

Submit 1 Copy To Appropriate District Office
District I - (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II - (575) 748-1283
811 S. First St., Artesia, NM 88210
District III - (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV - (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources
NEW MEXICO OIL CONSERVATION
ARTESIA DISTRICT
OIL CONSERVATION DIVISION
1220 South St. Francis Dr., Santa Fe, NM 87505
OCT 15 2018
RECEIVED

Form C-103
Revised July 18, 2013

SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)		WELL API NO. 30-015-44753
1. Type of Well: Oil Well ☐ Gas Well ☒ Other		5. Indicate Type of Lease STATE ☐ FEE ☒
2. Name of Operator DEVON ENERGY PRODUCTION COMPANY, LP.		6. State Oil & Gas Lease No.
3. Address of Operator 333 WEST SHERIDAN AVENUE, OKC, OK 73102		7. Lease Name or Unit Agreement Name Spud Muffin 31-30 Com
4. Well Location Unit Letter N : 475 feet from the South line and 2435 feet from the West line Section 31 Township 23S Range 29E NMPM, County New Mexico		8. Well Number 734H
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 2961.2		9. OGRID Number 6137
		10. Pool name or Wildcat (98220) PURPLE SAGE; WOLFCAMP

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐	CHANGE PLANS ☐	COMMENCE DRILLING OPNS. ☐	P AND A ☐
PULL OR ALTER CASING ☐	MULTIPLE COMPL ☐	CASING/CEMENT JOB ☐	
DOWNHOLE COMMINGLE ☐			
CLOSED-LOOP SYSTEM ☐			
OTHER: BHL CHG ☒		OTHER: ☐	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Devon Energy Production Company, LP Respectfully requests approval to change the Bottom Hole per the following:

From: Sec. 30, T23S, R29E 230 FNL, 2310 FWL

To: Sec. 30, T23S, R29E 230 FNL, 2178 FWL

Attachment: New C-102, Drilling Plans, & Directional Survey

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE: Erin Workman TITLE Regulatory Compliance Analyst DATE 10/15/18

Type or print name Erin Workman E-mail address: Erin.workman@dvn.com PHONE: (405)552-7970
For State Use Only

APPROVED BY: Raymond M. Bodany TITLE Geologist DATE 10-17-18
Conditions of Approval (if any):

District I
1623 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
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811 S. First St., Artesia, NM 88210
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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
OIL 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**

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015-44753		² Pool Code 98220		³ Pool Name PURPLE SAGE; WOLFCAMP	
⁴ Property Code 320826		⁵ Property Name SPUD MUFFIN 31-30 COM			⁶ Well Number 734H
⁷ OGRID No. 6137		⁸ Operator Name DEVON ENERGY PRODUCTION COMPANY, L.P.			⁹ Elevation 2961.2

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	31	23 S	29 E		475	SOUTH	2435	WEST	EDDY

¹¹ 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
C	30	23 S	29 E		230	NORTH	2178	WEST	EDDY

¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
632.38			R-14262

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.

	¹⁶ 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 bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or in a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. <i>Erin Workman</i> 10/15/18 Signature Date Erin Workman Printed Name Erin.workman@dmv.com E-mail Address ¹⁷ 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 30, 2018 Date of Survey <i>[Signature]</i> Signature and Seal of Professional Surveyor Certificate Number: FILIMON P. JARAMILLO, PLS 12797 SURVEY NO. 5948D
--	---

RWP 10-17-18

Intent ☒ As Drilled ☐

API #
30-015-44753

Operator Name: DEVON ENERGY PRODUCTION COMPANY, L.P.	Property Name: SPUD MUFFIN 31-30	Well Number 734H
--	-------------------------------------	---------------------

Kick Off Point (KOP)

UL	Section 31	Township 23S	Range 29E	Lot	Feet 50	From N/S South	Feet 2320	From E/W West	County Eddy
Latitude 32.254394					Longitude -104.024855			NAD 83	

First Take Point (FTP)

UL N	Section 31	Township 23S	Range 29E	Lot	Feet 330	From N/S SOUTH	Feet 2178	From E/W WEST	County EDDY
Latitude 32.2551694					Longitude 104.0253019			NAD 83	

Last Take Point (LTP)

UL C	Section 30	Township 23S	Range 29E	Lot	Feet 330	From N/S NORTH	Feet 2178	From E/W WEST	County EDDY
Latitude 32.2825035					Longitude 104.0252017			NAD 83	

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

Is this well an infill well?

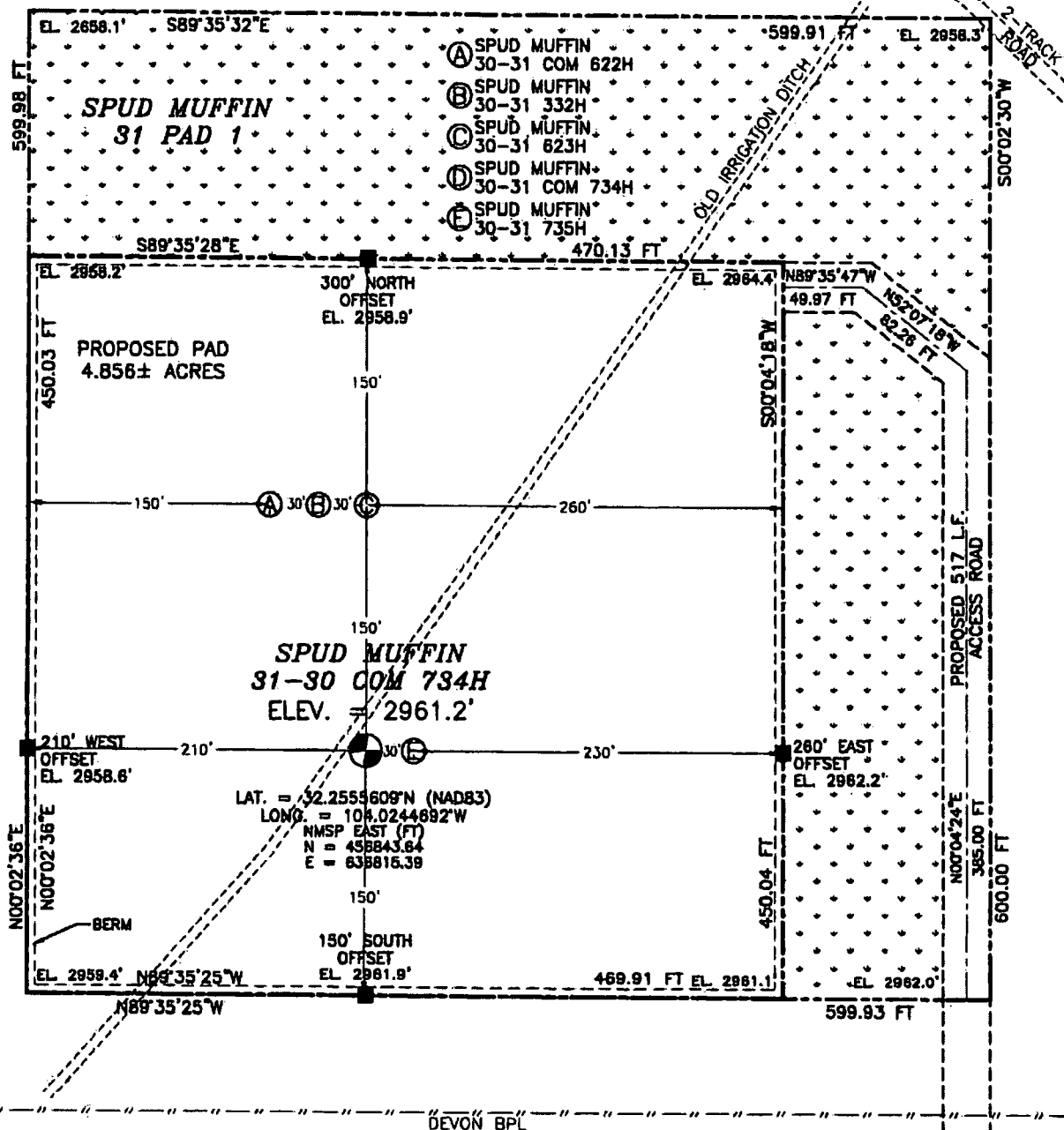
If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #
30-015-45266

Operator Name: Devon Energy Production Company, LP	Property Name: Spud Muffin 31-30 Com	Well Number 622H
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KZ 06/29/2018

**SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SITE MAP**



0 10 50 100 200

SCALE 1" = 100'

DIRECTIONS TO LOCATION

BEGINNING AT THE JUNCTION OF US 285 AND CR 720, GO EAST ON CR 720 0.8 OF A MILE TO HARROUN ROAD ON THE LEFT. GO NORTH-NORTHEAST ON HARROUN ROAD FOR 3.1 MILES TO A FORK IN THE ROAD. CONTINUE NORTH, LEFT ON SAID HARROUN ROAD 230' TO A LEASE ROAD TO THE LEFT, GO NORTH 0.5 OF A MILE, GO EAST 1706' THEN NORTH 125' TO SOUTHEAST PAD CORNER OF SPUD MUFFIN 31 PAD 1, THEN NORTH-NORTHWEST-WEST 517' TO THE NORTHEAST PAD CORNER FOR THIS LOCATION.

**DEVON ENERGY PRODUCTION COMPANY, L.P.
SPUD MUFFIN 31-30 COM 734H
LOCATED 475 FT. FROM THE SOUTH LINE
AND 2435 FT. FROM THE WEST LINE OF
SECTION 31, TOWNSHIP 23 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO**

