

19457-21885'

30.015-44941

Devon Energy

SURVEY REPORT

Tomb Raider 1-12 FED 614H

SCIENTIFIC DRILLING NABORS X-15

**Provide Signature Page for
Directional Survey**

NM OIL CONSERVATION
ARTESIA DISTRICT

JAN 10 2019

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This survey is correct to the best of my knowledge and is supported by actual field data.

Notarized this date 12th of December, 2018.

Sherry Stewart

Notary Signature

County of Midland

State of Texas



SHERRY STEWART
Notary Public, State of Texas
My Commission Expires
April 08, 2019

 Scientific Drilling

The Ultimate Partner In Wellbore Placement

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DISTRICT II-ARTESIA O.C.D.

Devon Energy

Eddy County, NM (NAD83 NME)

Tomb Raider 1-12 Fed

614H

OH

Survey: SDI Survey #1

Standard Survey Report

01 August, 2018



www.scientificdrilling.com

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Survey Report

Company:	Devon Energy	Local Co-ordinate Reference:	Well 614H
Project:	Eddy County, NM (NAD83 NME)	TVD Reference:	KB = 33' @ 3508.00usft (Nabors X15)
Site:	Tomb Raider 1-12 Fed	MD Reference:	KB = 33' @ 3508.00usft (Nabors X15)
Well:	614H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Midland District

Project	Eddy County, NM (NAD83 NME)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		Using geodetic scale factor

Site	Tomb Raider 1-12 Fed		
Site Position:		Northing:	487,968.75 usft
From:	Map	Easting:	727,482.68 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 20' 24.208 N
		Longitude:	103° 43' 50.202 W
		Grid Convergence:	0.32 °

Well	614H		
Well Position	+N/-S	0.00 usft	Northing: 487,968.58 usft
	+E/-W	0.00 usft	Easting: 727,452.70 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 20' 24.208 N
		Longitude:	103° 43' 50.551 W
		Ground Level:	3,475.00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
	IGRF200510	12/31/2009	(°) 7.83
			Dip Angle (°) 60.32
			Field Strength (nT) 48,845

Design	OH		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
		Direction	Tie On Depth:
		(bearing)	19,457.00

Survey Program	Date 8/1/2018		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
187.00	19,457.00	MWD Survey (As-Drilled)	MWD
19,549.00	21,885.00	SDI Survey #1 (OH)	MWD+HDGM
			Description
			MWD - Standard ISCWSA
			OWSG MWD + HDGM

Survey									
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn
Depth	(°)	(bearing)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate
(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)
19,457.00	92.00	182.00	11,707.48	-7,842.15	222.26	7,843.27	0.00	0.00	0.00
MidP[TR614H]									
19,549.00	91.95	179.35	11,704.30	-7,934.08	221.17	7,935.19	2.88	-0.05	-2.88
19,643.00	92.96	179.21	11,700.28	-8,027.98	222.35	8,029.10	1.08	1.07	-0.15
19,737.00	91.98	180.88	11,696.23	-8,121.89	222.28	8,123.01	2.06	-1.04	1.78
19,831.00	89.87	180.86	11,694.71	-8,215.86	220.85	8,216.97	2.24	-2.24	-0.02
19,926.00	88.72	181.98	11,695.88	-8,310.83	218.50	8,311.92	1.69	-1.21	1.18
20,020.00	88.86	182.39	11,697.86	-8,404.74	214.92	8,405.80	0.46	0.15	0.44
20,115.00	89.53	182.48	11,699.20	-8,499.64	210.88	8,500.69	0.71	0.71	0.09
20,209.00	88.52	183.08	11,700.80	-8,593.51	206.32	8,594.53	1.25	-1.07	0.64

Scientific Drilling, Intl

Survey Report

Company: Devon Energy
 Project: Eddy County, NM (NAD83 NME)
 Site: Tomb Raider 1-12 Fed
 Well: 614H
 Wellbore: OH
 Design: OH

