

NOV 20 2019

Form 3160-4
(August 2007)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB No. 1004-0137
Expires: July 31, 2010

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

DISTRICT/ARTESIA/O.C.D

1a. Type of Well ☐ Oil Well ☒ Gas Well ☐ Dry ☐ Other		5. Lease Serial No. NMNM107384	
b. Type of Completion ☒ New Well ☐ Work Over ☐ Deepen ☐ Plug Back ☐ Diff. Resvr. Other _____		6. If Indian, Allottee or Tribe Name	
2. Name of Operator MURCHISON OIL & GAS LLC		Contact: CINDY COTTRELL E-Mail: ccottrell@jdmii.com	
3. Address LEGACY TOWER ONE 7250 DALLAS PKY, STE 1400 PLANO, TX 75024-5002		3a. Phone No. (include area code) Ph: 972.931.0700	
4. Location of Well (Report location clearly and in accordance with Federal requirements)* At surface NENE 330FNL 300FEL 32.194859 N Lat, 104.016159 W Lon At top prod interval reported below NENE 330FNL 300FEL At total depth Lot 1 368FNL 333FWL 32.195764 N Lat, 104.032093 W Lon		8. Lease Name and Well No. ROCK RIDGE FEDERAL WCXY 2H	
14. Date Spudded 04/10/2019		15. Date T.D. Reached 05/30/2019 ✓	
16. Date Completed ☐ D & A ☒ Ready to Prod 07/16/2019		9. API Well No. 30-015-45729-00-S1	
18. Total Depth: MD 14433 TVD 9714		19. Plug Back T.D.: MD TVD	
20. Depth Bridge Plug Set: MD TVD		10. Field and Pool, or Exploratory PURPLE SAGE-WOLFCAMP (GAS)	
21. Type Electric & Other Mechanical Logs Run (Submit copy of each) MWDGAMMARAY		11. Sec., T., R., M., or Block and Survey or Area Sec 30 T24S R29E Mer NMP	
22. Was well cored? ☒ No ☐ Yes (Submit analysis) Was DST run? ☒ No ☐ Yes (Submit analysis) Directional Survey? ☐ No ☒ Yes (Submit analysis)		12. County or Parish EDDY	
23. Casing and Liner Record (Report all strings set in well)		13. State NM	
17. Elevations (DF, KB, RT, GL)* 2916 GL			

Hole Size	Size/Grade	Wt. (#/ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sk. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
✓ 16.000	✓ 13.375 J55	✓ 48.0	0	✓ 373		✓ 355	85	0	
✓ 12.250	✓ 9.625 P110	40.0	0	6399	9125 3028	1380	548	0	
3 8.500	5.500 P110	20.0	0	✓ 14413		1585	470	5014	
✓ 12.250	✓ 9.625 P110	43.5	6399	✓ 9016		1345	605	3028	

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)

Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A) WOLFCAMP	9850	14375	✓ 9850 TO 14375	0.420	1056	OPEN
B)						
C)						
D)						

Depth Interval	Amount and Type of Material
9850 TO 14375	9,224,270# SD; 2,045 BBLS 15% HCL ACID; 275,193 BBLS TOTAL WATER VOLUME

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
07/18/2019	08/31/2019	24	→	1558.0	3479.0	4656.0	48.6		FLOWS FROM WELL
Choke Size	Tbg. Press. Flwg.	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	
41/64	SI	2000.0	→	1558	3479	4656	2233	PGW	

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						
Choke Size	Tbg. Press. Flwg.	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	
	SI		→						

(See Instructions and spaces for additional data on reverse side)

ELECTRONIC SUBMISSION #488267 VERIFIED BY THE BLM WELL INFORMATION SYSTEM

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

28b. Production - Interval C

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	
			→						

28c. Production - Interval D

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
			→						
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	
			→						

29. Disposition of Gas(Sold, used for fuel, vented, etc.)
SOLD

30. Summary of Porous Zones (Include Aquifers):

Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures and recoveries.

