

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 276597

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

1. Operator Name and Address Catena Resources Operating, LLC 18402 US Hwy 281 N San Antonio, TX 78259		2. OGRID Number 328449
4. Property Code 326777		3. API Number 30-025-46714
5. Property Name FOXTAIL 193505		6. Well No. 001H

7. Surface Location

UL - Lot C	Section 8	Township 19S	Range 35E	Lot Idn C	Feet From 340	N/S Line N	Feet From 2310	E/W Line W	County Lea
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8. Proposed Bottom Hole Location

UL - Lot C	Section 32	Township 18S	Range 35E	Lot Idn C	Feet From 100	N/S Line N	Feet From 2310	E/W Line W	County Lea
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9. Pool Information

SCHARB,BONE SPRING	55610
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Additional Well Information

11. Work Type New Well	12. Well Type OIL	13. Cable/Rotary	14. Lease Type Private	15. Ground Level Elevation 3860
16. Multiple N	17. Proposed Depth 21054	18. Formation 1st Bone Spring Sand	19. Contractor	20. Spud Date 3/5/2020
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	1878	1580	0
Int1	12.25	9.625	40	3982	1080	0
Prod	8.75	5.5	20	20140	2700	3482

Casing/Cement Program: Additional Comments

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22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Annular	3000	3000	Shaffer
Double Ram	5000	5000	Shaffer
Double Ram	5000	5000	Shaffer

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.		OIL CONSERVATION DIVISION	
Signature:			
Printed Name: Electronically filed by Robert Swann	Approved By: Paul F Kautz		
Title:	Title: Geologist		
Email Address: rswann@catenares.com	Approved Date: 1/10/2020	Expiration Date: 1/10/2022	
Date: 1/7/2020	Phone: 210-775-6993	Conditions of Approval Attached	

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Oil Conservation Division
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Santa Fe, NM 87505

Form C-102
August 1, 2011

Permit 276597

WELL LOCATION AND ACREAGE DEDICATION PLAT

1. API Number 30-025-46714	2. Pool Code 55610	3. Pool Name SCHARB;BONE SPRING
4. Property Code 326777	5. Property Name FOXTAIL 193505	6. Well No. 001H
7. OGRID No. 328449	8. Operator Name Catena Resources Operating, LLC	9. Elevation 3860

10. Surface Location

UL - Lot C	Section 8	Township 19S	Range 35E	Lot Idn C	Feet From 340	N/S Line N	Feet From 2310	E/W Line W	County Lea
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11. Bottom Hole Location If Different From Surface

UL - Lot C	Section 32	Township 18S	Range 35E	Lot Idn C	Feet From 100	N/S Line N	Feet From 2310	E/W Line W	County Lea
12. Dedicated Acres 319.64			13. Joint or Infill		14. Consolidation Code Communitization			15. Order No.	

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

	OPERATOR CERTIFICATION <i>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location(s) or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</i> E-Signed By: Robert Swann Title: Date: 1/7/2020
	SURVEYOR CERTIFICATION <i>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.</i> Surveyed By: Filimon F Jaramillo Date of Survey: 1/7/2020 Certificate Number: 12797

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GAS CAPTURE PLAN

Date: 1/10/2020

☒ Original

Operator & OGRID No.: [328449] Catena Resources Operating, LLC

☐ Amended - Reason for
Amendment: _____

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomple to new zone, re-frac) activity.

Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).

Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
FOXTAIL 193505 #001H	30-025-46714	C-8-19S-35E	0340N 2310W	400	Flared	

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to TARGA MIDSTREAM SERVICES LLC and will be connected to TARGA MIDSTREAM SERVICES LLC High Pressure gathering system located in Lea County, New Mexico. It will require 150' of pipeline to connect the facility to High Pressure gathering system. Catena Resources Operating, LLC provides (periodically) to TARGA MIDSTREAM SERVICES LLC a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, Catena Resources Operating, LLC and TARGA MIDSTREAM SERVICES LLC have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at TARGA MIDSTREAM SERVICES LLC Processing Plant located in Sec. 19, Twn. 20S, Rng. 35E, Lea County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on TARGA MIDSTREAM SERVICES LLC system at that time. Based on current information, it is Catena Resources Operating, LLC's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
 - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
 - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
 - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

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Form APD Comments

Permit 276597

PERMIT COMMENTS

Operator Name and Address: Catena Resources Operating, LLC [328449] 18402 US Hwy 281 N San Antonio, TX 78259	API Number: 30-025-46714
	Well: FOXTAIL 193505 #001H

Created By	Comment	Comment Date
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Form APD Conditions

Permit 276597

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address: Catena Resources Operating, LLC [328449] 18402 US Hwy 281 N San Antonio, TX 78259	API Number: 30-025-46714
	Well: FOXTAIL 193505 #001H

OCD Reviewer	Condition
pkautz	Will require a directional survey with the C-104
pkautz	1) SURFACE & INTERMEDIATE CASING - Cement must circulate to surface -- 2) PRODUCTION CASING - Cement must tie back into intermediate casing --
pkautz	If cement does not circulate to surface, must run temperature survey or other log to determine top of cement
pkautz	Surface casing must be set 25' below top of Rustler Anhydrite in order to seal off protectable water
pkautz	1)- The Operator is to notify NMOC by sundry (Form C-103) within ten (10) days of the well being spud 2)- Drilling Sundries Form C-103 (Casing and Cement test are to be submitted within 10 days 3)- Completion Reports & Logs are to be submitted within 45 days 4)- Deviation / Directional Drill Survey are to be filed with or prior to C-104
pkautz	It is the operator's responsibility to monitor cancellation dates of approved APDs. APD's are good for 2 years and may be extended for one year. Only one 1 year extension will be granted if submitted by C-103 before expiration date. After expiration date or after a 1 year extension must submit new APD. If an APD expires and if site construction has occurred, site remediation is required.
pkautz	Stage Tool 1) Must notify OCD Hobbs Office prior to running Stage Tool at 5753703186 2) If using Stage Tool on Surface casing, Stage Tool must be set greater than 350' from surface and a minimum of 200 feet above surface shoe. 3) When using a Stage Tool on Intermediate or Production Casing Stage must be a minimum of 50 feet below previous casing shoe.



Catena Resources Operating, LLC

Lea County NM N83-NM-EZ

A06 Foxtail

Foxtail 19-35-05 #1H

1H

Plan: Plan #1

Standard Planning Report

07 January, 2020



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Project	Lea County NM N83-NM-EZ		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site		A06 Foxtail			
Site Position:		Northing:	612,845.47 usft	Latitude:	32.68185844
From:	Map	Easting:	803,693.36 usft	Longitude:	-103.48063395
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.46 °

Well	Foxtail 19-35-05 #1H					
Well Position	+N/-S	0.00 usft	Northing:	612,845.47 usft	Latitude:	32.68185844
	+E/-W	0.00 usft	Easting:	803,693.36 usft	Longitude:	-103.48063395
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	3,863.00 usft

Wellbore	1H				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	1/7/2020	6.67	60.46	47,950.80410962

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	359.38

Plan Survey Tool Program	Date	1/7/2020		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	20,140.40	Plan #1 (1H)	MWD
				MWD - Standard



Planning Report

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Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,408.83	4.18	179.30	4,408.65	-7.61	0.09	2.00	2.00	0.00	179.30	
8,402.14	4.18	179.30	8,391.35	-298.43	3.63	0.00	0.00	0.00	0.00	
8,610.98	0.00	0.00	8,600.00	-306.04	3.72	2.00	-2.00	0.00	180.00	A06N01-EON(1H)
8,850.26	0.00	0.00	8,839.28	-306.04	3.72	0.00	0.00	0.00	0.00	
9,771.46	92.12	359.38	9,411.85	288.08	-2.71	10.00	10.00	0.00	359.38	
9,956.49	92.12	359.38	9,405.00	472.98	-4.71	0.00	0.00	0.00	0.00	
9,981.56	91.62	359.38	9,404.18	498.03	-4.98	2.00	-2.00	-0.01	-179.78	
10,483.70	91.62	359.38	9,390.00	999.94	-10.43	0.00	0.00	0.00	0.00	A06N01-T03-1000(1H)
10,506.47	91.16	359.38	9,389.45	1,022.70	-10.67	2.00	-2.00	0.00	179.97	
13,484.33	91.16	359.38	9,329.00	3,999.78	-42.98	0.00	0.00	0.00	0.00	A06N01-T09-4000(1H)
13,501.64	91.51	359.38	9,328.60	4,017.09	-43.16	2.00	2.00	0.00	-0.03	
16,485.35	91.51	359.38	9,250.00	6,999.59	-75.54	0.00	0.00	0.00	0.00	A06N01-T15-7000(1H)
16,490.08	91.60	359.38	9,249.87	7,004.31	-75.59	2.00	2.00	0.00	0.12	
18,486.15	91.60	359.38	9,194.00	8,999.48	-97.24	0.00	0.00	0.00	0.00	A06N01-T19-9000(1H)
18,593.07	93.74	359.38	9,189.01	9,106.27	-98.39	2.00	2.00	0.00	-0.01	
20,140.68	93.74	359.38	9,088.00	10,650.49	-115.16	0.00	0.00	0.00	0.00	A06N01-PBHL(1H)



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,828.00	0.00	0.00	1,828.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
1,838.00	0.00	0.00	1,838.00	0.00	0.00	0.00	0.00	0.00	0.00
Surface									
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,907.00	0.00	0.00	1,907.00	0.00	0.00	0.00	0.00	0.00	0.00
Salt									
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,201.00	0.00	0.00	3,201.00	0.00	0.00	0.00	0.00	0.00	0.00
Base of Salt									
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,413.00	0.00	0.00	3,413.00	0.00	0.00	0.00	0.00	0.00	0.00
Yates									
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,882.00	0.00	0.00	3,882.00	0.00	0.00	0.00	0.00	0.00	0.00
Seven Rivers									
3,888.00	0.00	0.00	3,888.00	0.00	0.00	0.00	0.00	0.00	0.00
Quaternary									



Planning Report

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Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,024.00	0.00	0.00	4,024.00	0.00	0.00	0.00	0.00	0.00	0.00	
Intermediate										
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,300.00	2.00	179.30	4,299.98	-1.75	0.02	-1.75	2.00	2.00	0.00	
4,408.83	4.18	179.30	4,408.65	-7.61	0.09	-7.61	2.00	2.00	0.00	
4,500.00	4.18	179.30	4,499.57	-14.25	0.17	-14.25	0.00	0.00	0.00	
4,600.00	4.18	179.30	4,599.31	-21.53	0.26	-21.53	0.00	0.00	0.00	
4,638.80	4.18	179.30	4,638.00	-24.36	0.30	-24.36	0.00	0.00	0.00	
Queen										
4,700.00	4.18	179.30	4,699.04	-28.81	0.35	-28.81	0.00	0.00	0.00	
4,800.00	4.18	179.30	4,798.78	-36.10	0.44	-36.10	0.00	0.00	0.00	
4,900.00	4.18	179.30	4,898.51	-43.38	0.53	-43.38	0.00	0.00	0.00	
5,000.00	4.18	179.30	4,998.25	-50.66	0.62	-50.66	0.00	0.00	0.00	
5,100.00	4.18	179.30	5,097.98	-57.94	0.71	-57.95	0.00	0.00	0.00	
5,200.00	4.18	179.30	5,197.71	-65.23	0.79	-65.23	0.00	0.00	0.00	
5,267.47	4.18	179.30	5,265.00	-70.14	0.85	-70.14	0.00	0.00	0.00	
Capitan Reef										
5,300.00	4.18	179.30	5,297.45	-72.51	0.88	-72.51	0.00	0.00	0.00	
5,400.00	4.18	179.30	5,397.18	-79.79	0.97	-79.80	0.00	0.00	0.00	
5,500.00	4.18	179.30	5,496.92	-87.07	1.06	-87.08	0.00	0.00	0.00	
5,600.00	4.18	179.30	5,596.65	-94.36	1.15	-94.36	0.00	0.00	0.00	
5,700.00	4.18	179.30	5,696.39	-101.64	1.24	-101.65	0.00	0.00	0.00	
5,800.00	4.18	179.30	5,796.12	-108.92	1.33	-108.93	0.00	0.00	0.00	
5,900.00	4.18	179.30	5,895.86	-116.20	1.41	-116.21	0.00	0.00	0.00	
6,000.00	4.18	179.30	5,995.59	-123.49	1.50	-123.50	0.00	0.00	0.00	
6,079.62	4.18	179.30	6,075.00	-129.29	1.57	-129.30	0.00	0.00	0.00	
Delaware Cherry Canyon										
6,100.00	4.18	179.30	6,095.32	-130.77	1.59	-130.78	0.00	0.00	0.00	
6,200.00	4.18	179.30	6,195.06	-138.05	1.68	-138.06	0.00	0.00	0.00	
6,300.00	4.18	179.30	6,294.79	-145.34	1.77	-145.35	0.00	0.00	0.00	
6,400.00	4.18	179.30	6,394.53	-152.62	1.86	-152.63	0.00	0.00	0.00	
6,500.00	4.18	179.30	6,494.26	-159.90	1.95	-159.91	0.00	0.00	0.00	
6,600.00	4.18	179.30	6,594.00	-167.18	2.03	-167.20	0.00	0.00	0.00	
6,700.00	4.18	179.30	6,693.73	-174.47	2.12	-174.48	0.00	0.00	0.00	
6,800.00	4.18	179.30	6,793.46	-181.75	2.21	-181.76	0.00	0.00	0.00	
6,900.00	4.18	179.30	6,893.20	-189.03	2.30	-189.05	0.00	0.00	0.00	
7,000.00	4.18	179.30	6,992.93	-196.31	2.39	-196.33	0.00	0.00	0.00	
7,100.00	4.18	179.30	7,092.67	-203.60	2.48	-203.61	0.00	0.00	0.00	
7,200.00	4.18	179.30	7,192.40	-210.88	2.57	-210.89	0.00	0.00	0.00	
7,300.00	4.18	179.30	7,292.14	-218.16	2.65	-218.18	0.00	0.00	0.00	
7,400.00	4.18	179.30	7,391.87	-225.44	2.74	-225.46	0.00	0.00	0.00	
7,500.00	4.18	179.30	7,491.61	-232.73	2.83	-232.74	0.00	0.00	0.00	
7,600.00	4.18	179.30	7,591.34	-240.01	2.92	-240.03	0.00	0.00	0.00	
7,700.00	4.18	179.30	7,691.07	-247.29	3.01	-247.31	0.00	0.00	0.00	
7,730.01	4.18	179.30	7,721.00	-249.48	3.04	-249.50	0.00	0.00	0.00	
Bone Spring Lime										
7,800.00	4.18	179.30	7,790.81	-254.58	3.10	-254.59	0.00	0.00	0.00	
7,900.00	4.18	179.30	7,890.54	-261.86	3.19	-261.88	0.00	0.00	0.00	
8,000.00	4.18	179.30	7,990.28	-269.14	3.28	-269.16	0.00	0.00	0.00	
8,100.00	4.18	179.30	8,090.01	-276.42	3.36	-276.44	0.00	0.00	0.00	
8,200.00	4.18	179.30	8,189.75	-283.71	3.45	-283.73	0.00	0.00	0.00	