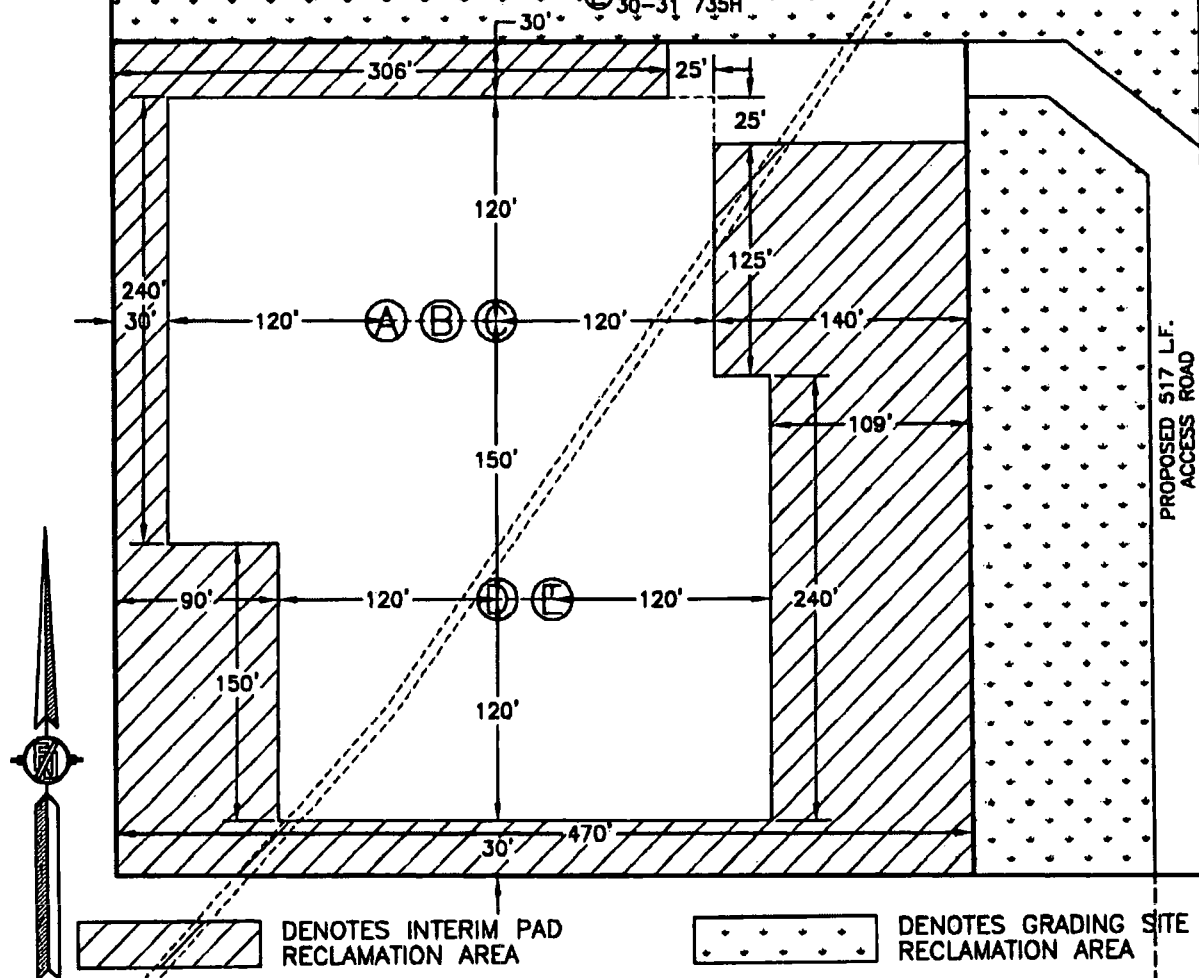
AUGUST 30, 2018

SURVEY NO. 5948D

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
(575) 234-3341

SPUD MUFFIN
• 31 PAD 1 •

- (A) SPUD MUFFIN
30-31 COM 822H
(B) SPUD MUFFIN
30-31 332H
(C) SPUD MUFFIN
30-31 823H
(D) SPUD MUFFIN
30-31 COM 734H
(E) SPUD MUFFIN
30-31 735H



2.018± ACRES INTERIM PAD RECLAMATION AREA
3.052± ACRES GRADING SITE RECLAMATION AREA
3.193± ACRES NON-RECLAIMED AREA

8.263± ACRES SPUD MUFFIN 31 PAD 1

**DEVON ENERGY PRODUCTION COMPANY, L.P.
SPUD MUFFIN 31-30 COM 734H
LOCATED 475 FT. FROM THE SOUTH LINE
AND 2435 FT. FROM THE WEST LINE OF
SECTION 31, TOWNSHIP 23 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO**

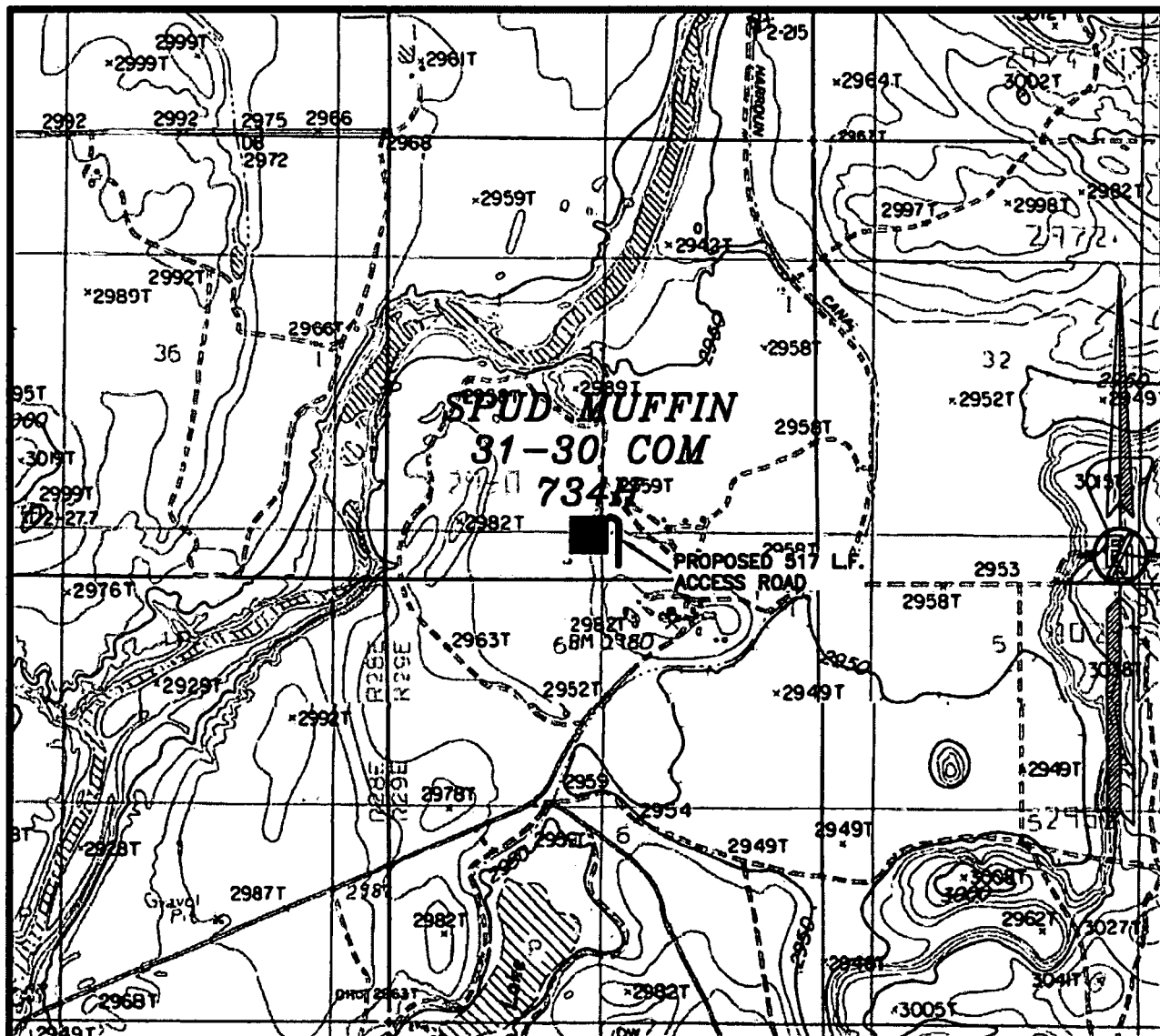
AUGUST 30, 2018

SURVEY NO. 6948D

MADRON SURVEYING, INC. 301 SOUTH CANAL
(575) 234-3341

CARLSBAD, NEW MEXICO

SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LOCATION VERIFICATION MAP



USGS QUAD MAP:
LOVING

NOT TO SCALE

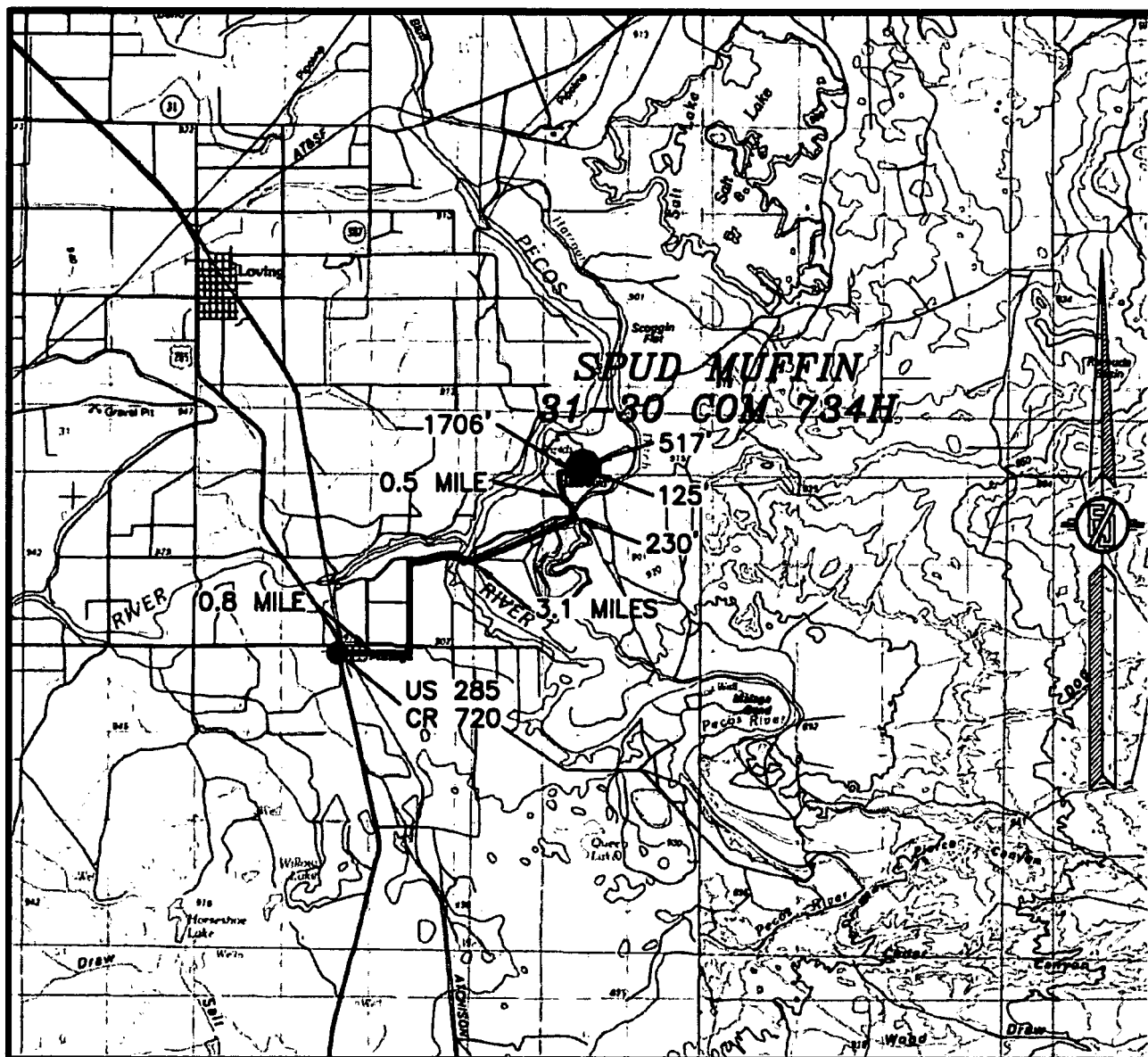
DEVON ENERGY PRODUCTION COMPANY, L.P.
SPUD MUFFIN 31-30 COM 734H
LOCATED 475 FT. FROM THE SOUTH LINE
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SECTION 31, TOWNSHIP 23 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

AUGUST 30, 2018

SURVEY NO. 5948D

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
(575) 234-3341

SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
VICINITY MAP



DISTANCES IN MILES

NOT TO SCALE

DIRECTIONS TO LOCATION

BEGINNING AT THE JUNCTION OF US 285 AND CR 720, GO EAST ON CR 720 0.8 OF A MILE TO HARROUN ROAD ON THE LEFT. GO NORTH-NORTHEAST ON HARROUN ROAD FOR 3.1 MILES TO A FORK IN THE ROAD. CONTINUE NORTH, LEFT ON SAID HARROUN ROAD 230' TO A LEASE ROAD TO THE LEFT, GO NORTH 0.5 OF A MILE, GO EAST 1708' THEN NORTH 125' TO SOUTHEAST PAD CORNER OF SPUD MUFFIN 31 PAD 1, THEN NORTH-NORTHWEST-WEST 517' TO THE NORTHEAST PAD CORNER FOR THIS LOCATION.

DEVON ENERGY PRODUCTION COMPANY, L.P.

