

Rcvd 4/17/2020 District 1

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

1a. Type of Well ☒ Oil Well ☐ Gas Well ☐ Dry ☐ Other				5. Lease Serial No. NMNM26394	
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 CIMAREX ENERGY COMPANY Contact: FATIMA VASQUEZ E-Mail: fvasquez@cimarex.com				7. Unit or CA Agreement Name and No.	
3. Address 600 N MARIENFELD ST SUITE 600 MIDLAND, TX 79701		3a. Phone No. (include area code) Ph: 432.620.1933		8. Lease Name and Well No. VACA DRAW 20 17 FEDERAL 71H	
4. Location of Well (Report location clearly and in accordance with Federal requirements)* At surface SESE 390FSL 370FEL 32.109895 N Lat, 103.586964 W Lon Sec 20 T25S R33E Mer NMP At top prod interval reported below SESE 695FSL 980FEL 32.110733 N Lat, 103.588933 W Lon Sec 17 T25S R33E Mer NMP At total depth NENE 100FNL 977FEL 32.137578 N Lat, 103.588908 W Lon				9. API Well No. 30-025-46160	
10. Field and Pool, or Exploratory UPPER BONE SPRING				11. Sec., T., R., M., or Block and Survey or Area Sec 20 T25S R33E Mer NMP	
12. County or Parish LEA				13. State NM	
14. Date Spudded 08/02/2019		15. Date T.D. Reached 10/19/2019		16. Date Completed ☐ D & A ☒ Ready to Prod. 02/01/2020	
17. Elevations (DF, KB, RT, GL)* 3396 GL					
18. Total Depth: MD 19978 TVD 10037		19. Plug Back T.D.: MD 19939 TVD 10037		20. Depth Bridge Plug Set: MD TVD	
21. Type Electric & Other Mechanical Logs Run (Submit copy of each) RCBL				22. Was well cored? ☒ No ☐ Yes (Submit analysis) Was DST run? ☒ No ☐ Yes (Submit analysis) Directional Survey? ☐ No ☒ Yes (Submit analysis)	

23. Casing and Liner Record (Report all strings set in well)

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
17.500	13.375 J-55	48.0	0	1066		875		0	
12.250	9.625 HCL-80	40.0	0	4933		1400		0	
8.750	7.000 P-110	29.0	0	8887				0	
6.125	4.500 P-110CY	11.6	8388	19978		880		10060	
8.750	7.000 L-80	26.0	8887	10260		885		0	

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
3.500	8361	8361						

25. Producing Intervals

Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A) BONE SPRING	9114		10209 TO 19886	0.350	975	PRODUCING
B)						
C)						
D)						

26. Perforation Record

27. Acid, Fracture, Treatment, Cement Squeeze, Etc.

Depth Interval	Amount and Type of Material
10209 TO 19886	390,243 BBLS TOTAL FLUID & 19,495,019# SAND

28. Production - Interval A

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method
02/01/2020	02/25/2020	24	→	1159.0	2158.0	3920.0	47.8		GAS LIFT
Choke Size	Tbg. Press. Flwg.	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas:Oil Ratio	Well Status	
44	SI 1018	714.0	→	1159	2158	3920	1862	POW	

28a. Production - Interval B

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 #509678 VERIFIED BY THE BLM WELL INFORMATION SYSTEM

** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED **

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
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Formation	Top	Bottom	Descriptions, Contents, etc.	Name	Top
					Meas. Depth
BELL CANYON	4969	6048	SANDSTONE; WATER SANDSTONE; WATER SANDSTONE; WATER LS/SHALE/SS; OIL, WATER, GAS	RUSTLER	1001
CHERRY CANYON	6048	7525		TOP OF SALT	1341
BRUSHY CANYON	7525	9114		LAMAR	4935
BONE SPRING	9114			BELL CANYON	4969
				CHERRY CANYON	6048
				BRUSHY CANYON	7525
				BONE SPRING	9114

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 #509678 Verified by the BLM Well Information System.
For CIMAREX ENERGY COMPANY, sent to the Hobbs

Name (<i>please print</i>) <u>FATIMA VASQUEZ</u>	Title <u>REGULATORY ANALYST</u>
Signature _____ (Electronic Submission)	Date <u>04/05/2020</u>

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.

**** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ** ORIGINAL ****

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018**SUNDRY NOTICES AND REPORTS ON WELLS**
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.5. Lease Serial No.
NMNM26394

6. If Indian, Allottee or Tribe Name

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

8. Well Name and No.
VACA DRAW 20-17 FEDERAL 71H9. API Well No.
30-025-4616010. Field and Pool or Exploratory Area
UPPER BONE SPRING11. County or Parish, State
LEA COUNTY, NM**SUBMIT IN TRIPLICATE - Other instructions on page 2**

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator

CIMAREX ENERGY COMPANY

Contact: FATIMA VASQUEZ

E-Mail: fvasquez@cimarex.com

3a. Address

600 N MARIENFELD ST SUITE 600
MIDLAND, TX 79701

3b. Phone No. (include area code)

Ph: 432-620-1933

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 20 T25S R33E SESE 390FSL 370FEL
32.109895 N Lat, 103.586964 W Lon

12. CHECK THE 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	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Production Start-up
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

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 recompleat 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/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

Cimarex competed this well as follows:

12/12/2019 Test csg to 9800 psi for 30 min. Good test.

12/20/2019 to

01/07/2020 Perf Bone Spring @ 10,209'-19,886', 975 holes, .35". Frac w/ 390,243 bbls total fluid & 19,495,019# sand.

01/12/2020 DO plugs.

01/13/2020 Continue DO plugs & CO to PBTD. SI well.

01/23/2020 RIH w/ 3-1/2" 9.3# L-80 8rd EUE tbg, pkr & GLVs, set @ 8361'. SI well & secure.

02/01/2020 Turn to production.

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

**Electronic Submission #509677 verified by the BLM Well Information System
For CIMAREX ENERGY COMPANY, sent to the Hobbs**

Name (Printed/Typed) FATIMA VASQUEZ

Title REGULATORY ANALYST

Signature (Electronic Submission)

Date 04/05/2020

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By _____	Title _____	Date _____
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 _____	

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.

(Instructions on page 2)

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 E. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, 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
CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

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

☐ AMENDED REPORT

HOBBES
FEB 10 2020
RECEIVED

WELL LOCATION AND ACREAGE DEDICATION PLAT

* API Number 30-025-46160	* Well Name WC-025 G-06 S253329D; UPR BONE SPRING
* Property Code 319775	* Property Name VACA DRAW 20-17 FEDERAL
* DGBID No. 215099	* Operator Name CIMAREX ENERGY CO.
	* Well Number 71H
	* Elevation 3395.8'

* Surface Location

UL or lot no. P	Section 20	Township 25S	Range 33E	Lot 10n	Feet from the 390	North/South line SOUTH	Feet from the 370	East/West line EAST	County LEA
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* Bottom Hole Location If Different From Surface

UL or lot no. A	Section 17	Township 25S	Range 33E	Lot 10n	Feet from the 100	North/South line NORTH	Feet from the 977	East/West line EAST	County LEA
Dedicated Acres 640	Joint or Infill	Consolidation Code	Order No.						