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,300.00	4.18	179.30	8,289.48	-290.99	3.54	-291.01	0.00	0.00	0.00
8,402.14	4.18	179.30	8,391.35	-298.43	3.63	-298.45	0.00	0.00	0.00
8,500.00	2.22	179.30	8,489.05	-303.89	3.70	-303.91	2.00	-2.00	0.00
8,600.00	0.22	179.30	8,589.02	-306.01	3.72	-306.04	2.00	-2.00	0.00
8,610.98	0.00	0.00	8,600.00	-306.04	3.72	-306.06	2.00	-2.00	0.00
A06N01-EON(1H)									
8,700.00	0.00	0.00	8,689.02	-306.04	3.72	-306.06	0.00	0.00	0.00
8,800.00	0.00	0.00	8,789.02	-306.04	3.72	-306.06	0.00	0.00	0.00
8,821.98	0.00	0.00	8,811.00	-306.04	3.72	-306.06	0.00	0.00	0.00
First Bone Spring Carbonate									
8,850.26	0.00	0.00	8,839.28	-306.04	3.72	-306.06	0.00	0.00	0.00
KOP: 8850.26' MD, -306.06 VS, 8839.28' TVD									
8,900.00	4.97	359.38	8,888.96	-303.88	3.70	-303.90	10.00	10.00	0.00
8,950.00	9.97	359.38	8,938.52	-297.38	3.63	-297.40	10.00	10.00	0.00
9,000.00	14.97	359.38	8,987.33	-286.58	3.51	-286.60	10.00	10.00	0.00
9,050.00	19.97	359.38	9,035.00	-271.57	3.35	-271.59	10.00	10.00	0.00
9,097.59	24.73	359.38	9,079.00	-253.48	3.16	-253.50	10.00	10.00	0.00
Avalon Black									
9,100.00	24.97	359.38	9,081.19	-252.46	3.14	-252.48	10.00	10.00	0.00
9,150.00	29.97	359.38	9,125.54	-229.41	2.89	-229.42	10.00	10.00	0.00
9,200.00	34.97	359.38	9,167.71	-202.57	2.60	-202.59	10.00	10.00	0.00
9,250.00	39.97	359.38	9,207.37	-172.16	2.28	-172.17	10.00	10.00	0.00
9,300.00	44.97	359.38	9,244.24	-138.41	1.91	-138.42	10.00	10.00	0.00
9,350.00	49.97	359.38	9,278.03	-101.57	1.51	-101.59	10.00	10.00	0.00
9,400.00	54.97	359.38	9,308.47	-61.94	1.08	-61.94	10.00	10.00	0.00
9,450.00	59.97	359.38	9,335.35	-19.79	0.63	-19.80	10.00	10.00	0.00
9,498.94	64.87	359.38	9,358.00	23.57	0.16	23.57	10.00	10.00	0.00
First Bone Spring Sand									
9,500.00	64.97	359.38	9,358.45	24.53	0.15	24.53	10.00	10.00	0.00
9,550.00	69.97	359.38	9,377.60	70.70	-0.35	70.70	10.00	10.00	0.00
9,600.00	74.97	359.38	9,392.65	118.36	-0.87	118.36	10.00	10.00	0.00
9,650.00	79.97	359.38	9,403.49	167.15	-1.40	167.16	10.00	10.00	0.00
9,700.00	84.97	359.38	9,410.04	216.70	-1.93	216.71	10.00	10.00	0.00
9,750.00	89.97	359.38	9,412.24	266.63	-2.47	266.65	10.00	10.00	0.00
9,771.46	92.12	359.38	9,411.85	288.09	-2.71	288.10	10.00	10.00	0.00
EOC: 9771.46' MD, 288.10 VS, 9411.85' TVD									
9,772.81	92.12	359.38	9,411.80	289.44	-2.72	289.45	0.00	0.00	0.00
A06N01-FTP(1H)									
9,800.00	92.12	359.38	9,410.79	316.61	-3.01	316.62	0.00	0.00	0.00
9,900.00	92.12	359.38	9,407.09	416.53	-4.10	416.55	0.00	0.00	0.00
9,956.49	92.12	359.38	9,405.00	472.98	-4.71	473.00	0.00	0.00	0.00
A06N01-T01-473(1H)									
9,981.56	91.62	359.38	9,404.18	498.03	-4.98	498.06	2.00	-2.00	-0.01
10,000.00	91.62	359.38	9,403.66	516.47	-5.18	516.49	0.00	0.00	0.00
10,056.53	91.62	359.38	9,402.07	572.98	-5.79	573.00	0.00	0.00	0.00
A06N01-T02-573(1H)									
10,100.00	91.62	359.38	9,400.84	616.42	-6.26	616.45	0.00	0.00	0.00
10,200.00	91.62	359.38	9,398.01	716.38	-7.35	716.41	0.00	0.00	0.00
10,300.00	91.62	359.38	9,395.19	816.33	-8.43	816.37	0.00	0.00	0.00
10,400.00	91.62	359.38	9,392.36	916.28	-9.52	916.33	0.00	0.00	0.00
10,483.70	91.62	359.38	9,390.00	999.94	-10.43	1,000.00	0.00	0.00	0.00
A06N01-T03-1000(1H)									



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,506.47	91.16	359.38	9,389.45	1,022.70	-10.67	1,022.76	2.00	-2.00	0.00
10,600.00	91.16	359.38	9,387.55	1,116.21	-11.69	1,116.27	0.00	0.00	0.00
10,700.00	91.16	359.38	9,385.52	1,216.19	-12.77	1,216.25	0.00	0.00	0.00
10,800.00	91.16	359.38	9,383.49	1,316.16	-13.86	1,316.23	0.00	0.00	0.00
10,900.00	91.16	359.38	9,381.46	1,416.13	-14.94	1,416.21	0.00	0.00	0.00
10,983.80	91.16	359.38	9,379.76	1,499.91	-15.85	1,500.00	0.00	0.00	0.00
A06N01-T04-1500(1H)									
11,000.00	91.16	359.38	9,379.43	1,516.11	-16.03	1,516.19	0.00	0.00	0.00
11,100.00	91.16	359.38	9,377.40	1,616.08	-17.11	1,616.17	0.00	0.00	0.00
11,200.00	91.16	359.38	9,375.37	1,716.05	-18.20	1,716.15	0.00	0.00	0.00
11,300.00	91.16	359.38	9,373.34	1,816.03	-19.28	1,816.13	0.00	0.00	0.00
11,400.00	91.16	359.38	9,371.31	1,916.00	-20.37	1,916.11	0.00	0.00	0.00
11,483.92	91.16	359.38	9,369.61	1,999.90	-21.28	2,000.01	0.00	0.00	0.00
A06N01-T05-2000(1H)									
11,500.00	91.16	359.38	9,369.28	2,015.97	-21.45	2,016.09	0.00	0.00	0.00
11,600.00	91.16	359.38	9,367.25	2,115.95	-22.54	2,116.07	0.00	0.00	0.00
11,700.00	91.16	359.38	9,365.22	2,215.92	-23.62	2,216.05	0.00	0.00	0.00
11,800.00	91.16	359.38	9,363.19	2,315.89	-24.70	2,316.03	0.00	0.00	0.00
11,900.00	91.16	359.38	9,361.16	2,415.87	-25.79	2,416.01	0.00	0.00	0.00
11,984.04	91.16	359.38	9,359.45	2,499.88	-26.70	2,500.03	0.00	0.00	0.00
A06N01-T06-2500(1H)									
12,000.00	91.16	359.38	9,359.13	2,515.84	-26.87	2,515.99	0.00	0.00	0.00
12,100.00	91.16	359.38	9,357.10	2,615.82	-27.96	2,615.96	0.00	0.00	0.00
12,200.00	91.16	359.38	9,355.07	2,715.79	-29.04	2,715.94	0.00	0.00	0.00
12,300.00	91.16	359.38	9,353.04	2,815.76	-30.13	2,815.92	0.00	0.00	0.00
12,400.00	91.16	359.38	9,351.01	2,915.74	-31.21	2,915.90	0.00	0.00	0.00
12,484.16	91.16	359.38	9,349.30	2,999.87	-32.13	3,000.04	0.00	0.00	0.00
A06N01-T07-3000(1H)									
12,500.00	91.16	359.38	9,348.98	3,015.71	-32.30	3,015.88	0.00	0.00	0.00
12,600.00	91.16	359.38	9,346.95	3,115.68	-33.38	3,115.86	0.00	0.00	0.00
12,700.00	91.16	359.38	9,344.92	3,215.66	-34.47	3,215.84	0.00	0.00	0.00
12,800.00	91.16	359.38	9,342.89	3,315.63	-35.55	3,315.82	0.00	0.00	0.00
12,900.00	91.16	359.38	9,340.86	3,415.60	-36.64	3,415.80	0.00	0.00	0.00
12,984.25	91.16	359.38	9,339.15	3,499.83	-37.55	3,500.03	0.00	0.00	0.00
A06N01-T08-3500(1H)									
13,000.00	91.16	359.38	9,338.83	3,515.58	-37.72	3,515.78	0.00	0.00	0.00
13,100.00	91.16	359.38	9,336.80	3,615.55	-38.81	3,615.76	0.00	0.00	0.00
13,200.00	91.16	359.38	9,334.77	3,715.52	-39.89	3,715.74	0.00	0.00	0.00
13,300.00	91.16	359.38	9,332.74	3,815.50	-40.98	3,815.72	0.00	0.00	0.00
13,400.00	91.16	359.38	9,330.71	3,915.47	-42.06	3,915.70	0.00	0.00	0.00
13,484.33	91.16	359.38	9,329.00	3,999.78	-42.98	4,000.01	0.00	0.00	0.00
A06N01-T09-4000(1H)									
13,501.64	91.51	359.38	9,328.60	4,017.09	-43.16	4,017.32	2.00	2.00	0.00
13,600.00	91.51	359.38	9,326.01	4,115.40	-44.23	4,115.64	0.00	0.00	0.00
13,700.00	91.51	359.38	9,323.37	4,215.36	-45.32	4,215.61	0.00	0.00	0.00
13,800.00	91.51	359.38	9,320.74	4,315.32	-46.40	4,315.57	0.00	0.00	0.00
13,900.00	91.51	359.38	9,318.10	4,415.28	-47.49	4,415.54	0.00	0.00	0.00
13,984.46	91.51	359.38	9,315.88	4,499.71	-48.40	4,499.97	0.00	0.00	0.00
A06N01-T10-4500(1H)									
14,000.00	91.51	359.38	9,315.47	4,515.24	-48.57	4,515.50	0.00	0.00	0.00
14,100.00	91.51	359.38	9,312.83	4,615.20	-49.66	4,615.47	0.00	0.00	0.00
14,200.00	91.51	359.38	9,310.20	4,715.16	-50.74	4,715.43	0.00	0.00	0.00
14,300.00	91.51	359.38	9,307.57	4,815.12	-51.83	4,815.40	0.00	0.00	0.00



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,400.00	91.51	359.38	9,304.93	4,915.08	-52.91	4,915.36	0.00	0.00	0.00
14,484.60	91.51	359.38	9,302.70	4,999.64	-53.83	4,999.93	0.00	0.00	0.00
A06N01-T11-5000(1H)									
14,500.00	91.51	359.38	9,302.30	5,015.04	-54.00	5,015.33	0.00	0.00	0.00
14,600.00	91.51	359.38	9,299.66	5,115.00	-55.08	5,115.29	0.00	0.00	0.00
14,700.00	91.51	359.38	9,297.03	5,214.96	-56.17	5,215.26	0.00	0.00	0.00
14,800.00	91.51	359.38	9,294.40	5,314.92	-57.25	5,315.22	0.00	0.00	0.00
14,900.00	91.51	359.38	9,291.76	5,414.88	-58.34	5,415.19	0.00	0.00	0.00
14,984.82	91.51	359.38	9,289.53	5,499.66	-59.26	5,499.98	0.00	0.00	0.00
A06N01-T12-5500(1H)									
15,000.00	91.51	359.38	9,289.13	5,514.83	-59.42	5,515.16	0.00	0.00	0.00
15,100.00	91.51	359.38	9,286.49	5,614.79	-60.51	5,615.12	0.00	0.00	0.00
15,200.00	91.51	359.38	9,283.86	5,714.75	-61.59	5,715.09	0.00	0.00	0.00
15,300.00	91.51	359.38	9,281.22	5,814.71	-62.68	5,815.05	0.00	0.00	0.00
15,400.00	91.51	359.38	9,278.59	5,914.67	-63.76	5,915.02	0.00	0.00	0.00
15,485.03	91.51	359.38	9,276.35	5,999.66	-64.68	6,000.01	0.00	0.00	0.00
A06N01-T13-6000(1H)									
15,500.00	91.51	359.38	9,275.96	6,014.63	-64.85	6,014.98	0.00	0.00	0.00
15,600.00	91.51	359.38	9,273.32	6,114.59	-65.93	6,114.95	0.00	0.00	0.00
15,700.00	91.51	359.38	9,270.69	6,214.55	-67.02	6,214.91	0.00	0.00	0.00
15,800.00	91.51	359.38	9,268.05	6,314.51	-68.10	6,314.88	0.00	0.00	0.00
15,900.00	91.51	359.38	9,265.42	6,414.47	-69.19	6,414.84	0.00	0.00	0.00
15,985.19	91.51	359.38	9,263.18	6,499.63	-70.11	6,500.01	0.00	0.00	0.00
A06N01-T14-6500(1H)									
16,000.00	91.51	359.38	9,262.79	6,514.43	-70.27	6,514.81	0.00	0.00	0.00
16,100.00	91.51	359.38	9,260.15	6,614.39	-71.36	6,614.77	0.00	0.00	0.00
16,200.00	91.51	359.38	9,257.52	6,714.35	-72.44	6,714.74	0.00	0.00	0.00
16,300.00	91.51	359.38	9,254.88	6,814.31	-73.52	6,814.70	0.00	0.00	0.00
16,400.00	91.51	359.38	9,252.25	6,914.27	-74.61	6,914.67	0.00	0.00	0.00
16,485.35	91.51	359.38	9,250.00	6,999.59	-75.54	6,999.99	0.00	0.00	0.00
A06N01-T15-7000(1H)									
16,490.08	91.60	359.38	9,249.87	7,004.31	-75.59	7,004.72	2.00	2.00	0.00
16,500.00	91.60	359.38	9,249.59	7,014.23	-75.69	7,014.63	0.00	0.00	0.00
16,600.00	91.60	359.38	9,246.80	7,114.18	-76.78	7,114.59	0.00	0.00	0.00
16,700.00	91.60	359.38	9,244.00	7,214.14	-77.86	7,214.56	0.00	0.00	0.00
16,800.00	91.60	359.38	9,241.20	7,314.09	-78.95	7,314.52	0.00	0.00	0.00
16,900.00	91.60	359.38	9,238.40	7,414.05	-80.03	7,414.48	0.00	0.00	0.00
16,985.45	91.60	359.38	9,236.01	7,499.45	-80.96	7,499.89	0.00	0.00	0.00
A06N01-T16-7500(1H)									
17,000.00	91.60	359.38	9,235.60	7,514.00	-81.12	7,514.44	0.00	0.00	0.00
17,100.00	91.60	359.38	9,232.80	7,613.96	-82.20	7,614.40	0.00	0.00	0.00
17,200.00	91.60	359.38	9,230.00	7,713.91	-83.29	7,714.36	0.00	0.00	0.00
17,300.00	91.60	359.38	9,227.20	7,813.87	-84.37	7,814.32	0.00	0.00	0.00
17,400.00	91.60	359.38	9,224.40	7,913.82	-85.46	7,914.28	0.00	0.00	0.00
17,485.53	91.60	359.38	9,222.01	7,999.31	-86.38	7,999.78	0.00	0.00	0.00
A06N01-T17-8000(1H)									
17,500.00	91.60	359.38	9,221.60	8,013.77	-86.54	8,014.24	0.00	0.00	0.00
17,600.00	91.60	359.38	9,218.80	8,113.73	-87.63	8,114.20	0.00	0.00	0.00
17,700.00	91.60	359.38	9,216.01	8,213.68	-88.71	8,214.16	0.00	0.00	0.00
17,800.00	91.60	359.38	9,213.21	8,313.64	-89.79	8,314.12	0.00	0.00	0.00
17,900.00	91.60	359.38	9,210.41	8,413.59	-90.88	8,414.09	0.00	0.00	0.00
17,985.84	91.60	359.38	9,208.00	8,499.39	-91.81	8,499.89	0.00	0.00	0.00
A06N01-T18-8500(1H)									