SPUD MUFFIN 31-30 COM 734H

LOCATED 475 FT. FROM THE SOUTH LINE
AND 2435 FT. FROM THE WEST LINE OF
SECTION 31, TOWNSHIP 23 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

AUGUST 30, 2018

MADRON SURVEYING, INC. 301 SOUTH CANAL
(575) 234-3341

SURVEY NO. 5948D
CARLSBAD, NEW MEXICO

**SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AERIAL PHOTO**



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
FEB. 2017

**DEVON ENERGY PRODUCTION COMPANY, L.P.
SPUD MUFFIN 31-30 COM 734H
LOCATED 475 FT. FROM THE SOUTH LINE
AND 2435 FT. FROM THE WEST LINE OF
SECTION 31, TOWNSHIP 23 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO**

AUGUST 30, 2018

SURVEY NO. 5948D

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 **CARLSBAD, NEW MEXICO**

**SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AERIAL ACCESS ROUTE MAP**



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
FEB. 2017

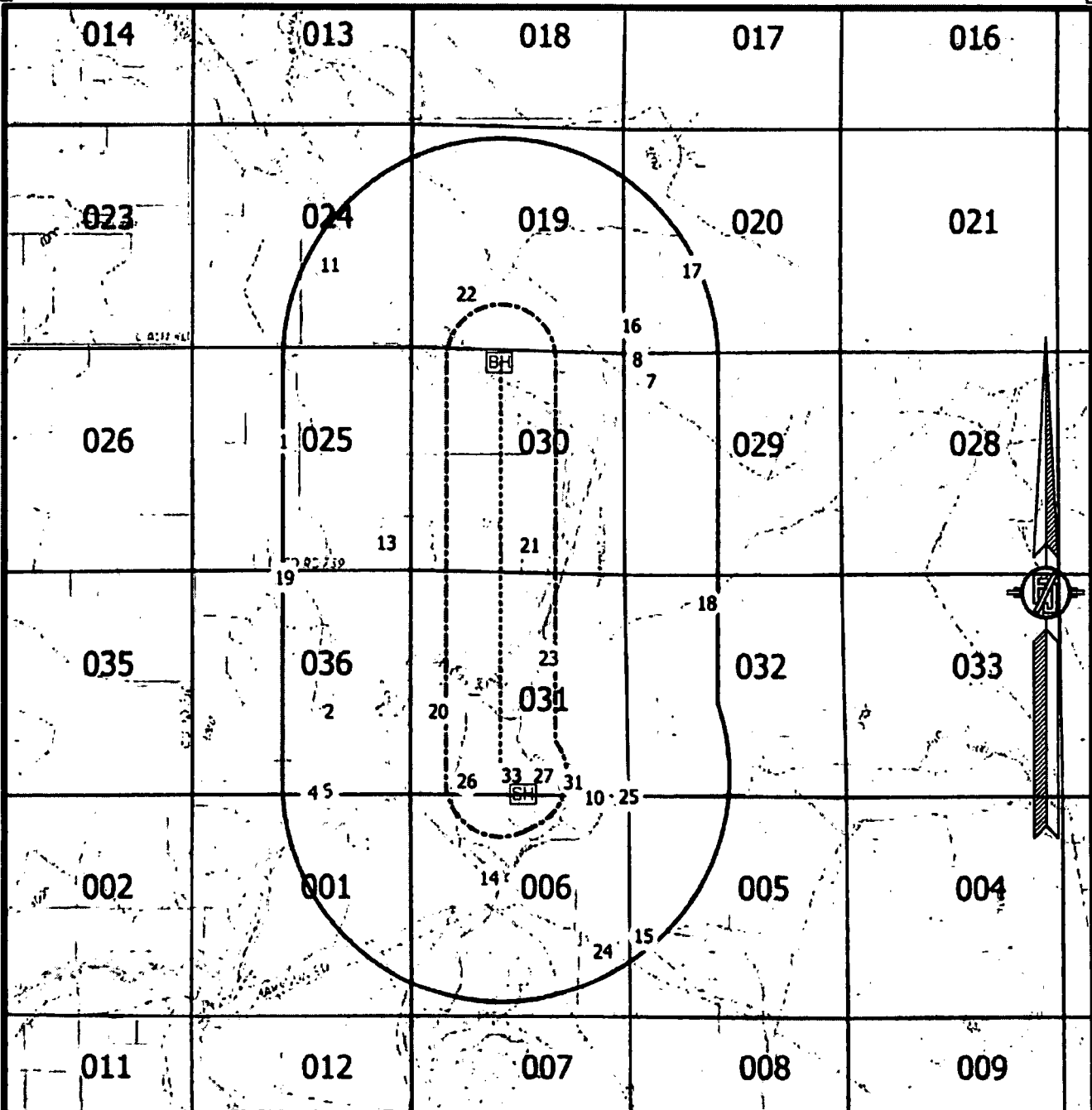
**DEVON ENERGY PRODUCTION COMPANY, L.P.
SPUD MUFFIN 31-30 COM 734H
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SECTION 31, TOWNSHIP 23 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO**

AUGUST 30, 2018

SURVEY NO. 5948D

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

1-MILE WELL MAP



WELL DATA FROM NMOCD GIS - 8/29/18

[SH] SURFACE LOCATION

[BH] BOTTOM OF HOLE

(XX) WELLS WITHIN 1 MILE

----- WELL PATH

----- 1/4 MILE BOUNDARY

----- 1-MILE BOUNDARY

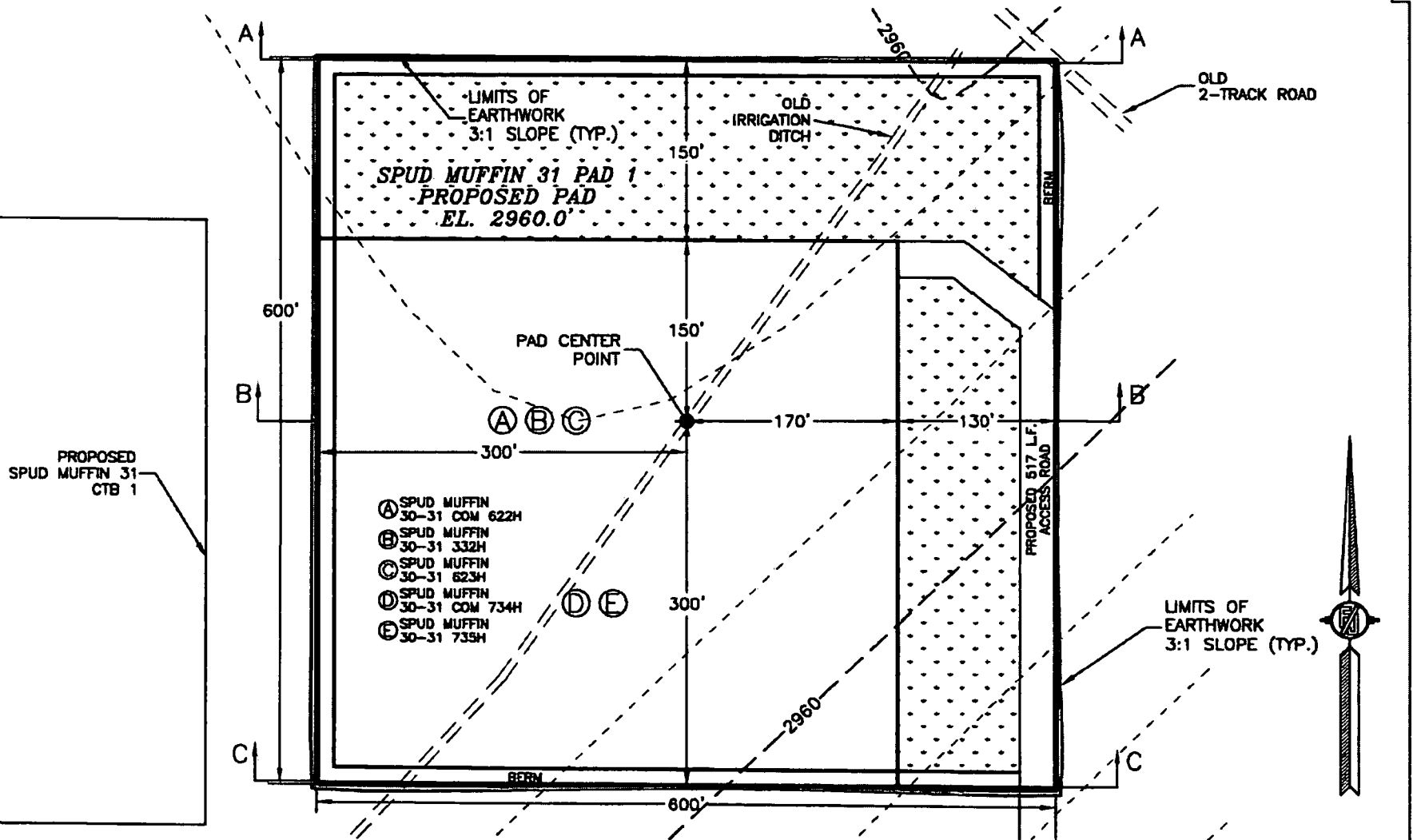
DEVON ENERGY PRODUCTION COMPANY, L.P.
SPUD MUFFIN 31-30 COM 734H
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 SECTION 31, TOWNSHIP 23 SOUTH,
 RANGE 29 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO

AUGUST 30, 2018

SURVEY NO. 5948D

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
 (575) 234-3341

PLAN VIEW



DEVON ENERGY PRODUCTION COMPANY, L.P.
GRADING PLAN AND CROSS SECTIONS
SPUD MUFFIN 31-30 COM 734H
SECTION 31, TOWNSHIP 23 SOUTH,
RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

AUGUST 30, 2018

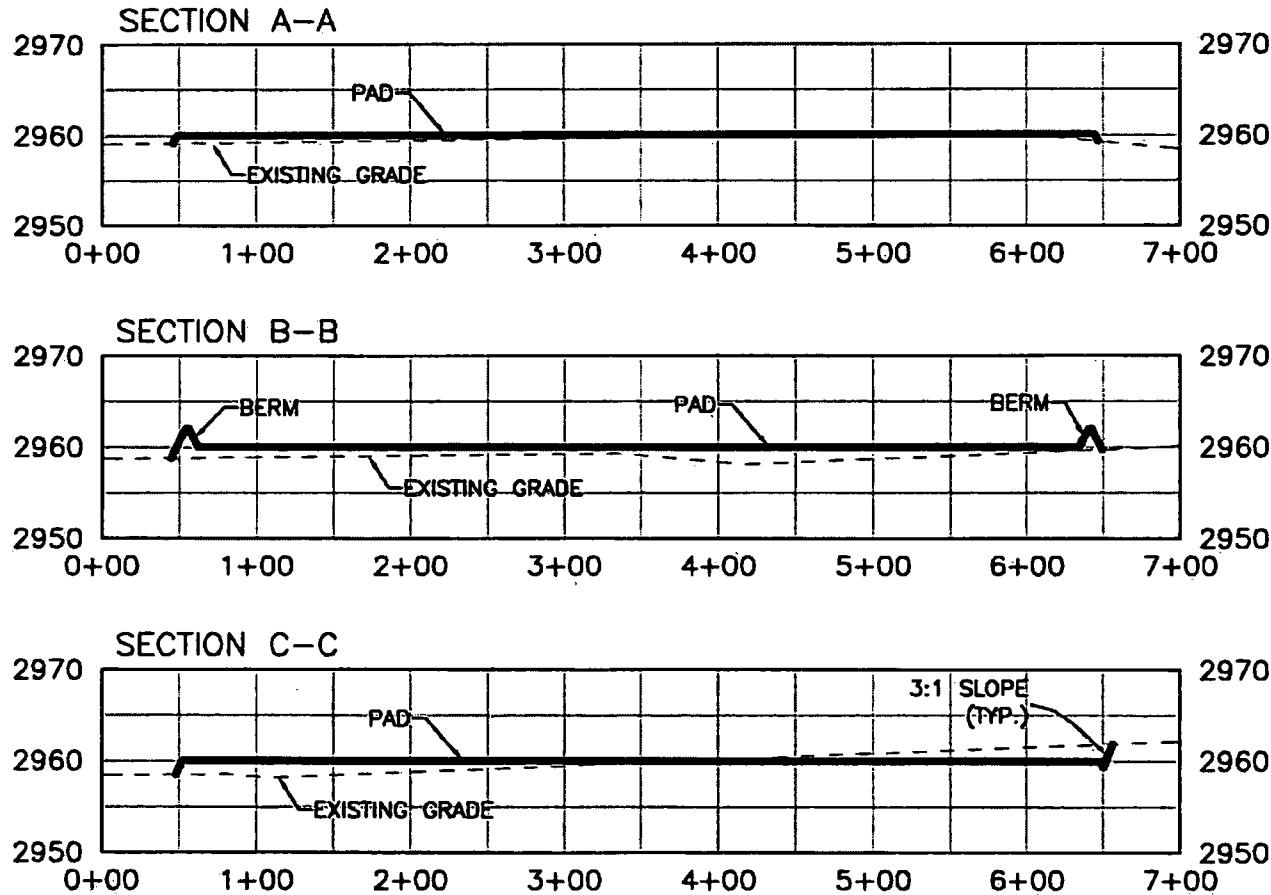
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