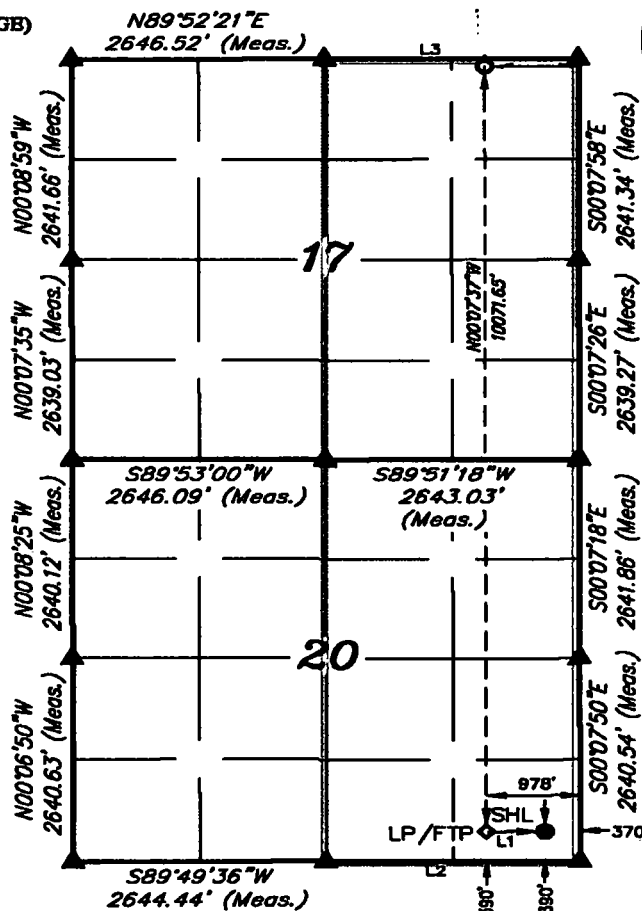
No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

- = SURFACE HOLE LOCATION
- ◇ = LANDING POINT/FIRST TAKE POINT
- = BOTTOM HOLE LOCATION/
LAST TAKE POINT
- ▲ = SECTION CORNER LOCATED



SCALE
REV: 2 06-19-19 S.T.O. (BHL CHANGE)

NAD 83 (SURFACE HOLE LOCATION)
LATITUDE - 32°06'35.62" (32.109895°)
LONGITUDE - 103°35'13.07" (103.586964°)
NAD 83 (SURFACE HOLE LOCATION)
LATITUDE - 32°06'35.17" (32.109770°)
LONGITUDE - 103°35'11.37" (103.586492°)
STATE PLANE NAD 83 (N.M. EAST)
N: 404316.16' E: 772435.36'
STATE PLANE NAD 83 (N.M. EAST)
N: 404458.38' E: 751243.38'



NOTE:
• Distances referenced on plat to section lines are perpendicular.
• Basis of Bearing is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

* OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed well location or has a right to drill this well as its location pursuant to a contract with an owner of such a mineral or working interest, or to a subsurface pooling agreement, or a pooling order heretofore filed in the district.

Signature _____ Date 1-2020

Printed Name
Jeri Stathem
Jstathem@cimarex.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.

July 27, 2018

Date of Survey
Signature and Seal of Professional Surveyor:



Certificate Number:

Intent ☐ As Drilled ☐

API #		
Operator Name:	Property Name:	Well Number

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude				NAD

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude				NAD

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude				NAD

Is this well the defining well for the Horizontal Spacing Unit? ☐

Is this well an infill well? ☐

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #		
Operator Name:	Property Name:	Well Number

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1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
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1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals & Natural Resources

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

Rcvd 4/17/2020 District I
Form C-104
Revised August 1, 2011

Submit one copy to appropriate District Office

☐ AMENDED REPORT

I. REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT

¹ Operator name and Address		² OGRID Number	
		³ Reason for Filing Code/ Effective Date	
⁴ API Number	⁵ Pool Name		⁶ Pool Code KZ
⁷ Property Code	⁸ Property Name		⁹ Well Number

II. ¹⁰Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South Line	Feet from the	East/West line	County
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¹¹ Bottom Hole Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
¹² Lse Code	¹³ Producing Method Code		¹⁴ Gas Connection Date		¹⁵ C-129 Permit Number		¹⁶ C-129 Effective Date		¹⁷ C-129 Expiration Date

III. Oil and Gas Transporters

¹⁸ Transporter OGRID	¹⁹ Transporter Name and Address	²⁰ O/G/W

IV. Well Completion Data

²¹ Spud Date	²² Ready Date	²³ TD	²⁴ PBDT	²⁵ Perforations	²⁶ DHC, MC
²⁷ Hole Size		²⁸ Casing & Tubing Size	²⁹ Depth Set		³⁰ Sacks Cement

V. Well Test Data

³¹ Date New Oil	³² Gas Delivery Date	³³ Test Date	³⁴ Test Length	³⁵ Tbg. Pressure	³⁶ Csg. Pressure
³⁷ Choke Size	³⁸ Oil	³⁹ Water	⁴⁰ Gas		⁴¹ Test Method
⁴² I hereby certify that the rules of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief. Signature: <i>Fatima Vasquez</i>			OIL CONSERVATION DIVISION		
Printed name:			Approved by: <i>PM</i>		
Title:			Title: <i>LM II</i>		
E-mail Address:			Approval Date: <i>6/17/2020</i>		
Date:		Phone:			



Final Surveys - Cimarex Vaca Draw 20-17 Federal #71H MWD 0ft-19978ft (Surcon Corrected) Survey Geodetic Report (Def Survey)