31. Formation (Log) Markers

Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top Meas. Depth
BONE SPRING 1ST	7491	8292	OIL & GAS	DELAWARE	2765
BONE SPRING 2ND	8292	9375	OIL & GAS	AVALON SAND	6592
BONE SPRING 3RD	9375	9710	OIL & GAS	BONE SPRING 1ST	7491
WOLFCAMP	9710		OIL & GAS	BONE SPRING 2ND	8292
				BONE SPRING 3RD	9375
				WOLFCAMP	9710

32. Additional remarks (include plugging procedure):

33. Circle enclosed attachments:

- | | | | |
|---|--------------------|---------------|-----------------------|
| 1. Electrical/Mechanical Logs (1 full set req'd.) | 2. Geologic Report | 3. DST Report | 4. Directional Survey |
| 5. Sundry Notice for plugging and cement verification | 6. Core Analysis | 7 Other: | |

34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions):

Electronic Submission #488267 Verified by the BLM Well Information System.

For MURCHISON OIL & GAS LLC, sent to the Carlsbad

Committed to AFMSS for processing by DINAH NEGRETE on 11/16/2019 (20DCN0023SE)

Name (please print) CINDY COTTRELL

Title REGULATORY COORDINATOR

Signature (Electronic Submission)

Date 10/15/2019

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.

**** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ** REVISED ****

Revisions to Operator-Submitted EC Data for Well Completion #488267

	Operator Submitted	BLM Revised (AFMSS)
Lease:	NMNM107384	NMNM107384
Agreement:		
Operator:	MURCHISON OIL & GAS LLC 7250 DALLAS PARKWAY STE 1400 PLANO, TX 75024 Ph: 972-931-0700	MURCHISON OIL & GAS LLC LEGACY TOWER ONE 7250 DALLAS PKY, STE 1400 PLANO, TX 75024-5002 Ph: 972.931.0700
Admin Contact:	CINDY COTTRELL REPORT PREPARER E-Mail: ccottrell@jdmii.com Ph: 972-931-0700 Ext: 113	CINDY COTTRELL REGULATORY COORDINATOR E-Mail: ccottrell@jdmii.com Ph: 972.931.0700
Tech Contact:	CINDY COTTRELL REPORT PREPARER E-Mail: ccottrell@jdmii.com Ph: 972-931-0700 Ext: 113	CINDY COTTRELL REGULATORY COORDINATOR E-Mail: ccottrell@jdmii.com Ph: 972.931.0700
Well Name: Number:	ROCK RIDGE FEDERAL WCXY 2H	ROCK RIDGE FEDERAL WCXY 2H
Location: State: County: S/T/R: Surf Loc:	NM EDDY Sec 30 T24S R29E Mer NMP NENE Lot A 330FNL 300FEL	NM EDDY Sec 30 T24S R29E Mer NMP NENE 330FNL 300FEL 32.194859 N Lat, 104.016159 W Lon
Field/Pool:	PURPLE SAGE-WOLFCAMP(GAS)	PURPLE SAGE-WOLFCAMP (GAS)
Logs Run:	MWD GAMMA RAY	MWDGAMMARAY
Producing Intervals - Formations:	WOLFCAMP	WOLFCAMP
Porous Zones:	1ST BONE SPRING 2ND BONE SPRING 3RD BONE SPRING WOLFCAMP	BONE SPRING 1ST BONE SPRING 2ND BONE SPRING 3RD WOLFCAMP
Markers:	DELAWARE AVALON SHALE 1ST BONE SPRING SAND 2ND BONE SPRING SAND 3RD BONE SPRING SAND WOLFCAMP	DELAWARE AVALON SAND BONE SPRING 1ST BONE SPRING 2ND BONE SPRING 3RD WOLFCAMP

Murchison Oil and Gas, LLC

Eddy County, New Mexico (NAD 83)

Rock Ridge Federal 1-4

Rock Ridge Federal WCXY 2H

Wellbore #1

Design: Surveys

NM OIL CONSERVATION
ARTESIA DISTRICT

OCT 28 2019

RECEIVED

Standard Survey Report

31 May, 2019

***MS* Directional**

Company:	Murchison Oil and Gas, LLC	Local Co-ordinate Reference:	Well Rock Ridge Federal WCXY 2H
Project:	Eddy County, New Mexico (NAD 83)	TVD Reference:	WELL @ 2940.70usft (Latshaw 7)
Site:	Rock Ridge Federal 1-4	MD Reference:	WELL @ 2940.70usft (Latshaw 7)
Well:	Rock Ridge Federal WCXY 2H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.1 Conroe DB