CUT	FILL	NET
666 CU. YD	12477 CU. YD	11810 CU. YD (FILL)

EARTHWORK QUANTITIES ARE ESTIMATED

SHEET 1-2
SURVEY NO. 5948D

CROSS SECTIONS



DEVON ENERGY PRODUCTION COMPANY, L.P.
 GRADING PLAN AND CROSS SECTIONS
 SPUD MUFFIN 31-30 COM 734H
 SECTION 31, TOWNSHIP 23 SOUTH,
 RANGE 29 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO

012 60 120 240
 SCALE 1" = 120' - 1" = 20' VER

CUT	FILL	NET
666 CU. YD	12477 CU. YD	11810 CU. YD (FILL)

EARTHWORK QUANTITIES ARE ESTIMATED

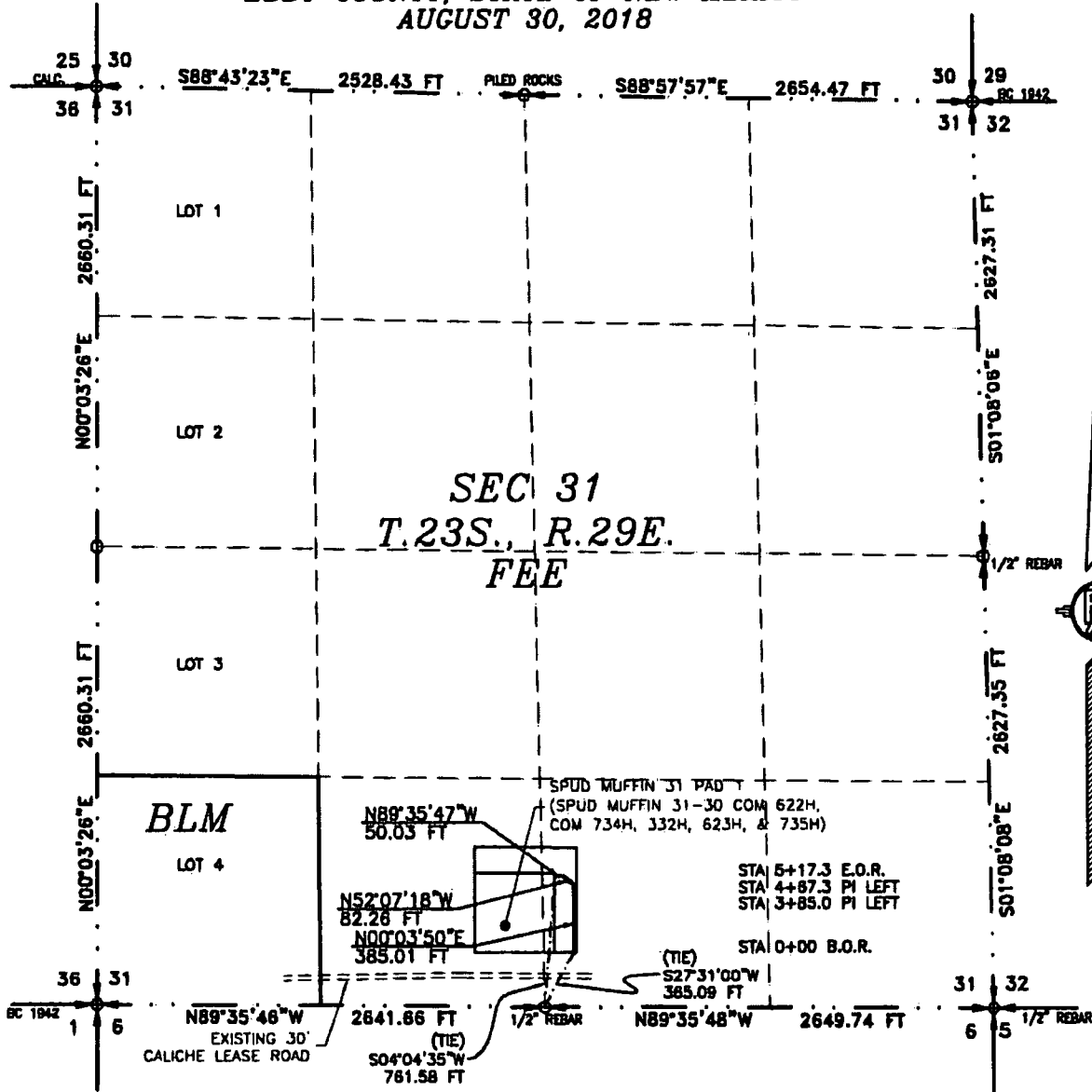
AUGUST 30, 2018
 MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SHEET 2-2
 SURVEY NO. 5948D

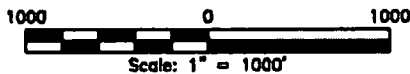
ACCESS ROAD PLAT

ACCESS ROAD TO THE SPUD MUFFIN 31 PAD 1
(SPUD MUFFIN 31-30 COM 622H, COM 734H, 332H, 623H, & 735H)

DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AUGUST 30, 2018



SEE NEXT SHEET (2-2) FOR DESCRIPTION



SURVEYOR CERTIFICATE

I, FILMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 30 DAY OF SEPTEMBER 2018

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

GENERAL NOTES

- 1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.
- 2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SHEET: 1-2

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

SURVEY NO. 5948D

ACCESS ROAD PLAT
ACCESS ROAD TO THE SPUD MUFFIN 31 PAD 1
(SPUD MUFFIN 31-30 COM 622H, COM 734H, 332H, 623H, & 735H)

DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AUGUST 30, 2018

DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING FEE LAND IN SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, STATE OF NEW MEXICO AND BEING 15 FEET EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY:

BEGINNING AT A POINT WITHIN THE SW/4 SE/4 OF SAID SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M., WHENCE THE SOUTH QUARTER CORNER OF SAID SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M. BEARS S27°31'00"W, A DISTANCE OF 365.09 FEET;
THENCE N00°03'50"E A DISTANCE OF 385.01 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE N52°07'18"W A DISTANCE OF 82.28 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE N89°35'47"W A DISTANCE OF 50.03 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE SOUTH QUARTER CORNER OF SAID SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M. BEARS S04°04'35"W, A DISTANCE OF 781.58 FEET;

SAID STRIP OF LAND BEING 517.30 FEET OR 31.35 RODS IN LENGTH, CONTAINING 0.356 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

SW/4 SE/4 517.30 L.F. 31.35 RODS 0.356 ACRES

SURVEYOR CERTIFICATE

I, FILMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12787, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 5TH DAY OF SEPTEMBER 2018

FILMON F. JARAMILLO
MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SHEET: 2-2

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

SURVEY NO. 5948D

Devon Energy, Spud Muffin 31-30 Com 734H

1. Geologic Formations

TVD of target	10870	Pilot hole depth	N/A
MD at TD:	20986	Deepest expected fresh water:	400'

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Top Salt	500		
Base of Salt	2700		
Lamar	3106		
Bell Canyon	3157		
Brushy Canyon	5230		
Bone Spring Lime	6812		
1st BSPG Sand	7872		
2nd BSPG Sand	8716		
3rd BSPG Sand	9791		
Wolfcamp	10133		
Wolfcamp XY	10164		
Wolfcamp 100	10268		
Wolfcamp 200	10561		
Wolfcamp 300	10989		

*H2S, water flows, loss of circulation, abnormal pressures, etc.

Devon Energy, Spud Muffin 31-30 Com 734H

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	400'	13.375"	48	J-55	STC	1.125	1.25	1.6
12.25"	0	2700'	10.75"	40.5	J-55	STC	1.125	1.25	1.6
9.875"	0	10362'	7.625"	29.7	P110	BTC	1.125	1.25	1.6
8.75"	10362'	10,650'	7.625"	29.7	P110	Flushmax III	1.125	1.25	1.6
6.75"	0	20,986'	5.5"	20	P110	Vam SG	1.125	1.25	1.6

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed.

A variance is requested to wave the annular clearance guidelines pertaining to casing collars allowing the use of 10-3/4" casing in 12-1/4" hole.

A variance is requested to wave the centralizer requirement for the 7-5/8" flush casing in the 8-3/4" hole and the 5-1/2" SF/Flush casing in the 6-3/4" hole.

Casing Program (Alternate Design I)

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	400'	13.375"	48	J-55	STC	1.125	1.25	1.6
12.25"	0	2700'	10.75"	40.5	J-55	STC	1.125	1.25	1.6
9.875"	0	10650'	8.625"	29.7	P110EC	VAM FJL	1.125	1.25	1.6
7.875"	0	20986'	5.5"	20	P110	Vam SG	1.125	1.25	1.6

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed.

A variance is requested to wave the centralizer requirement for the 8-5/8" flush casing in the 9-7/8" hole and the 5-1/2" SF/Flush casing in the 7-7/8" hole.

A variance is requested to wave the annular clearance guidelines pertaining to casing collars allowing the use of 10-3/4" casing in 12-1/4" hole.

8-5/8" Intermediate casing will be kept fluid filled.

Devon Energy, Spud Muffin 31-30 Com 734H

Casing Program (Alternate Design II)

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	400'	13.375"	48	J-55	STC	1.125	1.25	1.6
9.875"	0	10650'	8.625"	29.7	P110EC	VAM FJL	1.125	1.25	1.6
7.875"	0	20986'	5.5"	20	P110	Vam SG	1.125	1.25	1.6

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed.

A variance is requested to wave the centralizer requirement for the 8-5/8" flush casing in the 9-7/8" hole and the 5-1/2" SF/Flush casing in the 7-7/8" hole.