Report Date: October 21, 2019 - 10:11 AM
Client: Cimarex Energy
Field: NM Lea County (NAD 83)
Structure / Slot: Cimarex Vaca Draw 20-17 Federal #71H / New Slot
Well: Vaca Draw 20-17 Federal #71H
Borehole: Vaca Draw 20-17 Federal #71H
UWI / API#: Unknown / Unknown
Survey Name: Final Surveys - Cimarex Vaca Draw 20-17 Federal #71H MWD 0ft-19978ft (Surcon Corrected)
Survey Date: October 13, 2019
Tort / AHD / DDI / ERD Ratio: 229.188 ° / 10908.535 ft / 6.696 / 1.084
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 6' 35.62096", W 103° 35' 13.07049"
Location Grid N/E Y/X: N 404516.160 ftUS, E 772429.560 ftUS
CRS Grid Convergence Angle: 0.3967 °
Grid Scale Factor: 0.99997026
Version / Patch: 2.10.782.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 359.628 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3421.800 ft above MSL
Seabed / Ground Elevation: 3395.800 ft above MSL
Magnetic Declination: 6.607 °
Total Gravity Field Strength: 998.4332mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 47736.220 nT
Magnetic Dip Angle: 59.706 °
Declination Date: October 13, 2019
Magnetic Declination Model: HDGM 2019
North Reference: Grid North
Grid Convergence Used: 0.3967 °
Total Corr Mag North->Grid North: 6.2105 °
Local Coord Referenced To: Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")	Closure Azimuth (°)	Closure (ft)
SHL [390' FSL, 370' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	404516.16	772429.56	N 32 6 35.62	W 103 35 13.07	0.00	0.00
	193.00	0.52	49.62	193.00	0.56	0.57	0.67	0.27	404516.73	772430.23	N 32 6 35.63	W 103 35 13.06	49.62	0.88
	293.00	0.48	41.02	292.99	1.17	1.18	1.29	0.08	404517.34	772430.85	N 32 6 35.63	W 103 35 13.06	47.56	1.74
	384.00	0.33	339.61	383.99	1.70	1.71	1.45	0.48	404517.87	772431.01	N 32 6 35.64	W 103 35 13.05	40.22	2.24
	476.00	0.32	307.22	475.99	2.11	2.11	1.15	0.20	404518.27	772430.71	N 32 6 35.64	W 103 35 13.06	28.54	2.41
	566.00	0.41	302.24	565.99	2.43	2.44	0.68	0.11	404518.60	772430.24	N 32 6 35.65	W 103 35 13.06	15.52	2.53
	657.00	0.44	307.42	656.99	2.82	2.82	0.12	0.05	404518.98	772429.68	N 32 6 35.65	W 103 35 13.07	2.52	2.83
	747.00	0.45	299.46	746.98	3.21	3.21	-0.46	0.07	404519.37	772429.10	N 32 6 35.65	W 103 35 13.08	351.88	3.24
	838.00	0.50	299.16	837.98	3.58	3.58	-1.12	0.06	404519.74	772428.44	N 32 6 35.66	W 103 35 13.08	342.68	3.75
	933.00	0.51	295.85	932.98	3.98	3.96	-1.86	0.03	404520.12	772427.70	N 32 6 35.66	W 103 35 13.09	334.88	4.38
	995.00	0.54	294.23	994.97	4.22	4.20	-2.37	0.05	404520.36	772427.19	N 32 6 35.66	W 103 35 13.10	330.56	4.83
	1120.00	0.44	287.15	1119.97	4.61	4.59	-3.37	0.09	404520.75	772426.19	N 32 6 35.67	W 103 35 13.11	323.71	5.69
	1215.00	1.47	258.67	1214.96	4.49	4.46	-4.91	1.16	404520.62	772424.65	N 32 6 35.67	W 103 35 13.13	312.21	6.63
	1403.00	1.97	255.63	1402.87	3.25	3.18	-10.41	0.27	404519.34	772419.15	N 32 6 35.65	W 103 35 13.19	286.99	10.88
	1592.00	2.14	253.53	1591.75	1.48	1.37	-16.94	0.10	404517.53	772412.62	N 32 6 35.64	W 103 35 13.27	274.63	16.99
	1687.00	2.31	254.92	1686.68	0.50	0.37	-20.49	0.19	404516.53	772409.07	N 32 6 35.63	W 103 35 13.31	271.04	20.49
	1876.00	2.41	255.60	1875.52	-1.43	-1.61	-28.01	0.05	404514.55	772401.55	N 32 6 35.61	W 103 35 13.40	266.72	28.06
	2065.00	2.47	256.22	2064.34	-3.33	-3.57	-35.82	0.03	404512.59	772393.74	N 32 6 35.59	W 103 35 13.49	264.31	36.00
	2159.00	2.56	256.33	2158.25	-4.29	-4.54	-39.83	0.10	404511.62	772389.74	N 32 6 35.58	W 103 35 13.53	263.49	40.08
	2253.00	2.62	257.15	2252.16	-5.23	-5.52	-43.96	0.08	404510.64	772385.60	N 32 6 35.57	W 103 35 13.58	262.85	44.30
	2442.00	2.76	266.70	2440.95	-6.40	-6.74	-52.71	0.25	404509.42	772376.85	N 32 6 35.56	W 103 35 13.68	262.71	53.14
	2537.00	2.77	270.25	2535.84	-6.49	-6.86	-57.29	0.18	404509.30	772372.27	N 32 6 35.56	W 103 35 13.74	263.17	57.70
	2631.00	2.85	273.19	2629.73	-6.32	-6.72	-61.90	0.18	404509.44	772367.66	N 32 6 35.56	W 103 35 13.79	263.80	62.26
	2726.00	3.01	277.47	2724.60	-5.83	-6.27	-66.73	0.29	404509.89	772362.83	N 32 6 35.56	W 103 35 13.85	264.63	67.02
	2820.00	3.01	279.65	2818.47	-5.07	-5.53	-71.61	0.12	404510.63	772357.95	N 32 6 35.57	W 103 35 13.90	265.58	71.82
	2915.00	3.07	284.68	2913.34	-3.97	-4.47	-76.53	0.29	404511.69	772353.03	N 32 6 35.58	W 103 35 13.96	266.66	76.66
	3009.00	3.19	288.55	3007.20	-2.47	-3.00	-81.44	0.26	404513.16	772348.12	N 32 6 35.60	W 103 35 14.02	267.89	81.50
	3103.00	3.18	298.10	3101.06	-0.38	-0.94	-86.22	0.56	404515.22	772343.34	N 32 6 35.62	W 103 35 14.07	269.38	86.23
	3197.00	3.22	306.97	3194.91	2.46	1.88	-90.63	0.53	404518.04	772338.93	N 32 6 35.65	W 103 35 14.12	271.19	90.65
	3292.00	3.39	318.64	3289.75	6.20	5.59	-94.62	0.73	404521.75	772334.94	N 32 6 35.68	W 103 35 14.17	273.38	94.78
	3386.00	3.87	325.65	3383.56	10.93	10.29	-98.25	0.69	404526.45	772331.32	N 32 6 35.73	W 103 35 14.21	275.98	98.78
	3480.00	3.38	356.58	3477.38	16.33	15.68	-100.20	2.12	404531.84	772329.36	N 32 6 35.78	W 103 35 14.23	278.89	101.42
	3575.00	4.25	32.08	3572.19	22.10	21.46	-98.50	2.60	404537.62	772331.06	N 32 6 35.84	W 103 35 14.21	282.29	100.81
	3669.00	4.05	40.83	3665.94	27.53	26.92	-94.48	0.71	404543.08	772335.08	N 32 6 35.89	W 103 35 14.17	285.90	98.24
	3764.00	3.17	62.48	3760.76	31.26	30.67	-89.96	1.69	404546.83	772339.61	N 32 6 35.93	W 103 35 14.11	288.83	95.04