Project	Eddy County, New Mexico (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Rock Ridge Federal 1-4		
Site Position:		Northing:	0.00 usft
From:	Map	Easting:	0.00 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	30° 59' 18.404 N
		Longitude:	106° 3' 38.987 W

Well	Rock Ridge Federal WCXY 2H		
Well Position	+N/-S	0.00 usft	Northing: 434,769.16 usft
	+E/-W	0.00 usft	Easting: 639,449.13 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
Grid Convergence:	0.169 °	Ground Level:	2,915.70 usft
		Latitude:	32° 11' 41.496 N
		Longitude:	104° 0' 58.176 W

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
			(°)
	HDGM2019	5/1/2019	7.000
			Dip Angle
			(°)
			59.933
			Field Strength
			(nT)
			47,904.10

Design	Surveys		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction
			(°)
			269.57

Survey Program	Date: 5/31/2019		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		
168.00	14,413.00	MS MWD (Wellbore #1)	MWD+HRGM
			Description
			OWSG MWD + HRGM

Survey										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn	
Depth	(°)	(°)	Depth	(usft)	(usft)	Section	Rate	Rate	Rate	
(usft)			(usft)			(usft)	(°/100usft)	(°/100usft)	(°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
168.00	2.50	310.80	167.95	2.39	-2.77	2.76	1.49	1.49	0.00	
228.00	2.10	313.10	227.90	4.00	-4.57	4.54	0.68	-0.67	3.83	
293.00	2.30	320.70	292.85	5.82	-6.26	6.22	0.54	0.31	11.69	
390.00	2.20	321.50	389.78	8.79	-8.65	8.59	0.11	-0.10	0.82	
431.00	1.60	338.70	430.75	9.94	-9.35	9.28	2.00	-1.46	41.95	
520.00	0.50	23.70	519.74	11.45	-9.65	9.56	1.46	-1.24	50.56	
609.00	0.60	353.20	608.73	12.27	-9.55	9.45	0.34	0.11	-34.27	
640.00	0.80	32.40	639.73	12.61	-9.45	9.36	1.63	0.65	126.45	
729.00	0.90	121.50	728.73	12.77	-8.52	8.43	1.34	0.11	100.11	

Company:	Murchison Oil and Gas, LLC	Local Co-ordinate Reference:	Well Rock Ridge Federal WCXY 2H
Project:	Eddy County, New Mexico (NAD 83)	TVD Reference:	WELL @ 2940.70usft (Latshaw 7)
Site:	Rock Ridge Federal 1-4	MD Reference:	WELL @ 2940.70usft (Latshaw 7)
Well:	Rock Ridge Federal WCXY 2H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.1 Conroe DB

