

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010**UNORTHODOX
LOCATION****SUNDRY NOTICES AND REPORTS ON CARLSBAD FIELD OFFICE**
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.
OCD Artesia**SUBMIT IN TRIPLICATE - Other instructions on reverse side.**5. Lease Serial No.
NMNM109748
6. Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

8. Well Name and No.
ROAD RUNNER FEDERAL COM 1H9. API Well No.
30-015-43133-00-X110. Field and Pool, or Exploratory
WILDCAT11. County or Parish, and State
EDDY COUNTY, NM

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

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Change to Original A
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	PD

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BJA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

COG Operating LLC, respectfully requests approval for the following changes to the original approved APD.

BHL

From: 330' FNL & 380' FEL Section 25. T25S. R26E.
To: 50' FNL & 330' FEL Section 24. T25S. R30E
C102 attached.

Drilling Changes

The operator will drill to a final TD of 17,516? MD
See attached.

**SEE ATTACHED FOR
CONDITIONS OF APPROVAL****NM OIL CONSERVATION
ARTESIA DISTRICT****SEP 13 2016**

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

Electronic Submission #348667 verified by the BLM Well Information System.

For COG OPERATING LLC, sent to the Carlsbad

Committed to AFMSS for processing by MUSTAFA HAQUE on 08/31/2016 (16MH0011SE)

RECEIVED

Name (Printed/Typed) MAYTE X REYES

Title REGULATORY ANALYST

Signature (Electronic Submission)

Date 08/22/2016

THIS SPACE FOR FEDERAL OR STATE OFFICE USEApproved By (BLM Approver Not Specified) Mustafa HaqueTitle **PETROLEUM ENGINEER**

Date 09/01/2016

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

Office Carlsbad

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

**** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ****

Additional data for EC transaction #348667 that would not fit on the form

32. Additional remarks, continued

NOTE
WELL TYPE: OIL

SEP 13 2016

**PECOS DISTRICT
CONDITIONS OF APPROVAL**

RECEIVED

OPERATOR'S NAME:	COG Operating, LLC.
LEASE NO.:	NMNM-112907
WELL NAME & NO.:	Road Runner Federal 1H
SURFACE HOLE FOOTAGE:	0190' FSL & 0380' FEL
BOTTOM HOLE FOOTAGE	0050' FNL & 0330' FEL
LOCATION:	Section 25, T. 25 S., R 26 E., NMPM
COUNTY:	Eddy County, New Mexico

All previous COAs still apply.

MHH 09012016



Haque, Mustafa <mhaque@blm.gov>

FW: [External] EC Document Submitted - Road Runner Federal Com #1H

Melanie Wilson <MWilson@concho.com>

Thu, Sep 1, 2016 at 8:29 AM

To: "Haque, Mustafa" <mhaque@blm.gov>, Mayte Reyes <MReyes1@concho.com>

Hi Haque!

The proposed FTP is 330' FSL & 380' FEL Section 25, proposed LTP is 100' FNL & 330' FEL Section 24. We are in the process of filing an NSL application with OCD for the unorthodox LTP.

Let me know if you need anything else!!

Thank you!!

Melanie

From: Haque, Mustafa [mailto:mhaque@blm.gov]**Sent:** Thursday, September 01, 2016 6:49 AM**To:** Mayte Reyes; Melanie Wilson**Subject:** Re: FW: [External] EC Document Submitted - Road Runner Federal Com #1H

[Quoted text hidden]

NM OIL CONSERVATION
ARTESIA DISTRICT

DISTRICT I
1623 N. FRANCE DR., HOBBS, NM 88240
Phone: (505) 393-0181 Fax: (505) 393-0720

DISTRICT II
811 S. FIRST ST., ARTESIA, NM 88210
Phone: (505) 746-1283 Fax: (505) 746-0720

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

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 SOUTH ST. FRANCIS DR.
Santa Fe, New Mexico 87505

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

RECEIVED

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-43133	Pool Code	Pool Name Wildcat; Bone Spring
Property Code 314846	Property Name ROADRUNNER FEDERAL COM	Well Number 1H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3250.4'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	25	25-S	26-E		190	SOUTH	380	EAST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	24	25	26-E		50	NORTH	330	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
320			

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

SECTION 24
SECTION 25

NMNM096835
Y=408305.7 N
X=528361.2 E

NMNM109748
Y=408299.7 N
X=529675.0 E
NAD 27
PROPOSED BOTTOM HOLE LOCATION
Y=408251.2 N
X=529346.1 E
LAT.=32.122363° N
LONG.=104.238541° W

NMNM112907
Y=397718.3 N
X=528365.7 E

**Y=397715.3 N
X=529685.7 E**

GRID AZ. - 00°13'20"
HORZ. DIST. - 10345.2'
S.L. 380'

OPERATOR CERTIFICATION

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

Signature *Melanie J Wilson* Date *8/22/16*
Melanie J Wilson
Printed Name
mwilson@concho.com
E-mail Address

SURVEYOR CERTIFICATION

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

AUGUST 2, 2016
Date of Survey

Signature & Seal of Professional Surveyor

Chad L. Harcrow 8/3/16
Certificate No. CHAD HARCROW 17777
W.O. #16-623 DRAWN BY: CF



NM OIL CONSERVATION
ARTESIA DISTRICT

SEP 13 2016

RECEIVED

COG Operating LLC

Eddy County, NM (NAD-27 2015)

Roadrunner Federal Com #1H

Roadrunner Federal Com #1H

30-015-43133

Lateral #1

Design #3

Anticollision Report

21 August, 2016





TDS
Anticollision Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Reference Site: Roadrunner Federal Com #1H
Site Error: 0.00 usft
Reference Well: Roadrunner Federal Com #1H
Well Error: 0.00 usft
Reference Wellbore: Lateral #1
Reference Design: Design #3

Local Co-ordinate Reference: Well Roadrunner Federal Com #1H
TVD Reference: KB @ 3275.40usft (Latshaw 44)
MD Reference: KB @ 3275.40usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference:	Design #3		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 9,999.98 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date: 8/21/2016	
From (usft)	To (usft)	Survey (Wellbore)
0.00	17,516.56	Design #3 (Lateral #1)
		Tool Name
		MWD
		Description
		MWD - Standard

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Roadrunner Federal Com #11H						
Roadrunner Federal Com #11H - Lateral #1 - Design #1	6,908.83	6,908.63	29.90	-0.88	0.972	Level 1, CC
Roadrunner Federal Com #11H - Lateral #1 - Design #1	6,925.00	6,924.79	29.91	-0.94	0.969	Level 1, ES, SF

Offset Design Roadrunner Federal Com #11H - Roadrunner Federal Com #11H - Lateral #1 - Design #1														Offset Site Error: 0.00 usft
Survey Program: 0-MWD														Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		N-S (usft)	E-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
0.00	0.00	0.00	0.00	0.00	0.00	90.00	0.00	29.90	29.90					
100.00	100.00	99.80	99.80	0.08	0.08	90.00	0.00	29.90	29.90	29.73	0.17	177.547		
200.00	200.00	199.80	199.80	0.31	0.31	90.00	0.00	29.90	29.90	29.28	0.62	48.409		
300.00	300.00	299.80	299.80	0.53	0.53	90.00	0.00	29.90	29.90	28.83	1.07	28.018		
400.00	400.00	399.80	399.80	0.76	0.76	90.00	0.00	29.90	29.90	28.38	1.52	19.714		
500.00	500.00	499.80	499.80	0.98	0.98	90.00	0.00	29.90	29.90	27.93	1.97	15.207		
600.00	600.00	599.80	599.80	1.21	1.21	90.00	0.00	29.90	29.90	27.48	2.42	12.377		
700.00	700.00	699.80	699.80	1.43	1.43	90.00	0.00	29.90	29.90	27.03	2.87	10.435		
800.00	800.00	799.80	799.80	1.66	1.66	90.00	0.00	29.90	29.90	26.59	3.31	9.020		
900.00	900.00	899.80	899.80	1.88	1.88	90.00	0.00	29.90	29.90	26.14	3.76	7.943		
1,000.00	1,000.00	999.80	999.80	2.11	2.11	90.00	0.00	29.90	29.90	25.69	4.21	7.096		
1,100.00	1,100.00	1,099.80	1,099.80	2.33	2.33	90.00	0.00	29.90	29.90	25.24	4.66	6.412		
1,200.00	1,200.00	1,199.80	1,199.80	2.56	2.56	90.00	0.00	29.90	29.90	24.79	5.11	5.848		
1,300.00	1,300.00	1,299.80	1,299.80	2.78	2.78	90.00	0.00	29.90	29.90	24.34	5.56	5.375		
1,400.00	1,400.00	1,399.80	1,399.80	3.01	3.01	90.00	0.00	29.90	29.90	23.89	6.01	4.973		
1,500.00	1,500.00	1,499.80	1,499.80	3.23	3.23	90.00	0.00	29.90	29.90	23.44	6.46	4.627		
1,600.00	1,600.00	1,599.80	1,599.80	3.46	3.46	90.00	0.00	29.90	29.90	22.99	6.91	4.326		
1,700.00	1,700.00	1,699.80	1,699.80	3.68	3.68	90.00	0.00	29.90	29.90	22.54	7.36	4.062		
1,800.00	1,800.00	1,799.80	1,799.80	3.91	3.90	90.00	0.00	29.90	29.90	22.09	7.81	3.828		
1,900.00	1,900.00	1,899.80	1,899.80	4.13	4.13	90.00	0.00	29.90	29.90	21.64	8.26	3.620		
2,000.00	2,000.00	1,999.80	1,999.80	4.35	4.35	90.00	0.00	29.90	29.90	21.19	8.71	3.433		
2,100.00	2,100.00	2,099.80	2,099.80	4.58	4.58	90.00	0.00	29.90	29.90	20.74	9.16	3.265		
2,200.00	2,200.00	2,199.80	2,199.80	4.80	4.80	90.00	0.00	29.90	29.90	20.29	9.61	3.112		
2,300.00	2,300.00	2,299.80	2,299.80	5.03	5.03	90.00	0.00	29.90	29.90	19.84	10.06	2.973		
2,400.00	2,400.00	2,399.80	2,399.80	5.25	5.25	90.00	0.00	29.90	29.90	19.39	10.51	2.846		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