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")	Closure Azimuth (°)	Closure (ft)
	3858.00	3.22	68.65	3854.61	33.39	32.84	-85.19	0.37	404549.00	772344.37	N 32 6 35.95	W 103 35 14.06	291.08	91.30
	3952.00	3.02	80.06	3948.47	34.75	34.22	-80.29	0.69	404550.38	772349.27	N 32 6 35.97	W 103 35 14.00	293.09	87.28
	4047.00	2.39	115.63	4043.37	34.29	33.80	-76.04	1.85	404549.96	772353.52	N 32 6 35.96	W 103 35 13.95	293.96	83.22
	4141.00	2.66	107.48	4137.28	32.76	32.30	-72.19	0.48	404548.46	772357.37	N 32 6 35.95	W 103 35 13.91	294.10	79.09
	4236.00	2.56	129.96	4232.18	30.72	30.27	-68.47	1.08	404546.43	772361.10	N 32 6 35.93	W 103 35 13.86	293.85	74.86
	4330.00	2.58	144.53	4326.09	27.63	27.20	-65.63	0.69	404543.36	772363.93	N 32 6 35.89	W 103 35 13.83	292.51	71.04
	4424.00	3.29	140.80	4419.97	23.79	23.39	-62.70	0.78	404539.55	772366.87	N 32 6 35.86	W 103 35 13.80	290.46	66.92
	4519.00	3.88	143.99	4514.78	19.06	18.67	-59.08	0.66	404534.83	772370.48	N 32 6 35.81	W 103 35 13.76	287.54	61.96
	4613.00	4.18	149.12	4608.55	13.52	13.16	-55.46	0.50	404529.32	772374.11	N 32 6 35.76	W 103 35 13.71	283.35	57.00
	4708.00	3.70	157.72	4703.32	7.69	7.35	-52.52	0.80	404523.51	772377.05	N 32 6 35.70	W 103 35 13.68	277.97	53.03
	4873.00	2.94	171.06	4868.05	-1.43	-1.75	-49.84	0.65	404514.41	772379.72	N 32 6 35.61	W 103 35 13.65	267.99	49.87
	4984.00	2.76	174.38	4978.91	-6.91	-7.22	-49.14	0.22	404508.94	772380.43	N 32 6 35.55	W 103 35 13.64	261.64	49.66
	5174.00	3.55	199.35	5168.63	-17.00	-17.33	-50.64	0.82	404498.83	772378.92	N 32 6 35.45	W 103 35 13.66	251.11	53.52
	5268.00	3.96	221.07	5262.43	-22.17	-22.52	-53.73	1.56	404493.64	772375.83	N 32 6 35.40	W 103 35 13.70	247.26	58.26
	5362.00	4.52	234.70	5356.18	-26.73	-27.11	-58.89	1.22	404489.05	772370.67	N 32 6 35.36	W 103 35 13.76	245.28	64.83
	5457.00	5.52	247.53	5450.82	-30.59	-31.02	-66.17	1.58	404485.14	772363.39	N 32 6 35.32	W 103 35 13.84	244.88	73.08
	5551.00	6.86	256.04	5544.27	-33.61	-34.10	-75.79	1.72	404482.06	772353.77	N 32 6 35.29	W 103 35 13.95	245.78	83.11
	5646.00	8.30	260.23	5638.44	-36.06	-36.63	-88.06	1.62	404479.53	772341.50	N 32 6 35.26	W 103 35 14.10	247.41	95.37
	5740.00	8.20	264.46	5731.46	-37.77	-38.43	-101.42	0.65	404477.73	772328.15	N 32 6 35.25	W 103 35 14.25	249.25	108.45
	5834.00	8.56	267.26	5824.46	-38.67	-39.41	-115.08	0.58	404476.75	772314.49	N 32 6 35.24	W 103 35 14.41	251.09	121.64
	5928.00	9.12	273.35	5917.35	-38.47	-39.31	-129.50	1.16	404476.85	772300.06	N 32 6 35.24	W 103 35 14.58	253.11	135.34
	6023.00	8.97	272.23	6011.16	-37.65	-38.58	-144.42	0.24	404477.58	772285.15	N 32 6 35.25	W 103 35 14.75	255.04	149.48
	6118.00	9.01	274.17	6105.00	-36.72	-37.76	-159.24	0.32	404478.41	772270.33	N 32 6 35.26	W 103 35 14.92	256.66	163.65
	6212.00	9.01	277.92	6197.84	-35.08	-36.21	-173.87	0.62	404479.96	772255.70	N 32 6 35.27	W 103 35 15.09	258.24	177.60
	6306.00	8.90	277.05	6290.69	-33.08	-34.30	-188.38	0.19	404481.86	772241.19	N 32 6 35.29	W 103 35 15.26	259.68	191.47
	6401.00	8.80	277.09	6384.56	-31.18	-32.50	-202.88	0.11	404483.66	772226.69	N 32 6 35.31	W 103 35 15.43	260.90	205.47
	6495.00	8.84	276.41	6477.45	-29.40	-30.81	-217.19	0.12	404485.35	772212.37	N 32 6 35.33	W 103 35 15.60	261.93	219.37
	6589.00	8.83	275.92	6570.33	-27.75	-29.26	-231.55	0.08	404486.91	772198.02	N 32 6 35.35	W 103 35 15.76	262.80	233.39
	6684.00	8.89	275.43	6664.20	-26.21	-27.81	-246.11	0.10	404488.35	772183.46	N 32 6 35.36	W 103 35 15.93	263.55	247.67
	6778.00	8.77	274.97	6757.09	-24.81	-26.50	-260.48	0.15	404489.66	772169.09	N 32 6 35.38	W 103 35 16.10	264.19	261.82
	6873.00	8.62	274.49	6851.00	-23.53	-25.32	-274.79	0.18	404490.84	772154.78	N 32 6 35.39	W 103 35 16.27	264.74	275.95
	6967.00	8.54	272.73	6943.94	-22.56	-24.43	-288.78	0.29	404491.73	772140.78	N 32 6 35.40	W 103 35 16.43	265.16	289.82
	7061.00	8.40	272.07	7036.92	-21.89	-23.85	-302.62	0.18	404492.31	772126.95	N 32 6 35.41	W 103 35 16.59	265.49	303.56