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)
819.00	0.80	144.40	818.72	11.89	-7.55	7.46	0.39	-0.11	25.44
909.00	1.10	119.30	908.70	10.96	-6.43	6.35	0.56	0.33	-27.89
1,002.00	1.50	161.00	1,001.68	9.37	-5.26	5.19	1.07	0.43	44.84
1,097.00	2.00	176.10	1,096.64	6.54	-4.74	4.69	0.71	0.53	15.89
1,190.00	2.60	184.50	1,189.56	2.82	-4.80	4.78	0.74	0.65	9.03
1,284.00	2.20	161.20	1,283.48	-1.02	-4.38	4.39	1.11	-0.43	-24.79
1,379.00	2.20	160.20	1,378.41	-4.46	-3.18	3.21	0.04	0.00	-1.05
1,474.00	2.30	128.90	1,473.34	-7.37	-1.08	1.13	1.28	0.11	-32.95
1,568.00	2.50	120.10	1,567.26	-9.58	2.17	-2.09	0.45	0.21	-9.36
1,661.00	3.10	125.40	1,660.15	-12.06	5.97	-5.88	0.70	0.65	5.70
1,755.00	3.10	121.50	1,754.01	-14.86	10.21	-10.10	0.22	0.00	-4.15
1,850.00	3.30	111.70	1,848.86	-17.21	14.94	-14.81	0.61	0.21	-10.32
1,944.00	3.50	111.40	1,942.70	-19.26	20.13	-19.98	0.21	0.21	-0.32
2,039.00	3.50	116.50	2,037.52	-21.61	25.42	-25.26	0.33	0.00	5.37
2,133.00	4.00	121.30	2,131.32	-24.59	30.79	-30.60	0.63	0.53	5.11
2,227.00	4.00	113.70	2,225.09	-27.61	36.59	-36.38	0.56	0.00	-8.09
2,322.00	4.00	112.60	2,319.86	-30.22	42.69	-42.46	0.08	0.00	-1.16
2,416.00	4.80	109.50	2,413.58	-32.79	49.42	-49.17	0.89	0.85	-3.30
2,510.00	4.50	109.10	2,507.27	-35.31	56.61	-56.35	0.32	-0.32	-0.43
2,603.00	4.60	110.80	2,599.98	-37.83	63.55	-63.26	0.18	0.11	1.83
2,698.00	3.70	99.90	2,694.73	-39.71	70.13	-69.83	1.26	-0.95	-11.47
2,792.00	3.60	91.70	2,788.54	-40.32	76.06	-75.76	0.56	-0.11	-8.72
2,886.00	4.00	90.60	2,882.33	-40.44	82.29	-81.99	0.43	0.43	-1.17
2,980.00	4.40	91.80	2,976.08	-40.59	89.18	-88.87	0.44	0.43	1.28
3,074.00	4.90	91.90	3,069.77	-40.83	96.79	-96.48	0.53	0.53	0.11
3,168.00	4.80	98.00	3,163.44	-41.51	104.70	-104.38	0.56	-0.11	6.49
3,262.00	3.40	112.60	3,257.20	-43.13	111.17	-110.84	1.85	-1.49	15.53
3,357.00	3.30	116.60	3,352.03	-45.44	116.21	-115.87	0.27	-0.11	4.21
3,451.00	3.80	117.70	3,445.85	-48.10	121.39	-121.03	0.54	0.53	1.17
3,546.00	4.00	114.60	3,540.63	-50.94	127.19	-126.80	0.31	0.21	-3.26
3,639.00	4.40	114.20	3,633.38	-53.76	133.39	-132.99	0.43	0.43	-0.43
3,733.00	4.40	109.90	3,727.11	-56.46	140.07	-139.64	0.35	0.00	-4.57
3,828.00	4.40	103.80	3,821.83	-58.57	147.04	-146.59	0.49	0.00	-6.42
3,922.00	4.80	107.30	3,915.52	-60.60	154.29	-153.84	0.52	0.43	3.72
4,016.00	5.30	105.00	4,009.16	-62.89	162.24	-161.77	0.57	0.53	-2.45
4,111.00	5.10	100.60	4,103.77	-64.81	170.63	-170.14	0.47	-0.21	-4.63
4,205.00	4.00	97.00	4,197.47	-65.97	177.99	-177.49	1.21	-1.17	-3.83
4,299.00	3.50	96.90	4,291.27	-66.72	184.10	-183.59	0.53	-0.53	-0.11
4,394.00	3.90	98.50	4,386.07	-67.54	190.17	-189.66	0.43	0.42	1.68
4,488.00	3.90	99.10	4,479.85	-68.52	196.49	-195.97	0.04	0.00	0.64
4,582.00	4.00	94.80	4,573.63	-69.30	202.91	-202.39	0.33	0.11	-4.57
4,677.00	4.60	94.10	4,668.36	-69.85	210.01	-209.48	0.63	0.63	-0.74
4,771.00	3.90	100.20	4,762.10	-70.69	216.92	-216.38	0.89	-0.74	6.49

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Site:	Rock Ridge Federal 1-4	MD Reference:	WELL @ 2940.70usft (Latshaw 7)
Well:	Rock Ridge Federal WCXY 2H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.1 Conroe DB