Local Co-ordinate Reference: Well 614H
 TVD Reference: KB = 33' @ 3508.00usft (Nabors X15)
 MD Reference: KB = 33' @ 3508.00usft (Nabors X15)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Midland District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (bearing)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
20,304.00	87.74	182.09	11,703.90	-8,688.36	202.04	8,689.36	1.33	-0.82	-1.04
20,398.00	87.41	182.99	11,707.87	-8,782.19	197.88	8,783.16	1.02	-0.35	0.96
20,493.00	87.04	182.44	11,712.47	-8,876.97	193.38	8,877.91	0.70	-0.39	-0.58
20,523.00	87.72	182.96	11,713.85	-8,906.90	191.97	8,907.84	2.85	2.27	1.73
20,587.00	88.02	183.55	11,716.22	-8,970.76	188.34	8,971.67	1.03	0.47	0.92
20,682.00	89.40	181.75	11,718.36	-9,065.62	183.95	9,066.51	2.39	1.45	-1.89
20,776.00	88.93	181.80	11,719.73	-9,159.57	181.04	9,160.44	0.50	-0.50	0.05
20,871.00	86.91	181.19	11,723.18	-9,254.47	178.56	9,255.32	2.22	-2.13	-0.64
20,965.00	89.56	179.61	11,726.08	-9,348.41	177.91	9,349.26	3.28	2.82	-1.68
21,060.00	88.02	179.07	11,728.08	-9,443.38	179.00	9,444.23	1.72	-1.62	-0.57
21,155.00	91.24	179.18	11,728.70	-9,538.35	180.45	9,539.21	3.39	3.39	0.12
21,249.00	92.02	180.01	11,726.02	-9,632.31	181.11	9,633.17	1.21	0.83	0.88
21,344.00	93.12	179.11	11,721.76	-9,727.21	181.84	9,728.08	1.50	1.16	-0.95
21,439.00	89.66	177.35	11,719.46	-9,822.12	184.78	9,823.00	4.09	-3.64	-1.85
21,533.00	91.41	177.52	11,718.58	-9,916.02	188.98	9,916.92	1.87	1.86	0.18
21,604.12	92.45	177.41	11,716.18	-9,987.02	192.13	9,987.94	1.48	1.47	-0.16
BHL[TR614H]									
21,627.00	92.79	177.37	11,715.13	-10,009.86	193.17	10,010.78	1.48	1.47	-0.16
FINAL MWD Survey (21627.00' MD)									
21,885.00	92.79	177.37	11,702.58	-10,267.28	204.99	10,268.27	0.00	0.00	0.00
FINAL Proj. to Bit (21885.00' MD)									

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
21,627.00	11,715.13	-10,009.86	193.17	FINAL MWD Survey (21627.00' MD)
21,885.00	11,702.58	-10,267.28	204.99	FINAL Proj. to Bit (21885.00' MD)

Checked By: _____ Approved By: _____ Date: _____

30-015-44941

Hydraulic Fracturing Fluid Product Component Information Disclosure

NM OIL CONSERVATION
ARTESIA DISTRICT

JAN 10 2019

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Job Start Date:	10/6/2018
Job End Date:	10/22/2018
State:	New Mexico
County:	Eddy
API Number:	30-015-44941-00-00
Operator Name:	Devon Energy Production Company L. P.
Well Name and Number:	Tomb Raider 1-12 Fed Com 614H
Latitude:	32.34005770
Longitude:	-103.73070860
Datum:	NAD27
Federal Well:	YES
Indian Well:	NO
True Vertical Depth:	11,727
Total Base Water Volume (gal):	18,080,076
Total Base Non Water Volume:	0

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	Company 1	Carrier/Base Fluid					
			Water	7732-18-5	100.00000	85.85154	None
Other Chemical (s)	Listed Above	See Trade Name (s) List					
			Water	7732-18-5	90.00000	0.09525	

Surf-Flo 420	Innospec Oilfield Services	Flowback Surfactant					
				Listed Below			
HiRate HV 655	Innospec Oilfield Services	Friction Reducer					
				Listed Below			
Sand	Company 1	Proppant					
				Listed Below			
BioSuite GQ 12-3	BioSuite	Biocide					
				Listed Below			

Items above are Trade Names with the exception of Base Water . Items below are the individual ingredients.

			CRYSTALLINE SILICA	14808-60-7	100.00000	13.99969	
			Ethoxylated Alcohol	Proprietary	20.00000	0.01645	
			Distillates (petroleum), hydrotreated light	64742-47-8	30.00000	0.01326	
			Dipentene	68956-56-9	5.00000	0.00410	
			Methanol	67-56-1	5.00000	0.00410	
			Glutaraldehyde	111-30-8	15.00000	0.00334	
			N,N-bis(2-hydroxyethyl) oleamide	93-83-4	5.00000	0.00221	
			Alcohols, C12-16, ethoxylated	68551-12-2	5.00000	0.00221	
			Alkyl (C12-16) dimethylbenzyl ammonium chloride	68424-85-1	5.00000	0.00111	
			Didecyl dimethyl ammonium chloride	7173-51-5	5.00000	0.00111	
			Ethylene oxide/Propylene oxide copolymer	9003-11-6	0.50000	0.00041	

- * Total Water Volume sources may include various types of water including fresh water, produced water, and recycled water
- ** Information is based on the maximum potential for concentration and thus the total may be over 100%
- *** If you are calculating a percentage of total ingredients do not add the water volume below the green line to the water volume above the green line

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)