TDS
Anticollision Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Reference Site: Roadrunner Federal Com #1H
Site Error: 0.00 usft
Reference Well: Roadrunner Federal Com #1H
Well Error: 0.00 usft
Reference Wellbore: Lateral #1
Reference Design: Design #3

Local Co-ordinate Reference: Well Roadrunner Federal Com #1H
TVD Reference: KB @ 3275.40usft (Latshaw 44)
MD Reference: KB @ 3275.40usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Roadrunner Federal Com #11H - Roadrunner Federal Com #11H - Lateral #1 - Design #1													Offset Site Error: 0.00 usft
Survey Program: 0-MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)					
2,500.00	2,500.00	2,499.80	2,499.80	5.48	5.48	90.00	0.00	29.90	29.90	18.94	10.96	2.729	
2,600.00	2,600.00	2,599.80	2,599.80	5.70	5.70	90.00	0.00	29.90	29.90	18.49	11.41	2.621	
2,700.00	2,700.00	2,699.80	2,699.80	5.93	5.93	90.00	0.00	29.90	29.90	18.04	11.86	2.522	
2,800.00	2,800.00	2,799.80	2,799.80	6.15	6.15	90.00	0.00	29.90	29.90	17.59	12.31	2.430	
2,900.00	2,900.00	2,899.80	2,899.80	6.38	6.38	90.00	0.00	29.90	29.90	17.14	12.76	2.344	
3,000.00	3,000.00	2,999.80	2,999.80	6.60	6.60	90.00	0.00	29.90	29.90	16.70	13.20	2.264	
3,100.00	3,100.00	3,099.80	3,099.80	6.83	6.83	90.00	0.00	29.90	29.90	16.25	13.65	2.190	
3,200.00	3,200.00	3,199.80	3,199.80	7.05	7.05	90.00	0.00	29.90	29.90	15.80	14.10	2.120	
3,300.00	3,300.00	3,299.80	3,299.80	7.28	7.28	90.00	0.00	29.90	29.90	15.35	14.55	2.055	
3,400.00	3,400.00	3,399.80	3,399.80	7.50	7.50	90.00	0.00	29.90	29.90	14.90	15.00	1.993	
3,500.00	3,500.00	3,499.80	3,499.80	7.73	7.73	90.00	0.00	29.90	29.90	14.45	15.45	1.935	
3,600.00	3,600.00	3,599.80	3,599.80	7.95	7.95	90.00	0.00	29.90	29.90	14.00	15.90	1.880	
3,700.00	3,700.00	3,699.80	3,699.80	8.18	8.18	90.00	0.00	29.90	29.90	13.55	16.35	1.829	
3,800.00	3,800.00	3,799.80	3,799.80	8.40	8.40	90.00	0.00	29.90	29.90	13.10	16.80	1.780	
3,900.00	3,900.00	3,899.80	3,899.80	8.63	8.62	90.00	0.00	29.90	29.90	12.65	17.25	1.733	
4,000.00	4,000.00	3,999.80	3,999.80	8.85	8.85	90.00	0.00	29.90	29.90	12.20	17.70	1.689	
4,100.00	4,100.00	4,099.80	4,099.80	9.07	9.07	90.00	0.00	29.90	29.90	11.75	18.15	1.647	
4,200.00	4,200.00	4,199.80	4,199.80	9.30	9.30	90.00	0.00	29.90	29.90	11.30	18.60	1.608	
4,300.00	4,300.00	4,299.80	4,299.80	9.52	9.52	90.00	0.00	29.90	29.90	10.85	19.05	1.570	
4,400.00	4,400.00	4,399.80	4,399.80	9.75	9.75	90.00	0.00	29.90	29.90	10.40	19.50	1.533	
4,500.00	4,500.00	4,499.80	4,499.80	9.97	9.97	90.00	0.00	29.90	29.90	9.95	19.95	1.499	Level 3
4,600.00	4,600.00	4,599.80	4,599.80	10.20	10.20	90.00	0.00	29.90	29.90	9.50	20.40	1.466	Level 3
4,700.00	4,700.00	4,699.80	4,699.80	10.42	10.42	90.00	0.00	29.90	29.90	9.05	20.85	1.434	Level 3
4,800.00	4,800.00	4,799.80	4,799.80	10.65	10.65	90.00	0.00	29.90	29.90	8.60	21.30	1.404	Level 3
4,900.00	4,900.00	4,899.80	4,899.80	10.87	10.87	90.00	0.00	29.90	29.90	8.15	21.75	1.375	Level 3
5,000.00	5,000.00	4,999.80	4,999.80	11.10	11.10	90.00	0.00	29.90	29.90	7.70	22.20	1.347	Level 3
5,100.00	5,100.00	5,099.80	5,099.80	11.32	11.32	90.00	0.00	29.90	29.90	7.26	22.64	1.320	Level 3
5,200.00	5,200.00	5,199.80	5,199.80	11.55	11.55	90.00	0.00	29.90	29.90	6.81	23.09	1.295	Level 3
5,300.00	5,300.00	5,299.80	5,299.80	11.77	11.77	90.00	0.00	29.90	29.90	6.36	23.54	1.270	Level 3
5,400.00	5,400.00	5,399.80	5,399.80	12.00	12.00	90.00	0.00	29.90	29.90	5.91	23.99	1.246	Level 2
5,500.00	5,500.00	5,499.80	5,499.80	12.22	12.22	90.00	0.00	29.90	29.90	5.46	24.44	1.223	Level 2
5,600.00	5,600.00	5,599.80	5,599.80	12.45	12.45	90.00	0.00	29.90	29.90	5.01	24.89	1.201	Level 2
5,700.00	5,700.00	5,699.80	5,699.80	12.67	12.67	90.00	0.00	29.90	29.90	4.56	25.34	1.180	Level 2
5,800.00	5,800.00	5,799.80	5,799.80	12.90	12.90	90.00	0.00	29.90	29.90	4.11	25.79	1.159	Level 2
5,900.00	5,900.00	5,899.80	5,899.80	13.12	13.12	90.00	0.00	29.90	29.90	3.66	26.24	1.139	Level 2
6,000.00	6,000.00	5,999.80	5,999.80	13.35	13.35	90.00	0.00	29.90	29.90	3.21	26.69	1.120	Level 2
6,100.00	6,100.00	6,099.80	6,099.80	13.57	13.57	90.00	0.00	29.90	29.90	2.76	27.14	1.102	Level 2
6,200.00	6,200.00	6,199.80	6,199.80	13.80	13.79	90.00	0.00	29.90	29.90	2.31	27.59	1.084	Level 2
6,300.00	6,300.00	6,299.80	6,299.80	14.02	14.02	90.00	0.00	29.90	29.90	1.86	28.04	1.066	Level 2
6,400.00	6,400.00	6,399.80	6,399.80	14.24	14.24	90.00	0.00	29.90	29.90	1.41	28.49	1.050	Level 2
6,500.00	6,500.00	6,499.80	6,499.80	14.47	14.47	90.00	0.00	29.90	29.90	0.96	28.94	1.033	Level 2
6,600.00	6,600.00	6,599.80	6,599.80	14.69	14.69	90.00	0.00	29.90	29.90	0.51	29.39	1.017	Level 2
6,700.00	6,700.00	6,699.80	6,699.80	14.92	14.92	90.00	0.00	29.90	29.90	0.06	29.84	1.002	Level 2
6,800.00	6,800.00	6,799.80	6,799.80	15.14	15.14	90.00	0.00	29.90	29.90	-0.39	30.29	0.987	Level 1
6,898.55	6,898.55	6,898.35	6,898.35	15.37	15.36	90.00	0.00	29.90	29.90	-0.83	30.73	0.973	Level 1
6,900.00	6,900.00	6,899.80	6,899.80	15.37	15.37	89.78	0.00	29.90	29.90	-0.84	30.74	0.973	Level 1
6,908.83	6,908.83	6,908.63	6,908.63	15.39	15.39	89.99	0.00	29.90	29.90	-0.88	30.78	0.972	Level 1, CC
6,925.00	6,924.99	6,924.79	6,924.79	15.42	15.42	91.18	0.00	29.90	29.91	-0.94	30.85	0.969	Level 1, ES, SF
6,950.00	6,949.90	6,949.70	6,949.70	15.48	15.48	95.04	0.00	29.90	30.02	-0.94	30.96	0.970	Level 1
6,975.00	6,974.67	6,974.47	6,974.47	15.54	15.54	101.19	0.00	29.90	30.49	-0.58	31.07	0.981	Level 1
7,000.00	6,999.24	6,999.04	6,999.04	15.60	15.59	109.15	0.00	29.90	31.73	0.55	31.18	1.018	Level 2
7,025.00	7,023.53	7,023.33	7,023.33	15.65	15.65	118.08	0.00	29.90	34.17	2.88	31.29	1.092	Level 2

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



TDS
Anticollision Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Reference Site: Roadrunner Federal Com #1H
Site Error: 0.00 usft
Reference Well: Roadrunner Federal Com #1H
Well Error: 0.00 usft
Reference Wellbore: Lateral #1
Reference Design: Design #3