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)
4,865.00	4.00	104.80	4,855.88	-72.09	223.23	-222.69	0.35	0.11	4.89
4,959.00	3.90	105.70	4,949.66	-73.79	229.48	-228.92	0.13	-0.11	0.96
5,053.00	3.80	105.10	5,043.45	-75.47	235.57	-234.99	0.11	-0.11	-0.64
5,147.00	3.10	118.30	5,137.28	-77.49	240.81	-240.22	1.12	-0.74	14.04
5,242.00	1.70	120.30	5,232.19	-79.42	244.29	-243.69	1.48	-1.47	2.11
5,335.00	0.60	141.10	5,325.17	-80.49	245.79	-245.18	1.25	-1.18	22.37
5,430.00	0.40	75.20	5,420.17	-80.79	246.42	-245.81	0.60	-0.21	-69.37
5,524.00	0.50	158.90	5,514.17	-81.09	246.89	-246.27	0.64	0.11	89.04
5,619.00	0.10	317.00	5,609.16	-81.42	246.98	-246.36	0.63	-0.42	166.42
5,713.00	0.50	146.80	5,703.16	-81.70	247.15	-246.53	0.64	0.43	-181.06
5,807.00	0.50	158.60	5,797.16	-82.43	247.52	-246.90	0.11	0.00	12.55
5,901.00	0.60	154.30	5,891.16	-83.25	247.88	-247.25	0.12	0.11	-4.57
5,996.00	0.30	121.90	5,986.15	-83.83	248.31	-247.67	0.40	-0.32	-34.11
6,089.00	0.60	138.40	6,079.15	-84.32	248.84	-248.20	0.35	0.32	17.74
6,184.00	0.20	67.30	6,174.15	-84.63	249.32	-248.68	0.60	-0.42	-74.84
6,278.00	0.30	121.80	6,268.15	-84.70	249.68	-249.04	0.26	0.11	57.98
6,372.00	0.60	201.20	6,362.14	-85.29	249.72	-249.07	0.66	0.32	84.47
6,466.00	0.30	257.10	6,456.14	-85.80	249.30	-248.65	0.53	-0.32	59.47
6,560.00	0.60	184.90	6,550.14	-86.35	249.02	-248.36	0.62	0.32	-76.81
6,655.00	0.70	201.80	6,645.13	-87.38	248.76	-248.10	0.23	0.11	17.79
6,750.00	0.60	230.20	6,740.13	-88.24	248.16	-247.49	0.35	-0.11	29.89
6,844.00	0.60	214.90	6,834.12	-88.96	247.50	-246.83	0.17	0.00	-16.28
6,938.00	0.30	264.00	6,928.12	-89.39	246.97	-246.30	0.49	-0.32	52.23
7,033.00	0.80	318.50	7,023.12	-88.91	246.29	-245.61	0.71	0.53	57.37
7,127.00	1.50	352.10	7,117.10	-87.20	245.68	-245.02	1.00	0.74	35.74
7,220.00	0.70	339.60	7,210.08	-85.47	245.32	-244.67	0.89	-0.86	-13.44
7,315.00	1.20	302.30	7,305.07	-84.39	244.28	-243.63	0.81	0.53	-39.26
7,410.00	0.50	45.20	7,400.06	-83.57	243.73	-243.09	1.47	-0.74	108.32
7,504.00	0.70	92.20	7,494.05	-83.30	244.59	-243.96	0.55	0.21	50.00
7,599.00	0.60	106.20	7,589.05	-83.46	245.65	-245.02	0.20	-0.11	14.74
7,693.00	0.70	118.10	7,683.04	-83.87	246.63	-245.99	0.18	0.11	12.66
7,787.00	0.50	166.70	7,777.04	-84.54	247.23	-246.59	0.56	-0.21	51.70
7,882.00	0.60	221.20	7,872.03	-85.32	247.00	-246.35	0.54	0.11	57.37
7,976.00	0.80	249.50	7,966.03	-85.92	246.06	-245.41	0.42	0.21	30.11
8,071.00	1.40	260.10	8,061.01	-86.35	244.30	-243.64	0.66	0.63	11.16
8,166.00	1.00	263.80	8,155.99	-86.64	242.33	-241.67	0.43	-0.42	3.89
8,261.00	1.10	254.00	8,250.97	-86.98	240.63	-239.97	0.22	0.11	-10.32
8,355.00	1.30	272.20	8,344.95	-87.19	238.69	-238.03	0.46	0.21	19.36
8,450.00	0.30	292.20	8,439.94	-87.05	237.39	-236.73	1.08	-1.05	21.05
8,544.00	0.60	269.90	8,533.94	-86.96	236.67	-236.01	0.36	0.32	-23.72
8,638.00	0.90	260.80	8,627.93	-87.08	235.45	-234.79	0.34	0.32	-9.68
8,733.00	0.70	274.50	8,722.92	-87.15	234.13	-233.47	0.29	-0.21	14.42
8,826.00	1.30	253.30	8,815.91	-87.41	232.55	-231.89	0.75	0.65	-22.80