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
18,000.00	91.60	359.38	9,207.61	8,513.55	-91.96	8,514.05	0.00	0.00	0.00
18,100.00	91.60	359.38	9,204.81	8,613.50	-93.05	8,614.01	0.00	0.00	0.00
18,200.00	91.60	359.38	9,202.01	8,713.46	-94.13	8,713.97	0.00	0.00	0.00
18,300.00	91.60	359.38	9,199.21	8,813.41	-95.22	8,813.93	0.00	0.00	0.00
18,400.00	91.60	359.38	9,196.41	8,913.37	-96.30	8,913.89	0.00	0.00	0.00
18,486.15	91.60	359.38	9,194.00	8,999.48	-97.24	9,000.00	0.00	0.00	0.00
A06N01-T19-9000(1H)									
18,500.00	91.88	359.38	9,193.58	9,013.32	-97.39	9,013.85	2.00	2.00	0.00
18,593.07	93.74	359.38	9,189.01	9,106.27	-98.39	9,106.80	2.00	2.00	0.00
18,600.00	93.74	359.38	9,188.56	9,113.19	-98.47	9,113.72	0.00	0.00	0.00
18,700.00	93.74	359.38	9,182.03	9,212.97	-99.55	9,213.51	0.00	0.00	0.00
18,800.00	93.74	359.38	9,175.51	9,312.75	-100.64	9,313.29	0.00	0.00	0.00
18,900.00	93.74	359.38	9,168.98	9,412.53	-101.72	9,413.08	0.00	0.00	0.00
18,987.03	93.74	359.38	9,163.30	9,499.37	-102.66	9,499.92	0.00	0.00	0.00
A06N01-T20-9500(1H)									
19,000.00	93.74	359.38	9,162.45	9,512.31	-102.80	9,512.87	0.00	0.00	0.00
19,100.00	93.74	359.38	9,155.93	9,612.09	-103.89	9,612.65	0.00	0.00	0.00
19,200.00	93.74	359.38	9,149.40	9,711.87	-104.97	9,712.44	0.00	0.00	0.00
19,300.00	93.74	359.38	9,142.87	9,811.65	-106.05	9,812.23	0.00	0.00	0.00
19,400.00	93.74	359.38	9,136.34	9,911.43	-107.13	9,912.01	0.00	0.00	0.00
19,487.89	93.74	359.38	9,130.61	9,999.13	-108.09	9,999.71	0.00	0.00	0.00
A06N01-T21-10000(1H)									
19,500.00	93.74	359.38	9,129.82	10,011.21	-108.22	10,011.80	0.00	0.00	0.00
19,600.00	93.74	359.38	9,123.29	10,111.00	-109.30	10,111.59	0.00	0.00	0.00
19,700.00	93.74	359.38	9,116.76	10,210.78	-110.38	10,211.37	0.00	0.00	0.00
19,800.00	93.74	359.38	9,110.24	10,310.56	-111.47	10,311.16	0.00	0.00	0.00
19,900.00	93.74	359.38	9,103.71	10,410.34	-112.55	10,410.95	0.00	0.00	0.00
20,000.00	93.74	359.38	9,097.18	10,510.12	-113.63	10,510.73	0.00	0.00	0.00
20,100.00	93.74	359.38	9,090.66	10,609.90	-114.72	10,610.52	0.00	0.00	0.00
20,139.68	93.74	359.38	9,088.07	10,649.49	-115.15	10,650.12	0.00	0.00	0.00
TD: 20140.68' MD, 10651.11 VS, 9088.00' TVD									
20,140.68	93.74	359.38	9,088.00	10,650.49	-115.16	10,651.11	0.00	0.00	0.00
A06N01-PBHL(1H)									



Planning Report

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Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
A06N01-EON(1H)	0.00	0.00	8,600.00	-306.04	3.72	612,539.43	803,697.09	32.68101725	-103.48062984
- plan hits target center									
- Point									
A06N01-PBHL(1H)	0.00	0.00	9,088.00	10,650.49	-115.16	623,495.96	803,578.21	32.71113274	-103.48072994
- plan hits target center									
- Point									
A06N01-T21-10000(1H)	0.00	0.00	9,135.00	9,999.42	-108.10	622,844.88	803,585.27	32.70934318	-103.48072401
- plan misses target center by 4.40usft at 19487.89usft MD (9130.61 TVD, 9999.13 N, -108.09 E)									
- Point									
A06N01-T20-9500(1H)	0.00	0.00	9,164.50	9,499.45	-102.67	622,344.91	803,590.70	32.70796894	-103.48071943
- plan misses target center by 1.20usft at 18987.03usft MD (9163.30 TVD, 9499.37 N, -102.66 E)									
- Point									
A06N01-T19-9000(1H)	0.00	0.00	9,194.00	8,999.48	-97.24	621,844.94	803,596.13	32.70659471	-103.48071485
- plan hits target center									
- Point									
A06N01-T18-8500(1H)	0.00	0.00	9,212.00	8,499.51	-91.82	621,344.97	803,601.55	32.70522048	-103.48071030
- plan misses target center by 4.00usft at 17985.84usft MD (9208.00 TVD, 8499.39 N, -91.81 E)									
- Point									
A06N01-T17-8000(1H)	0.00	0.00	9,230.00	7,999.54	-86.39	620,845.00	803,606.98	32.70384624	-103.48070571
- plan misses target center by 8.00usft at 17485.53usft MD (9222.01 TVD, 7999.31 N, -86.38 E)									
- Point									
A06N01-T16-7500(1H)	0.00	0.00	9,240.00	7,499.57	-80.97	620,345.03	803,612.40	32.70247201	-103.48070116
- plan misses target center by 4.00usft at 16985.45usft MD (9236.01 TVD, 7499.45 N, -80.96 E)									
- Point									
A06N01-T15-7000(1H)	0.00	0.00	9,250.00	6,999.59	-75.54	619,845.05	803,617.83	32.70109775	-103.48069658
- plan hits target center									
- Point									
A06N01-T14-6500(1H)	0.00	0.00	9,263.00	6,499.63	-70.11	619,345.09	803,623.26	32.69972354	-103.48069200
- plan misses target center by 0.18usft at 15985.19usft MD (9263.18 TVD, 6499.63 N, -70.11 E)									
- Point									
A06N01-T13-6000(1H)	0.00	0.00	9,276.00	5,999.66	-64.69	618,845.12	803,628.68	32.69834931	-103.48068744
- plan misses target center by 0.35usft at 15485.03usft MD (9276.35 TVD, 5999.66 N, -64.68 E)									
- Point									
A06N01-T12-5500(1H)	0.00	0.00	9,290.50	5,499.69	-59.26	618,345.15	803,634.11	32.69697507	-103.48068286
- plan misses target center by 0.97usft at 14984.82usft MD (9289.53 TVD, 5499.66 N, -59.26 E)									
- Point									
A06N01-T11-5000(1H)	0.00	0.00	9,305.00	4,999.71	-53.84	617,845.17	803,639.53	32.69560081	-103.48067831
- plan misses target center by 2.30usft at 14484.60usft MD (9302.70 TVD, 4999.64 N, -53.83 E)									
- Point									
A06N01-T10-4500(1H)	0.00	0.00	9,317.00	4,499.74	-48.41	617,345.20	803,644.96	32.69422658	-103.48067372
- plan misses target center by 1.12usft at 13984.46usft MD (9315.88 TVD, 4499.71 N, -48.40 E)									
- Point									
A06N01-T09-4000(1H)	0.00	0.00	9,329.00	3,999.78	-42.98	616,845.24	803,650.39	32.69285237	-103.48066914
- plan hits target center									
- Point									
A06N01-T08-3500(1H)	0.00	0.00	9,338.00	3,499.81	-37.56	616,345.27	803,655.81	32.69147813	-103.48066458
- plan misses target center by 1.15usft at 12984.25usft MD (9339.15 TVD, 3499.83 N, -37.55 E)									
- Point									
A06N01-T07-3000(1H)	0.00	0.00	9,347.00	2,999.83	-32.13	615,845.29	803,661.24	32.69010387	-103.48066000
- plan misses target center by 2.30usft at 12484.16usft MD (9349.30 TVD, 2999.87 N, -32.13 E)									
- Point									



Planning Report

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Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

A06N01-T06-2500(1H)	0.00	0.00	9,358.00	2,499.86	-26.71	615,345.32	803,666.66	32.68872963	-103.48065544
- plan misses target center by 1.45usft at 11984.04usft MD (9359.45 TVD, 2499.88 N, -26.70 E)									
- Point									
A06N01-T05-2000(1H)	0.00	0.00	9,369.00	1,999.89	-21.28	614,845.35	803,672.09	32.68735540	-103.48065086
- plan misses target center by 0.61usft at 11483.92usft MD (9369.61 TVD, 1999.90 N, -21.28 E)									
- Point									
A06N01-T04-1500(1H)	0.00	0.00	9,380.00	1,499.92	-15.85	614,345.39	803,677.51	32.68598117	-103.48064629
- plan misses target center by 0.24usft at 10983.80usft MD (9379.76 TVD, 1499.91 N, -15.85 E)									
- Point									
A06N01-T03-1000(1H)	0.00	0.00	9,390.00	999.94	-10.43	613,845.41	803,682.94	32.68460691	-103.48064171
- plan hits target center									
- Point									
A06N01-T02-573(1H)	0.00	0.00	9,402.00	572.97	-5.79	613,418.44	803,687.57	32.68343333	-103.48063781
- plan misses target center by 0.07usft at 10056.53usft MD (9402.07 TVD, 572.98 N, -5.79 E)									
- Point									
A06N01-T01-473(1H)	0.00	0.00	9,405.00	472.98	-4.71	613,318.45	803,688.66	32.68315848	-103.48063689
- plan hits target center									
- Point									
A06N01-FTP(1H)	0.00	0.00	9,425.00	289.93	-2.74	613,135.40	803,690.62	32.68265534	-103.48063528
- plan misses target center by 13.21usft at 9772.81usft MD (9411.80 TVD, 289.44 N, -2.72 E)									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,838.00	1,838.00	Surface	13-3/8	17-1/2	
4,024.00	4,024.00	Intermediate	9-5/8	12-1/4	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,828.00	1,828.00	Rustler				
1,907.00	1,907.00	Salt				
3,201.00	3,201.00	Base of Salt				
3,413.00	3,413.00	Yates				
3,882.00	3,882.00	Seven Rivers				
3,888.00	3,888.00	Quaternary				
4,638.80	4,638.00	Queen				
5,267.47	5,265.00	Capitan Reef				
6,079.62	6,075.00	Delaware Cherry Canyon				
7,730.01	7,721.00	Bone Spring Lime				
8,821.98	8,811.00	First Bone Spring Carbonate				
9,097.59	9,079.00	Avalon Black				
9,498.94	9,358.00	First Bone Spring Sand				



Planning Report

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Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
8,850.26	8,839.28	-306.04	3.72	KOP: 8850.26' MD, -306.06 VS, 8839.28' TVD	
9,771.46	9,411.85	288.09	-2.71	EOC: 9771.46' MD, 288.10 VS, 9411.85' TVD	
20,139.68	9,088.07	10,649.49	-115.15	TD: 20140.68' MD, 10651.11 VS, 9088.00' TVD	

Foxtail 193505 #1H

Permit Application

Well Design Engineering

Hole Section Summary

Hole Section	Hole OD	Casing OD	Casing #/Grade	Setting Depth	Sacks of Cement	TOC	Mud Type	Mud Weight
Surface	17.5"	13.375"	54.5# J-55	1878'	1580	Surface	FW - WBM	8.4-8.6
Intermediate	12.25"	9.625"	40# J-55	3982'	1080	Surface	Brine - WBM	9.9-10.1
Production	8.75"	5.5"	20# CYHP110	20,140'	2700	3482	Cut Brine - WBM	9.5-9.7

BOPE Summary

BOPE	Working Pressure	Test Pressure	Manufacturer
Annular	3000	3000	Shaffer
Single Ram	5000	5000	Shaffer
Double Ram	5000	5000	Shaffer



Catena Resources Operating, LLC

Lea County NM N83-NM-EZ

A06 Foxtail

Foxtail 19-35-05 #1H

1H

Plan: Plan #1

Standard Planning Report

07 January, 2020



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Project	Lea County NM N83-NM-EZ		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site		A06 Foxtail			
Site Position:		Northing:	612,845.47 usft	Latitude:	32.68185844
From:	Map	Easting:	803,693.36 usft	Longitude:	-103.48063395
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.46 °