	7250.00	8.00	267.68	7223.99	-21.75	-23.89	-329.55	0.39	404492.28	772100.02	N 32 6 35.41	W 103 35 16.90	265.85	330.42
	7345.00	8.63	267.52	7317.99	-22.23	-24.46	-343.28	0.66	404491.70	772086.29	N 32 6 35.40	W 103 35 17.06	265.92	344.15
	7439.00	9.07	268.75	7410.87	-22.61	-24.93	-357.73	0.51	404491.23	772071.84	N 32 6 35.40	W 103 35 17.23	266.01	358.60
	7534.00	8.87	266.14	7504.71	-23.17	-25.58	-372.53	0.48	404490.58	772057.04	N 32 6 35.39	W 103 35 17.40	266.07	373.41
	7628.00	8.40	264.34	7597.64	-24.24	-26.75	-386.59	0.58	404489.41	772042.98	N 32 6 35.38	W 103 35 17.57	266.04	387.52
	7722.00	7.87	263.48	7690.70	-25.56	-28.16	-399.82	0.58	404488.00	772029.75	N 32 6 35.37	W 103 35 17.72	265.97	400.81
	7816.00	7.32	266.90	7783.87	-26.54	-29.21	-412.19	0.76	404486.95	772017.38	N 32 6 35.36	W 103 35 17.86	265.95	413.23
	7911.00	7.59	270.34	7878.07	-26.75	-29.50	-424.51	0.55	404486.66	772005.06	N 32 6 35.36	W 103 35 18.01	266.02	425.53
	8005.00	8.04	274.50	7971.20	-26.11	-28.95	-437.27	0.77	404487.21	771992.30	N 32 6 35.36	W 103 35 18.16	266.21	438.23
	8099.00	7.46	272.44	8064.34	-25.25	-28.17	-449.92	0.68	404487.99	771979.65	N 32 6 35.37	W 103 35 18.30	266.42	450.80
	8194.00	7.27	270.47	8158.55	-24.86	-27.86	-462.09	0.33	404488.30	771967.48	N 32 6 35.38	W 103 35 18.44	266.55	462.93
	8288.00	7.64	271.20	8251.76	-24.60	-27.68	-474.29	0.41	404488.48	771955.29	N 32 6 35.38	W 103 35 18.59	266.66	475.09
	8382.00	7.84	271.78	8344.90	-24.19	-27.35	-486.94	0.23	404488.81	771942.63	N 32 6 35.38	W 103 35 18.73	266.78	487.71
	8571.00	6.97	268.31	8532.33	-23.97	-27.29	-511.29	0.52	404488.87	771918.29	N 32 6 35.39	W 103 35 19.02	266.94	512.02
	8666.00	7.27	269.96	8626.59	-24.07	-27.46	-523.06	0.38	404488.70	771906.51	N 32 6 35.38	W 103 35 19.15	266.99	523.78
	8855.00	6.84	269.15	8814.16	-24.09	-27.64	-546.27	0.23	404488.52	771883.30	N 32 6 35.38	W 103 35 19.42	267.10	546.97
	9043.00	5.65	267.17	9001.04	-24.58	-28.26	-566.71	0.64	404487.90	771862.87	N 32 6 35.38	W 103 35 19.66	267.14	567.42
	9138.00	5.28	264.87	9095.61	-25.15	-28.88	-575.74	0.45	404487.28	771853.84	N 32 6 35.37	W 103 35 19.77	267.13	576.46
	9327.00	4.40	260.06	9283.94	-27.07	-30.91	-591.54	0.51	404485.25	771838.04	N 32 6 35.36	W 103 35 19.95	267.01	592.35
	9493.00	4.08	248.17	9449.48	-30.29	-34.21	-603.29	0.56	404481.95	771826.29	N 32 6 35.32	W 103 35 20.09	266.75	604.26
First SLB Survey	9556.00	4.04	243.64	9512.33	-32.08	-36.03	-607.36	0.51	404480.13	771822.22	N 32 6 35.31	W 103 35 20.13	266.61	608.43
KOP	9580.24	5.05	261.80	9536.49	-32.60	-36.56	-609.18	7.20	404479.60	771820.40	N 32 6 35.30	W 103 35 20.16	266.57	610.28
	9588.00	5.45	266.04	9544.22	-32.67	-36.63	-609.89	7.20	404479.53	771819.69	N 32 6 35.30	W 103 35 20.16	266.56	610.99
	9619.00	9.55	287.45	9574.95	-31.98	-35.96	-613.81	15.79	404480.20	771815.77	N 32 6 35.31	W 103 35 20.21	266.65	614.87
	9651.00	13.30	291.24	9606.31	-29.81	-33.83	-619.78	11.95	404482.33	771809.80	N 32 6 35.33	W 103 35 20.28	266.88	620.70
	9682.00	14.88	303.24	9636.39	-26.29	-30.36	-626.43	10.69	404485.80	771803.15	N 32 6 35.36	W 103 35 20.36	267.23	627.17
	9714.00	17.11	317.30	9667.16	-20.53	-24.64	-633.07	13.92	404491.52	771796.51	N 32 6 35.42	W 103 35 20.43	267.77	633.54
	9745.00	18.93	323.06	9696.64	-13.12	-17.27	-639.18	8.21	404498.89	771790.40	N 32 6 35.49	W 103 35 20.50	268.45	639.41
	9777.00	21.53	332.06	9726.67	-3.74	-7.93	-645.05	12.65	404508.23	771784.53	N 32 6 35.59	W 103 35 20.57	269.30	645.10
	9808.00	25.21	339.54	9755.13	7.50	3.28	-645.03	15.23	404519.44	771779.55	N 32 6 35.70	W 103 35 20.63	270.29	650.04
	9840.00	29.37	347.20	9783.57	21.58	17.33	-654.15	16.99	404533.49	771775.43	N 32 6 35.84	W 103 35 20.67	271.52	654.38
	9871.00	34.57	354.91	9809.87	37.79	33.52	-656.62	21.30	404549.68	771772.96	N 32 6 36.00	W 103 35 20.70	272.92	657.48
	9903.00	41.29	0.84	9835.10	57.42	53.15	-657.27	23.87	404569.31	771772.31	N 32 6 36.19	W 103 35 20.71	274.62	659.42
	9934.00	45.75	5.57	9857.58	78.70	74.45	-656.04	17.81	404590.60	771773.54	N 32 6 36.40	W 103 35 20.69	276.47	660.25