Local Co-ordinate Reference: Well Roadrunner Federal Com #1H
TVD Reference: KB @ 3275.40usft (Latshaw 44)
MD Reference: KB @ 3275.40usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Roadrunner Federal Com #11H - Roadrunner Federal Com #11H - Lateral #1 - Design #1														Offset Site Error	0.00 usft
Survey Program: 0-MWD														Offset Well Error	0.00 usft
Reference		Offset		Semi Major Axis		Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)				N-S (usft)	E-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
7,050.00	7,047.47	7,047.27	7,047.27	15.71	15.70			126.99	0.00	29.90	38.16	6.76	31.40	1.215	Level 2
7,075.00	7,071.01	7,070.81	7,070.81	15.77	15.75			135.05	0.00	29.90	43.88	12.37	31.51	1.393	Level 3
7,100.00	7,094.08	7,093.88	7,093.88	15.82	15.80			141.87	0.00	29.90	51.36	19.74	31.62	1.624	
7,125.00	7,116.61	7,116.41	7,116.41	15.88	15.85			147.42	0.00	29.90	60.49	28.77	31.73	1.907	
7,150.00	7,138.54	7,138.34	7,138.34	15.93	15.90			151.83	0.00	29.90	71.17	39.34	31.83	2.236	
7,175.00	7,159.81	7,159.61	7,159.61	15.98	15.95			155.31	0.00	29.90	83.26	51.33	31.93	2.608	
7,200.00	7,180.37	7,180.17	7,180.17	16.04	16.00			158.05	0.00	29.90	96.67	64.64	32.03	3.018	
7,225.00	7,200.15	7,199.95	7,199.95	16.11	16.04			160.21	0.00	29.90	111.29	79.17	32.12	3.465	
7,250.00	7,219.11	7,218.91	7,218.91	16.18	16.09			161.91	0.00	29.90	127.06	94.85	32.21	3.945	
7,275.00	7,237.19	7,236.99	7,236.99	16.26	16.13			163.23	0.00	29.90	143.90	111.60	32.29	4.456	
7,300.00	7,254.34	7,254.14	7,254.14	16.34	16.16			164.25	0.00	29.90	161.73	129.36	32.37	4.996	
7,325.00	7,270.52	7,270.32	7,270.32	16.43	16.20			165.00	0.00	29.90	180.49	148.04	32.45	5.562	
7,350.00	7,285.68	7,285.48	7,285.48	16.53	16.23			165.52	0.00	29.90	200.12	167.60	32.52	6.154	
7,375.00	7,299.77	7,299.57	7,299.57	16.64	16.27			165.83	0.00	29.90	220.56	187.97	32.58	6.769	
7,400.00	7,312.77	7,312.57	7,312.57	16.75	16.30			165.93	0.00	29.90	241.73	209.09	32.64	7.405	
7,425.00	7,324.63	7,324.43	7,324.43	16.87	16.32			165.80	0.00	29.90	263.58	230.88	32.70	8.061	
7,450.00	7,335.32	7,335.12	7,335.12	17.01	16.35			165.42	0.00	29.90	286.04	253.29	32.75	8.735	
7,475.00	7,344.82	7,344.62	7,344.62	17.15	16.37			164.71	0.00	29.90	309.05	276.26	32.79	9.426	
7,500.00	7,353.09	7,352.89	7,352.89	17.30	16.39			163.57	0.00	29.90	332.53	299.71	32.82	10.130	
7,525.00	7,360.12	7,359.92	7,359.92	17.46	16.40			161.79	0.00	29.90	356.43	323.57	32.86	10.848	
7,550.00	7,365.88	7,365.59	7,365.58	17.63	16.46			162.89	0.66	29.90	380.54	347.63	32.91	11.562	
7,575.00	7,370.36	7,422.86	7,422.69	17.81	16.55			165.22	4.06	29.90	404.57	371.73	32.84	12.321	
7,600.00	7,373.55	7,483.83	7,482.46	18.00	16.68			168.78	15.83	29.92	428.26	395.95	32.32	13.252	
7,625.00	7,375.43	7,626.69	7,613.12	18.19	17.00			173.39	72.28	29.97	450.60	421.31	29.28	15.388	
7,652.28	7,376.00	8,114.42	7,838.00	18.41	19.33			176.47	481.35	30.37	463.08	451.62	11.46	40.418	
7,700.00	7,375.63	8,162.14	7,837.98	18.82	19.73			176.49	529.07	30.42	463.43	451.60	11.82	39.191	
7,800.00	7,374.85	8,262.14	7,837.94	19.78	20.65			176.53	629.07	30.52	464.15	451.47	12.68	36.612	
7,900.00	7,374.07	8,362.14	7,837.90	20.85	21.67			176.57	729.06	30.62	464.87	451.23	13.64	34.092	
8,000.00	7,373.29	8,462.14	7,837.86	22.02	22.80			176.61	829.06	30.72	465.59	450.91	14.68	31.716	
8,100.00	7,372.51	8,562.13	7,837.82	23.28	24.01			176.65	929.06	30.82	466.31	450.52	15.79	29.526	
8,200.00	7,371.72	8,662.13	7,837.78	24.61	25.30			176.69	1,029.05	30.91	467.03	450.07	16.96	27.535	
8,300.00	7,370.94	8,762.13	7,837.74	25.99	26.65			176.74	1,129.05	31.01	467.76	449.58	18.17	25.738	
8,400.00	7,370.16	8,862.12	7,837.70	27.43	28.06			176.78	1,229.05	31.11	468.48	449.06	19.42	24.121	
8,500.00	7,369.38	8,962.12	7,837.66	28.92	29.51			176.82	1,329.04	31.21	469.20	448.50	20.70	22.667	
8,600.00	7,368.60	9,062.12	7,837.62	30.44	31.00			176.86	1,429.04	31.31	469.92	447.92	22.00	21.359	
8,700.00	7,367.82	9,162.11	7,837.58	31.99	32.52			176.90	1,529.04	31.41	470.65	447.32	23.32	20.179	
8,800.00	7,367.04	9,262.11	7,837.54	33.57	34.08			176.94	1,629.03	31.51	471.37	446.71	24.66	19.113	
8,900.00	7,366.26	9,362.11	7,837.50	35.18	35.66			176.98	1,729.03	31.60	472.09	446.08	26.02	18.147	
9,000.00	7,365.48	9,462.10	7,837.46	36.81	37.27			177.02	1,829.03	31.70	472.82	445.44	27.38	17.269	
9,100.00	7,364.70	9,562.10	7,837.42	38.45	38.89			177.06	1,929.02	31.80	473.54	444.79	28.75	16.468	
9,200.00	7,363.92	9,662.10	7,837.38	40.11	40.53			177.09	2,029.02	31.90	474.27	444.13	30.14	15.736	
9,300.00	7,363.14	9,762.09	7,837.33	41.78	42.19			177.13	2,129.02	32.00	474.99	443.46	31.53	15.065	
9,400.00	7,362.36	9,862.09	7,837.29	43.47	43.86			177.17	2,229.01	32.10	475.72	442.79	32.93	14.448	
9,500.00	7,361.58	9,962.09	7,837.25	45.17	45.54			177.21	2,329.01	32.20	476.44	442.11	34.33	13.878	
9,600.00	7,360.80	10,062.08	7,837.21	46.87	47.23			177.25	2,429.01	32.29	477.17	441.43	35.74	13.352	
9,700.00	7,360.02	10,162.08	7,837.17	48.59	48.94			177.29	2,529.00	32.39	477.89	440.74	37.15	12.863	
9,800.00	7,359.24	10,262.08	7,837.13	50.31	50.65			177.33	2,629.00	32.49	478.62	440.05	38.57	12.410	
9,900.00	7,358.45	10,362.08	7,837.09	52.04	52.37			177.37	2,729.00	32.59	479.34	439.35	39.99	11.987	
10,000.00	7,357.67	10,462.07	7,837.05	53.78	54.10			177.41	2,829.00	32.69	480.07	438.66	41.41	11.593	
10,100.00	7,356.89	10,562.07	7,837.01	55.52	55.83			177.44	2,928.99	32.79	480.79	437.96	42.84	11.224	
10,200.00	7,356.11	10,662.07	7,836.97	57.27	57.57			177.48	3,028.99	32.89	481.52	437.26	44.26	10.878	
10,300.00	7,355.33	10,762.06	7,836.93	59.02	59.31			177.52	3,128.99	32.99	482.25	436.55	45.69	10.554	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



TDS
Anticollision Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Reference Site: Roadrunner Federal Com #1H
Site Error: 0.00 usft
Reference Well: Roadrunner Federal Com #1H
Well Error: 0.00 usft
Reference Wellbore: Lateral #1
Reference Design: Design #3