Well	Foxtail 19-35-05 #1H					
Well Position	+N/-S	0.00 usft	Northing:	612,845.47 usft	Latitude:	32.68185844
	+E/-W	0.00 usft	Easting:	803,693.36 usft	Longitude:	-103.48063395
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	3,863.00 usft

Wellbore	1H				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	1/7/2020	6.67	60.46	47,950.80410962

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	359.38

Plan Survey Tool Program	Date	1/7/2020		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	20,140.40	Plan #1 (1H)	MWD
				MWD - Standard



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,408.83	4.18	179.30	4,408.65	-7.61	0.09	2.00	2.00	0.00	179.30	
8,402.14	4.18	179.30	8,391.35	-298.43	3.63	0.00	0.00	0.00	0.00	
8,610.98	0.00	0.00	8,600.00	-306.04	3.72	2.00	-2.00	0.00	180.00	A06N01-EON(1H)
8,850.26	0.00	0.00	8,839.28	-306.04	3.72	0.00	0.00	0.00	0.00	
9,771.46	92.12	359.38	9,411.85	288.08	-2.71	10.00	10.00	0.00	359.38	
9,956.49	92.12	359.38	9,405.00	472.98	-4.71	0.00	0.00	0.00	0.00	
9,981.56	91.62	359.38	9,404.18	498.03	-4.98	2.00	-2.00	-0.01	-179.78	
10,483.70	91.62	359.38	9,390.00	999.94	-10.43	0.00	0.00	0.00	0.00	A06N01-T03-1000(1H)
10,506.47	91.16	359.38	9,389.45	1,022.70	-10.67	2.00	-2.00	0.00	179.97	
13,484.33	91.16	359.38	9,329.00	3,999.78	-42.98	0.00	0.00	0.00	0.00	A06N01-T09-4000(1H)
13,501.64	91.51	359.38	9,328.60	4,017.09	-43.16	2.00	2.00	0.00	-0.03	
16,485.35	91.51	359.38	9,250.00	6,999.59	-75.54	0.00	0.00	0.00	0.00	A06N01-T15-7000(1H)
16,490.08	91.60	359.38	9,249.87	7,004.31	-75.59	2.00	2.00	0.00	0.12	
18,486.15	91.60	359.38	9,194.00	8,999.48	-97.24	0.00	0.00	0.00	0.00	A06N01-T19-9000(1H)
18,593.07	93.74	359.38	9,189.01	9,106.27	-98.39	2.00	2.00	0.00	-0.01	
20,140.68	93.74	359.38	9,088.00	10,650.49	-115.16	0.00	0.00	0.00	0.00	A06N01-PBHL(1H)



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,828.00	0.00	0.00	1,828.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
1,838.00	0.00	0.00	1,838.00	0.00	0.00	0.00	0.00	0.00	0.00
Surface									
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,907.00	0.00	0.00	1,907.00	0.00	0.00	0.00	0.00	0.00	0.00
Salt									
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,201.00	0.00	0.00	3,201.00	0.00	0.00	0.00	0.00	0.00	0.00
Base of Salt									
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,413.00	0.00	0.00	3,413.00	0.00	0.00	0.00	0.00	0.00	0.00
Yates									
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,882.00	0.00	0.00	3,882.00	0.00	0.00	0.00	0.00	0.00	0.00
Seven Rivers									
3,888.00	0.00	0.00	3,888.00	0.00	0.00	0.00	0.00	0.00	0.00
Quaternary									



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,024.00	0.00	0.00	4,024.00	0.00	0.00	0.00	0.00	0.00	0.00	
Intermediate										
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,300.00	2.00	179.30	4,299.98	-1.75	0.02	-1.75	2.00	2.00	0.00	
4,408.83	4.18	179.30	4,408.65	-7.61	0.09	-7.61	2.00	2.00	0.00	
4,500.00	4.18	179.30	4,499.57	-14.25	0.17	-14.25	0.00	0.00	0.00	
4,600.00	4.18	179.30	4,599.31	-21.53	0.26	-21.53	0.00	0.00	0.00	
4,638.80	4.18	179.30	4,638.00	-24.36	0.30	-24.36	0.00	0.00	0.00	
Queen										
4,700.00	4.18	179.30	4,699.04	-28.81	0.35	-28.81	0.00	0.00	0.00	
4,800.00	4.18	179.30	4,798.78	-36.10	0.44	-36.10	0.00	0.00	0.00	
4,900.00	4.18	179.30	4,898.51	-43.38	0.53	-43.38	0.00	0.00	0.00	
5,000.00	4.18	179.30	4,998.25	-50.66	0.62	-50.66	0.00	0.00	0.00	
5,100.00	4.18	179.30	5,097.98	-57.94	0.71	-57.95	0.00	0.00	0.00	
5,200.00	4.18	179.30	5,197.71	-65.23	0.79	-65.23	0.00	0.00	0.00	
5,267.47	4.18	179.30	5,265.00	-70.14	0.85	-70.14	0.00	0.00	0.00	
Capitan Reef										
5,300.00	4.18	179.30	5,297.45	-72.51	0.88	-72.51	0.00	0.00	0.00	
5,400.00	4.18	179.30	5,397.18	-79.79	0.97	-79.80	0.00	0.00	0.00	
5,500.00	4.18	179.30	5,496.92	-87.07	1.06	-87.08	0.00	0.00	0.00	
5,600.00	4.18	179.30	5,596.65	-94.36	1.15	-94.36	0.00	0.00	0.00	
5,700.00	4.18	179.30	5,696.39	-101.64	1.24	-101.65	0.00	0.00	0.00	
5,800.00	4.18	179.30	5,796.12	-108.92	1.33	-108.93	0.00	0.00	0.00	
5,900.00	4.18	179.30	5,895.86	-116.20	1.41	-116.21	0.00	0.00	0.00	
6,000.00	4.18	179.30	5,995.59	-123.49	1.50	-123.50	0.00	0.00	0.00	
6,079.62	4.18	179.30	6,075.00	-129.29	1.57	-129.30	0.00	0.00	0.00	
Delaware Cherry Canyon										
6,100.00	4.18	179.30	6,095.32	-130.77	1.59	-130.78	0.00	0.00	0.00	
6,200.00	4.18	179.30	6,195.06	-138.05	1.68	-138.06	0.00	0.00	0.00	
6,300.00	4.18	179.30	6,294.79	-145.34	1.77	-145.35	0.00	0.00	0.00	
6,400.00	4.18	179.30	6,394.53	-152.62	1.86	-152.63	0.00	0.00	0.00	
6,500.00	4.18	179.30	6,494.26	-159.90	1.95	-159.91	0.00	0.00	0.00	
6,600.00	4.18	179.30	6,594.00	-167.18	2.03	-167.20	0.00	0.00	0.00	
6,700.00	4.18	179.30	6,693.73	-174.47	2.12	-174.48	0.00	0.00	0.00	
6,800.00	4.18	179.30	6,793.46	-181.75	2.21	-181.76	0.00	0.00	0.00	
6,900.00	4.18	179.30	6,893.20	-189.03	2.30	-189.05	0.00	0.00	0.00	
7,000.00	4.18	179.30	6,992.93	-196.31	2.39	-196.33	0.00	0.00	0.00	
7,100.00	4.18	179.30	7,092.67	-203.60	2.48	-203.61	0.00	0.00	0.00	
7,200.00	4.18	179.30	7,192.40	-210.88	2.57	-210.89	0.00	0.00	0.00	
7,300.00	4.18	179.30	7,292.14	-218.16	2.65	-218.18	0.00	0.00	0.00	
7,400.00	4.18	179.30	7,391.87	-225.44	2.74	-225.46	0.00	0.00	0.00	
7,500.00	4.18	179.30	7,491.61	-232.73	2.83	-232.74	0.00	0.00	0.00	
7,600.00	4.18	179.30	7,591.34	-240.01	2.92	-240.03	0.00	0.00	0.00	
7,700.00	4.18	179.30	7,691.07	-247.29	3.01	-247.31	0.00	0.00	0.00	
7,730.01	4.18	179.30	7,721.00	-249.48	3.04	-249.50	0.00	0.00	0.00	
Bone Spring Lime										
7,800.00	4.18	179.30	7,790.81	-254.58	3.10	-254.59	0.00	0.00	0.00	
7,900.00	4.18	179.30	7,890.54	-261.86	3.19	-261.88	0.00	0.00	0.00	
8,000.00	4.18	179.30	7,990.28	-269.14	3.28	-269.16	0.00	0.00	0.00	
8,100.00	4.18	179.30	8,090.01	-276.42	3.36	-276.44	0.00	0.00	0.00	
8,200.00	4.18	179.30	8,189.75	-283.71	3.45	-283.73	0.00	0.00	0.00	



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,300.00	4.18	179.30	8,289.48	-290.99	3.54	-291.01	0.00	0.00	0.00
8,402.14	4.18	179.30	8,391.35	-298.43	3.63	-298.45	0.00	0.00	0.00
8,500.00	2.22	179.30	8,489.05	-303.89	3.70	-303.91	2.00	-2.00	0.00
8,600.00	0.22	179.30	8,589.02	-306.01	3.72	-306.04	2.00	-2.00	0.00
8,610.98	0.00	0.00	8,600.00	-306.04	3.72	-306.06	2.00	-2.00	0.00
A06N01-EON(1H)									
8,700.00	0.00	0.00	8,689.02	-306.04	3.72	-306.06	0.00	0.00	0.00
8,800.00	0.00	0.00	8,789.02	-306.04	3.72	-306.06	0.00	0.00	0.00
8,821.98	0.00	0.00	8,811.00	-306.04	3.72	-306.06	0.00	0.00	0.00
First Bone Spring Carbonate									
8,850.26	0.00	0.00	8,839.28	-306.04	3.72	-306.06	0.00	0.00	0.00
KOP: 8850.26' MD, -306.06 VS, 8839.28' TVD									
8,900.00	4.97	359.38	8,888.96	-303.88	3.70	-303.90	10.00	10.00	0.00
8,950.00	9.97	359.38	8,938.52	-297.38	3.63	-297.40	10.00	10.00	0.00
9,000.00	14.97	359.38	8,987.33	-286.58	3.51	-286.60	10.00	10.00	0.00
9,050.00	19.97	359.38	9,035.00	-271.57	3.35	-271.59	10.00	10.00	0.00
9,097.59	24.73	359.38	9,079.00	-253.48	3.16	-253.50	10.00	10.00	0.00
Avalon Black									
9,100.00	24.97	359.38	9,081.19	-252.46	3.14	-252.48	10.00	10.00	0.00
9,150.00	29.97	359.38	9,125.54	-229.41	2.89	-229.42	10.00	10.00	0.00
9,200.00	34.97	359.38	9,167.71	-202.57	2.60	-202.59	10.00	10.00	0.00
9,250.00	39.97	359.38	9,207.37	-172.16	2.28	-172.17	10.00	10.00	0.00
9,300.00	44.97	359.38	9,244.24	-138.41	1.91	-138.42	10.00	10.00	0.00
9,350.00	49.97	359.38	9,278.03	-101.57	1.51	-101.59	10.00	10.00	0.00
9,400.00	54.97	359.38	9,308.47	-61.94	1.08	-61.94	10.00	10.00	0.00
9,450.00	59.97	359.38	9,335.35	-19.79	0.63	-19.80	10.00	10.00	0.00
9,498.94	64.87	359.38	9,358.00	23.57	0.16	23.57	10.00	10.00	0.00
First Bone Spring Sand									
9,500.00	64.97	359.38	9,358.45	24.53	0.15	24.53	10.00	10.00	0.00
9,550.00	69.97	359.38	9,377.60	70.70	-0.35	70.70	10.00	10.00	0.00
9,600.00	74.97	359.38	9,392.65	118.36	-0.87	118.36	10.00	10.00	0.00
9,650.00	79.97	359.38	9,403.49	167.15	-1.40	167.16	10.00	10.00	0.00
9,700.00	84.97	359.38	9,410.04	216.70	-1.93	216.71	10.00	10.00	0.00
9,750.00	89.97	359.38	9,412.24	266.63	-2.47	266.65	10.00	10.00	0.00
9,771.46	92.12	359.38	9,411.85	288.09	-2.71	288.10	10.00	10.00	0.00
EOC: 9771.46' MD, 288.10 VS, 9411.85' TVD									
9,772.81	92.12	359.38	9,411.80	289.44	-2.72	289.45	0.00	0.00	0.00
A06N01-FTP(1H)									
9,800.00	92.12	359.38	9,410.79	316.61	-3.01	316.62	0.00	0.00	0.00
9,900.00	92.12	359.38	9,407.09	416.53	-4.10	416.55	0.00	0.00	0.00
9,956.49	92.12	359.38	9,405.00	472.98	-4.71	473.00	0.00	0.00	0.00
A06N01-T01-473(1H)									
9,981.56	91.62	359.38	9,404.18	498.03	-4.98	498.06	2.00	-2.00	-0.01
10,000.00	91.62	359.38	9,403.66	516.47	-5.18	516.49	0.00	0.00	0.00
10,056.53	91.62	359.38	9,402.07	572.98	-5.79	573.00	0.00	0.00	0.00
A06N01-T02-573(1H)									
10,100.00	91.62	359.38	9,400.84	616.42	-6.26	616.45	0.00	0.00	0.00
10,200.00	91.62	359.38	9,398.01	716.38	-7.35	716.41	0.00	0.00	0.00
10,300.00	91.62	359.38	9,395.19	816.33	-8.43	816.37	0.00	0.00	0.00
10,400.00	91.62	359.38	9,392.36	916.28	-9.52	916.33	0.00	0.00	0.00
10,483.70	91.62	359.38	9,390.00	999.94	-10.43	1,000.00	0.00	0.00	0.00
A06N01-T03-1000(1H)									