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")	Closure Azimuth (°)	Closure (ft)
	9965.00	48.06	8.70	9878.76	101.14	96.90	-653.22	10.48	404613.06	771776.36	N 32 6 36.62	W 103 35 20.66	278.44	660.37
	9997.00	49.98	11.20	9899.75	124.90	120.69	-649.04	8.41	404636.84	771780.54	N 32 6 36.86	W 103 35 20.61	280.53	660.17
	10028.00	52.23	13.07	9919.21	148.45	144.27	-643.96	8.64	404660.43	771785.62	N 32 6 37.09	W 103 35 20.55	282.63	659.93
	10060.00	54.87	13.18	9938.22	173.48	169.34	-638.12	8.25	404685.49	771791.46	N 32 6 37.34	W 103 35 20.48	284.86	660.20
	10091.00	58.90	12.22	9955.16	198.76	194.66	-632.42	13.26	404710.82	771797.16	N 32 6 37.59	W 103 35 20.41	287.11	661.70
	10123.00	63.26	12.04	9970.63	226.10	222.04	-626.53	13.63	404738.19	771803.05	N 32 6 37.86	W 103 35 20.34	289.51	664.71
	10154.00	66.80	11.27	9983.71	253.58	249.56	-620.86	11.64	404765.71	771808.72	N 32 6 38.13	W 103 35 20.27	291.90	669.14
	10186.00	72.74	9.28	9994.77	283.08	279.09	-615.52	19.46	404795.24	771814.06	N 32 6 38.42	W 103 35 20.20	294.39	675.83
	10209.00	76.88	7.91	10000.80	305.00	301.03	-612.20	18.90	404817.18	771817.38	N 32 6 38.64	W 103 35 20.16	296.18	682.21
	10291.00	88.66	4.67	10011.10	385.65	381.74	-603.34	14.89	404897.89	771826.24	N 32 6 39.44	W 103 35 20.05	302.32	713.96
	10368.00	89.52	1.90	10012.33	462.47	458.60	-598.93	3.77	404974.74	771830.65	N 32 6 40.20	W 103 35 20.00	307.44	754.33
	10462.00	88.97	359.92	10013.56	556.44	552.57	-597.43	2.19	405068.71	771832.15	N 32 6 41.13	W 103 35 19.97	312.77	813.79
	10556.00	88.90	0.07	10015.31	650.42	646.55	-597.44	0.18	405162.69	771832.14	N 32 6 42.06	W 103 35 19.96	317.26	880.32
	10745.00	90.14	359.42	10016.90	839.41	835.54	-598.28	0.74	405351.67	771831.30	N 32 6 43.93	W 103 35 19.96	324.40	1027.65
	10933.00	88.56	0.68	10019.03	1027.38	1023.52	-598.12	1.07	405539.65	771831.46	N 32 6 45.79	W 103 35 19.94	329.70	1185.47
	11027.00	88.14	359.59	10021.73	1121.34	1117.48	-597.90	1.24	405633.60	771831.68	N 32 6 46.72	W 103 35 19.93	331.85	1267.37
	11121.00	88.80	0.30	10024.24	1215.30	1211.44	-597.99	1.03	405727.56	771831.59	N 32 6 47.65	W 103 35 19.93	333.73	1350.99
	11215.00	88.31	358.57	10026.62	1309.27	1305.40	-598.91	1.91	405821.52	771830.67	N 32 6 48.58	W 103 35 19.93	335.35	1436.24
	11309.00	87.90	358.10	10029.72	1403.19	1399.31	-601.64	0.66	405915.43	771827.94	N 32 6 49.51	W 103 35 19.95	336.73	1523.17
	11404.00	88.42	358.28	10032.77	1498.11	1494.22	-604.64	0.58	406010.33	771824.94	N 32 6 50.45	W 103 35 19.98	337.97	1611.92
	11499.00	89.11	358.49	10034.82	1593.07	1589.16	-607.32	0.76	406105.27	771822.26	N 32 6 51.39	W 103 35 20.00	339.08	1701.25
	11593.00	89.11	358.75	10036.28	1687.04	1683.12	-609.58	0.28	406199.22	771820.00	N 32 6 52.32	W 103 35 20.02	340.09	1790.10
	11687.00	86.83	357.07	10039.61	1780.93	1776.99	-613.01	3.01	406293.09	771816.57	N 32 6 53.25	W 103 35 20.05	340.97	1879.75
	11782.00	87.14	356.60	10044.61	1875.68	1871.71	-618.24	0.59	406387.81	771811.33	N 32 6 54.18	W 103 35 20.11	341.72	1971.17
	11876.00	88.31	358.70	10048.34	1969.55	1965.55	-622.10	2.56	406481.65	771807.48	N 32 6 55.11	W 103 35 20.15	342.44	2061.65
	11970.00	88.18	357.90	10051.22	2063.48	2059.46	-624.88	0.86	406575.56	771804.70	N 32 6 56.04	W 103 35 20.17	343.12	2152.18
	12159.00	91.13	359.72	10052.36	2252.43	2248.39	-628.81	1.83	406764.48	771800.77	N 32 6 57.91	W 103 35 20.20	344.38	2334.66
	12253.00	90.48	359.69	10051.04	2346.42	2342.38	-629.29	0.69	406858.47	771800.29	N 32 6 58.84	W 103 35 20.20	344.96	2425.44
	12441.00	90.89	0.26	10048.79	2534.40	2530.37	-629.37	0.37	407046.44	771800.21	N 32 7 0 7.00	W 103 35 20.18	346.03	2607.46
	12630.00	91.24	359.48	10045.28	2723.36	2719.33	-629.80	0.45	407235.40	771799.78	N 32 7 2 57	W 103 35 20.17	346.96	2791.31
	12818.00	88.83	358.91	10045.16	2911.34	2907.30	-632.44	1.32	407423.36	771797.14	N 32 7 4 43	W 103 35 20.19	347.73	2975.29
	12912.00	89.11	359.61	10046.85	3005.32	3001.27	-633.66	0.80	407517.34	771795.92	N 32 7 5 36	W 103 35 20.20	348.08	3067.44
	13007.00	89.38	359.45	10048.10	3100.32	3096.26	-634.44	0.33	407612.32	771795.14	N 32 7 6 30	W 103 35 20.20	348.42	3160.59
	13101.00	89.69	359.92	10048.87	3194.31	3190.26	-634.95	0.60	407706.32	771794.63	N 32 7 7 23	W 103 35 20.20	348.74	3252.83
	13195.00	89.59	0.02	10049.46	3288.31	3284.25	-635.00	0.15	407800.31	771794.58	N 32 7 8 16	W 103 35 20.19	349.06	3345.08
	13289.00	89.48	359.66	10050.22	3382.30	3378.25	-635.26	0.40	407894.30	771794.32	N 32 7 9 09	W 103 35 20.18	349.35	3437.46
	13384.00	89.38	359.55	10051.16	3477.30	3473.24	-635.92	0.16	407989.29	771793.66	N 32 7 10 03	W 103 35 20.18	349.62	3530.98
	13574.00	89.14	359.58	10053.62	3667.28	3663.22	-637.36	0.13	408179.27	771792.22	N 32 7 11 91	W 103 35 20.19	350.13	3718.26
	13668.00	89.48	359.32	10054.75	3761.28	3757.21	-638.26	0.46	408273.25	771791.32	N 32 7 12 84	W 103 35 20.19	350.36	3811.04
	13762.00	89.42	359.61	10055.65	3855.27	3851.20	-639.14	0.32	408367.24	771790.44	N 32 7 13 77	W 103 35 20.19	350.58	3903.88
	13857.00	89.79	358.99	10056.31	3950.27	3946.19	-640.30	0.76	408462.23	771789.28	N 32 7 14 71	W 103 35 20.20	350.78	3997.80
	13951.00	89.62	0.59	10056.79	4044.26	4040.19	-640.65	1.71	408556.22	771788.93	N 32 7 15 64	W 103 35 20.19	350.99	4090.67
	14046.00	89.52	359.71	10057.50	4139.25	4135.18	-640.40	0.93	408651.21	771789.18	N 32 7 16 58	W 103 35 20.18	351.20	4184.48
	14141.00	89.52	358.53	10058.30	4234.25	4230.17	-641.86	1.24	408746.19	771787.72	N 32 7 17 52	W 103 35 20.19	351.37	4278.59
	14328.00	89.83	359.83	10059.36	4421.23	4417.14	-644.53	0.71	408933.16	771785.05	N 32 7 19 37	W 103 35 20.21	351.70	4463.92
	14422.00	89.00	359.47	10060.32	4515.23	4511.13	-645.11	0.96	409027.15	771784.47	N 32 7 20 30	W 103 35 20.21	351.86	4557.03
	14610.00	89.72	359.83	10062.42	4703.21	4699.12	-646.25	0.43	409215.13	771783.33	N 32 7 22 16	W 103 35 20.21	352.17	4743.35
	14705.00	89.79	359.92	10062.83	4798.21	4794.12	-646.46	0.12	409310.12	771783.12	N 32 7 23 10	W 103 35 20.20	352.32	4837.51
Section Line Crossing [986' FEL]	14797.80	90.57	359.63	10062.53	4891.01	4886.91	-646.82	0.90	409402.92	771782.76	N 32 7 24 02	W 103 35 20.20	352.46	4929.53
	14799.00	90.58	359.63	10062.52	4892.21	4888.11	-646.83	0.90	409404.12	771782.75	N 32 7 24 03	W 103 35 20.20	352.46	4930.72
	14894.00	90.55	359.84	10061.59	4987.21	4983.11	-647.27	0.22	409499.11	771782.31	N 32 7 24 97	W 103 35 20.20	352.60	5024.97
	15083.00	90.69	359.65	10059.54	5176.19	5172.10	-648.11	0.12	409688.09	771781.47	N 32 7 26 84	W 103 35 20.19	352.86	5212.54
	15177.00	90.34	0.03	10058.70	5270.19	5266.09	-648.37	0.55	409782.08	771781.21	N 32 7 27 77	W 103 35 20.19	352.98	5305.86
	15271.00	90.03	358.94	10058.39	5364.19	5360.08	-649.22	1.21	409876.07	771780.36	N 32 7 28 70	W 103 35 20.19	353.09	5399.26
	15366.00	90.10	359.26	10058.28	5459.18	5455.07	-650.71	0.34	409971.06	771778.87	N 32 7 29 64	W 103 35 20.20	353.20	5493.75
	15554.00	90.14	359.76	10057.89	5647.18	5643.07	-652.32	0.27	410159.05	771777.26	N 32 7 31 50	W 103 35 20.20	353.41	5680.64
	15742.00	88.76	357.73	10059.70	5835.14	5831.00	-656.44	1.31	410346.97	771773.15	N 32 7 33 36	W 103 35 20.23	353.58	5867.83
	15930.00	92.41	0.41	10057.78	6023.07	6018.91	-659.49	2.41	410534.88	771770.09	N 32 7 35 22	W 103 35 20.25	353.75	6054.94
	16024.00	89.14	359.53	10056.50	6117.04	6112.89	-659.54	3.60	410628.86	771770.04	N 32 7 36 15	W 103 35 20.25	353.84	6148.37
	16118.00	90.10	359.40	10057.13	6211.04	6206.88	-660.41	1.03	410722.85	771769.17	N 32 7 37 08	W 103 35 20.25	353.93	6241.92
	16212.00	90.17	359.54	10056.91	6305.04	6300.88	-661.28	0.17	410816.84	771768.30	N 32 7 38 01	W 103 35 20.25	354.01	6335.49
	16307.00	90.00	359.55	10056.77	6400.04	6395.88	-662.04	0.18	410911.83	771767.54	N 32 7 38 95	W 103 35 20.25	354.09	6430.05
	16401.00	89.72	359.45	10057.00	6494.04	6489.87	-662.86	0.32	411005.83	771766.72	N 32 7 39 88	W 103 35 20.26	354.17	6523.64
	16495.00	90.31	359.41	10056.97	6588.04	6583.87	-663.79	0.63	411099.82	771765.79	N 32 7 40 81	W 103 35 20.26	354.24	6617.25
	16589.00	90.21	359.45	10056.54	6682.04	6677.86	-664.73	0.11	411193.81	771764.85	N 32 7 41 74	W 103 35 20.26	354.32	6710.86