Company:	Murchison Oil and Gas, LLC	Local Co-ordinate Reference:	Well Rock Ridge Federal WCXY 2H
Project:	Eddy County, New Mexico (NAD 83)	TVD Reference:	WELL @ 2940.70usft (Latshaw 7)
Site:	Rock Ridge Federal 1-4	MD Reference:	WELL @ 2940.70usft (Latshaw 7)
Well:	Rock Ridge Federal WCXY 2H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.1 Conroe DB

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)
8,920.00	1.40	247.10	8,909.88	-88.16	230.48	-229.81	0.19	0.11	-6.60
8,968.00	1.50	249.50	8,957.87	-88.61	229.35	-228.68	0.24	0.21	5.00
9,031.00	1.50	250.20	9,020.84	-89.18	227.80	-227.12	0.03	0.00	1.11
9,125.00	1.30	248.30	9,114.82	-89.99	225.65	-224.97	0.22	-0.21	-2.02
9,218.00	1.20	254.80	9,207.79	-90.64	223.73	-223.04	0.19	-0.11	6.99
9,312.00	8.30	280.90	9,301.42	-89.61	216.11	-215.43	7.70	7.55	27.77
9,359.00	13.10	284.90	9,347.59	-87.60	207.62	-206.96	10.33	10.21	8.51
9,406.00	16.10	276.10	9,393.07	-85.53	195.99	-195.35	7.92	6.38	-18.72
9,453.00	15.70	279.70	9,438.27	-83.77	183.24	-182.61	2.26	-0.85	7.66
9,503.00	18.80	283.90	9,486.02	-80.69	168.75	-168.14	6.68	6.20	8.40
9,550.00	25.60	281.10	9,529.51	-76.92	151.41	-150.83	14.64	14.47	-5.96
9,597.00	32.70	281.00	9,570.53	-72.53	128.96	-128.41	15.11	15.11	-0.21
9,644.00	37.60	282.10	9,608.95	-67.10	102.46	-101.95	10.51	10.43	2.34
9,691.00	41.70	281.20	9,645.13	-61.06	73.09	-72.63	8.81	8.72	-1.91
9,738.00	45.20	276.00	9,679.26	-56.27	41.15	-40.73	10.64	7.45	-11.06
9,785.00	52.20	276.30	9,710.26	-52.49	6.07	-5.68	14.90	14.89	0.64
9,829.31	56.63	275.92	9,736.04	-48.66	-29.75	30.12	10.02	10.00	-0.85
HL Crossing - 9829.31' MD									
9,832.00	56.90	275.90	9,737.51	-48.42	-31.99	32.35	10.02	10.00	-0.81
9,879.00	62.00	275.70	9,761.39	-44.34	-72.24	72.58	10.86	10.85	-0.43
9,926.00	68.00	274.80	9,781.25	-40.45	-114.64	114.94	12.88	12.77	-1.91
9,973.00	72.00	274.10	9,797.32	-37.03	-158.67	158.94	8.62	8.51	-1.49
10,020.00	75.50	271.20	9,810.47	-34.95	-203.73	203.99	9.51	7.45	-6.17
10,067.00	80.80	268.40	9,820.12	-35.12	-249.71	249.96	12.69	11.28	-5.96
10,114.00	85.60	269.30	9,825.68	-36.06	-296.35	296.61	10.39	10.21	1.91
10,161.00	90.00	269.80	9,827.49	-36.43	-343.30	343.57	9.42	9.36	1.06
10,255.00	91.20	269.00	9,826.50	-37.41	-437.29	437.56	1.53	1.28	-0.85
10,349.00	90.30	268.70	9,825.27	-39.30	-531.26	531.54	1.01	-0.96	-0.32
10,441.00	92.60	270.20	9,822.94	-40.18	-623.22	623.50	2.98	2.50	1.63
10,534.00	92.80	269.70	9,818.56	-40.26	-716.12	716.40	0.58	0.22	-0.54
10,628.00	92.90	269.50	9,813.89	-40.92	-810.00	810.28	0.24	0.11	-0.21
10,722.00	91.30	269.80	9,810.45	-41.49	-903.93	904.22	1.73	-1.70	0.32
10,816.00	91.40	269.70	9,808.23	-41.90	-997.90	998.19	0.15	0.11	-0.11
10,910.00	91.50	269.30	9,805.85	-42.72	-1,091.87	1,092.16	0.44	0.11	-0.43
11,003.00	91.80	269.00	9,803.17	-44.10	-1,184.82	1,185.12	0.46	0.32	-0.32
11,097.00	92.10	269.00	9,799.98	-45.74	-1,278.75	1,279.06	0.32	0.32	0.00
11,191.00	91.70	269.80	9,796.86	-46.72	-1,372.69	1,373.01	0.95	-0.43	0.85
11,285.00	92.50	269.70	9,793.41	-47.13	-1,466.63	1,466.94	0.86	0.85	-0.11
11,380.00	92.60	269.60	9,789.19	-47.71	-1,561.53	1,561.85	0.15	0.11	-0.11
11,474.00	92.00	269.60	9,785.42	-48.37	-1,655.45	1,655.77	0.64	-0.64	0.00
11,569.00	91.60	269.00	9,782.43	-49.53	-1,750.40	1,750.72	0.76	-0.42	-0.63
11,664.00	91.60	269.00	9,779.78	-51.19	-1,845.35	1,845.68	0.00	0.00	0.00
11,758.00	91.40	268.70	9,777.32	-53.07	-1,939.30	1,939.64	0.38	-0.21	-0.32
11,852.00	91.30	271.20	9,775.10	-53.15	-2,033.26	2,033.61	2.66	-0.11	2.66