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,506.47	91.16	359.38	9,389.45	1,022.70	-10.67	1,022.76	2.00	-2.00	0.00
10,600.00	91.16	359.38	9,387.55	1,116.21	-11.69	1,116.27	0.00	0.00	0.00
10,700.00	91.16	359.38	9,385.52	1,216.19	-12.77	1,216.25	0.00	0.00	0.00
10,800.00	91.16	359.38	9,383.49	1,316.16	-13.86	1,316.23	0.00	0.00	0.00
10,900.00	91.16	359.38	9,381.46	1,416.13	-14.94	1,416.21	0.00	0.00	0.00
10,983.80	91.16	359.38	9,379.76	1,499.91	-15.85	1,500.00	0.00	0.00	0.00
A06N01-T04-1500(1H)									
11,000.00	91.16	359.38	9,379.43	1,516.11	-16.03	1,516.19	0.00	0.00	0.00
11,100.00	91.16	359.38	9,377.40	1,616.08	-17.11	1,616.17	0.00	0.00	0.00
11,200.00	91.16	359.38	9,375.37	1,716.05	-18.20	1,716.15	0.00	0.00	0.00
11,300.00	91.16	359.38	9,373.34	1,816.03	-19.28	1,816.13	0.00	0.00	0.00
11,400.00	91.16	359.38	9,371.31	1,916.00	-20.37	1,916.11	0.00	0.00	0.00
11,483.92	91.16	359.38	9,369.61	1,999.90	-21.28	2,000.01	0.00	0.00	0.00
A06N01-T05-2000(1H)									
11,500.00	91.16	359.38	9,369.28	2,015.97	-21.45	2,016.09	0.00	0.00	0.00
11,600.00	91.16	359.38	9,367.25	2,115.95	-22.54	2,116.07	0.00	0.00	0.00
11,700.00	91.16	359.38	9,365.22	2,215.92	-23.62	2,216.05	0.00	0.00	0.00
11,800.00	91.16	359.38	9,363.19	2,315.89	-24.70	2,316.03	0.00	0.00	0.00
11,900.00	91.16	359.38	9,361.16	2,415.87	-25.79	2,416.01	0.00	0.00	0.00
11,984.04	91.16	359.38	9,359.45	2,499.88	-26.70	2,500.03	0.00	0.00	0.00
A06N01-T06-2500(1H)									
12,000.00	91.16	359.38	9,359.13	2,515.84	-26.87	2,515.99	0.00	0.00	0.00
12,100.00	91.16	359.38	9,357.10	2,615.82	-27.96	2,615.96	0.00	0.00	0.00
12,200.00	91.16	359.38	9,355.07	2,715.79	-29.04	2,715.94	0.00	0.00	0.00
12,300.00	91.16	359.38	9,353.04	2,815.76	-30.13	2,815.92	0.00	0.00	0.00
12,400.00	91.16	359.38	9,351.01	2,915.74	-31.21	2,915.90	0.00	0.00	0.00
12,484.16	91.16	359.38	9,349.30	2,999.87	-32.13	3,000.04	0.00	0.00	0.00
A06N01-T07-3000(1H)									
12,500.00	91.16	359.38	9,348.98	3,015.71	-32.30	3,015.88	0.00	0.00	0.00
12,600.00	91.16	359.38	9,346.95	3,115.68	-33.38	3,115.86	0.00	0.00	0.00
12,700.00	91.16	359.38	9,344.92	3,215.66	-34.47	3,215.84	0.00	0.00	0.00
12,800.00	91.16	359.38	9,342.89	3,315.63	-35.55	3,315.82	0.00	0.00	0.00
12,900.00	91.16	359.38	9,340.86	3,415.60	-36.64	3,415.80	0.00	0.00	0.00
12,984.25	91.16	359.38	9,339.15	3,499.83	-37.55	3,500.03	0.00	0.00	0.00
A06N01-T08-3500(1H)									
13,000.00	91.16	359.38	9,338.83	3,515.58	-37.72	3,515.78	0.00	0.00	0.00
13,100.00	91.16	359.38	9,336.80	3,615.55	-38.81	3,615.76	0.00	0.00	0.00
13,200.00	91.16	359.38	9,334.77	3,715.52	-39.89	3,715.74	0.00	0.00	0.00
13,300.00	91.16	359.38	9,332.74	3,815.50	-40.98	3,815.72	0.00	0.00	0.00
13,400.00	91.16	359.38	9,330.71	3,915.47	-42.06	3,915.70	0.00	0.00	0.00
13,484.33	91.16	359.38	9,329.00	3,999.78	-42.98	4,000.01	0.00	0.00	0.00
A06N01-T09-4000(1H)									
13,501.64	91.51	359.38	9,328.60	4,017.09	-43.16	4,017.32	2.00	2.00	0.00
13,600.00	91.51	359.38	9,326.01	4,115.40	-44.23	4,115.64	0.00	0.00	0.00
13,700.00	91.51	359.38	9,323.37	4,215.36	-45.32	4,215.61	0.00	0.00	0.00
13,800.00	91.51	359.38	9,320.74	4,315.32	-46.40	4,315.57	0.00	0.00	0.00
13,900.00	91.51	359.38	9,318.10	4,415.28	-47.49	4,415.54	0.00	0.00	0.00
13,984.46	91.51	359.38	9,315.88	4,499.71	-48.40	4,499.97	0.00	0.00	0.00
A06N01-T10-4500(1H)									
14,000.00	91.51	359.38	9,315.47	4,515.24	-48.57	4,515.50	0.00	0.00	0.00
14,100.00	91.51	359.38	9,312.83	4,615.20	-49.66	4,615.47	0.00	0.00	0.00
14,200.00	91.51	359.38	9,310.20	4,715.16	-50.74	4,715.43	0.00	0.00	0.00
14,300.00	91.51	359.38	9,307.57	4,815.12	-51.83	4,815.40	0.00	0.00	0.00



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,400.00	91.51	359.38	9,304.93	4,915.08	-52.91	4,915.36	0.00	0.00	0.00
14,484.60	91.51	359.38	9,302.70	4,999.64	-53.83	4,999.93	0.00	0.00	0.00
A06N01-T11-5000(1H)									
14,500.00	91.51	359.38	9,302.30	5,015.04	-54.00	5,015.33	0.00	0.00	0.00
14,600.00	91.51	359.38	9,299.66	5,115.00	-55.08	5,115.29	0.00	0.00	0.00
14,700.00	91.51	359.38	9,297.03	5,214.96	-56.17	5,215.26	0.00	0.00	0.00
14,800.00	91.51	359.38	9,294.40	5,314.92	-57.25	5,315.22	0.00	0.00	0.00
14,900.00	91.51	359.38	9,291.76	5,414.88	-58.34	5,415.19	0.00	0.00	0.00
14,984.82	91.51	359.38	9,289.53	5,499.66	-59.26	5,499.98	0.00	0.00	0.00
A06N01-T12-5500(1H)									
15,000.00	91.51	359.38	9,289.13	5,514.83	-59.42	5,515.16	0.00	0.00	0.00
15,100.00	91.51	359.38	9,286.49	5,614.79	-60.51	5,615.12	0.00	0.00	0.00
15,200.00	91.51	359.38	9,283.86	5,714.75	-61.59	5,715.09	0.00	0.00	0.00
15,300.00	91.51	359.38	9,281.22	5,814.71	-62.68	5,815.05	0.00	0.00	0.00
15,400.00	91.51	359.38	9,278.59	5,914.67	-63.76	5,915.02	0.00	0.00	0.00
15,485.03	91.51	359.38	9,276.35	5,999.66	-64.68	6,000.01	0.00	0.00	0.00
A06N01-T13-6000(1H)									
15,500.00	91.51	359.38	9,275.96	6,014.63	-64.85	6,014.98	0.00	0.00	0.00
15,600.00	91.51	359.38	9,273.32	6,114.59	-65.93	6,114.95	0.00	0.00	0.00
15,700.00	91.51	359.38	9,270.69	6,214.55	-67.02	6,214.91	0.00	0.00	0.00
15,800.00	91.51	359.38	9,268.05	6,314.51	-68.10	6,314.88	0.00	0.00	0.00
15,900.00	91.51	359.38	9,265.42	6,414.47	-69.19	6,414.84	0.00	0.00	0.00
15,985.19	91.51	359.38	9,263.18	6,499.63	-70.11	6,500.01	0.00	0.00	0.00
A06N01-T14-6500(1H)									
16,000.00	91.51	359.38	9,262.79	6,514.43	-70.27	6,514.81	0.00	0.00	0.00
16,100.00	91.51	359.38	9,260.15	6,614.39	-71.36	6,614.77	0.00	0.00	0.00
16,200.00	91.51	359.38	9,257.52	6,714.35	-72.44	6,714.74	0.00	0.00	0.00
16,300.00	91.51	359.38	9,254.88	6,814.31	-73.52	6,814.70	0.00	0.00	0.00
16,400.00	91.51	359.38	9,252.25	6,914.27	-74.61	6,914.67	0.00	0.00	0.00
16,485.35	91.51	359.38	9,250.00	6,999.59	-75.54	6,999.99	0.00	0.00	0.00
A06N01-T15-7000(1H)									
16,490.08	91.60	359.38	9,249.87	7,004.31	-75.59	7,004.72	2.00	2.00	0.00
16,500.00	91.60	359.38	9,249.59	7,014.23	-75.69	7,014.63	0.00	0.00	0.00
16,600.00	91.60	359.38	9,246.80	7,114.18	-76.78	7,114.59	0.00	0.00	0.00
16,700.00	91.60	359.38	9,244.00	7,214.14	-77.86	7,214.56	0.00	0.00	0.00
16,800.00	91.60	359.38	9,241.20	7,314.09	-78.95	7,314.52	0.00	0.00	0.00
16,900.00	91.60	359.38	9,238.40	7,414.05	-80.03	7,414.48	0.00	0.00	0.00
16,985.45	91.60	359.38	9,236.01	7,499.45	-80.96	7,499.89	0.00	0.00	0.00
A06N01-T16-7500(1H)									
17,000.00	91.60	359.38	9,235.60	7,514.00	-81.12	7,514.44	0.00	0.00	0.00
17,100.00	91.60	359.38	9,232.80	7,613.96	-82.20	7,614.40	0.00	0.00	0.00
17,200.00	91.60	359.38	9,230.00	7,713.91	-83.29	7,714.36	0.00	0.00	0.00
17,300.00	91.60	359.38	9,227.20	7,813.87	-84.37	7,814.32	0.00	0.00	0.00
17,400.00	91.60	359.38	9,224.40	7,913.82	-85.46	7,914.28	0.00	0.00	0.00
17,485.53	91.60	359.38	9,222.01	7,999.31	-86.38	7,999.78	0.00	0.00	0.00
A06N01-T17-8000(1H)									
17,500.00	91.60	359.38	9,221.60	8,013.77	-86.54	8,014.24	0.00	0.00	0.00
17,600.00	91.60	359.38	9,218.80	8,113.73	-87.63	8,114.20	0.00	0.00	0.00
17,700.00	91.60	359.38	9,216.01	8,213.68	-88.71	8,214.16	0.00	0.00	0.00
17,800.00	91.60	359.38	9,213.21	8,313.64	-89.79	8,314.12	0.00	0.00	0.00
17,900.00	91.60	359.38	9,210.41	8,413.59	-90.88	8,414.09	0.00	0.00	0.00
17,985.84	91.60	359.38	9,208.00	8,499.39	-91.81	8,499.89	0.00	0.00	0.00
A06N01-T18-8500(1H)									



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
18,000.00	91.60	359.38	9,207.61	8,513.55	-91.96	8,514.05	0.00	0.00	0.00
18,100.00	91.60	359.38	9,204.81	8,613.50	-93.05	8,614.01	0.00	0.00	0.00
18,200.00	91.60	359.38	9,202.01	8,713.46	-94.13	8,713.97	0.00	0.00	0.00
18,300.00	91.60	359.38	9,199.21	8,813.41	-95.22	8,813.93	0.00	0.00	0.00
18,400.00	91.60	359.38	9,196.41	8,913.37	-96.30	8,913.89	0.00	0.00	0.00
18,486.15	91.60	359.38	9,194.00	8,999.48	-97.24	9,000.00	0.00	0.00	0.00
A06N01-T19-9000(1H)									
18,500.00	91.88	359.38	9,193.58	9,013.32	-97.39	9,013.85	2.00	2.00	0.00
18,593.07	93.74	359.38	9,189.01	9,106.27	-98.39	9,106.80	2.00	2.00	0.00
18,600.00	93.74	359.38	9,188.56	9,113.19	-98.47	9,113.72	0.00	0.00	0.00
18,700.00	93.74	359.38	9,182.03	9,212.97	-99.55	9,213.51	0.00	0.00	0.00
18,800.00	93.74	359.38	9,175.51	9,312.75	-100.64	9,313.29	0.00	0.00	0.00
18,900.00	93.74	359.38	9,168.98	9,412.53	-101.72	9,413.08	0.00	0.00	0.00
18,987.03	93.74	359.38	9,163.30	9,499.37	-102.66	9,499.92	0.00	0.00	0.00
A06N01-T20-9500(1H)									
19,000.00	93.74	359.38	9,162.45	9,512.31	-102.80	9,512.87	0.00	0.00	0.00
19,100.00	93.74	359.38	9,155.93	9,612.09	-103.89	9,612.65	0.00	0.00	0.00
19,200.00	93.74	359.38	9,149.40	9,711.87	-104.97	9,712.44	0.00	0.00	0.00
19,300.00	93.74	359.38	9,142.87	9,811.65	-106.05	9,812.23	0.00	0.00	0.00
19,400.00	93.74	359.38	9,136.34	9,911.43	-107.13	9,912.01	0.00	0.00	0.00
19,487.89	93.74	359.38	9,130.61	9,999.13	-108.09	9,999.71	0.00	0.00	0.00
A06N01-T21-10000(1H)									
19,500.00	93.74	359.38	9,129.82	10,011.21	-108.22	10,011.80	0.00	0.00	0.00
19,600.00	93.74	359.38	9,123.29	10,111.00	-109.30	10,111.59	0.00	0.00	0.00
19,700.00	93.74	359.38	9,116.76	10,210.78	-110.38	10,211.37	0.00	0.00	0.00
19,800.00	93.74	359.38	9,110.24	10,310.56	-111.47	10,311.16	0.00	0.00	0.00
19,900.00	93.74	359.38	9,103.71	10,410.34	-112.55	10,410.95	0.00	0.00	0.00
20,000.00	93.74	359.38	9,097.18	10,510.12	-113.63	10,510.73	0.00	0.00	0.00
20,100.00	93.74	359.38	9,090.66	10,609.90	-114.72	10,610.52	0.00	0.00	0.00
20,139.68	93.74	359.38	9,088.07	10,649.49	-115.15	10,650.12	0.00	0.00	0.00
TD: 20140.68' MD, 10651.11 VS, 9088.00' TVD									
20,140.68	93.74	359.38	9,088.00	10,650.49	-115.16	10,651.11	0.00	0.00	0.00
A06N01-PBHL(1H)									