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")	Closure Azimuth (°)	Closure (ft)
	16778.00	90.34	359.62	10055.64	6871.03	6866.85	-666.26	0.11	411382.80	771763.32	N 32 7 43.61	W 103 35 20.26	354.46	6899.10
	16966.00	89.86	1.81	10055.31	7058.99	7054.83	-663.92	1.19	411570.76	771765.66	N 32 7 45.47	W 103 35 20.22	354.62	7086.00
	17061.00	89.76	1.33	10055.62	7153.93	7149.79	-661.31	0.52	411665.72	771768.27	N 32 7 46.41	W 103 35 20.18	354.72	7180.31
	17156.00	89.83	2.03	10055.96	7248.87	7244.75	-658.53	0.74	411760.68	771771.05	N 32 7 47.35	W 103 35 20.14	354.81	7274.62
	17250.00	90.14	1.78	10055.99	7342.80	7338.70	-655.40	0.42	411854.62	771774.18	N 32 7 48.28	W 103 35 20.10	354.90	7367.90
	17437.00	90.28	359.39	10055.30	7529.76	7525.67	-653.50	1.28	412041.59	771776.09	N 32 7 50.13	W 103 35 20.06	355.04	7553.99
	17626.00	90.76	359.85	10053.59	7718.75	7714.66	-654.75	0.35	412230.57	771774.83	N 32 7 52.00	W 103 35 20.06	355.15	7742.39
	17721.00	90.24	359.72	10052.76	7813.74	7809.65	-655.11	0.56	412325.57	771774.48	N 32 7 52.94	W 103 35 20.06	355.21	7837.08
	17815.00	91.00	359.64	10051.74	7907.74	7903.65	-655.63	0.81	412419.55	771773.95	N 32 7 53.87	W 103 35 20.06	355.26	7930.79
	17910.00	90.55	359.59	10050.46	8002.73	7998.63	-656.27	0.48	412514.54	771773.31	N 32 7 54.81	W 103 35 20.06	355.31	8025.51
	18004.00	90.31	359.31	10049.75	8096.72	8092.63	-657.17	0.39	412608.53	771772.41	N 32 7 55.74	W 103 35 20.06	355.36	8119.27
	18099.00	90.76	359.46	10048.86	8191.72	8187.62	-658.19	0.50	412703.52	771771.39	N 32 7 56.68	W 103 35 20.06	355.40	8214.03
	18194.00	89.52	359.69	10048.63	8286.72	8282.61	-658.90	1.33	412798.51	771770.69	N 32 7 57.62	W 103 35 20.07	355.45	8308.78
	18382.00	90.93	359.84	10047.89	8474.71	8470.60	-659.67	0.75	412986.50	771769.91	N 32 7 59.48	W 103 35 20.06	355.55	8496.25
	18476.00	90.69	359.55	10046.56	8568.70	8564.59	-660.17	0.40	413080.48	771769.41	N 32 8 0.41	W 103 35 20.06	355.59	8590.00
	18571.00	90.79	359.39	10045.34	8663.69	8659.58	-661.05	0.20	413175.47	771768.54	N 32 8 1.35	W 103 35 20.06	355.63	8684.78
	18665.00	88.90	358.94	10045.59	8757.68	8753.57	-662.41	2.07	413269.45	771767.17	N 32 8 2.28	W 103 35 20.07	355.67	8778.60
	18853.00	90.24	0.07	10047.00	8945.67	8941.55	-664.04	0.93	413457.42	771765.54	N 32 8 4.14	W 103 35 20.07	355.75	8966.17
	19042.00	90.79	359.47	10045.30	9134.66	9130.54	-664.80	0.43	413646.41	771764.78	N 32 8 6.01	W 103 35 20.07	355.84	9154.71
	19136.00	90.79	359.51	10044.01	9228.65	9224.52	-665.63	0.04	413740.39	771763.95	N 32 8 6.94	W 103 35 20.07	355.87	9248.51
	19231.00	90.38	359.58	10043.04	9323.65	9319.52	-666.39	0.44	413835.38	771763.19	N 32 8 7.88	W 103 35 20.07	355.91	9343.31
	19326.00	90.62	359.42	10042.21	9418.64	9414.51	-667.22	0.30	413930.37	771762.36	N 32 8 8.82	W 103 35 20.07	355.95	9438.12
	19420.00	90.28	0.05	10041.47	9512.64	9508.50	-667.65	0.76	414024.36	771761.93	N 32 8 9.75	W 103 35 20.07	355.98	9531.92
	19515.00	90.65	359.75	10040.70	9607.63	9603.50	-667.82	0.50	414119.36	771761.76	N 32 8 10.69	W 103 35 20.06	356.02	9626.69
	19609.00	90.21	359.71	10039.99	9701.63	9697.50	-668.26	0.47	414213.35	771761.32	N 32 8 11.62	W 103 35 20.06	356.06	9720.49
	19703.00	90.45	359.85	10039.45	9795.63	9791.49	-668.62	0.30	414307.34	771760.96	N 32 8 12.55	W 103 35 20.06	356.09	9814.30
	19798.00	90.69	359.21	10038.51	9890.62	9886.49	-669.40	0.72	414402.33	771760.18	N 32 8 13.49	W 103 35 20.06	356.13	9909.12
	19892.00	90.38	359.27	10037.63	9984.62	9980.47	-670.65	0.34	414496.32	771758.93	N 32 8 14.42	W 103 35 20.07	356.16	10002.98
	19939.00	90.76	359.22	10037.16	10031.61	10027.47	-671.27	0.82	414543.31	771758.31	N 32 8 14.89	W 103 35 20.07	356.17	10049.91
Final Survey TD, PTB [977' FEL, 101' FNL]	19978.00	90.76	359.22	10036.65	10070.61	10066.46	-671.80	0.00	414582.30	771757.78	N 32 8 15.28	W 103 35 20.07	356.18	10088.85