Local Co-ordinate Reference: Well Roadrunner Federal Com #1H
TVD Reference: KB @ 3275.40usft (Latshaw 44)
MD Reference: KB @ 3275.40usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Offset Design Roadrunner Federal Com #11H - Roadrunner Federal Com #11H - Lateral #1 - Design #1													Offset Site Error: 0.00 usft
Survey Program: 0-MWD													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		Offset Wellbore Centre N-S (usft)	Offset Wellbore Centre E-W (usft)				Between Centres (usft)	Between Ellipses (usft)
10,400.00	7,354.55	10,862.06	7,836.89	60.78	61.06	177.56	3,228.98	33.08	482.97	435.85	47.13	10.248	
10,500.00	7,353.77	10,962.06	7,836.85	62.54	62.82	177.60	3,328.98	33.18	483.70	435.14	48.56	9.961	
10,600.00	7,352.99	11,062.05	7,836.81	64.31	64.57	177.64	3,428.98	33.28	484.43	434.43	50.00	9.689	
10,700.00	7,352.21	11,162.05	7,836.77	66.08	66.34	177.67	3,528.97	33.38	485.16	433.72	51.43	9.433	
10,800.00	7,351.43	11,262.05	7,836.73	67.85	68.10	177.71	3,628.97	33.48	485.88	433.01	52.87	9.190	
10,900.00	7,350.65	11,362.04	7,836.69	69.62	69.87	177.75	3,728.97	33.58	486.61	432.30	54.31	8.960	
11,000.00	7,349.87	11,462.04	7,836.64	71.40	71.64	177.79	3,828.96	33.68	487.34	431.59	55.75	8.741	
11,100.00	7,349.09	11,562.04	7,836.60	73.18	73.41	177.82	3,928.96	33.77	488.07	430.87	57.19	8.533	
11,200.00	7,348.31	11,662.03	7,836.56	74.96	75.19	177.86	4,028.96	33.87	488.80	430.16	58.64	8.336	
11,300.00	7,347.53	11,762.03	7,836.52	76.74	76.97	177.90	4,128.95	33.97	489.53	429.45	60.08	8.148	
11,400.00	7,346.75	11,862.03	7,836.48	78.53	78.75	177.93	4,228.95	34.07	490.26	428.73	61.53	7.968	
11,500.00	7,345.97	11,962.02	7,836.44	80.32	80.54	177.97	4,328.95	34.17	490.98	428.01	62.97	7.797	
11,600.00	7,345.18	12,062.02	7,836.40	82.11	82.32	178.01	4,428.94	34.27	491.71	427.30	64.42	7.633	
11,700.00	7,344.40	12,162.02	7,836.36	83.90	84.11	178.04	4,528.94	34.37	492.44	426.58	65.86	7.477	
11,800.00	7,343.62	12,262.02	7,836.32	85.69	85.90	178.08	4,628.94	34.46	493.17	425.86	67.31	7.327	
11,900.00	7,342.84	12,362.01	7,836.28	87.48	87.69	178.12	4,728.93	34.56	493.90	425.15	68.76	7.183	
12,000.00	7,342.06	12,462.01	7,836.24	89.28	89.48	178.15	4,828.93	34.66	494.63	424.43	70.21	7.046	
12,100.00	7,341.28	12,562.01	7,836.20	91.08	91.28	178.19	4,928.93	34.76	495.36	423.71	71.65	6.913	
12,200.00	7,340.50	12,662.00	7,836.16	92.87	93.07	178.23	5,028.92	34.86	496.09	422.99	73.10	6.786	
12,300.00	7,339.72	12,762.00	7,836.12	94.67	94.87	178.26	5,128.92	34.96	496.83	422.27	74.55	6.664	
12,400.00	7,338.94	12,862.00	7,836.08	96.47	96.66	178.30	5,228.92	35.06	497.56	421.55	76.00	6.547	
12,500.00	7,338.16	12,961.99	7,836.04	98.27	98.46	178.33	5,328.92	35.15	498.29	420.84	77.45	6.433	
12,600.00	7,337.38	13,061.99	7,836.00	100.08	100.26	178.37	5,428.91	35.25	499.02	420.12	78.90	6.324	
12,700.00	7,336.60	13,161.99	7,835.95	101.88	102.06	178.40	5,528.91	35.35	499.75	419.40	80.35	6.219	
12,800.00	7,335.82	13,261.98	7,835.91	103.68	103.86	178.44	5,628.91	35.45	500.48	418.68	81.81	6.118	
12,900.00	7,335.04	13,361.98	7,835.87	105.49	105.67	178.47	5,728.90	35.55	501.21	417.96	83.26	6.020	
13,000.00	7,334.26	13,461.98	7,835.83	107.29	107.47	178.51	5,828.90	35.65	501.95	417.24	84.71	5.926	
13,100.00	7,333.48	13,561.97	7,835.79	109.10	109.27	178.54	5,928.90	35.75	502.68	416.52	86.16	5.834	
13,200.00	7,332.70	13,661.97	7,835.75	110.91	111.08	178.58	6,028.89	35.84	503.41	415.80	87.61	5.746	
13,300.00	7,331.91	13,761.97	7,835.71	112.71	112.89	178.61	6,128.89	35.94	504.14	415.08	89.07	5.660	
13,400.00	7,331.13	13,861.96	7,835.67	114.52	114.69	178.65	6,228.89	36.04	504.88	414.36	90.52	5.578	
13,500.00	7,330.35	13,961.96	7,835.63	116.33	116.50	178.68	6,328.88	36.14	505.61	413.64	91.97	5.497	
13,600.00	7,329.57	14,061.96	7,835.59	118.14	118.31	178.72	6,428.88	36.24	506.34	412.92	93.43	5.420	
13,700.00	7,328.79	14,161.96	7,835.55	119.95	120.12	178.75	6,528.88	36.34	507.08	412.20	94.88	5.344	
13,800.00	7,328.01	14,261.95	7,835.51	121.76	121.92	178.79	6,628.87	36.44	507.81	411.48	96.34	5.271	
13,900.00	7,327.23	14,361.95	7,835.47	123.57	123.73	178.82	6,728.87	36.53	508.54	410.75	97.79	5.200	
14,000.00	7,326.45	14,461.95	7,835.43	125.38	125.54	178.86	6,828.87	36.63	509.28	410.03	99.24	5.132	
14,100.00	7,325.67	14,561.94	7,835.39	127.19	127.35	178.89	6,928.86	36.73	510.01	409.31	100.70	5.065	
14,200.00	7,324.89	14,661.94	7,835.35	129.01	129.17	178.92	7,028.86	36.83	510.75	408.59	102.15	5.000	
14,300.00	7,324.11	14,761.94	7,835.31	130.82	130.98	178.96	7,128.86	36.93	511.48	407.87	103.61	4.937	
14,400.00	7,323.33	14,861.93	7,835.26	132.63	132.79	178.99	7,228.85	37.03	512.22	407.15	105.07	4.875	
14,500.00	7,322.55	14,961.93	7,835.22	134.45	134.60	179.03	7,328.85	37.13	512.95	406.43	106.52	4.815	
14,600.00	7,321.77	15,061.93	7,835.18	136.26	136.42	179.06	7,428.85	37.22	513.69	405.71	107.98	4.757	
14,700.00	7,320.99	15,161.92	7,835.14	138.07	138.23	179.09	7,528.84	37.32	514.42	404.99	109.43	4.701	
14,800.00	7,320.21	15,261.92	7,835.10	139.89	140.04	179.13	7,628.84	37.42	515.16	404.27	110.89	4.646	
14,900.00	7,319.42	15,361.92	7,835.06	141.70	141.86	179.16	7,728.84	37.52	515.89	403.54	112.35	4.592	
15,000.00	7,318.64	15,461.91	7,835.02	143.52	143.67	179.19	7,828.83	37.62	516.63	402.82	113.80	4.540	
15,100.00	7,317.86	15,561.91	7,834.98	145.33	145.49	179.23	7,928.83	37.72	517.36	402.10	115.26	4.489	
15,200.00	7,317.08	15,661.91	7,834.94	147.15	147.30	179.26	8,028.83	37.82	518.10	401.38	116.72	4.439	
15,300.00	7,316.30	15,761.91	7,834.90	148.97	149.12	179.29	8,128.83	37.91	518.84	400.66	118.18	4.390	
15,400.00	7,315.52	15,861.90	7,834.86	150.78	150.93	179.33	8,228.82	38.01	519.57	399.94	119.64	4.343	
15,500.00	7,314.74	15,961.90	7,834.82	152.60	152.75	179.36	8,328.82	38.11	520.31	399.22	121.09	4.297	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



TDS
Anticollision Report



Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Reference Site: Roadrunner Federal Com #1H
Site Error: 0.00 usft
Reference Well: Roadrunner Federal Com #1H
Well Error: 0.00 usft
Reference Wellbore: Lateral #1
Reference Design: Design #3

Local Co-ordinate Reference: Well Roadrunner Federal Com #1H
TVD Reference: KB @ 3275.40usft (Latshaw-44)
MD Reference: KB @ 3275.40usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Roadrunner Federal Com #11H - Roadrunner Federal Com #11H - Lateral #1 - Design #1														Offset Site Error: 0.00 usft
Survey Program: 0-MWD														Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis		Distance		Warning								
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre N-S (usft)	Offset Wellbore Centre E-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
15,600.00	7,313.96	16,061.90	7,834.78	154.42	154.56	179.39	8,428.82	38.21	521.05	398.49	122.55	4.252		
15,700.00	7,313.18	16,161.89	7,834.74	156.23	156.38	179.42	8,528.81	38.31	521.78	397.77	124.01	4.208		
15,800.00	7,312.40	16,261.89	7,834.70	158.05	158.20	179.46	8,628.81	38.41	522.52	397.05	125.47	4.164		
15,900.00	7,311.62	16,361.89	7,834.66	159.87	160.01	179.49	8,728.81	38.51	523.26	396.33	126.93	4.122		
16,000.00	7,310.84	16,461.88	7,834.62	161.69	161.83	179.52	8,828.80	38.60	524.00	395.61	128.39	4.081		
16,100.00	7,310.06	16,561.88	7,834.57	163.50	163.65	179.55	8,928.80	38.70	524.73	394.88	129.85	4.041		
16,200.00	7,309.28	16,661.88	7,834.53	165.32	165.47	179.59	9,028.80	38.80	525.47	394.16	131.31	4.002		
16,300.00	7,308.50	16,761.87	7,834.49	167.14	167.29	179.62	9,128.79	38.90	526.21	393.44	132.77	3.963		
16,400.00	7,307.72	16,861.87	7,834.45	168.96	169.10	179.65	9,228.79	39.00	526.95	392.72	134.23	3.926		
16,500.00	7,306.94	16,961.87	7,834.41	170.78	170.92	179.68	9,328.79	39.10	527.69	391.99	135.69	3.889		
16,600.00	7,306.15	17,061.86	7,834.37	172.60	172.74	179.71	9,428.78	39.20	528.42	391.27	137.15	3.853		
16,700.00	7,305.37	17,161.86	7,834.33	174.42	174.56	179.74	9,528.78	39.30	529.16	390.55	138.61	3.818		
16,800.00	7,304.59	17,261.86	7,834.29	176.23	176.38	179.78	9,628.78	39.39	529.90	389.83	140.08	3.783		
16,900.00	7,303.81	17,361.85	7,834.25	178.05	178.20	179.81	9,728.77	39.49	530.64	389.10	141.54	3.749		
17,000.00	7,303.03	17,461.85	7,834.21	179.87	180.02	179.84	9,828.77	39.59	531.38	388.38	143.00	3.716		
17,100.00	7,302.25	17,561.85	7,834.17	181.69	181.84	179.87	9,928.77	39.69	532.12	387.66	144.46	3.683		
17,200.00	7,301.47	17,661.85	7,834.13	183.51	183.66	179.90	10,028.76	39.79	532.86	386.93	145.92	3.652		
17,300.00	7,300.69	17,761.84	7,834.09	185.33	185.48	179.93	10,128.76	39.89	533.60	386.21	147.39	3.620		
17,400.00	7,299.91	17,861.84	7,834.05	187.15	187.30	179.96	10,228.76	39.99	534.34	385.49	148.85	3.590		
17,500.00	7,299.13	17,961.84	7,834.01	188.97	189.12	179.99	10,328.75	40.08	535.08	384.76	150.31	3.560		
17,516.56	7,299.00	17,978.40	7,834.00	189.28	189.42	-180.00	10,345.32	40.10	535.20	384.64	150.56	3.555		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