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
A06N01-EON(1H)	0.00	0.00	8,600.00	-306.04	3.72	612,539.43	803,697.09	32.68101725	-103.48062984
- plan hits target center									
- Point									
A06N01-PBHL(1H)	0.00	0.00	9,088.00	10,650.49	-115.16	623,495.96	803,578.21	32.71113274	-103.48072994
- plan hits target center									
- Point									
A06N01-T21-10000(1H)	0.00	0.00	9,135.00	9,999.42	-108.10	622,844.88	803,585.27	32.70934318	-103.48072401
- plan misses target center by 4.40usft at 19487.89usft MD (9130.61 TVD, 9999.13 N, -108.09 E)									
- Point									
A06N01-T20-9500(1H)	0.00	0.00	9,164.50	9,499.45	-102.67	622,344.91	803,590.70	32.70796894	-103.48071943
- plan misses target center by 1.20usft at 18987.03usft MD (9163.30 TVD, 9499.37 N, -102.66 E)									
- Point									
A06N01-T19-9000(1H)	0.00	0.00	9,194.00	8,999.48	-97.24	621,844.94	803,596.13	32.70659471	-103.48071485
- plan hits target center									
- Point									
A06N01-T18-8500(1H)	0.00	0.00	9,212.00	8,499.51	-91.82	621,344.97	803,601.55	32.70522048	-103.48071030
- plan misses target center by 4.00usft at 17985.84usft MD (9208.00 TVD, 8499.39 N, -91.81 E)									
- Point									
A06N01-T17-8000(1H)	0.00	0.00	9,230.00	7,999.54	-86.39	620,845.00	803,606.98	32.70384624	-103.48070571
- plan misses target center by 8.00usft at 17485.53usft MD (9222.01 TVD, 7999.31 N, -86.38 E)									
- Point									
A06N01-T16-7500(1H)	0.00	0.00	9,240.00	7,499.57	-80.97	620,345.03	803,612.40	32.70247201	-103.48070116
- plan misses target center by 4.00usft at 16985.45usft MD (9236.01 TVD, 7499.45 N, -80.96 E)									
- Point									
A06N01-T15-7000(1H)	0.00	0.00	9,250.00	6,999.59	-75.54	619,845.05	803,617.83	32.70109775	-103.48069658
- plan hits target center									
- Point									
A06N01-T14-6500(1H)	0.00	0.00	9,263.00	6,499.63	-70.11	619,345.09	803,623.26	32.69972354	-103.48069200
- plan misses target center by 0.18usft at 15985.19usft MD (9263.18 TVD, 6499.63 N, -70.11 E)									
- Point									
A06N01-T13-6000(1H)	0.00	0.00	9,276.00	5,999.66	-64.69	618,845.12	803,628.68	32.69834931	-103.48068744
- plan misses target center by 0.35usft at 15485.03usft MD (9276.35 TVD, 5999.66 N, -64.68 E)									
- Point									
A06N01-T12-5500(1H)	0.00	0.00	9,290.50	5,499.69	-59.26	618,345.15	803,634.11	32.69697507	-103.48068286
- plan misses target center by 0.97usft at 14984.82usft MD (9289.53 TVD, 5499.66 N, -59.26 E)									
- Point									
A06N01-T11-5000(1H)	0.00	0.00	9,305.00	4,999.71	-53.84	617,845.17	803,639.53	32.69560081	-103.48067831
- plan misses target center by 2.30usft at 14484.60usft MD (9302.70 TVD, 4999.64 N, -53.83 E)									
- Point									
A06N01-T10-4500(1H)	0.00	0.00	9,317.00	4,499.74	-48.41	617,345.20	803,644.96	32.69422658	-103.48067372
- plan misses target center by 1.12usft at 13984.46usft MD (9315.88 TVD, 4499.71 N, -48.40 E)									
- Point									
A06N01-T09-4000(1H)	0.00	0.00	9,329.00	3,999.78	-42.98	616,845.24	803,650.39	32.69285237	-103.48066914
- plan hits target center									
- Point									
A06N01-T08-3500(1H)	0.00	0.00	9,338.00	3,499.81	-37.56	616,345.27	803,655.81	32.69147813	-103.48066458
- plan misses target center by 1.15usft at 12984.25usft MD (9339.15 TVD, 3499.83 N, -37.55 E)									
- Point									
A06N01-T07-3000(1H)	0.00	0.00	9,347.00	2,999.83	-32.13	615,845.29	803,661.24	32.69010387	-103.48066000
- plan misses target center by 2.30usft at 12484.16usft MD (9349.30 TVD, 2999.87 N, -32.13 E)									
- Point									



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

A06N01-T06-2500(1H)	0.00	0.00	9,358.00	2,499.86	-26.71	615,345.32	803,666.66	32.68872963	-103.48065544
- plan misses target center by 1.45usft at 11984.04usft MD (9359.45 TVD, 2499.88 N, -26.70 E)									
- Point									
A06N01-T05-2000(1H)	0.00	0.00	9,369.00	1,999.89	-21.28	614,845.35	803,672.09	32.68735540	-103.48065086
- plan misses target center by 0.61usft at 11483.92usft MD (9369.61 TVD, 1999.90 N, -21.28 E)									
- Point									
A06N01-T04-1500(1H)	0.00	0.00	9,380.00	1,499.92	-15.85	614,345.39	803,677.51	32.68598117	-103.48064629
- plan misses target center by 0.24usft at 10983.80usft MD (9379.76 TVD, 1499.91 N, -15.85 E)									
- Point									
A06N01-T03-1000(1H)	0.00	0.00	9,390.00	999.94	-10.43	613,845.41	803,682.94	32.68460691	-103.48064171
- plan hits target center									
- Point									
A06N01-T02-573(1H)	0.00	0.00	9,402.00	572.97	-5.79	613,418.44	803,687.57	32.68343333	-103.48063781
- plan misses target center by 0.07usft at 10056.53usft MD (9402.07 TVD, 572.98 N, -5.79 E)									
- Point									
A06N01-T01-473(1H)	0.00	0.00	9,405.00	472.98	-4.71	613,318.45	803,688.66	32.68315848	-103.48063689
- plan hits target center									
- Point									
A06N01-FTP(1H)	0.00	0.00	9,425.00	289.93	-2.74	613,135.40	803,690.62	32.68265534	-103.48063528
- plan misses target center by 13.21usft at 9772.81usft MD (9411.80 TVD, 289.44 N, -2.72 E)									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,838.00	1,838.00	Surface	13-3/8	17-1/2	
4,024.00	4,024.00	Intermediate	9-5/8	12-1/4	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,828.00	1,828.00	Rustler				
1,907.00	1,907.00	Salt				
3,201.00	3,201.00	Base of Salt				
3,413.00	3,413.00	Yates				
3,882.00	3,882.00	Seven Rivers				
3,888.00	3,888.00	Quaternary				
4,638.80	4,638.00	Queen				
5,267.47	5,265.00	Capitan Reef				
6,079.62	6,075.00	Delaware Cherry Canyon				
7,730.01	7,721.00	Bone Spring Lime				
8,821.98	8,811.00	First Bone Spring Carbonate				
9,097.59	9,079.00	Avalon Black				
9,498.94	9,358.00	First Bone Spring Sand				



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
8,850.26	8,839.28	-306.04	3.72	KOP: 8850.26' MD, -306.06 VS, 8839.28' TVD	
9,771.46	9,411.85	288.09	-2.71	EOC: 9771.46' MD, 288.10 VS, 9411.85' TVD	
20,139.68	9,088.07	10,649.49	-115.15	TD: 20140.68' MD, 10651.11 VS, 9088.00' TVD	



Catena Resources Operating, LLC

Lea County NM N83-NM-EZ

A06 Foxtail

Foxtail 19-35-05 #1H

1H

Plan: Plan #1

Standard Planning Report

07 January, 2020



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Project	Lea County NM N83-NM-EZ		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site		A06 Foxtail			
Site Position:		Northing:	612,845.47 usft	Latitude:	32.68185844
From:	Map	Easting:	803,693.36 usft	Longitude:	-103.48063395
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.46 °

Well	Foxtail 19-35-05 #1H					
Well Position	+N/-S	0.00 usft	Northing:	612,845.47 usft	Latitude:	32.68185844
	+E/-W	0.00 usft	Easting:	803,693.36 usft	Longitude:	-103.48063395
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	3,863.00 usft

Wellbore	1H				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	1/7/2020	6.67	60.46	47,950.80410962

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	359.38

Plan Survey Tool Program	Date	1/7/2020		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	20,140.40	Plan #1 (1H)	MWD
				MWD - Standard



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,408.83	4.18	179.30	4,408.65	-7.61	0.09	2.00	2.00	0.00	179.30	
8,402.14	4.18	179.30	8,391.35	-298.43	3.63	0.00	0.00	0.00	0.00	
8,610.98	0.00	0.00	8,600.00	-306.04	3.72	2.00	-2.00	0.00	180.00	A06N01-EON(1H)
8,850.26	0.00	0.00	8,839.28	-306.04	3.72	0.00	0.00	0.00	0.00	
9,771.46	92.12	359.38	9,411.85	288.08	-2.71	10.00	10.00	0.00	359.38	
9,956.49	92.12	359.38	9,405.00	472.98	-4.71	0.00	0.00	0.00	0.00	
9,981.56	91.62	359.38	9,404.18	498.03	-4.98	2.00	-2.00	-0.01	-179.78	
10,483.70	91.62	359.38	9,390.00	999.94	-10.43	0.00	0.00	0.00	0.00	A06N01-T03-1000(1H)
10,506.47	91.16	359.38	9,389.45	1,022.70	-10.67	2.00	-2.00	0.00	179.97	
13,484.33	91.16	359.38	9,329.00	3,999.78	-42.98	0.00	0.00	0.00	0.00	A06N01-T09-4000(1H)
13,501.64	91.51	359.38	9,328.60	4,017.09	-43.16	2.00	2.00	0.00	-0.03	
16,485.35	91.51	359.38	9,250.00	6,999.59	-75.54	0.00	0.00	0.00	0.00	A06N01-T15-7000(1H)
16,490.08	91.60	359.38	9,249.87	7,004.31	-75.59	2.00	2.00	0.00	0.12	
18,486.15	91.60	359.38	9,194.00	8,999.48	-97.24	0.00	0.00	0.00	0.00	A06N01-T19-9000(1H)
18,593.07	93.74	359.38	9,189.01	9,106.27	-98.39	2.00	2.00	0.00	-0.01	
20,140.68	93.74	359.38	9,088.00	10,650.49	-115.16	0.00	0.00	0.00	0.00	A06N01-PBHL(1H)



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,828.00	0.00	0.00	1,828.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
1,838.00	0.00	0.00	1,838.00	0.00	0.00	0.00	0.00	0.00	0.00
Surface									
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,907.00	0.00	0.00	1,907.00	0.00	0.00	0.00	0.00	0.00	0.00
Salt									
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,201.00	0.00	0.00	3,201.00	0.00	0.00	0.00	0.00	0.00	0.00
Base of Salt									
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,413.00	0.00	0.00	3,413.00	0.00	0.00	0.00	0.00	0.00	0.00
Yates									
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,882.00	0.00	0.00	3,882.00	0.00	0.00	0.00	0.00	0.00	0.00
Seven Rivers									
3,888.00	0.00	0.00	3,888.00	0.00	0.00	0.00	0.00	0.00	0.00
Quaternary									



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,024.00	0.00	0.00	4,024.00	0.00	0.00	0.00	0.00	0.00	0.00	
Intermediate										
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,300.00	2.00	179.30	4,299.98	-1.75	0.02	-1.75	2.00	2.00	0.00	
4,408.83	4.18	179.30	4,408.65	-7.61	0.09	-7.61	2.00	2.00	0.00	
4,500.00	4.18	179.30	4,499.57	-14.25	0.17	-14.25	0.00	0.00	0.00	
4,600.00	4.18	179.30	4,599.31	-21.53	0.26	-21.53	0.00	0.00	0.00	
4,638.80	4.18	179.30	4,638.00	-24.36	0.30	-24.36	0.00	0.00	0.00	
Queen										
4,700.00	4.18	179.30	4,699.04	-28.81	0.35	-28.81	0.00	0.00	0.00	
4,800.00	4.18	179.30	4,798.78	-36.10	0.44	-36.10	0.00	0.00	0.00	
4,900.00	4.18	179.30	4,898.51	-43.38	0.53	-43.38	0.00	0.00	0.00	
5,000.00	4.18	179.30	4,998.25	-50.66	0.62	-50.66	0.00	0.00	0.00	
5,100.00	4.18	179.30	5,097.98	-57.94	0.71	-57.95	0.00	0.00	0.00	
5,200.00	4.18	179.30	5,197.71	-65.23	0.79	-65.23	0.00	0.00	0.00	
5,267.47	4.18	179.30	5,265.00	-70.14	0.85	-70.14	0.00	0.00	0.00	
Capitan Reef										
5,300.00	4.18	179.30	5,297.45	-72.51	0.88	-72.51	0.00	0.00	0.00	
5,400.00	4.18	179.30	5,397.18	-79.79	0.97	-79.80	0.00	0.00	0.00	
5,500.00	4.18	179.30	5,496.92	-87.07	1.06	-87.08	0.00	0.00	0.00	
5,600.00	4.18	179.30	5,596.65	-94.36	1.15	-94.36	0.00	0.00	0.00	
5,700.00	4.18	179.30	5,696.39	-101.64	1.24	-101.65	0.00	0.00	0.00	
5,800.00	4.18	179.30	5,796.12	-108.92	1.33	-108.93	0.00	0.00	0.00	
5,900.00	4.18	179.30	5,895.86	-116.20	1.41	-116.21	0.00	0.00	0.00	
6,000.00	4.18	179.30	5,995.59	-123.49	1.50	-123.50	0.00	0.00	0.00	
6,079.62	4.18	179.30	6,075.00	-129.29	1.57	-129.30	0.00	0.00	0.00	
Delaware Cherry Canyon										
6,100.00	4.18	179.30	6,095.32	-130.77	1.59	-130.78	0.00	0.00	0.00	
6,200.00	4.18	179.30	6,195.06	-138.05	1.68	-138.06	0.00	0.00	0.00	
6,300.00	4.18	179.30	6,294.79	-145.34	1.77	-145.35	0.00	0.00	0.00	
6,400.00	4.18	179.30	6,394.53	-152.62	1.86	-152.63	0.00	0.00	0.00	
6,500.00	4.18	179.30	6,494.26	-159.90	1.95	-159.91	0.00	0.00	0.00	
6,600.00	4.18	179.30	6,594.00	-167.18	2.03	-167.20	0.00	0.00	0.00	
6,700.00	4.18	179.30	6,693.73	-174.47	2.12	-174.48	0.00	0.00	0.00	
6,800.00	4.18	179.30	6,793.46	-181.75	2.21	-181.76	0.00	0.00	0.00	
6,900.00	4.18	179.30	6,893.20	-189.03	2.30	-189.05	0.00	0.00	0.00	
7,000.00	4.18	179.30	6,992.93	-196.31	2.39	-196.33	0.00	0.00	0.00	
7,100.00	4.18	179.30	7,092.67	-203.60	2.48	-203.61	0.00	0.00	0.00	
7,200.00	4.18	179.30	7,192.40	-210.88	2.57	-210.89	0.00	0.00	0.00	
7,300.00	4.18	179.30	7,292.14	-218.16	2.65	-218.18	0.00	0.00	0.00	
7,400.00	4.18	179.30	7,391.87	-225.44	2.74	-225.46	0.00	0.00	0.00	
7,500.00	4.18	179.30	7,491.61	-232.73	2.83	-232.74	0.00	0.00	0.00	
7,600.00	4.18	179.30	7,591.34	-240.01	2.92	-240.03	0.00	0.00	0.00	
7,700.00	4.18	179.30	7,691.07	-247.29	3.01	-247.31	0.00	0.00	0.00	
7,730.01	4.18	179.30	7,721.00	-249.48	3.04	-249.50	0.00	0.00	0.00	
Bone Spring Lime										
7,800.00	4.18	179.30	7,790.81	-254.58	3.10	-254.59	0.00	0.00	0.00	
7,900.00	4.18	179.30	7,890.54	-261.86	3.19	-261.88	0.00	0.00	0.00	
8,000.00	4.18	179.30	7,990.28	-269.14	3.28	-269.16	0.00	0.00	0.00	
8,100.00	4.18	179.30	8,090.01	-276.42	3.36	-276.44	0.00	0.00	0.00	
8,200.00	4.18	179.30	8,189.75	-283.71	3.45	-283.73	0.00	0.00	0.00	