Company:	Murchison Oil and Gas, LLC	Local Co-ordinate Reference:	Well Rock Ridge Federal WCXY 2H
Project:	Eddy County, New Mexico (NAD 83)	TVD Reference:	WELL @ 2940.70usft (Latshaw 7)
Site:	Rock Ridge Federal 1-4	MD Reference:	WELL @ 2940.70usft (Latshaw 7)
Well:	Rock Ridge Federal WCXY 2H	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM 5000.1 Conroe DB

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)	
11,946.00	90.80	270.60	9,773.38	-51.68	-2,127.24	2,127.56	0.83	-0.53	-0.64	
12,040.00	92.00	270.90	9,771.08	-50.45	-2,221.20	2,221.51	1.32	1.28	0.32	
12,135.00	90.10	270.60	9,769.34	-49.20	-2,316.17	2,316.47	2.02	-2.00	-0.32	
12,230.00	90.20	270.50	9,769.09	-48.29	-2,411.16	2,411.46	0.15	0.11	-0.11	
12,324.00	91.90	270.80	9,767.37	-47.23	-2,505.14	2,505.42	1.84	1.81	0.32	
12,419.00	91.40	269.80	9,764.64	-46.73	-2,600.10	2,600.37	1.18	-0.53	-1.05	
12,513.00	92.30	269.60	9,761.60	-47.22	-2,694.05	2,694.32	0.98	0.96	-0.21	
12,607.00	88.70	270.60	9,760.78	-47.06	-2,788.02	2,788.30	3.97	-3.83	1.06	
12,701.00	89.20	270.80	9,762.50	-45.91	-2,882.00	2,882.27	0.57	0.53	0.21	
12,796.00	89.60	270.90	9,763.50	-44.50	-2,976.99	2,977.24	0.43	0.42	0.11	
12,891.00	89.00	270.20	9,764.66	-43.59	-3,071.97	3,072.21	0.97	-0.63	-0.74	
12,984.00	89.90	271.10	9,765.55	-42.53	-3,164.96	3,165.19	1.37	0.97	0.97	
13,078.00	91.60	271.30	9,764.32	-40.56	-3,258.93	3,259.14	1.82	1.81	0.21	
13,173.00	92.80	271.80	9,760.68	-38.00	-3,353.82	3,354.01	1.37	1.26	0.53	
13,267.00	90.70	270.40	9,757.80	-36.19	-3,447.75	3,447.93	2.68	-2.23	-1.49	
13,360.00	92.10	271.00	9,755.53	-35.06	-3,540.72	3,540.88	1.64	1.51	0.65	
13,454.00	91.80	271.00	9,752.33	-33.42	-3,634.65	3,634.80	0.32	-0.32	0.00	
13,548.00	91.20	270.50	9,749.87	-32.19	-3,728.61	3,728.74	0.83	-0.64	-0.53	
13,642.00	92.20	270.80	9,747.08	-31.12	-3,822.56	3,822.68	1.11	1.06	0.32	
13,735.00	92.40	270.50	9,743.35	-30.07	-3,915.48	3,915.59	0.39	0.22	-0.32	
13,829.00	91.20	268.60	9,740.40	-30.81	-4,009.42	4,009.54	2.39	-1.28	-2.02	
13,923.00	92.70	269.00	9,737.20	-32.77	-4,103.34	4,103.47	1.65	1.60	0.43	
14,017.00	93.20	269.00	9,732.36	-34.41	-4,197.20	4,197.34	0.53	0.53	0.00	
14,111.00	92.40	267.50	9,727.77	-37.28	-4,291.04	4,291.20	1.81	-0.85	-1.60	
14,206.00	92.30	267.00	9,723.88	-41.83	-4,385.86	4,386.05	0.54	-0.11	-0.53	
14,299.00	92.90	267.20	9,719.66	-46.53	-4,478.64	4,478.86	0.68	0.65	0.22	
14,344.00	93.00	266.80	9,717.34	-48.89	-4,523.52	4,523.76	0.92	0.22	-0.89	
14,413.00	93.00	266.80	9,713.73	-52.73	-4,592.32	4,592.58	0.00	0.00	0.00	
Projection to TD-14413.00' MD										