8-5/8" Intermediate casing will be kept fluid filled.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

Devon Energy, Spud Muffin 31-30 Com 734H

3. Cementing Program (Primary Design)

Casing	# Sks	Wt. lb/ gal	H ₂ O gal/sk	Yld ft ³ / sack	Slurry Description
Surface	310	14.8	6.34	1.34	Tail: Class C Cement + 1% Calcium Chloride
Int I	448	12.9	13.5	1.85	Lead: Class H/C + additives
	142	14.8	3.31	1.33	Tail: Class H/C + additives
Int II	804	9	5.31	3.27	Lead: Tuned Light® Cement
	108	14.5	3.31	1.6	Tail: Class H/C + additives
Intermediate II (Bradenhead)	730	14.8	6.32	1.33	Class C Cement + 0.125 lbs/sack Poly-E-Flake
	386	13.2	5.31	1.6	Lead: Class H/C + additives
	108	14.5	3.31	1.6	Tail: Class H/C + additives
Production	773	14.8	6.32	1.33	Class H Cement + 0.125 lbs/sack Poly-E-Flake

If a DV tool is used, depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	% Excess
Surface	50%
Intermediate	30%
Production	25%

Cementing Program (Alternate Design I)

Casing	# Sks	Wt. lb/ gal	H ₂ O gal/sk	Yld ft ³ / sack	Slurry Description
Surface	310	14.8	6.34	1.34	Tail: Class C Cement + 1% Calcium Chloride
Int I	448	12.9	13.5	1.85	Lead: Class H/C + additives
	142	14.8	3.31	1.33	Tail: Class H/C + additives
Int II	485	9	5.31	3.27	Lead: Tuned Light® Cement
	108	14.5	3.31	1.6	Tail: Class H/C + additives
Intermediate II (Bradenhead)	450	14.8	6.32	1.33	Class C Cement + 0.125 lbs/sack Poly-E-Flake
	386	13.2	5.31	1.6	Tail: Class H/C + additives
	108	14.5	3.31	1.6	Tail: Class H/C + additives
Production	773	14.8	6.32	1.33	Class H Cement + 0.125 lbs/sack Poly-E-Flake

If a DV tool is used, depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Devon Energy, Spud Muffin 31-30 Com 734H

Casing String	% Excess
Surface	50%
Intermediate	30%
Production	25%

Cementing Program (Alternate Design II)

Casing	# Sks	Wt. lb/ gal	H₂O gal/sk	Yld ft³/ sack	Slurry Description
Surface	310	14.8	6.34	1.34	Tail: Class C Cement + 1% Calcium Chloride
Int	485	9	5.31	3.27	Lead: Tuned Light® Cement
	108	14.5	3.31	1.6	Tail: Class H/C + additives
Intermediate (Bradenhead)	485	14.8	6.32	1.33	Class C Cement + 0.125 lbs/sack Poly-E-Flake
	386	13.2	5.31	1.6	Tail: Class H/C + additives
	108	14.5	3.31	1.6	Tail: Class H/C + additives
Production	773	14.8	6.32	1.33	Class H Cement + 0.125 lbs/sack Poly-E-Flake

4. Pressure Control Equipment

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
---	--

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
Intermediate	13-5/8"	5M	Annular	X	50% of rated working pressure
			Blind Ram	X	5M
			Pipe Ram		
			Double Ram	X	
			Other*		
Production	6-3/4"	5M	Annular (5M)	X	50% of rated working pressure
			Blind Ram	X	5M
			Pipe Ram		
			Double Ram	X	
			Other *		
			Annular		
			Blind Ram		
			Pipe Ram		
			Double Ram		

Devon Energy, Spud Muffin 31-30 Com 734H

			Other *			
--	--	--	------------	--	--	--

*Specify if additional ram is utilized.

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

Y	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
Y	Are anchors required by manufacturer?
Y	A multibowl wellhead may be used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. Devon proposes using a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 5000 (5M) psi. - Wellhead will be installed by wellhead representatives. - If the welding is performed by a third party, the wellhead representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal. - Wellhead representative will install the test plug for the initial BOP test. - Wellhead company will install a solid steel body pack-off to completely isolate the lower head after cementing intermediate casing. After installation of the pack-off, the pack-off and the lower flange will be tested to 3M, as shown on the attached schematic. Everything above the pack-off will not have been altered whatsoever from the initial nipple up. Therefore the BOP components will not be retested at that time. - If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head will be cut and top out operations will be conducted. - Devon will pressure test all seals above and below the mandrel (but still above the casing) to full working pressure rating.

Devon Energy, Spud Muffin 31-30 Com 734H

- Devon will test the casing to 0.22 psi/ft or 1500 psi, whichever is greater, as per Onshore Order #2.

After running surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 5M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 5,000 psi high pressure test. The 5,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days, as per Onshore Order #2. If the well is not complete within 30 days of this BOP test, another full BOP test will be conducted, as per Onshore Order #2.

13-5/8" BOP/BOPE system will have been tested to 10M rating prior to drilling out intermediate casing.

The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 5,000 psi WP.

Devon's proposed wellhead manufactures will be FMC Technologies, Cactus Wellhead, or Cameron.

Devon requests a variance to use a flexible line with flanged ends between the BOP and the choke manifold (choke line). The line will be kept as straight as possible with minimal turns.

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	400'	FW Gel	8.6-8.8	28-34	N/C
400'	2700'	Sat Brine	9.5-10.1	34-40	N/C - 6
2700'	10650'	Cut Brine/DBE	9.0-9.8	32-36	N/C - 6
10650'	TD	OBM	10.5-12.0	45-65	N/C-6

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
---	-----------------------------

Devon Energy, Spud Muffin 31-30 Com 734H

6. Logging and Testing Procedures

Logging, Coring and Testing.	
x	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No Logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain
	Coring? If yes, explain

Additional logs planned		Interval
	Resistivity	Int. shoe to KOP
	Density	Int. shoe to KOP
X	CBL	Production casing
X	Mud log	Intermediate shoe to TD
	PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	6782 psi
Abnormal Temperature	No

Mitigation measure for abnormal conditions. Describe. Lost circulation material/sweeps/mud scavengers.

Hydrogen Sulfide (H ₂ S) monitors will be installed prior to drilling out the surface shoe. If H ₂ S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
N	H ₂ S is present
Y	H ₂ S Plan attached

8. Other facets of operation

Is this a walking operation? Potentially

1. In the event the spudder rig is unable to drill the surface holes the drilling rig will batch drill the surface holes and run/cement surface casing; walking the rig to next wells on the pad.
2. The drilling rig will then batch drill the intermediate sections with either OBM or cut brine and run/cement intermediate casing; the wellbore will be isolated with a blind flange and pressure gauge installed for monitoring the well before walking to the next well.
3. The drilling rig will then batch drill the production hole sections on the wells with OBM, run/cement production casing, and install TA caps or tubing heads for completions.

NOTE: During batch operations the drilling rig will be moved from well to well however, it will not be removed from the pad until all wells have production casing run/cemented.

Devon Energy, Spud Muffin 31-30 Com 734H

Will be pre-setting casing? Potentially

1. Spudder rig will move in and drill surface hole.
 - a. Rig will utilize fresh water based mud to drill surface hole to TD. Solids control will be handled entirely on a closed loop basis.
2. After drilling the surface hole section, the spudder rig will run casing and cement following all of the applicable rules and regulations (OnShore Order 2, all COAs and NMOCD regulations).
3. The wellhead will be installed and tested once the surface casing is cut off and the WOC time has been reached.
4. A blind flange with the same pressure rating as the wellhead will be installed to seal the wellbore. Pressure will be monitored with a pressure gauge installed on the wellhead.
5. Spudder rig operations is expected to take 4-5 days per well on a multi well pad.
6. The NMOCD will be contacted and notified 24 hours prior to commencing spudder rig operations.
7. Drilling operations will be performed with the drilling rig. At that time an approved BOP stack will be nipped up and tested on the wellhead before drilling operations commences on each well.
 - a. The NMOCD will be contacted / notified 24 hours before the drilling rig moves back on to the pad with the pre-set surface casing.

Attachments

- ☒ Directional Plan
☐ Other, describe

WCDSC Permian NM

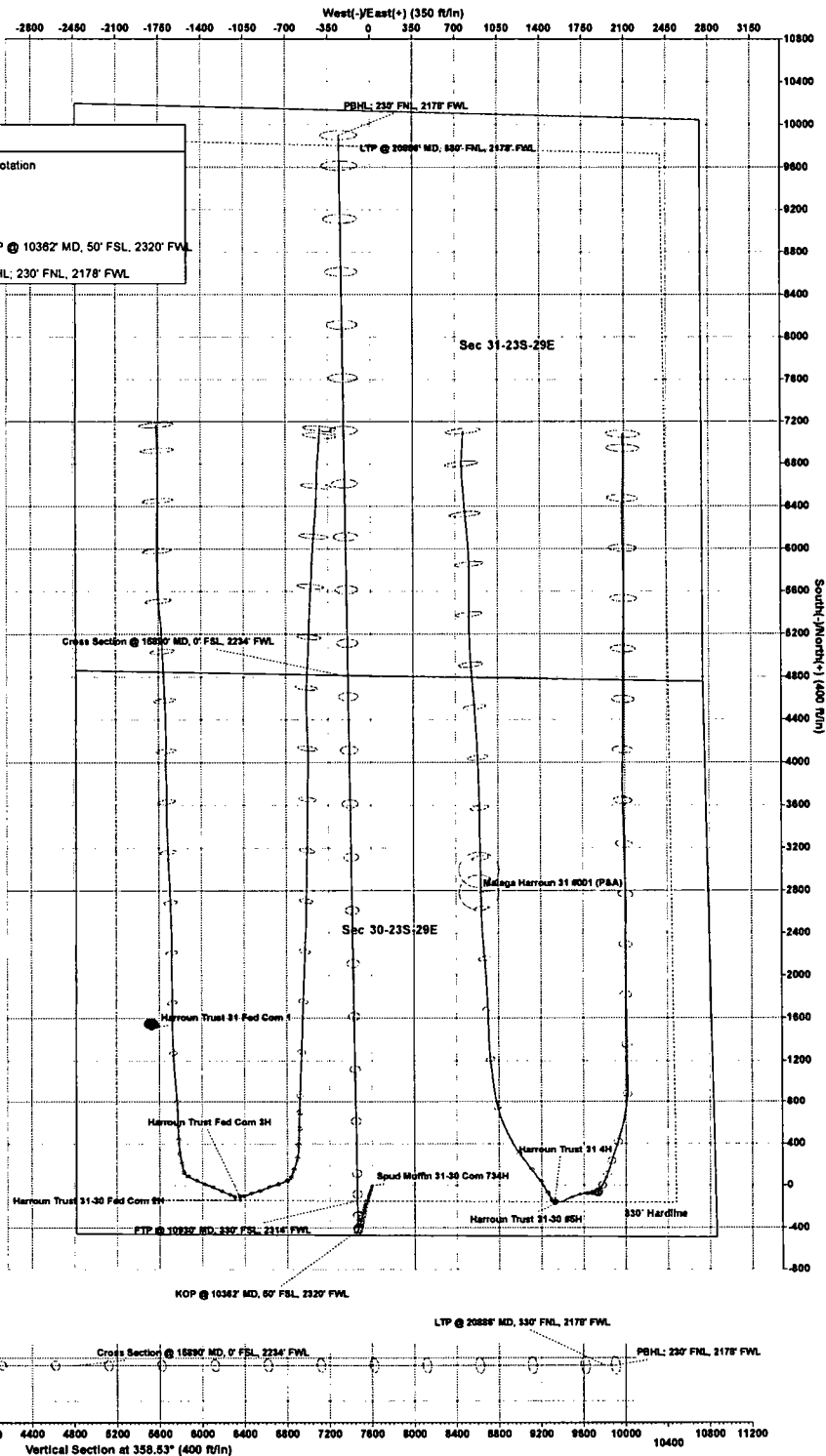
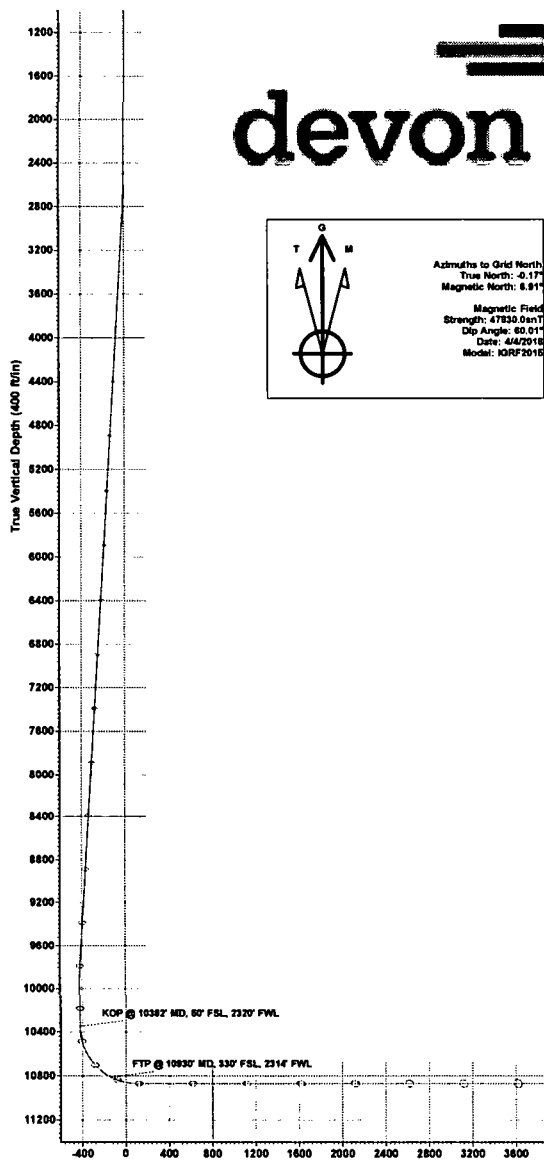
WELL DETAILS: Spud Muffin 31-30 Com 734H