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,300.00	4.18	179.30	8,289.48	-290.99	3.54	-291.01	0.00	0.00	0.00	
8,402.14	4.18	179.30	8,391.35	-298.43	3.63	-298.45	0.00	0.00	0.00	
8,500.00	2.22	179.30	8,489.05	-303.89	3.70	-303.91	2.00	-2.00	0.00	
8,600.00	0.22	179.30	8,589.02	-306.01	3.72	-306.04	2.00	-2.00	0.00	
8,610.98	0.00	0.00	8,600.00	-306.04	3.72	-306.06	2.00	-2.00	0.00	
A06N01-EON(1H)										
8,700.00	0.00	0.00	8,689.02	-306.04	3.72	-306.06	0.00	0.00	0.00	
8,800.00	0.00	0.00	8,789.02	-306.04	3.72	-306.06	0.00	0.00	0.00	
8,821.98	0.00	0.00	8,811.00	-306.04	3.72	-306.06	0.00	0.00	0.00	
First Bone Spring Carbonate										
8,850.26	0.00	0.00	8,839.28	-306.04	3.72	-306.06	0.00	0.00	0.00	
KOP: 8850.26' MD, -306.06 VS, 8839.28' TVD										
8,900.00	4.97	359.38	8,888.96	-303.88	3.70	-303.90	10.00	10.00	0.00	
8,950.00	9.97	359.38	8,938.52	-297.38	3.63	-297.40	10.00	10.00	0.00	
9,000.00	14.97	359.38	8,987.33	-286.58	3.51	-286.60	10.00	10.00	0.00	
9,050.00	19.97	359.38	9,035.00	-271.57	3.35	-271.59	10.00	10.00	0.00	
9,097.59	24.73	359.38	9,079.00	-253.48	3.16	-253.50	10.00	10.00	0.00	
Avalon Black										
9,100.00	24.97	359.38	9,081.19	-252.46	3.14	-252.48	10.00	10.00	0.00	
9,150.00	29.97	359.38	9,125.54	-229.41	2.89	-229.42	10.00	10.00	0.00	
9,200.00	34.97	359.38	9,167.71	-202.57	2.60	-202.59	10.00	10.00	0.00	
9,250.00	39.97	359.38	9,207.37	-172.16	2.28	-172.17	10.00	10.00	0.00	
9,300.00	44.97	359.38	9,244.24	-138.41	1.91	-138.42	10.00	10.00	0.00	
9,350.00	49.97	359.38	9,278.03	-101.57	1.51	-101.59	10.00	10.00	0.00	
9,400.00	54.97	359.38	9,308.47	-61.94	1.08	-61.94	10.00	10.00	0.00	
9,450.00	59.97	359.38	9,335.35	-19.79	0.63	-19.80	10.00	10.00	0.00	
9,498.94	64.87	359.38	9,358.00	23.57	0.16	23.57	10.00	10.00	0.00	
First Bone Spring Sand										
9,500.00	64.97	359.38	9,358.45	24.53	0.15	24.53	10.00	10.00	0.00	
9,550.00	69.97	359.38	9,377.60	70.70	-0.35	70.70	10.00	10.00	0.00	
9,600.00	74.97	359.38	9,392.65	118.36	-0.87	118.36	10.00	10.00	0.00	
9,650.00	79.97	359.38	9,403.49	167.15	-1.40	167.16	10.00	10.00	0.00	
9,700.00	84.97	359.38	9,410.04	216.70	-1.93	216.71	10.00	10.00	0.00	
9,750.00	89.97	359.38	9,412.24	266.63	-2.47	266.65	10.00	10.00	0.00	
9,771.46	92.12	359.38	9,411.85	288.09	-2.71	288.10	10.00	10.00	0.00	
EOC: 9771.46' MD, 288.10 VS, 9411.85' TVD										
9,772.81	92.12	359.38	9,411.80	289.44	-2.72	289.45	0.00	0.00	0.00	
A06N01-FTP(1H)										
9,800.00	92.12	359.38	9,410.79	316.61	-3.01	316.62	0.00	0.00	0.00	
9,900.00	92.12	359.38	9,407.09	416.53	-4.10	416.55	0.00	0.00	0.00	
9,956.49	92.12	359.38	9,405.00	472.98	-4.71	473.00	0.00	0.00	0.00	
A06N01-T01-473(1H)										
9,981.56	91.62	359.38	9,404.18	498.03	-4.98	498.06	2.00	-2.00	-0.01	
10,000.00	91.62	359.38	9,403.66	516.47	-5.18	516.49	0.00	0.00	0.00	
10,056.53	91.62	359.38	9,402.07	572.98	-5.79	573.00	0.00	0.00	0.00	
A06N01-T02-573(1H)										
10,100.00	91.62	359.38	9,400.84	616.42	-6.26	616.45	0.00	0.00	0.00	
10,200.00	91.62	359.38	9,398.01	716.38	-7.35	716.41	0.00	0.00	0.00	
10,300.00	91.62	359.38	9,395.19	816.33	-8.43	816.37	0.00	0.00	0.00	
10,400.00	91.62	359.38	9,392.36	916.28	-9.52	916.33	0.00	0.00	0.00	
10,483.70	91.62	359.38	9,390.00	999.94	-10.43	1,000.00	0.00	0.00	0.00	
A06N01-T03-1000(1H)										



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,506.47	91.16	359.38	9,389.45	1,022.70	-10.67	1,022.76	2.00	-2.00	0.00
10,600.00	91.16	359.38	9,387.55	1,116.21	-11.69	1,116.27	0.00	0.00	0.00
10,700.00	91.16	359.38	9,385.52	1,216.19	-12.77	1,216.25	0.00	0.00	0.00
10,800.00	91.16	359.38	9,383.49	1,316.16	-13.86	1,316.23	0.00	0.00	0.00
10,900.00	91.16	359.38	9,381.46	1,416.13	-14.94	1,416.21	0.00	0.00	0.00
10,983.80	91.16	359.38	9,379.76	1,499.91	-15.85	1,500.00	0.00	0.00	0.00
A06N01-T04-1500(1H)									
11,000.00	91.16	359.38	9,379.43	1,516.11	-16.03	1,516.19	0.00	0.00	0.00
11,100.00	91.16	359.38	9,377.40	1,616.08	-17.11	1,616.17	0.00	0.00	0.00
11,200.00	91.16	359.38	9,375.37	1,716.05	-18.20	1,716.15	0.00	0.00	0.00
11,300.00	91.16	359.38	9,373.34	1,816.03	-19.28	1,816.13	0.00	0.00	0.00
11,400.00	91.16	359.38	9,371.31	1,916.00	-20.37	1,916.11	0.00	0.00	0.00
11,483.92	91.16	359.38	9,369.61	1,999.90	-21.28	2,000.01	0.00	0.00	0.00
A06N01-T05-2000(1H)									
11,500.00	91.16	359.38	9,369.28	2,015.97	-21.45	2,016.09	0.00	0.00	0.00
11,600.00	91.16	359.38	9,367.25	2,115.95	-22.54	2,116.07	0.00	0.00	0.00
11,700.00	91.16	359.38	9,365.22	2,215.92	-23.62	2,216.05	0.00	0.00	0.00
11,800.00	91.16	359.38	9,363.19	2,315.89	-24.70	2,316.03	0.00	0.00	0.00
11,900.00	91.16	359.38	9,361.16	2,415.87	-25.79	2,416.01	0.00	0.00	0.00
11,984.04	91.16	359.38	9,359.45	2,499.88	-26.70	2,500.03	0.00	0.00	0.00
A06N01-T06-2500(1H)									
12,000.00	91.16	359.38	9,359.13	2,515.84	-26.87	2,515.99	0.00	0.00	0.00
12,100.00	91.16	359.38	9,357.10	2,615.82	-27.96	2,615.96	0.00	0.00	0.00
12,200.00	91.16	359.38	9,355.07	2,715.79	-29.04	2,715.94	0.00	0.00	0.00
12,300.00	91.16	359.38	9,353.04	2,815.76	-30.13	2,815.92	0.00	0.00	0.00
12,400.00	91.16	359.38	9,351.01	2,915.74	-31.21	2,915.90	0.00	0.00	0.00
12,484.16	91.16	359.38	9,349.30	2,999.87	-32.13	3,000.04	0.00	0.00	0.00
A06N01-T07-3000(1H)									
12,500.00	91.16	359.38	9,348.98	3,015.71	-32.30	3,015.88	0.00	0.00	0.00
12,600.00	91.16	359.38	9,346.95	3,115.68	-33.38	3,115.86	0.00	0.00	0.00
12,700.00	91.16	359.38	9,344.92	3,215.66	-34.47	3,215.84	0.00	0.00	0.00
12,800.00	91.16	359.38	9,342.89	3,315.63	-35.55	3,315.82	0.00	0.00	0.00
12,900.00	91.16	359.38	9,340.86	3,415.60	-36.64	3,415.80	0.00	0.00	0.00
12,984.25	91.16	359.38	9,339.15	3,499.83	-37.55	3,500.03	0.00	0.00	0.00
A06N01-T08-3500(1H)									
13,000.00	91.16	359.38	9,338.83	3,515.58	-37.72	3,515.78	0.00	0.00	0.00
13,100.00	91.16	359.38	9,336.80	3,615.55	-38.81	3,615.76	0.00	0.00	0.00
13,200.00	91.16	359.38	9,334.77	3,715.52	-39.89	3,715.74	0.00	0.00	0.00
13,300.00	91.16	359.38	9,332.74	3,815.50	-40.98	3,815.72	0.00	0.00	0.00
13,400.00	91.16	359.38	9,330.71	3,915.47	-42.06	3,915.70	0.00	0.00	0.00
13,484.33	91.16	359.38	9,329.00	3,999.78	-42.98	4,000.01	0.00	0.00	0.00
A06N01-T09-4000(1H)									
13,501.64	91.51	359.38	9,328.60	4,017.09	-43.16	4,017.32	2.00	2.00	0.00
13,600.00	91.51	359.38	9,326.01	4,115.40	-44.23	4,115.64	0.00	0.00	0.00
13,700.00	91.51	359.38	9,323.37	4,215.36	-45.32	4,215.61	0.00	0.00	0.00
13,800.00	91.51	359.38	9,320.74	4,315.32	-46.40	4,315.57	0.00	0.00	0.00
13,900.00	91.51	359.38	9,318.10	4,415.28	-47.49	4,415.54	0.00	0.00	0.00
13,984.46	91.51	359.38	9,315.88	4,499.71	-48.40	4,499.97	0.00	0.00	0.00
A06N01-T10-4500(1H)									
14,000.00	91.51	359.38	9,315.47	4,515.24	-48.57	4,515.50	0.00	0.00	0.00
14,100.00	91.51	359.38	9,312.83	4,615.20	-49.66	4,615.47	0.00	0.00	0.00
14,200.00	91.51	359.38	9,310.20	4,715.16	-50.74	4,715.43	0.00	0.00	0.00
14,300.00	91.51	359.38	9,307.57	4,815.12	-51.83	4,815.40	0.00	0.00	0.00