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
9,829.31	9,736.04	-48.66	-29.75	HL Crossing - 9829.31' MD
14,413.00	9,713.73	-52.73	-4,592.32	Projection to TD-14413.00' MD

Company: Murchison Oil and Gas, LLC
Well: Rock Ridge Federal WCXY 2H
County: Eddy County, New Mexico (NAD 83)
Rig: Latshaw 7
Wellbore: Wellbore #1
Design: Design #4
Created By: SAR
Date: 11:22, May 31 2019

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level

To convert a Magnetic Direction to a Grid Direction, Add 8.831°
To convert a Magnetic Direction to a True Direction, Add 7.000° East
To convert a True Direction to a Grid Direction, Subtract 0.169°



Azimuths to Grid North
True North: -0.17°
Magnetic North: 8.83°
Magnetic Field
Strength: 47904.1nT
Dip Angle: 59.93°
Date: 5/1/2019
Model: HDGM2019

SURVEY PROGRAM

Depth From: 0.00
Depth To: 14439.48
Survey/Plan: Design #4 (Wellbore #1)
Tool: MWD+HRGM

CASING DETAILS

TVD	MD	Name	Size
600.00	600.00	13 3/8"	13-3/8"
9000.00	9010.57	9 5/8"	9-5/8"

Projection to TD
14413.00' MD 9829.31' TVD
368.29' FNL 332.01' FWL

WELL DETAILS: Rock Ridge Federal WCXY 2H

GL @ 2915.70
Well @ 2940.70ust (Latshaw 7)
+N/-S 0.00 +E/-W 0.00
Northing 434769.16 Easting 639449.13
Latitude 32° 11' 41.496 N Longitude 104° 0' 58.176 W

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
VP v4 - Rock Ridge Federal WCXY 2H	5509.43	-91.16	250.45	434678.00	639699.58	32° 11' 40.587 N	104° 0' 55.265 W
PBHL v3 - Rock Ridge Federal WCXY 2H	9728.00	-34.44	-4584.59	434734.71	634854.54	32° 11' 41.286 N	104° 1' 51.649 W

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	KOP, 2.00°/100' Build
2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00	0.00	Hold 4.65° Inc, 110.00° Azm
2232.50	4.65	110.00	2232.24	-3.23	8.86	2.00	110.000	-8.84	Begin 2.00°/100' Drop
5287.50	4.65	110.00	5277.19	-87.93	241.59	0.00	0.000	-240.92	Begin Vertical Hold
5520.00	0.00	0.00	5509.43	-91.16	250.45	2.00	180.000	-249.76	Begin 10.00°/100' Build & Turn
9260.50	0.00	0.00	9249.93	-91.16	250.45	0.00	0.000	-249.76	Begin 10.00°/100' Build
9660.00	60.00	276.40	9746.13	-44.37	-32.18	10.00	279.400	32.51	Begin 10.00°/100' Build & Turn
10187.04	91.35	269.82	9826.10	-21.15	-343.37	10.00	-17.959	343.52	Begin 91.35° Lateral
14439.46	91.35	269.82	9728.00	-34.44	-4594.59	0.00	0.000	4594.72	PBHL