TDS
Anticollision Report



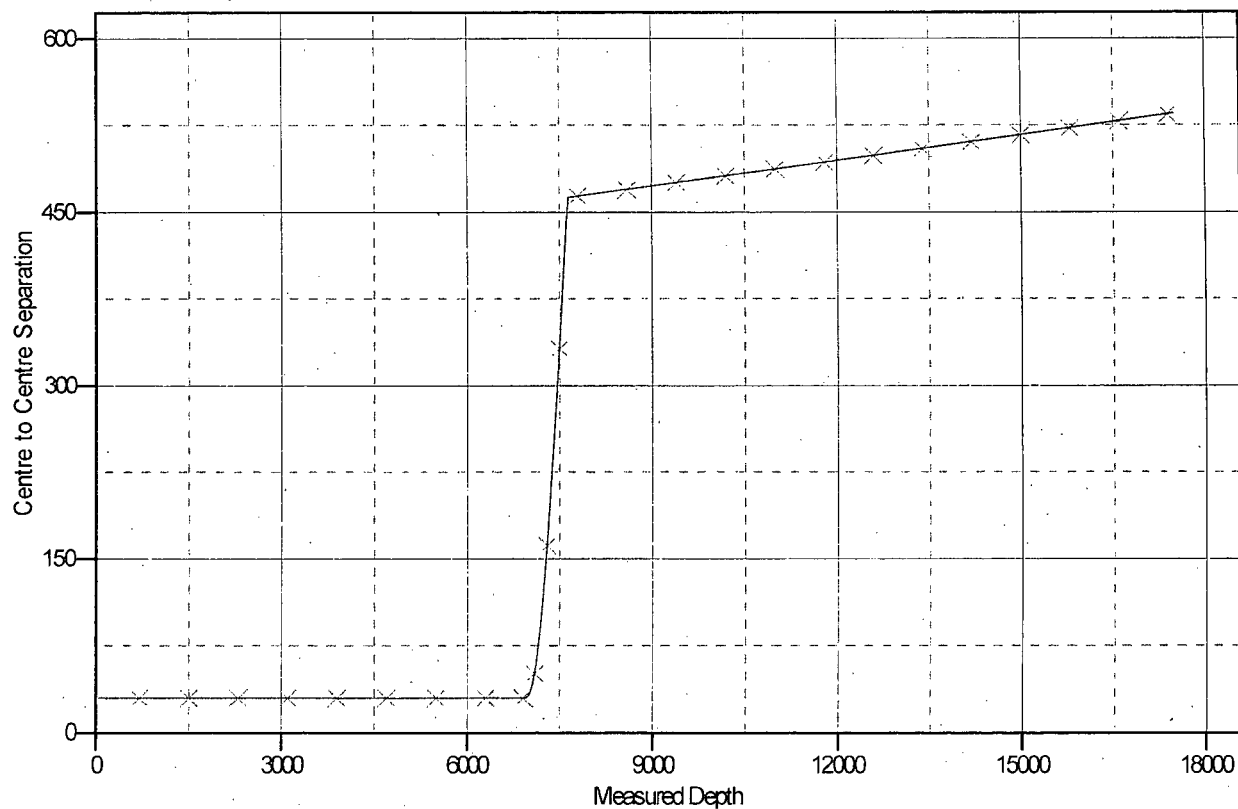
Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Reference Site: Roadrunner Federal Com #1H
Site Error: 0.00 usft
Reference Well: Roadrunner Federal Com #1H
Well Error: 0.00 usft
Reference Wellbore: Lateral #1
Reference Design: Design #3

Local Co-ordinate Reference: Well Roadrunner Federal Com #1H
TVD Reference: KB @ 3275.40usft (Latshaw 44)
MD Reference: KB @ 3275.40usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB @ 3275.40usft (Latshaw 44)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Roadrunner Federal Com #1H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.05°

Ladder Plot



LEGEND

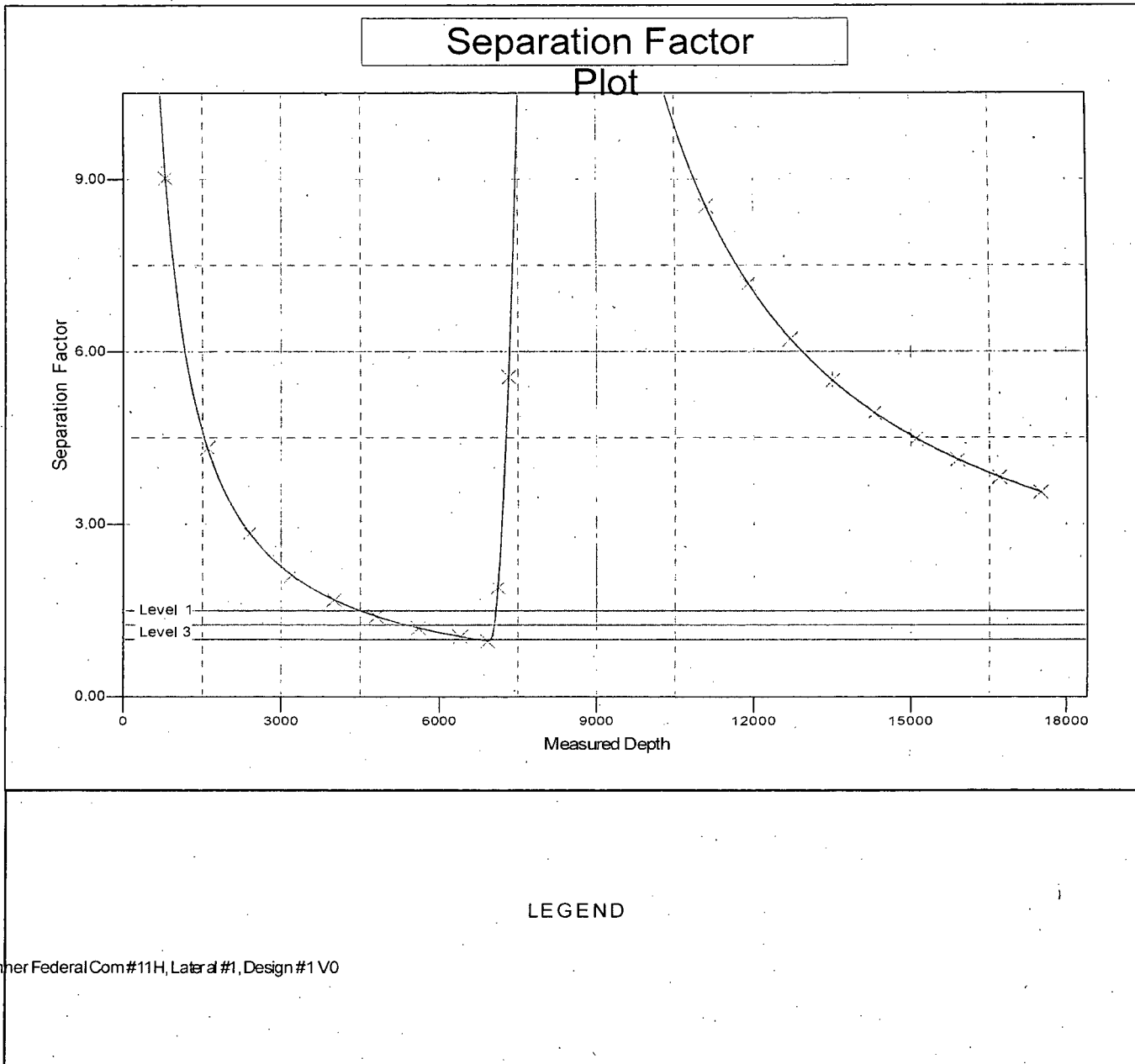
Inner Federal Com #11H, Lateral #1, Design #1 V0

Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Reference Site: Roadrunner Federal Com #1H
Site Error: 0.00 usft
Reference Well: Roadrunner Federal Com #1H
Well Error: 0.00 usft
Reference Wellbore: Lateral #1
Reference Design: Design #3