RKB @ 2986.20R
2961.20

Northing 456843.64 Easting 636815.39 Latitude 32.255561 Longitude -104.024469

SECTION DETAILS Permit Plan 2

MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	VSect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2500.00	0.00	0.00	2500.00	0.00	0.00	0.00	0.00	
2850.62	3.51	195.51	2850.40	-10.33	-2.87	1.00	-10.26	
9711.78	3.51	195.51	9698.73	-414.67	-115.05	0.00	-411.57	
5	10082.41	0.00	10049.13	-425.00	-117.92	1.00	-421.83	KOP @ 10362' MD, 50' FSL, 2320' FWL
6	10362.41	0.00	10349.13	-425.00	-117.92	0.00	-421.83	
7	11150.59	90.00	10870.00	95.83	-124.82	11.00	99.01	
8	20986.36	90.00	10870.00	9900.73	-254.81	0.00	9904.01	PBHL: 230' FNL, 2178' FWL



WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Sec 31-T23S-R29E

Spud Muffin 31-30 Com 734H

Wellbore #1

Plan: Permit Plan 2

Standard Planning Report - Geographic

04 October, 2018

Planning Report - Geographic

Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well Spud Muffin 31-30 Com 734H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 2986.20ft
Project:	Eddy County (NAD 83 NM Eastern)	MD Reference:	RKB @ 2986.20ft
Site:	Sec 31-T23S-R29E	North Reference:	Grid
Well:	Spud Muffin 31-30 Com 734H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 2		

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

Site	Sec 31-T23S-R29E				
Site Position:		Northing:	467,039.80 usft	Latitude:	32.283608
From:	Map	Easting:	634,382.44 usft	Longitude:	-104.032247
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.16 °

Well	Spud Muffin 31-30 Corn 734H					
Well Position	+N/-S	0.00 ft	Northing:	456,843.64 usft	Latitude:	32.255561
	+E/-W	0.00 ft	Easting:	636,815.39 usft	Longitude:	-104.024469
Position Uncertainty		0.50 ft	Wellhead Elevation:		Ground Level:	2,961.20 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2015	4/4/2018	(°)	(°)	(nT)
			7.08	60.01	47,830.00210243

Design	Permit Plan 2				
Audit Notes:					
Version:		Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.00	0.00	0.00	358.53	

Plan Survey Tool Program	Date	10/4/2018			
Depth From	Depth To	Survey (Wellbore)	Tool Name	Remarks	
(ft)	(ft)				
1	0.00	20,986.36 Permit Plan 2 (Wellbore #1)	MWD+HDGM		
			OWSG MWD + HDGM		

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(ft)	(ft)	Rate	Rate	Rate	(°)	
(ft)			(ft)			(°/100usft)	(°/100usft)	(°/100usft)		
0.00	0.00	0.00	0.00	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	
2,850.62	3.51	195.51	2,850.40	-10.33	-2.87	1.00	1.00	0.00	195.51	
9,711.79	3.51	195.51	9,698.73	-414.67	-115.05	0.00	0.00	0.00	0.00	
10,062.41	0.00	0.00	10,049.13	-425.00	-117.92	1.00	-1.00	0.00	180.00	
10,362.41	0.00	0.00	10,349.13	-425.00	-117.92	0.00	0.00	0.00	0.00	
11,180.59	90.00	359.24	10,870.00	95.83	-124.82	11.00	11.00	0.00	359.24	PBHL - SM 734H
20,986.36	90.00	359.24	10,870.00	9,900.73	-254.81	0.00	0.00	0.00	0.00	PBHL - SM 734H

Planning Report - Geographic

Database: EDM r5000.141_Prod US
 Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Site: Sec 31-T23S-R29E
 Well: Spud Muffin 31-30 Com 734H
 Wellbore: Wellbore #1
 Design: Permit Plan 2

Local Co-ordinate Reference: Well Spud Muffin 31-30 Com 734H
 TVD Reference: RKB @ 2986.20ft
 MD Reference: RKB @ 2986.20ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
100.00	0.00	0.00	100.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
200.00	0.00	0.00	200.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
300.00	0.00	0.00	300.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
400.00	0.00	0.00	400.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
500.00	0.00	0.00	500.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
600.00	0.00	0.00	600.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
700.00	0.00	0.00	700.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
800.00	0.00	0.00	800.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
900.00	0.00	0.00	900.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
1,000.00	0.00	0.00	1,000.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
1,100.00	0.00	0.00	1,100.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
1,200.00	0.00	0.00	1,200.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
1,300.00	0.00	0.00	1,300.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
1,400.00	0.00	0.00	1,400.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
1,500.00	0.00	0.00	1,500.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
1,600.00	0.00	0.00	1,600.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
1,700.00	0.00	0.00	1,700.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
1,800.00	0.00	0.00	1,800.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
1,900.00	0.00	0.00	1,900.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
2,000.00	0.00	0.00	2,000.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
2,100.00	0.00	0.00	2,100.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
2,200.00	0.00	0.00	2,200.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
2,300.00	0.00	0.00	2,300.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
2,400.00	0.00	0.00	2,400.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
2,500.00	0.00	0.00	2,500.00	0.00	0.00	456,843.64	636,815.39	32.255561	-104.024469
2,600.00	1.00	195.51	2,599.99	-0.84	-0.23	456,842.80	636,815.16	32.255559	-104.024470
2,700.00	2.00	195.51	2,699.96	-3.36	-0.93	456,840.28	636,814.46	32.255552	-104.024472
2,800.00	3.00	195.51	2,799.86	-7.57	-2.10	456,836.07	636,813.29	32.255540	-104.024476
2,850.62	3.51	195.51	2,850.40	-10.33	-2.87	456,833.31	636,812.53	32.255533	-104.024479
2,900.00	3.51	195.51	2,899.69	-13.24	-3.67	456,830.40	636,811.72	32.255525	-104.024481
3,000.00	3.51	195.51	2,999.50	-19.14	-5.31	456,824.50	636,810.08	32.255508	-104.024487
3,100.00	3.51	195.51	3,099.31	-25.03	-6.94	456,818.61	636,808.45	32.255492	-104.024492
3,200.00	3.51	195.51	3,199.13	-30.92	-8.58	456,812.72	636,806.81	32.255476	-104.024497
3,300.00	3.51	195.51	3,298.94	-36.82	-10.22	456,806.82	636,805.18	32.255460	-104.024503
3,400.00	3.51	195.51	3,398.75	-42.71	-11.85	456,800.93	636,803.54	32.255444	-104.024508
3,500.00	3.51	195.51	3,498.57	-48.60	-13.49	456,795.04	636,801.91	32.255427	-104.024513
3,600.00	3.51	195.51	3,598.38	-54.50	-15.12	456,789.14	636,800.27	32.255411	-104.024519
3,700.00	3.51	195.51	3,698.19	-60.39	-16.76	456,783.25	636,798.64	32.255395	-104.024524
3,800.00	3.51	195.51	3,798.00	-66.28	-18.39	456,777.36	636,797.00	32.255379	-104.024530
3,900.00	3.51	195.51	3,897.82	-72.17	-20.03	456,771.47	636,795.37	32.255363	-104.024535
4,000.00	3.51	195.51	3,997.63	-78.07	-21.66	456,765.57	636,793.73	32.255347	-104.024540
4,100.00	3.51	195.51	4,097.44	-83.96	-23.30	456,759.68	636,792.10	32.255330	-104.024546
4,200.00	3.51	195.51	4,197.26	-89.85	-24.93	456,753.79	636,790.46	32.255314	-104.024551
4,300.00	3.51	195.51	4,297.07	-95.75	-26.57	456,747.89	636,788.83	32.255298	-104.024556
4,400.00	3.51	195.51	4,396.88	-101.64	-28.20	456,742.00	636,787.19	32.255282	-104.024562
4,500.00	3.51	195.51	4,496.69	-107.53	-29.84	456,736.11	636,785.56	32.255266	-104.024567
4,600.00	3.51	195.51	4,596.51	-113.43	-31.47	456,730.21	636,783.92	32.255249	-104.024572
4,700.00	3.51	195.51	4,696.32	-119.32	-33.11	456,724.32	636,782.29	32.255233	-104.024578
4,800.00	3.51	195.51	4,796.13	-125.21	-34.74	456,718.43	636,780.65	32.255217	-104.024583
4,900.00	3.51	195.51	4,895.95	-131.11	-36.38	456,712.54	636,779.02	32.255201	-104.024588
5,000.00	3.51	195.51	4,995.76	-137.00	-38.01	456,706.64	636,777.38	32.255185	-104.024594
5,100.00	3.51	195.51	5,095.57	-142.89	-39.65	456,700.75	636,775.75	32.255168	-104.024599
5,200.00	3.51	195.51	5,195.38	-148.78	-41.28	456,694.86	636,774.11	32.255152	-104.024604
5,300.00	3.51	195.51	5,295.20	-154.68	-42.92	456,688.96	636,772.48	32.255136	-104.024610

Planning Report - Geographic

Database: EDM r5000.141_Prod US
 Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Site: Sec 31-T23S-R29E
 Well: Spud Muffin 31-30 Com 734H
 Wellbore: Wellbore #1
 Design: Permit Plan 2