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,400.00	91.51	359.38	9,304.93	4,915.08	-52.91	4,915.36	0.00	0.00	0.00
14,484.60	91.51	359.38	9,302.70	4,999.64	-53.83	4,999.93	0.00	0.00	0.00
A06N01-T11-5000(1H)									
14,500.00	91.51	359.38	9,302.30	5,015.04	-54.00	5,015.33	0.00	0.00	0.00
14,600.00	91.51	359.38	9,299.66	5,115.00	-55.08	5,115.29	0.00	0.00	0.00
14,700.00	91.51	359.38	9,297.03	5,214.96	-56.17	5,215.26	0.00	0.00	0.00
14,800.00	91.51	359.38	9,294.40	5,314.92	-57.25	5,315.22	0.00	0.00	0.00
14,900.00	91.51	359.38	9,291.76	5,414.88	-58.34	5,415.19	0.00	0.00	0.00
14,984.82	91.51	359.38	9,289.53	5,499.66	-59.26	5,499.98	0.00	0.00	0.00
A06N01-T12-5500(1H)									
15,000.00	91.51	359.38	9,289.13	5,514.83	-59.42	5,515.16	0.00	0.00	0.00
15,100.00	91.51	359.38	9,286.49	5,614.79	-60.51	5,615.12	0.00	0.00	0.00
15,200.00	91.51	359.38	9,283.86	5,714.75	-61.59	5,715.09	0.00	0.00	0.00
15,300.00	91.51	359.38	9,281.22	5,814.71	-62.68	5,815.05	0.00	0.00	0.00
15,400.00	91.51	359.38	9,278.59	5,914.67	-63.76	5,915.02	0.00	0.00	0.00
15,485.03	91.51	359.38	9,276.35	5,999.66	-64.68	6,000.01	0.00	0.00	0.00
A06N01-T13-6000(1H)									
15,500.00	91.51	359.38	9,275.96	6,014.63	-64.85	6,014.98	0.00	0.00	0.00
15,600.00	91.51	359.38	9,273.32	6,114.59	-65.93	6,114.95	0.00	0.00	0.00
15,700.00	91.51	359.38	9,270.69	6,214.55	-67.02	6,214.91	0.00	0.00	0.00
15,800.00	91.51	359.38	9,268.05	6,314.51	-68.10	6,314.88	0.00	0.00	0.00
15,900.00	91.51	359.38	9,265.42	6,414.47	-69.19	6,414.84	0.00	0.00	0.00
15,985.19	91.51	359.38	9,263.18	6,499.63	-70.11	6,500.01	0.00	0.00	0.00
A06N01-T14-6500(1H)									
16,000.00	91.51	359.38	9,262.79	6,514.43	-70.27	6,514.81	0.00	0.00	0.00
16,100.00	91.51	359.38	9,260.15	6,614.39	-71.36	6,614.77	0.00	0.00	0.00
16,200.00	91.51	359.38	9,257.52	6,714.35	-72.44	6,714.74	0.00	0.00	0.00
16,300.00	91.51	359.38	9,254.88	6,814.31	-73.52	6,814.70	0.00	0.00	0.00
16,400.00	91.51	359.38	9,252.25	6,914.27	-74.61	6,914.67	0.00	0.00	0.00
16,485.35	91.51	359.38	9,250.00	6,999.59	-75.54	6,999.99	0.00	0.00	0.00
A06N01-T15-7000(1H)									
16,490.08	91.60	359.38	9,249.87	7,004.31	-75.59	7,004.72	2.00	2.00	0.00
16,500.00	91.60	359.38	9,249.59	7,014.23	-75.69	7,014.63	0.00	0.00	0.00
16,600.00	91.60	359.38	9,246.80	7,114.18	-76.78	7,114.59	0.00	0.00	0.00
16,700.00	91.60	359.38	9,244.00	7,214.14	-77.86	7,214.56	0.00	0.00	0.00
16,800.00	91.60	359.38	9,241.20	7,314.09	-78.95	7,314.52	0.00	0.00	0.00
16,900.00	91.60	359.38	9,238.40	7,414.05	-80.03	7,414.48	0.00	0.00	0.00
16,985.45	91.60	359.38	9,236.01	7,499.45	-80.96	7,499.89	0.00	0.00	0.00
A06N01-T16-7500(1H)									
17,000.00	91.60	359.38	9,235.60	7,514.00	-81.12	7,514.44	0.00	0.00	0.00
17,100.00	91.60	359.38	9,232.80	7,613.96	-82.20	7,614.40	0.00	0.00	0.00
17,200.00	91.60	359.38	9,230.00	7,713.91	-83.29	7,714.36	0.00	0.00	0.00
17,300.00	91.60	359.38	9,227.20	7,813.87	-84.37	7,814.32	0.00	0.00	0.00
17,400.00	91.60	359.38	9,224.40	7,913.82	-85.46	7,914.28	0.00	0.00	0.00
17,485.53	91.60	359.38	9,222.01	7,999.31	-86.38	7,999.78	0.00	0.00	0.00
A06N01-T17-8000(1H)									
17,500.00	91.60	359.38	9,221.60	8,013.77	-86.54	8,014.24	0.00	0.00	0.00
17,600.00	91.60	359.38	9,218.80	8,113.73	-87.63	8,114.20	0.00	0.00	0.00
17,700.00	91.60	359.38	9,216.01	8,213.68	-88.71	8,214.16	0.00	0.00	0.00
17,800.00	91.60	359.38	9,213.21	8,313.64	-89.79	8,314.12	0.00	0.00	0.00
17,900.00	91.60	359.38	9,210.41	8,413.59	-90.88	8,414.09	0.00	0.00	0.00
17,985.84	91.60	359.38	9,208.00	8,499.39	-91.81	8,499.89	0.00	0.00	0.00
A06N01-T18-8500(1H)									



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
18,000.00	91.60	359.38	9,207.61	8,513.55	-91.96	8,514.05	0.00	0.00	0.00
18,100.00	91.60	359.38	9,204.81	8,613.50	-93.05	8,614.01	0.00	0.00	0.00
18,200.00	91.60	359.38	9,202.01	8,713.46	-94.13	8,713.97	0.00	0.00	0.00
18,300.00	91.60	359.38	9,199.21	8,813.41	-95.22	8,813.93	0.00	0.00	0.00
18,400.00	91.60	359.38	9,196.41	8,913.37	-96.30	8,913.89	0.00	0.00	0.00
18,486.15	91.60	359.38	9,194.00	8,999.48	-97.24	9,000.00	0.00	0.00	0.00
A06N01-T19-9000(1H)									
18,500.00	91.88	359.38	9,193.58	9,013.32	-97.39	9,013.85	2.00	2.00	0.00
18,593.07	93.74	359.38	9,189.01	9,106.27	-98.39	9,106.80	2.00	2.00	0.00
18,600.00	93.74	359.38	9,188.56	9,113.19	-98.47	9,113.72	0.00	0.00	0.00
18,700.00	93.74	359.38	9,182.03	9,212.97	-99.55	9,213.51	0.00	0.00	0.00
18,800.00	93.74	359.38	9,175.51	9,312.75	-100.64	9,313.29	0.00	0.00	0.00
18,900.00	93.74	359.38	9,168.98	9,412.53	-101.72	9,413.08	0.00	0.00	0.00
18,987.03	93.74	359.38	9,163.30	9,499.37	-102.66	9,499.92	0.00	0.00	0.00
A06N01-T20-9500(1H)									
19,000.00	93.74	359.38	9,162.45	9,512.31	-102.80	9,512.87	0.00	0.00	0.00
19,100.00	93.74	359.38	9,155.93	9,612.09	-103.89	9,612.65	0.00	0.00	0.00
19,200.00	93.74	359.38	9,149.40	9,711.87	-104.97	9,712.44	0.00	0.00	0.00
19,300.00	93.74	359.38	9,142.87	9,811.65	-106.05	9,812.23	0.00	0.00	0.00
19,400.00	93.74	359.38	9,136.34	9,911.43	-107.13	9,912.01	0.00	0.00	0.00
19,487.89	93.74	359.38	9,130.61	9,999.13	-108.09	9,999.71	0.00	0.00	0.00
A06N01-T21-10000(1H)									
19,500.00	93.74	359.38	9,129.82	10,011.21	-108.22	10,011.80	0.00	0.00	0.00
19,600.00	93.74	359.38	9,123.29	10,111.00	-109.30	10,111.59	0.00	0.00	0.00
19,700.00	93.74	359.38	9,116.76	10,210.78	-110.38	10,211.37	0.00	0.00	0.00
19,800.00	93.74	359.38	9,110.24	10,310.56	-111.47	10,311.16	0.00	0.00	0.00
19,900.00	93.74	359.38	9,103.71	10,410.34	-112.55	10,410.95	0.00	0.00	0.00
20,000.00	93.74	359.38	9,097.18	10,510.12	-113.63	10,510.73	0.00	0.00	0.00
20,100.00	93.74	359.38	9,090.66	10,609.90	-114.72	10,610.52	0.00	0.00	0.00
20,139.68	93.74	359.38	9,088.07	10,649.49	-115.15	10,650.12	0.00	0.00	0.00
TD: 20140.68' MD, 10651.11 VS, 9088.00' TVD									
20,140.68	93.74	359.38	9,088.00	10,650.49	-115.16	10,651.11	0.00	0.00	0.00
A06N01-PBHL(1H)									



Planning Report

Database:	EDM 5000.14 Single User Db	Local Co-ordinate Reference:	Well Foxtail 19-35-05 #1H
Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
A06N01-EON(1H)	0.00	0.00	8,600.00	-306.04	3.72	612,539.43	803,697.09	32.68101725	-103.48062984
- plan hits target center									
- Point									
A06N01-PBHL(1H)	0.00	0.00	9,088.00	10,650.49	-115.16	623,495.96	803,578.21	32.71113274	-103.48072994
- plan hits target center									
- Point									
A06N01-T21-10000(1H)	0.00	0.00	9,135.00	9,999.42	-108.10	622,844.88	803,585.27	32.70934318	-103.48072401
- plan misses target center by 4.40usft at 19487.89usft MD (9130.61 TVD, 9999.13 N, -108.09 E)									
- Point									
A06N01-T20-9500(1H)	0.00	0.00	9,164.50	9,499.45	-102.67	622,344.91	803,590.70	32.70796894	-103.48071943
- plan misses target center by 1.20usft at 18987.03usft MD (9163.30 TVD, 9499.37 N, -102.66 E)									
- Point									
A06N01-T19-9000(1H)	0.00	0.00	9,194.00	8,999.48	-97.24	621,844.94	803,596.13	32.70659471	-103.48071485
- plan hits target center									
- Point									
A06N01-T18-8500(1H)	0.00	0.00	9,212.00	8,499.51	-91.82	621,344.97	803,601.55	32.70522048	-103.48071030
- plan misses target center by 4.00usft at 17985.84usft MD (9208.00 TVD, 8499.39 N, -91.81 E)									
- Point									
A06N01-T17-8000(1H)	0.00	0.00	9,230.00	7,999.54	-86.39	620,845.00	803,606.98	32.70384624	-103.48070571
- plan misses target center by 8.00usft at 17485.53usft MD (9222.01 TVD, 7999.31 N, -86.38 E)									
- Point									
A06N01-T16-7500(1H)	0.00	0.00	9,240.00	7,499.57	-80.97	620,345.03	803,612.40	32.70247201	-103.48070116
- plan misses target center by 4.00usft at 16985.45usft MD (9236.01 TVD, 7499.45 N, -80.96 E)									
- Point									
A06N01-T15-7000(1H)	0.00	0.00	9,250.00	6,999.59	-75.54	619,845.05	803,617.83	32.70109775	-103.48069658
- plan hits target center									
- Point									
A06N01-T14-6500(1H)	0.00	0.00	9,263.00	6,499.63	-70.11	619,345.09	803,623.26	32.69972354	-103.48069200
- plan misses target center by 0.18usft at 15985.19usft MD (9263.18 TVD, 6499.63 N, -70.11 E)									
- Point									
A06N01-T13-6000(1H)	0.00	0.00	9,276.00	5,999.66	-64.69	618,845.12	803,628.68	32.69834931	-103.48068744
- plan misses target center by 0.35usft at 15485.03usft MD (9276.35 TVD, 5999.66 N, -64.68 E)									
- Point									
A06N01-T12-5500(1H)	0.00	0.00	9,290.50	5,499.69	-59.26	618,345.15	803,634.11	32.69697507	-103.48068286
- plan misses target center by 0.97usft at 14984.82usft MD (9289.53 TVD, 5499.66 N, -59.26 E)									
- Point									
A06N01-T11-5000(1H)	0.00	0.00	9,305.00	4,999.71	-53.84	617,845.17	803,639.53	32.69560081	-103.48067831
- plan misses target center by 2.30usft at 14484.60usft MD (9302.70 TVD, 4999.64 N, -53.83 E)									
- Point									
A06N01-T10-4500(1H)	0.00	0.00	9,317.00	4,499.74	-48.41	617,345.20	803,644.96	32.69422658	-103.48067372
- plan misses target center by 1.12usft at 13984.46usft MD (9315.88 TVD, 4499.71 N, -48.40 E)									
- Point									
A06N01-T09-4000(1H)	0.00	0.00	9,329.00	3,999.78	-42.98	616,845.24	803,650.39	32.69285237	-103.48066914
- plan hits target center									
- Point									
A06N01-T08-3500(1H)	0.00	0.00	9,338.00	3,499.81	-37.56	616,345.27	803,655.81	32.69147813	-103.48066458
- plan misses target center by 1.15usft at 12984.25usft MD (9339.15 TVD, 3499.83 N, -37.55 E)									
- Point									
A06N01-T07-3000(1H)	0.00	0.00	9,347.00	2,999.83	-32.13	615,845.29	803,661.24	32.69010387	-103.48066000
- plan misses target center by 2.30usft at 12484.16usft MD (9349.30 TVD, 2999.87 N, -32.13 E)									
- Point									



Planning Report

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Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

A06N01-T06-2500(1H)	0.00	0.00	9,358.00	2,499.86	-26.71	615,345.32	803,666.66	32.68872963	-103.48065544
- plan misses target center by 1.45usft at 11984.04usft MD (9359.45 TVD, 2499.88 N, -26.70 E)									
- Point									
A06N01-T05-2000(1H)	0.00	0.00	9,369.00	1,999.89	-21.28	614,845.35	803,672.09	32.68735540	-103.48065086
- plan misses target center by 0.61usft at 11483.92usft MD (9369.61 TVD, 1999.90 N, -21.28 E)									
- Point									
A06N01-T04-1500(1H)	0.00	0.00	9,380.00	1,499.92	-15.85	614,345.39	803,677.51	32.68598117	-103.48064629
- plan misses target center by 0.24usft at 10983.80usft MD (9379.76 TVD, 1499.91 N, -15.85 E)									
- Point									
A06N01-T03-1000(1H)	0.00	0.00	9,390.00	999.94	-10.43	613,845.41	803,682.94	32.68460691	-103.48064171
- plan hits target center									
- Point									
A06N01-T02-573(1H)	0.00	0.00	9,402.00	572.97	-5.79	613,418.44	803,687.57	32.68343333	-103.48063781
- plan misses target center by 0.07usft at 10056.53usft MD (9402.07 TVD, 572.98 N, -5.79 E)									
- Point									
A06N01-T01-473(1H)	0.00	0.00	9,405.00	472.98	-4.71	613,318.45	803,688.66	32.68315848	-103.48063689
- plan hits target center									
- Point									
A06N01-FTP(1H)	0.00	0.00	9,425.00	289.93	-2.74	613,135.40	803,690.62	32.68265534	-103.48063528
- plan misses target center by 13.21usft at 9772.81usft MD (9411.80 TVD, 289.44 N, -2.72 E)									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,838.00	1,838.00	Surface	13-3/8	17-1/2	
4,024.00	4,024.00	Intermediate	9-5/8	12-1/4	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,828.00	1,828.00	Rustler				
1,907.00	1,907.00	Salt				
3,201.00	3,201.00	Base of Salt				
3,413.00	3,413.00	Yates				
3,882.00	3,882.00	Seven Rivers				
3,888.00	3,888.00	Quaternary				
4,638.80	4,638.00	Queen				
5,267.47	5,265.00	Capitan Reef				
6,079.62	6,075.00	Delaware Cherry Canyon				
7,730.01	7,721.00	Bone Spring Lime				
8,821.98	8,811.00	First Bone Spring Carbonate				
9,097.59	9,079.00	Avalon Black				
9,498.94	9,358.00	First Bone Spring Sand				



Planning Report

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Company:	Catena Resources Operating, LLC	TVD Reference:	3863+25 @ 3888.00usft
Project:	Lea County NM N83-NM-EZ	MD Reference:	3863+25 @ 3888.00usft
Site:	A06 Foxtail	North Reference:	Grid
Well:	Foxtail 19-35-05 #1H	Survey Calculation Method:	Minimum Curvature
Wellbore:	1H		
Design:	Plan #1		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
8,850.26	8,839.28	-306.04	3.72	KOP: 8850.26' MD, -306.06 VS, 8839.28' TVD
9,771.46	9,411.85	288.09	-2.71	EOC: 9771.46' MD, 288.10 VS, 9411.85' TVD
20,139.68	9,088.07	10,649.49	-115.15	TD: 20140.68' MD, 10651.11 VS, 9088.00' TVD