Local Co-ordinate Reference: Well Roadrunner Federal Com #1H
TVD Reference: KB @ 3275.40usft (Latshaw 44)
MD Reference: KB @ 3275.40usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Single User Db
Offset TVD Reference: Offset Datum

Reference Depths are relative to KB @ 3275.40usft (Latshaw 44)
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Roadrunner Federal Com #1H
Coordinate System is US State Plane 1927 (Exact solution), New Mexico East 30
Grid Convergence at Surface is: 0.05°





COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Site: Roadrunner Federal Com #1H
Well: Roadrunner Federal Com #1H
Wellbore: Lateral #1

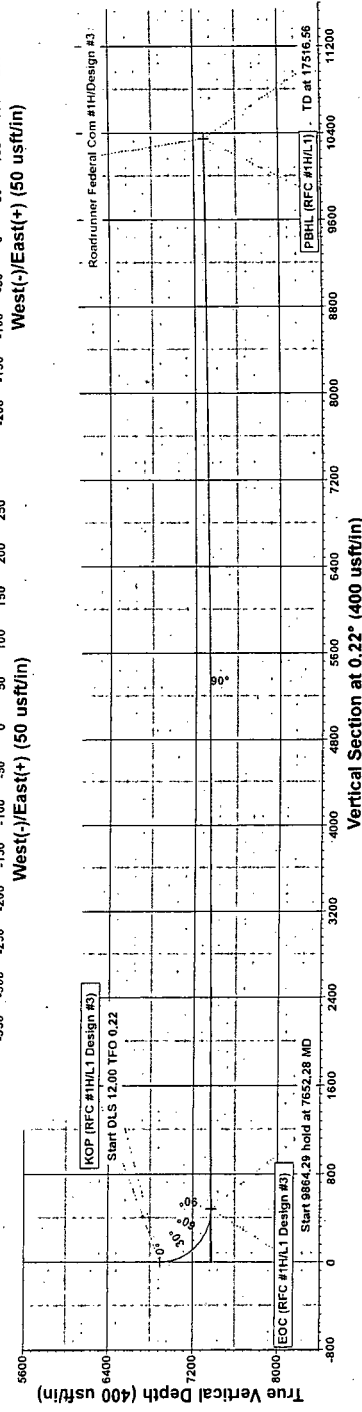
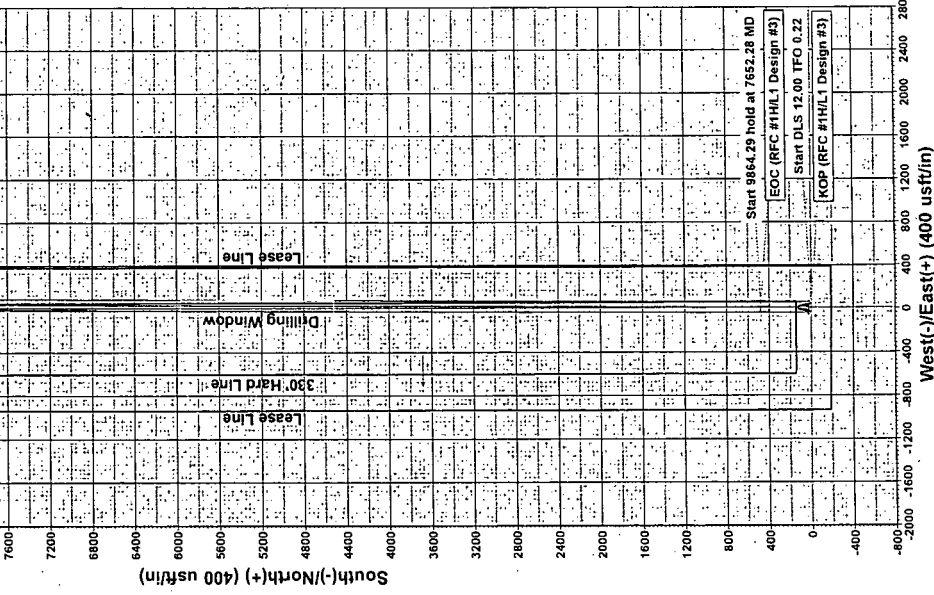
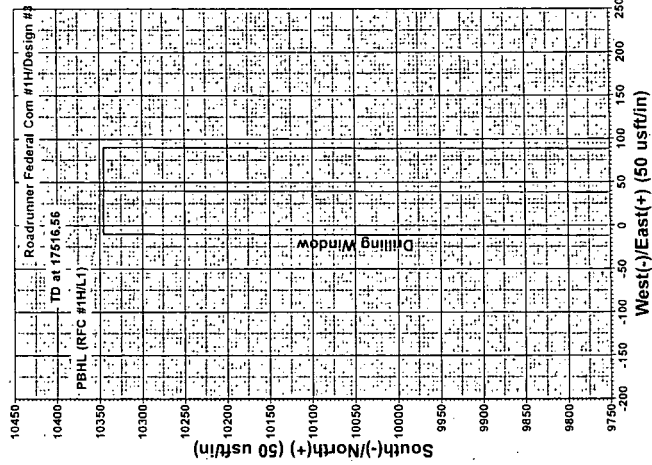
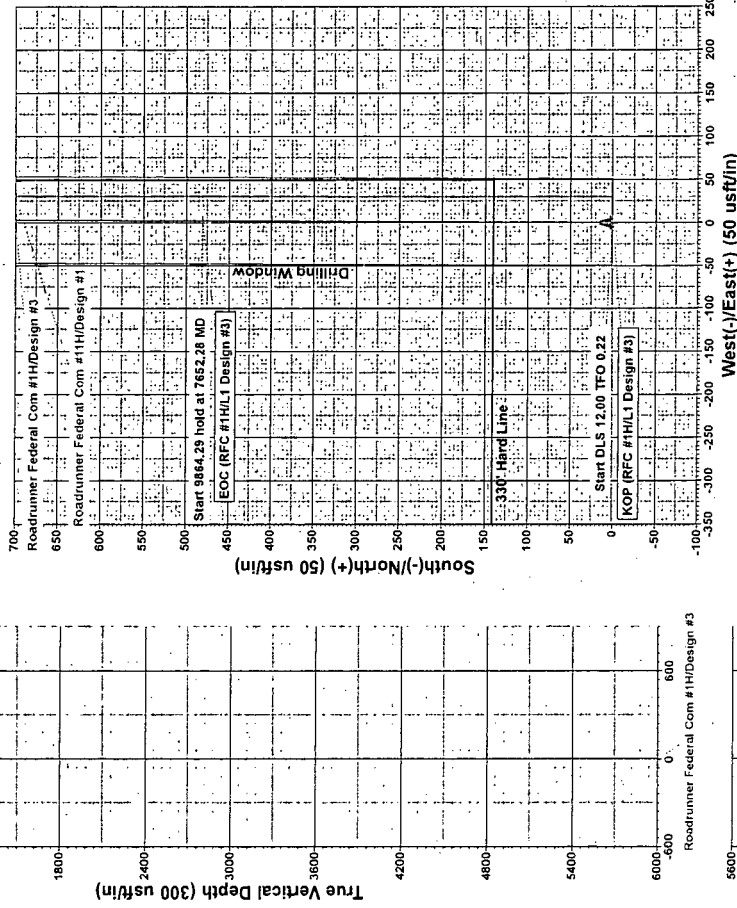
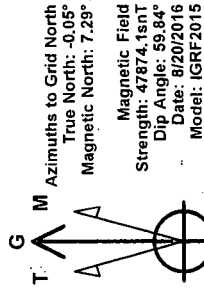
Plan: Design #3 (Roadrunner Federal Com #1H/Lateral #1)

WELL DETAILS: Roadrunner Federal Com #1H
Ground Elevation: 3250.40
RKB Elevation: KB @ 3275.40usft (Latshaw 44)
Rig Name: Latshaw 44

Northing 397906.10 Easting 529306.00 Latitude 32° 5' 38.128 N Longitude 104° 14' 19.319 W

Section Details

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	Vsect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	6998.55	0.00	0.00	6998.55	0.00	0.00	0.00	0.00	0.00
3	7652.28	90.45	0.22	7376.00	481.19	1.87	12.00	0.22	481.19
4	17516.56	90.45	0.22	7299.00	10345.10	40.10	0.00	0.00	0.00



Terra Directional Services
3705 South County Road 1210, Midland, TX 79706
4432.618.1210

Plan: Design #3 (Roadrunner Federal Com #1H/Lateral #1)
Created By: Well Planner Date: 14:38, August 21, 2016

PROJECT DETAILS: Eddy County, NM (NAD-27 2015)
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid



NM OIL CONSERVATION
ARTESIA DISTRICT
SEP 13 2016

RECEIVED

COG Operating LLC

Eddy County, NM (NAD-27 2015)

Roadrunner Federal Com #1H

Roadrunner Federal Com #1H

30-015-43133

Lateral #1

Plan: Design #3

Standard Planning Report

20 August, 2016





TDS
Planning Report



Database: EDM 5000.1 Single User Db
Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Site: Roadrunner Federal Com #1H
Well: Roadrunner Federal Com #1H
Wellbore: Lateral #1
Design: Design #3

Local Co-ordinate Reference: Site Roadrunner Federal Com #1H
TVD Reference: KB @ 3275.40usft (Latshaw 44)
MD Reference: KB @ 3275.40usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project: Eddy County, NM (NAD-27 2015)

Map System: US State Plane 1927 (Exact solution)
Geo Datum: NAD 1927 (NADCON CONUS)
Map Zone: New Mexico East 3001