Local Co-ordinate Reference: Well Spud Muffin 31-30 Com 734H
 TVD Reference: RKB @ 2986.20ft
 MD Reference: RKB @ 2986.20ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,400.00	3.51	195.51	5,395.01	-160.57	-44.55	456,683.07	636,770.84	32.255120	-104.024615
5,500.00	3.51	195.51	5,494.82	-166.46	-46.19	456,677.18	636,769.21	32.255104	-104.024620
5,600.00	3.51	195.51	5,594.63	-172.36	-47.82	456,671.28	636,767.57	32.255088	-104.024626
5,700.00	3.51	195.51	5,694.45	-178.25	-49.46	456,665.39	636,765.94	32.255071	-104.024631
5,800.00	3.51	195.51	5,794.26	-184.14	-51.09	456,659.50	636,764.30	32.255055	-104.024636
5,900.00	3.51	195.51	5,894.07	-190.04	-52.73	456,653.61	636,762.67	32.255039	-104.024642
6,000.00	3.51	195.51	5,993.89	-195.93	-54.36	456,647.71	636,761.03	32.255023	-104.024647
6,100.00	3.51	195.51	6,093.70	-201.82	-56.00	456,641.82	636,759.40	32.255007	-104.024652
6,200.00	3.51	195.51	6,193.51	-207.71	-57.63	456,635.93	636,757.76	32.254990	-104.024658
6,300.00	3.51	195.51	6,293.32	-213.61	-59.27	456,630.03	636,756.13	32.254974	-104.024663
6,400.00	3.51	195.51	6,393.14	-219.50	-60.90	456,624.14	636,754.49	32.254958	-104.024668
6,500.00	3.51	195.51	6,492.95	-225.39	-62.54	456,618.25	636,752.86	32.254942	-104.024674
6,600.00	3.51	195.51	6,592.76	-231.29	-64.17	456,612.35	636,751.22	32.254926	-104.024679
6,700.00	3.51	195.51	6,692.58	-237.18	-65.81	456,606.46	636,749.59	32.254910	-104.024685
6,800.00	3.51	195.51	6,792.39	-243.07	-67.44	456,600.57	636,747.95	32.254893	-104.024690
6,900.00	3.51	195.51	6,892.20	-248.97	-69.08	456,594.67	636,746.32	32.254877	-104.024695
7,000.00	3.51	195.51	6,992.01	-254.86	-70.71	456,588.78	636,744.68	32.254861	-104.024701
7,100.00	3.51	195.51	7,091.83	-260.75	-72.35	456,582.89	636,743.05	32.254845	-104.024706
7,200.00	3.51	195.51	7,191.64	-266.64	-73.98	456,577.00	636,741.41	32.254829	-104.024711
7,300.00	3.51	195.51	7,291.45	-272.54	-75.62	456,571.10	636,739.78	32.254812	-104.024717
7,400.00	3.51	195.51	7,391.27	-278.43	-77.25	456,565.21	636,738.14	32.254796	-104.024722
7,500.00	3.51	195.51	7,491.08	-284.32	-78.89	456,559.32	636,736.51	32.254780	-104.024727
7,600.00	3.51	195.51	7,590.89	-290.22	-80.52	456,553.42	636,734.87	32.254764	-104.024733
7,700.00	3.51	195.51	7,690.70	-296.11	-82.16	456,547.53	636,733.24	32.254748	-104.024738
7,800.00	3.51	195.51	7,790.52	-302.00	-83.79	456,541.64	636,731.60	32.254731	-104.024743
7,900.00	3.51	195.51	7,890.33	-307.90	-85.43	456,535.74	636,729.97	32.254715	-104.024749
8,000.00	3.51	195.51	7,990.14	-313.79	-87.06	456,529.85	636,728.33	32.254699	-104.024754
8,100.00	3.51	195.51	8,089.96	-319.68	-88.70	456,523.96	636,726.70	32.254683	-104.024759
8,200.00	3.51	195.51	8,189.77	-325.58	-90.33	456,518.07	636,725.06	32.254667	-104.024765
8,300.00	3.51	195.51	8,289.58	-331.47	-91.97	456,512.17	636,723.43	32.254651	-104.024770
8,400.00	3.51	195.51	8,389.39	-337.36	-93.60	456,506.28	636,721.79	32.254634	-104.024775
8,500.00	3.51	195.51	8,489.21	-343.25	-95.24	456,500.39	636,720.16	32.254618	-104.024781
8,600.00	3.51	195.51	8,589.02	-349.15	-96.87	456,494.49	636,718.52	32.254602	-104.024786
8,700.00	3.51	195.51	8,688.83	-355.04	-98.51	456,488.60	636,716.89	32.254586	-104.024791
8,800.00	3.51	195.51	8,788.65	-360.93	-100.14	456,482.71	636,715.25	32.254570	-104.024797
8,900.00	3.51	195.51	8,888.46	-366.83	-101.78	456,476.81	636,713.62	32.254553	-104.024802
9,000.00	3.51	195.51	8,988.27	-372.72	-103.41	456,470.92	636,711.98	32.254537	-104.024807
9,100.00	3.51	195.51	9,088.08	-378.61	-105.05	456,465.03	636,710.35	32.254521	-104.024813
9,200.00	3.51	195.51	9,187.90	-384.51	-106.68	456,459.14	636,708.71	32.254505	-104.024818
9,300.00	3.51	195.51	9,287.71	-390.40	-108.32	456,453.24	636,707.07	32.254489	-104.024823
9,400.00	3.51	195.51	9,387.52	-396.29	-109.95	456,447.35	636,705.44	32.254472	-104.024829
9,500.00	3.51	195.51	9,487.33	-402.18	-111.59	456,441.46	636,703.80	32.254456	-104.024834
9,600.00	3.51	195.51	9,587.15	-408.08	-113.22	456,435.56	636,702.17	32.254440	-104.024839
9,700.00	3.51	195.51	9,686.96	-413.97	-114.86	456,429.67	636,700.53	32.254424	-104.024845
9,711.79	3.51	195.51	9,698.73	-414.67	-115.05	456,428.98	636,700.34	32.254422	-104.024845
9,800.00	2.62	195.51	9,786.81	-419.21	-116.31	456,424.43	636,699.08	32.254410	-104.024850
9,900.00	1.62	195.51	9,886.74	-422.78	-117.30	456,420.86	636,698.09	32.254400	-104.024853
10,000.00	0.62	195.51	9,986.72	-424.67	-117.83	456,418.97	636,697.57	32.254395	-104.024855
10,062.41	0.00	0.00	10,049.13	-425.00	-117.92	456,418.64	636,697.47	32.254394	-104.024855
10,100.00	0.00	0.00	10,086.72	-425.00	-117.92	456,418.64	636,697.47	32.254394	-104.024855
10,200.00	0.00	0.00	10,186.72	-425.00	-117.92	456,418.64	636,697.47	32.254394	-104.024855
10,300.00	0.00	0.00	10,286.72	-425.00	-117.92	456,418.64	636,697.47	32.254394	-104.024855
10,362.14	0.00	0.00	10,348.86	-425.00	-117.92	456,418.64	636,697.47	32.254394	-104.024855

KOP @ 10362' MD, 50' FSL, 2320' FWL

Planning Report - Geographic

Database: EDM r5000.141_Prod US
Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Site: Sec 31-T23S-R29E
Well: Spud Muffin 31-30 Com 734H
Wellbore: Wellbore #1
Design: Permit Plan 2

Local Co-ordinate Reference: Well Spud Muffin 31-30 Com 734H
TVD Reference: RKB @ 2986.20ft
MD Reference: RKB @ 2986.20ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,362.41	0.00	0.00	10,349.13	-425.00	-117.92	456,418.64	636,697.47	32.254394	-104.024855
10,400.00	4.13	359.24	10,386.69	-423.64	-117.94	456,420.00	636,697.46	32.254397	-104.024855
10,500.00	15.13	359.24	10,485.13	-406.93	-118.16	456,436.71	636,697.23	32.254443	-104.024855
10,600.00	26.13	359.24	10,578.57	-371.75	-118.63	456,471.89	636,696.77	32.254540	-104.024857
10,700.00	37.13	359.24	10,663.58	-319.39	-119.32	456,524.26	636,696.07	32.254684	-104.024858
10,800.00	48.13	359.24	10,737.03	-251.76	-120.22	456,591.88	636,695.18	32.254870	-104.024861
10,900.00	59.13	359.24	10,796.23	-171.37	-121.28	456,672.27	636,694.11	32.255091	-104.024863
10,930.22	62.46	359.24	10,810.98	-145.00	-121.63	456,698.64	636,693.76	32.255163	-104.024864
FTP @ 10930' MD, 330' FSL, 2314' FWL									
11,000.00	70.13	359.24	10,839.01	-81.16	-122.48	456,762.48	636,692.92	32.255339	-104.024866
11,100.00	81.13	359.24	10,863.78	15.56	-123.76	456,859.20	636,691.63	32.255605	-104.024870
11,180.59	90.00	359.24	10,870.00	95.83	-124.82	456,939.47	636,690.57	32.255825	-104.024872
11,200.00	90.00	359.24	10,870.00	115.23	-125.08	456,958.87	636,690.31	32.255879	-104.024873
11,300.00	90.00	359.24	10,870.00	215.22	-126.41	457,058.86	636,688.99	32.256154	-104.024876
11,400.00	90.00	359.24	10,870.00	315.21	-127.73	457,158.85	636,687.66	32.256428	-104.024880
11,500.00	90.00	359.24	10,870.00	415.20	-129.06	457,258.84	636,686.34	32.256703	-104.024883
11,600.00	90.00	359.24	10,870.00	515.20	-130.38	457,358.83	636,685.01	32.256978	-104.024886
11,700.00	90.00	359.24	10,870.00	615.19	-131.71	457,458.83	636,683.68	32.257253	-104.024890
11,800.00	90.00	359.24	10,870.00	715.18	-133.04	457,558.82	636,682.36	32.257528	-104.024893
11,900.00	90.00	359.24	10,870.00	815.17	-134.36	457,658.81	636,681.03	32.257803	-104.024896
12,000.00	90.00	359.24	10,870.00	915.16	-135.69	457,758.80	636,679.71	32.258078	-104.024900
12,100.00	90.00	359.24	10,870.00	1,015.15	-137.01	457,858.79	636,678.38	32.258353	-104.024903
12,200.00	90.00	359.24	10,870.00	1,115.14	-138.34	457,958.78	636,677.06	32.258627	-104.024907
12,300.00	90.00	359.24	10,870.00	1,215.13	-139.66	458,058.77	636,675.73	32.258902	-104.024910
12,400.00	90.00	359.24	10,870.00	1,315.12	-140.99	458,158.76	636,674.41	32.259177	-104.024913
12,500.00	90.00	359.24	10,870.00	1,415.12	-142.31	458,258.75	636,673.08	32.259452	-104.024917
12,600.00	90.00	359.24	10,870.00	1,515.11	-143.64	458,358.74	636,671.75	32.259727	-104.024920
12,700.00	90.00	359.24	10,870.00	1,615.10	-144.97	458,458.74	636,670.43	32.260002	-104.024923
12,800.00	90.00	359.24	10,870.00	1,715.09	-146.29	458,558.73	636,669.10	32.260277	-104.024927
12,900.00	90.00	359.24	10,870.00	1,815.08	-147.62	458,658.72	636,667.78	32.260552	-104.024930
13,000.00	90.00	359.24	10,870.00	1,915.07	-148.94	458,758.71	636,666.45	32.260826	-104.024933
13,100.00	90.00	359.24	10,870.00	2,015.06	-150.27	458,858.70	636,665.13	32.261101	-104.024937
13,200.00	90.00	359.24	10,870.00	2,115.05	-151.59	458,958.69	636,663.80	32.261376	-104.024940
13,300.00	90.00	359.24	10,870.00	2,215.05	-152.92	459,058.68	636,662.47	32.261651	-104.024944
13,400.00	90.00	359.24	10,870.00	2,315.04	-154.25	459,158.67	636,661.15	32.261926	-104.024947
13,500.00	90.00	359.24	10,870.00	2,415.03	-155.57	459,258.66	636,659.82	32.262201	-104.024950
13,600.00	90.00	359.24	10,870.00	2,515.02	-156.90	459,358.65	636,658.50	32.262476	-104.024954
13,700.00	90.00	359.24	10,870.00	2,615.01	-158.22	459,458.65	636,657.17	32.262750	-104.024957
13,800.00	90.00	359.24	10,870.00	2,715.00	-159.55	459,558.64	636,655.85	32.263025	-104.024960
13,900.00	90.00	359.24	10,870.00	2,814.99	-160.87	459,658.63	636,654.52	32.263300	-104.024964
14,000.00	90.00	359.24	10,870.00	2,914.98	-162.20	459,758.62	636,653.20	32.263575	-104.024967
14,100.00	90.00	359.24	10,870.00	3,014.98	-163.52	459,858.61	636,651.87	32.263850	-104.024970
14,200.00	90.00	359.24	10,870.00	3,114.97	-164.85	459,958.60	636,650.54	32.264125	-104.024974
14,300.00	90.00	359.24	10,870.00	3,214.96	-166.18	460,058.59	636,649.22	32.264400	-104.024977
14,400.00	90.00	359.24	10,870.00	3,314.95	-167.50	460,158.58	636,647.89	32.264675	-104.024980
14,500.00	90.00	359.24	10,870.00	3,414.94	-168.83	460,258.57	636,646.57	32.264949	-104.024984
14,600.00	90.00	359.24	10,870.00	3,514.93	-170.15	460,358.56	636,645.24	32.265224	-104.024987
14,700.00	90.00	359.24	10,870.00	3,614.92	-171.48	460,458.56	636,643.92	32.265499	-104.024991
14,800.00	90.00	359.24	10,870.00	3,714.91	-172.80	460,558.55	636,642.59	32.265774	-104.024994
14,900.00	90.00	359.24	10,870.00	3,814.91	-174.13	460,658.54	636,641.27	32.266049	-104.024997
15,000.00	90.00	359.24	10,870.00	3,914.90	-175.45	460,758.53	636,639.94	32.266324	-104.025001
15,100.00	90.00	359.24	10,870.00	4,014.89	-176.78	460,858.52	636,638.61	32.266599	-104.025004
15,200.00	90.00	359.24	10,870.00	4,114.88	-178.11	460,958.51	636,637.29	32.266874	-104.025007
15,300.00	90.00	359.24	10,870.00	4,214.87	-179.43	461,058.50	636,635.96	32.267148	-104.025011