Survey Type: Def Survey

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma
Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/98.425	17.500	13.375	NAL_MWD_IFR1+MS-Depth Only	Vaca Draw 20-17 Federal #71H / Final Surveys - Cimarex Vaca Draw 20-17 Federal #71H MWD Off- Vaca Draw 20-17 Federal #71H /
	1	26.000	26.000	Act Stns	17.500	13.375	NAL_MWD_IFR1+MS-Depth Only	Final Surveys - Cimarex Vaca Draw 20-17 Federal #71H MWD Off- Vaca Draw 20-17 Federal #71H /
	1	26.000	1066.000	Act Stns	17.500	13.375	NAL_MWD_IFR1+MS	Final Surveys - Cimarex Vaca Draw Vaca Draw 20-17 Federal #71H /
	1	1066.000	4945.000	Act Stns	12.250	9.625	NAL_MWD_IFR1+MS	Final Surveys - Cimarex Vaca Draw Vaca Draw 20-17 Federal #71H /
	1	4945.000	10271.000	Act Stns	8.750	7.000	NAL_MWD_IFR1+MS	Final Surveys - Cimarex Vaca Draw Vaca Draw 20-17 Federal #71H /
	1	10271.000	19978.000	Act Stns	6.000	4.500	NAL_MWD_IFR1+MS	Final Surveys - Cimarex Vaca Draw Vaca Draw 20-17 Federal #71H / Final Surveys - Cimarex Vaca Draw



Borehole: Vaca Draw 20-17 Federal #71H					Well: Vaca Draw 20-17 Federal #71H					Field: NM Lea County (NAD 83)					Structure: Cimarex Vaca Draw 20-17 Federal #71H				
Gravity & Magnetic Parameters					Surface Location					NAD83 New Mexico State Plane, Eastern Zone, US Feet					Miscellaneous				
Model:	HDGM 2019	Dip:	59.706°	Date:	13-Oct-2019	Lat:	N 32 6 35.62	Northing:	404516.16ftUS	Grid Conv:	0.3967°	Slot:	New Slot	TVD Ref:	RKB(3421.8ft above MSL)				
MagDec:	6.607°	FS:	47736.22nT	Gravity FS:	998.433mgn (9.80665 Based)	Lon:	W 103 35 13.07	Easting:	772429.56ftUS	Scale Fact:	0.99997026	Plan:	Final Surveys - Cimarex Vaca Draw 20-17 Federal #71H MWD Off-19978ft (Surcon Corrected)						

Critical Points								
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [390° FSL, 370° FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
First SLB Survey	9556.00	4.04	243.64	9512.33	-32.08	-36.03	-607.36	0.51
KOP	9580.24	5.05	261.80	9536.49	-32.60	-36.56	-609.18	7.20
Section Line Crossing [986° FEL]	14797.80	90.57	359.63	10062.53	4891.01	4886.91	-646.82	0.90
Final Survey	19939.00	90.76	359.22	10037.16	10031.61	10027.47	-671.27	0.82
TD, PTB [977° FEL, 101° FNL]	19978.00	90.76	359.22	10036.65	10070.61	10066.46	-671.80	0.00

Grid North
Tot Corr (M->G 6.211°)
Mag Dec (6.607°)
Grid Conv (0.397°)

CONTROLLED

Final Surveys - Cimarex Vaca Draw 20-17 Federal #71H MWD Off-19978ft (Surcon Corrected)

of 3

21-Oct-2019

1	Client	
2	Client	
3	Office	
4	Office	

Copy number for