System Datum: Mean Sea Level

Site: Roadrunner Federal Com #1H

Site Position: Northing: 397,906.10 usft Latitude: 32° 5' 38.128 N
From: Map Easting: 529,306.00 usft Longitude: 104° 14' 19.319 W
Position Uncertainty: 0.00 usft Slot Radius: 13.20 in Grid Convergence: 0.05 °

Well: Roadrunner Federal Com #1H

Well Position: +N-S 0.00 usft Northing: 397,906.10 usft Latitude: 32° 5' 38.128 N
+E-W 0.00 usft Easting: 529,306.00 usft Longitude: 104° 14' 19.319 W
Position Uncertainty: 0.00 usft Wellhead Elevation: 0.00 usft Ground Level: 3,250.40 usft

Wellbore: Lateral #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	8/20/2016	7.34	59.84	47,874

Design: Design #3

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	0.22

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	
6,898.55	0.00	0.00	6,898.55	0.00	0.00	0.00	0.00	0.00	0.00	
7,652.28	90.45	0.22	7,376.00	481.19	1.87	12.00	12.00	0.03	0.22	
17,516.56	90.45	0.22	7,299.00	10,345.10	40.10	0.00	0.00	0.00	0.00	PBHL (RFC #1H/L1)



TDS
Planning Report



Database: EDM 5000.1 Single User Db
Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Site: Roadrunner Federal Com #1H
Well: Roadrunner Federal Com #1H
Wellbore: Lateral #1
Design: Design #3

Local Co-ordinate Reference: Site Roadrunner Federal Com #1H
TVD Reference: KB @ 3275.40usft (Latshaw 44)
MD Reference: KB @ 3275.40usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
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
3,300.00	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
3,500.00	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
3,900.00	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
4,100.00	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	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00



Database: EDM 5000.1 Single User Db
Company: COG Operating LLC
Project: Eddy County, NM (NAD-27 2015)
Site: Roadrunner Federal Com #1H
Well: Roadrunner Federal Com #1H
Wellbore: Lateral #1
Design: Design #3

Local Co-ordinate Reference: Site Roadrunner Federal Com #1H
TVD Reference: KB @ 3275.40usft (Latshaw 44)
MD Reference: KB @ 3275.40usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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)
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,300.00	0.00	0.00	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,400.00	0.00	0.00	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,500.00	0.00	0.00	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,600.00	0.00	0.00	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,700.00	0.00	0.00	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,800.00	0.00	0.00	0.00	0.00	0.00	0.00
6,898.55	0.00	0.00	6,898.55	0.00	0.00	0.00	0.00	0.00	0.00
Start DLS 12.00 TFO 0.22									
6,900.00	0.17	0.22	6,900.00	0.00	0.00	0.00	12.00	12.00	0.00
6,925.00	3.17	0.22	6,924.99	0.73	0.00	0.73	12.00	12.00	0.00
6,950.00	6.17	0.22	6,949.90	2.77	0.01	2.77	12.00	12.00	0.00
6,975.00	9.17	0.22	6,974.67	6.11	0.02	6.11	12.00	12.00	0.00
7,000.00	12.17	0.22	6,999.24	10.74	0.04	10.74	12.00	12.00	0.00
7,025.00	15.17	0.22	7,023.53	16.65	0.06	16.65	12.00	12.00	0.00
7,050.00	18.17	0.22	7,047.47	23.82	0.09	23.82	12.00	12.00	0.00
7,075.00	21.17	0.22	7,071.01	32.23	0.12	32.23	12.00	12.00	0.00
7,100.00	24.17	0.22	7,094.08	41.87	0.16	41.87	12.00	12.00	0.00
7,125.00	27.17	0.22	7,116.61	52.70	0.20	52.70	12.00	12.00	0.00
7,150.00	30.17	0.22	7,138.54	64.69	0.25	64.70	12.00	12.00	0.00
7,175.00	33.17	0.22	7,159.81	77.82	0.30	77.82	12.00	12.00	0.00
7,200.00	36.17	0.22	7,180.37	92.04	0.36	92.04	12.00	12.00	0.00
7,225.00	39.17	0.22	7,200.15	107.32	0.42	107.32	12.00	12.00	0.00
7,250.00	42.17	0.22	7,219.11	123.61	0.48	123.61	12.00	12.00	0.00
7,275.00	45.17	0.22	7,237.19	140.87	0.55	140.87	12.00	12.00	0.00
7,300.00	48.17	0.22	7,254.34	159.06	0.62	159.06	12.00	12.00	0.00
7,325.00	51.17	0.22	7,270.52	178.11	0.69	178.11	12.00	12.00	0.00
7,350.00	54.17	0.22	7,285.68	197.99	0.77	197.99	12.00	12.00	0.00
7,375.00	57.17	0.22	7,299.77	218.63	0.85	218.64	12.00	12.00	0.00
7,400.00	60.17	0.22	7,312.77	239.99	0.93	239.99	12.00	12.00	0.00
7,425.00	63.17	0.22	7,324.63	261.99	1.02	261.99	12.00	12.00	0.00
7,450.00	66.17	0.22	7,335.32	284.59	1.10	284.59	12.00	12.00	0.00
7,475.00	69.17	0.22	7,344.82	307.71	1.19	307.71	12.00	12.00	0.00
7,500.00	72.17	0.22	7,353.09	331.30	1.28	331.30	12.00	12.00	0.00
7,525.00	75.17	0.22	7,360.12	355.29	1.38	355.29	12.00	12.00	0.00
7,550.00	78.17	0.22	7,365.88	379.61	1.47	379.61	12.00	12.00	0.00
7,575.00	81.17	0.22	7,370.36	404.20	1.57	404.21	12.00	12.00	0.00
7,600.00	84.17	0.22	7,373.55	429.00	1.66	429.00	12.00	12.00	0.00
7,625.00	87.17	0.22	7,375.43	453.92	1.76	453.92	12.00	12.00	0.00
7,652.28	90.45	0.22	7,376.00	481.19	1.87	481.19	12.00	12.00	0.00
Start 9864.29 hold at 7652.28 MD									
7,700.00	90.45	0.22	7,375.63	528.91	2.05	528.91	0.00	0.00	0.00
7,800.00	90.45	0.22	7,374.85	628.91	2.44	628.91	0.00	0.00	0.00
7,900.00	90.45	0.22	7,374.07	728.90	2.83	728.91	0.00	0.00	0.00
8,000.00	90.45	0.22	7,373.29	828.90	3.21	828.90	0.00	0.00	0.00



Database: EDM 5000.1 Single User Db
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Well: Roadrunner Federal Com #1H
Wellbore: Lateral #1
Design: Design #3

Local Co-ordinate Reference: Site Roadrunner Federal Com #1H
TVD Reference: KB @ 3275.40usft (Latshaw 44)
MD Reference: KB @ 3275.40usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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)
8,100.00	90.45	0.22	7,372.51	928.89	3.60	928.90	0.00	0.00	0.00
8,200.00	90.45	0.22	7,371.72	1,028.89	3.99	1,028.90	0.00	0.00	0.00
8,300.00	90.45	0.22	7,370.94	1,128.89	4.38	1,128.90	0.00	0.00	0.00
8,400.00	90.45	0.22	7,370.16	1,228.88	4.76	1,228.89	0.00	0.00	0.00
8,500.00	90.45	0.22	7,369.38	1,328.88	5.15	1,328.89	0.00	0.00	0.00
8,600.00	90.45	0.22	7,368.60	1,428.88	5.54	1,428.89	0.00	0.00	0.00
8,700.00	90.45	0.22	7,367.82	1,528.87	5.93	1,528.88	0.00	0.00	0.00
8,800.00	90.45	0.22	7,367.04	1,628.87	6.31	1,628.88	0.00	0.00	0.00
8,900.00	90.45	0.22	7,366.26	1,728.86	6.70	1,728.88	0.00	0.00	0.00
9,000.00	90.45	0.22	7,365.48	1,828.86	7.09	1,828.87	0.00	0.00	0.00
9,100.00	90.45	0.22	7,364.70	1,928.86	7.48	1,928.87	0.00	0.00	0.00
9,200.00	90.45	0.22	7,363.92	2,028.85	7.86	2,028.87	0.00	0.00	0.00
9,300.00	90.45	0.22	7,363.14	2,128.85	8.25	2,128.86	0.00	0.00	0.00
9,400.00	90.45	0.22	7,362.36	2,228.84	8.64	2,228.86	0.00	0.00	0.00
9,500.00	90.45	0.22	7,361.58	2,328.84	9.03	2,328.86	0.00	0.00	0.00
9,600.00	90.45	0.22	7,360.80	2,428.84	9.41	2,428.86	0.00	0.00	0.00
9,700.00	90.45	0.22	7,360.02	2,528.83	9.80	2,528.85	0.00	0.00	0.00
9,800.00	90.45	0.22	7,359.24	2,628.83	10.19	2,628.85	0.00	0.00	0.00
9,900.00	90.45	0.22	7,358.45	2,728.83	10.58	2,728.85	0.00	0.00	0.00
10,000.00	90.45	0.22	7,357.67	2,828.82	10.97	2,828.84	0.00	0.00	0.00
10,100.00	90.45	0.22	7,356.89	2,928.82	11.35	2,928.84	0.00	0.00	0.00
10,200.00	90.45	0.22	7,356.11	3,028.81	11.74	3,028.84	0.00	0.00	0.00
10,300.00	90.45	0.22	7,355.33	3,128.81	12.13	3,128.83	0.00	0.00	0.00
10,400.00	90.45	0.22	7,354.55	3,228.81	12.52	3,228.83	0.00	0.00	0.00
10,500.00	90.45	0.22	7,353.77	3,328.80	12.90	3,328.83	0.00	0.00	0.00
10,600.00	90.45	0.22	7,352.99	3,428.80	13.29	3,428.83	0.00	0.00	0.00
10,700.00	90.45	0.22	7,352.21	3,528.80	13.68	3,528.82	0.00	0.00	0.00
10,800.00	90.45	0.22	7,351.43	3,628.79	14.07	3,628.82	0.00	0.00	0.00
10,900.00	90.45	0.22	7,350.65	3,728.79	14.45	3,728.82	0.00	0.00	0.00
11,000.00	90.45	0.22	7,349.87	3,828.78	14.84	3,828.81	0.00	0.00	0.00
11,100.00	90.45	0.22	7,349.09	3,928.78	15.23	3,928.81	0.00	0.00	0.00
11,200.00	90.45	0.22	7,348.31	4,028.78	15.62	4,028.81	0.00	0.00	0.00
11,300.00	90.45	0.22	7,347.53	4,128.77	16.00	4,128.80	0.00	0.00	0.00
11,400.00	90.45	0.22	7,346.75	4,228.77	16.39	4,228.80	0.00	0.00	0.00
11,500.00	90.45	0.22	7,345.97	4,328.77	16.78	4,328.80	0.00	0.00	0.00
11,600.00	90.45	0.22	7,345.18	4,428.76	17.17	4,428.79	0.00	0.00	0.00
11,700.00	90.45	0.22	7,344.40	4,528.76	17.55	4,528.79	0.00	0.00	0.00
11,800.00	90.45	0.22	7,343.62	4,628.75	17.94	4,628.79	0.00	0.00	0.00
11,900.00	90.45	0.22	7,342.84	4,728.75	18.33	4,728.79	0.00	0.00	0.00
12,000.00	90.45	0.22	7,342.06	4,828.75	18.72	4,828.78	0.00	0.00	0.00
12,100.00	90.45	0.22	7,341.28	4,928.74	19.10	4,928.78	0.00	0.00	0.00
12,200.00	90.45	0.22	7,340.50	5,028.74	19.49	5,028.78	0.00	0.00	0.00
12,300.00	90.45	0.22	7,339.72	5,128.73	19.88	5,128.77	0.00	0.00	0.00
12,400.00	90.45	0.22	7,338.94	5,228.73	20.27	5,228.77	0.00	0.00	0.00
12,500.00	90.45	0.22	7,338.16	5,328.73	20.66	5,328.77	0.00	0.00	0.00
12,600.00	90.45	0.22	7,337.38	5,428.72	21.04	5,428.76	0.00	0.00	0.00
12,700.00	90.45	0.22	7,336.60	5,528.72	21.43	5,528.76	0.00	0.00	0.00
12,800.00	90.45	0.22	7,335.82	5,628.72	21.82	5,628.76	0.00	0.00	0.00
12,900.00	90.45	0.22	7,335.04	5,728.71	22.21	5,728.76	0.00	0.00	0.00
13,000.00	90.45	0.22	7,334.26	5,828.71	22.59	5,828.75	0.00	0.00	0.00
13,100.00	90.45	0.22	7,333.48	5,928.70	22.98	5,928.75	0.00	0.00	0.00
13,200.00	90.45	0.22	7,332.70	6,028.70	23.37	6,028.75	0.00	0.00	0.00
13,300.00	90.45	0.22	7,331.91	6,128.70	23.76	6,128.74	0.00	0.00	0.00
13,400.00	90.45	0.22	7,331.13	6,228.69	24.14	6,228.74	0.00	0.00	0.00