Planning Report - Geographic

Database: EDM r5000.141_Prod US
 Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Site: Sec 31-T23S-R29E
 Well: Spud Muffin 31-30 Com 734H
 Wellbore: Wellbore #1
 Design: Permit Plan 2

Local Co-ordinate Reference: Well Spud Muffin 31-30 Com 734H
 TVD Reference: RKB @ 2986.20ft
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 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
15,400.00	90.00	359.24	10,870.00	4,314.86	-180.76	461,158.49	636,634.64	32.267423	-104.025014
15,500.00	90.00	359.24	10,870.00	4,414.85	-182.08	461,258.48	636,633.31	32.267698	-104.025017
15,600.00	90.00	359.24	10,870.00	4,514.84	-183.41	461,358.47	636,631.99	32.267973	-104.025021
15,700.00	90.00	359.24	10,870.00	4,614.83	-184.73	461,458.47	636,630.66	32.268248	-104.025024
15,800.00	90.00	359.24	10,870.00	4,714.83	-186.06	461,558.46	636,629.33	32.268523	-104.025027
15,890.18	90.00	359.24	10,870.00	4,805.00	-187.26	461,648.63	636,628.14	32.268771	-104.025031
Cross Section @ 15890' MD, 0' FSL, 2234' FWL									
15,900.00	90.00	359.24	10,870.00	4,814.82	-187.39	461,658.45	636,628.01	32.268798	-104.025031
16,000.00	90.00	359.24	10,870.00	4,914.81	-188.71	461,758.44	636,626.68	32.269072	-104.025034
16,100.00	90.00	359.24	10,870.00	5,014.80	-190.04	461,858.43	636,625.36	32.269347	-104.025038
16,200.00	90.00	359.24	10,870.00	5,114.79	-191.36	461,958.42	636,624.03	32.269622	-104.025041
16,300.00	90.00	359.24	10,870.00	5,214.78	-192.69	462,058.41	636,622.71	32.269897	-104.025044
16,400.00	90.00	359.24	10,870.00	5,314.77	-194.01	462,158.40	636,621.38	32.270172	-104.025048
16,500.00	90.00	359.24	10,870.00	5,414.76	-195.34	462,258.39	636,620.06	32.270447	-104.025051
16,600.00	90.00	359.24	10,870.00	5,514.76	-196.66	462,358.39	636,618.73	32.270722	-104.025054
16,700.00	90.00	359.24	10,870.00	5,614.75	-197.99	462,458.38	636,617.40	32.270997	-104.025058
16,800.00	90.00	359.24	10,870.00	5,714.74	-199.32	462,558.37	636,616.08	32.271271	-104.025061
16,900.00	90.00	359.24	10,870.00	5,814.73	-200.64	462,658.36	636,614.75	32.271546	-104.025064
17,000.00	90.00	359.24	10,870.00	5,914.72	-201.97	462,758.35	636,613.43	32.271821	-104.025068
17,100.00	90.00	359.24	10,870.00	6,014.71	-203.29	462,858.34	636,612.10	32.272096	-104.025071
17,200.00	90.00	359.24	10,870.00	6,114.70	-204.62	462,958.33	636,610.78	32.272371	-104.025075
17,300.00	90.00	359.24	10,870.00	6,214.69	-205.94	463,058.32	636,609.45	32.272646	-104.025078
17,400.00	90.00	359.24	10,870.00	6,314.69	-207.27	463,158.31	636,608.13	32.272921	-104.025081
17,500.00	90.00	359.24	10,870.00	6,414.68	-208.60	463,258.30	636,606.80	32.273196	-104.025085
17,600.00	90.00	359.24	10,870.00	6,514.67	-209.92	463,358.30	636,605.47	32.273470	-104.025088
17,700.00	90.00	359.24	10,870.00	6,614.66	-211.25	463,458.29	636,604.15	32.273745	-104.025091
17,800.00	90.00	359.24	10,870.00	6,714.65	-212.57	463,558.28	636,602.82	32.274020	-104.025095
17,900.00	90.00	359.24	10,870.00	6,814.64	-213.90	463,658.27	636,601.50	32.274295	-104.025098
18,000.00	90.00	359.24	10,870.00	6,914.63	-215.22	463,758.26	636,600.17	32.274570	-104.025101
18,100.00	90.00	359.24	10,870.00	7,014.62	-216.55	463,858.25	636,598.85	32.274845	-104.025105
18,200.00	90.00	359.24	10,870.00	7,114.62	-217.87	463,958.24	636,597.52	32.275120	-104.025108
18,300.00	90.00	359.24	10,870.00	7,214.61	-219.20	464,058.23	636,596.19	32.275395	-104.025111
18,400.00	90.00	359.24	10,870.00	7,314.60	-220.53	464,158.22	636,594.87	32.275669	-104.025115
18,500.00	90.00	359.24	10,870.00	7,414.59	-221.85	464,258.21	636,593.54	32.275944	-104.025118
18,600.00	90.00	359.24	10,870.00	7,514.58	-223.18	464,358.21	636,592.22	32.276219	-104.025122
18,700.00	90.00	359.24	10,870.00	7,614.57	-224.50	464,458.20	636,590.89	32.276494	-104.025125
18,800.00	90.00	359.24	10,870.00	7,714.56	-225.83	464,558.19	636,589.57	32.276769	-104.025128
18,900.00	90.00	359.24	10,870.00	7,814.55	-227.15	464,658.18	636,588.24	32.277044	-104.025132
19,000.00	90.00	359.24	10,870.00	7,914.55	-228.48	464,758.17	636,586.92	32.277319	-104.025135
19,100.00	90.00	359.24	10,870.00	8,014.54	-229.80	464,858.16	636,585.59	32.277593	-104.025138
19,200.00	90.00	359.24	10,870.00	8,114.53	-231.13	464,958.15	636,584.26	32.277868	-104.025142
19,300.00	90.00	359.24	10,870.00	8,214.52	-232.46	465,058.14	636,582.94	32.278143	-104.025145
19,400.00	90.00	359.24	10,870.00	8,314.51	-233.78	465,158.13	636,581.61	32.278418	-104.025148
19,500.00	90.00	359.24	10,870.00	8,414.50	-235.11	465,258.12	636,580.29	32.278693	-104.025152
19,600.00	90.00	359.24	10,870.00	8,514.49	-236.43	465,358.12	636,578.96	32.278968	-104.025155
19,700.00	90.00	359.24	10,870.00	8,614.48	-237.76	465,458.11	636,577.64	32.279243	-104.025159
19,800.00	90.00	359.24	10,870.00	8,714.47	-239.08	465,558.10	636,576.31	32.279518	-104.025162
19,900.00	90.00	359.24	10,870.00	8,814.47	-240.41	465,658.09	636,574.99	32.279792	-104.025165
20,000.00	90.00	359.24	10,870.00	8,914.46	-241.74	465,758.08	636,573.66	32.280067	-104.025169
20,100.00	90.00	359.24	10,870.00	9,014.45	-243.06	465,858.07	636,572.33	32.280342	-104.025172
20,200.00	90.00	359.24	10,870.00	9,114.44	-244.39	465,958.06	636,571.01	32.280617	-104.025175
20,300.00	90.00	359.24	10,870.00	9,214.43	-245.71	466,058.05	636,569.68	32.280892	-104.025179
20,400.00	90.00	359.24	10,870.00	9,314.42	-247.04	466,158.04	636,568.36	32.281167	-104.025182
20,500.00	90.00	359.24	10,870.00	9,414.41	-248.36	466,258.03	636,567.03	32.281442	-104.025185

Planning Report - Geographic

Database: EDM r5000.141_Prod US
 Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Site: Sec 31-T23S-R29E
 Well: Spud Muffin 31-30 Com 734H
 Wellbore: Wellbore #1
 Design: Permit Plan 2

Local Co-ordinate Reference: Well Spud Muffin 31-30 Com 734H
 TVD Reference: RKB @ 2986.20ft
 MD Reference: RKB @ 2986.20ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
20,600.00	90.00	359.24	10,870.00	9,514.40	-249.69	466,358.03	636,565.71	32.281717	-104.025189
20,700.00	90.00	359.24	10,870.00	9,614.40	-251.01	466,458.02	636,564.38	32.281991	-104.025192
20,800.00	90.00	359.24	10,870.00	9,714.39	-252.34	466,558.01	636,563.05	32.282266	-104.025195
20,886.36	90.00	359.24	10,870.00	9,800.74	-253.48	466,644.36	636,561.91	32.282504	-104.025198
LTP @ 20886' MD, 330' FNL, 2178' FWL									
20,900.00	90.00	359.24	10,870.00	9,814.38	-253.67	466,658.00	636,561.73	32.282541	-104.025199
20,986.36	90.00	359.24	10,870.00	9,900.73	-254.81	466,744.35	636,560.58	32.282779	-104.025202
PBHL; 230' FNL, 2178' FWL									

Design Targets

Target Name - hit/miss, target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL - SM 734H - plan misses target center by 9904.01ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E) - Point	0.00	0.01	0.00	9,900.73	-254.81	466,744.35	636,560.58	32.282779	-104.025202
Vertical Point - SM 734H - plan misses target center by 0.05ft at 10038.41ft MD (10025.13 TVD, -424.95 N, -117.91 E) - Point	0.00	0.00	10,025.13	-425.00	-117.92	456,418.64	636,697.47	32.254394	-104.024855

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
10,362.14	10,348.86	-425.00	-117.92	KOP @ 10362' MD, 50' FSL, 2320' FWL
10,930.22	10,810.98	-145.00	-121.63	FTP @ 10930' MD, 330' FSL, 2314' FWL
15,890.18	10,870.00	4,805.00	-187.26	Cross Section @ 15890' MD, 0' FSL, 2234' FWL
20,886.36	10,870.00	9,800.74	-253.48	LTP @ 20886' MD, 330' FNL, 2178' FWL
20,986.36	10,870.00	9,900.73	-254.81	PBHL; 230' FNL, 2178' FWL