
8	12071.6	90.00	179.37	11687.0	-1102.0	-647.7	10.00	
9	21955.0	90.00	179.37	11687.0	-10984.9	-538.7	0.00	

PROJECT DETAILS: Lea 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

WELL DETAILS: Vindicator Canyon State #320H

+N/-S	+E/-W	Northing	Ground Level	3872.0	Latitude	Longitude	Slot
0.0	0.0	661255.93	Easting	833866.43	32° 48' 51.120 N	103° 22' 52.188 W	