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Wellbore: Lateral #1
Design: Design #3

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:

Site Roadrunner Federal Com #1H
KB @ 3275.40usft (Latshaw 44)
KB @ 3275.40usft (Latshaw 44)
Grid
Minimum Curvature

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)
13,500.00	90.45	0.22	7,330.35	6,328.69	24.53	6,328.74	0.00	0.00	0.00
13,600.00	90.45	0.22	7,329.57	6,428.69	24.92	6,428.73	0.00	0.00	0.00
13,700.00	90.45	0.22	7,328.79	6,528.68	25.31	6,528.73	0.00	0.00	0.00
13,800.00	90.45	0.22	7,328.01	6,628.68	25.69	6,628.73	0.00	0.00	0.00
13,900.00	90.45	0.22	7,327.23	6,728.67	26.08	6,728.72	0.00	0.00	0.00
14,000.00	90.45	0.22	7,326.45	6,828.67	26.47	6,828.72	0.00	0.00	0.00
14,100.00	90.45	0.22	7,325.67	6,928.67	26.86	6,928.72	0.00	0.00	0.00
14,200.00	90.45	0.22	7,324.89	7,028.66	27.24	7,028.72	0.00	0.00	0.00
14,300.00	90.45	0.22	7,324.11	7,128.66	27.63	7,128.71	0.00	0.00	0.00
14,400.00	90.45	0.22	7,323.33	7,228.66	28.02	7,228.71	0.00	0.00	0.00
14,500.00	90.45	0.22	7,322.55	7,328.65	28.41	7,328.71	0.00	0.00	0.00
14,600.00	90.45	0.22	7,321.77	7,428.65	28.80	7,428.70	0.00	0.00	0.00
14,700.00	90.45	0.22	7,320.99	7,528.64	29.18	7,528.70	0.00	0.00	0.00
14,800.00	90.45	0.22	7,320.21	7,628.64	29.57	7,628.70	0.00	0.00	0.00
14,900.00	90.45	0.22	7,319.42	7,728.64	29.96	7,728.69	0.00	0.00	0.00
15,000.00	90.45	0.22	7,318.64	7,828.63	30.35	7,828.69	0.00	0.00	0.00
15,100.00	90.45	0.22	7,317.86	7,928.63	30.73	7,928.69	0.00	0.00	0.00
15,200.00	90.45	0.22	7,317.08	8,028.62	31.12	8,028.69	0.00	0.00	0.00
15,300.00	90.45	0.22	7,316.30	8,128.62	31.51	8,128.68	0.00	0.00	0.00
15,400.00	90.45	0.22	7,315.52	8,228.62	31.90	8,228.68	0.00	0.00	0.00
15,500.00	90.45	0.22	7,314.74	8,328.61	32.28	8,328.68	0.00	0.00	0.00
15,600.00	90.45	0.22	7,313.96	8,428.61	32.67	8,428.67	0.00	0.00	0.00
15,700.00	90.45	0.22	7,313.18	8,528.61	33.06	8,528.67	0.00	0.00	0.00
15,800.00	90.45	0.22	7,312.40	8,628.60	33.45	8,628.67	0.00	0.00	0.00
15,900.00	90.45	0.22	7,311.62	8,728.60	33.83	8,728.66	0.00	0.00	0.00
16,000.00	90.45	0.22	7,310.84	8,828.59	34.22	8,828.66	0.00	0.00	0.00
16,100.00	90.45	0.22	7,310.06	8,928.59	34.61	8,928.66	0.00	0.00	0.00
16,200.00	90.45	0.22	7,309.28	9,028.59	35.00	9,028.65	0.00	0.00	0.00
16,300.00	90.45	0.22	7,308.50	9,128.58	35.38	9,128.65	0.00	0.00	0.00
16,400.00	90.45	0.22	7,307.72	9,228.58	35.77	9,228.65	0.00	0.00	0.00
16,500.00	90.45	0.22	7,306.94	9,328.58	36.16	9,328.65	0.00	0.00	0.00
16,600.00	90.45	0.22	7,306.15	9,428.57	36.55	9,428.64	0.00	0.00	0.00
16,700.00	90.45	0.22	7,305.37	9,528.57	36.93	9,528.64	0.00	0.00	0.00
16,800.00	90.45	0.22	7,304.59	9,628.56	37.32	9,628.64	0.00	0.00	0.00
16,900.00	90.45	0.22	7,303.81	9,728.56	37.71	9,728.63	0.00	0.00	0.00
17,000.00	90.45	0.22	7,303.03	9,828.56	38.10	9,828.63	0.00	0.00	0.00
17,100.00	90.45	0.22	7,302.25	9,928.55	38.49	9,928.63	0.00	0.00	0.00
17,200.00	90.45	0.22	7,301.47	10,028.55	38.87	10,028.62	0.00	0.00	0.00
17,300.00	90.45	0.22	7,300.69	10,128.54	39.26	10,128.62	0.00	0.00	0.00
17,400.00	90.45	0.22	7,299.91	10,228.54	39.65	10,228.62	0.00	0.00	0.00
17,500.00	90.45	0.22	7,299.13	10,328.54	40.04	10,328.61	0.00	0.00	0.00
17,516.56	90.45	0.22	7,299.00	10,345.10	40.10	10,345.18	0.00	0.00	0.00

TD at 17516.56

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Design: Design #3

Local Co-ordinate Reference: Site Roadrunner Federal Com #1H
TVD Reference: KB @ 3275.40usft (Latshaw 44)
MD Reference: KB @ 3275.40usft (Latshaw 44)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
KOP (RFC #1H/L1 Desig - plan hits target center - Point	0.00	0.00	6,898.55	0.00	0.00	397,906.10	529,306.00	32° 5' 38.128 N	104° 14' 19.319 W
PBHL (RFC #1H/L1) - plan hits target center - Rectangle (sides W100.00 H10,345.18 D0.00)	-0.45	0.22	7,299.00	10,345.10	40.10	408,251.20	529,346.10	32° 7' 20.509 N	104° 14' 18.747 W
EOC (RFC #1H/L1 Desig - plan hits target center - Point	0.00	0.00	7,376.00	481.19	1.87	398,387.29	529,307.87	32° 5' 42.890 N	104° 14' 19.292 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
6,898.55	6,898.55	0.00	0.00	Start DLS 12.00 TFO 0.22
7,652.28	7,376.00	481.19	1.87	Start 9864.29 hold at 7652.28 MD
17,516.56	7,299.00	10,345.10	40.10	TD at 17516.56