Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Carlsbad Field Office
OCD Artesia

FORM 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.

SUBMIT IN TRIPLICATE - Other instructions on page 2

5. Lease Serial No.
NMNM82886

6. If Indian, Allottee or Tribe Name

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

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other

8. Well Name and No.
SPUD MUFFIN 31-30 FED COM 331H

2. Name of Operator
DEVON ENERGY PRODUCTION COMPAN

Contact: ERIN WORKMAN
Email: Erin.workman@dvn.com

9. API Well No.
30-015-45459-00-X1

3a. Address
6488 SEVEN RIVERS HIGHWAY
ARTESIA, NM 88211

3b. Phone No. (include area code)
Ph: 405-552-7970

10. Field and Pool or Exploratory Area
CEDAR CANYON-BONE SPRING

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

Sec 31 T23S R29E SWSW 270FSL 1275FWL
32.255028 N Lat, 104.028221 W Lon

11. County or Parish, State

EDDY COUNTY, NM

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	
	☐ 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 recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/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 recompletion 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.

Devon Energy Production Co., LP respectfully requests approval for a Name, Bottom Hole, and formation change of the subject well:

RECEIVED

Name Change:
From Spud Muffin 31-30 Fed Com 732H to Spud Muffin 31-30 Fed Com 331H

JAN 10 2019

Bottom Hole Change:

FROM: Sec. 30, T23S, R29E 230 FNL\990 FWL
To: Sec. 30, T23S, R29E 20 FNL\927 FWL

DISTRICT II-ARTESIA O.C.D.

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Accepted For Record
NMOCD 1-16-19

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

Electronic Submission #445652 verified by the BLM Well Information System
For DEVON ENERGY PRODUCTION COMPAN, sent to the Carlsbad
Committed to AFMSS for processing by MUSTAFA HAQUE on 11/29/2018 (19MH0008SE)

Name *(Printed/Typed)* ERIN WORKMAN — Title REGULATORY COMPLIANCE PROF.

Signature (Electronic Submission) — Date 11/29/2018

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By MUSTAFA HAQUE — Title PETROLEUM ENGINEER — Date 12/19/2018

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

Office Carlsbad

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

(Instructions on page 2)

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

Kay P. did changes on 1-4-2019 per ccpg from Devon Energy.

Additional data for EC transaction #445652 that would not fit on the form

32. Additional remarks, continued

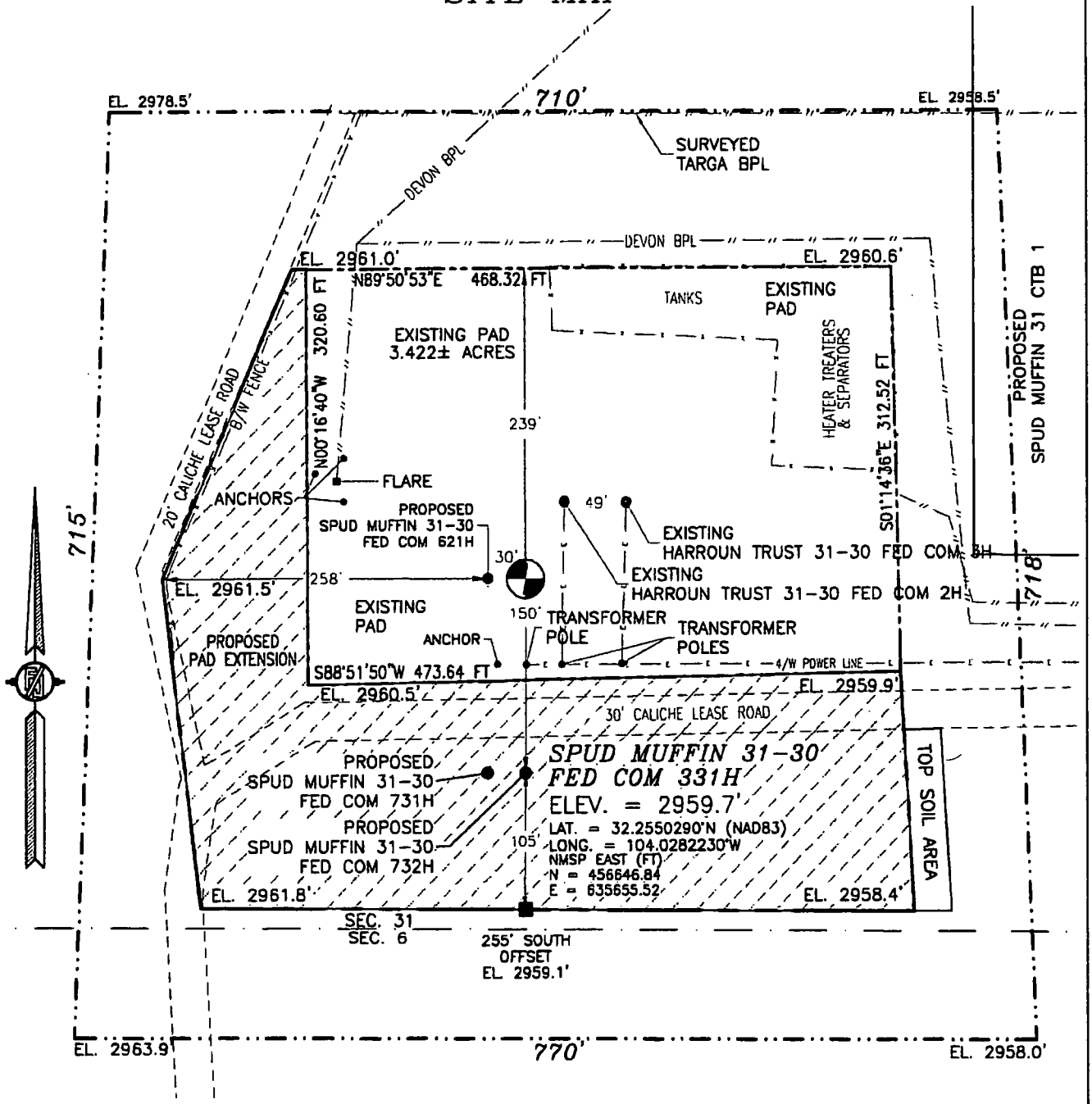
Formation Change:

From: Purple Sage; Wolfcamp
To: Cedar Canyon; Bone Spring

ATTACHMENTS: Directional Survey, Anti-Collision, Drilling Plan, & C-102

Thanks

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



012 60 120 240

SCALE 1" = 120'

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 NORTH 14' TO THE EXISTING SOUTHWEST PAD CORNER OF HARROUN TRUST 31-30 FED COM 2H & 3H FOR THIS LOCATION.

DEVON ENERGY PRODUCTION COMPANY, L.P.

SPUD MUFFIN 31-30 FED COM 331H

LOCATED 270 FT. FROM THE SOUTH LINE AND 1275 FT. FROM THE WEST LINE OF SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO

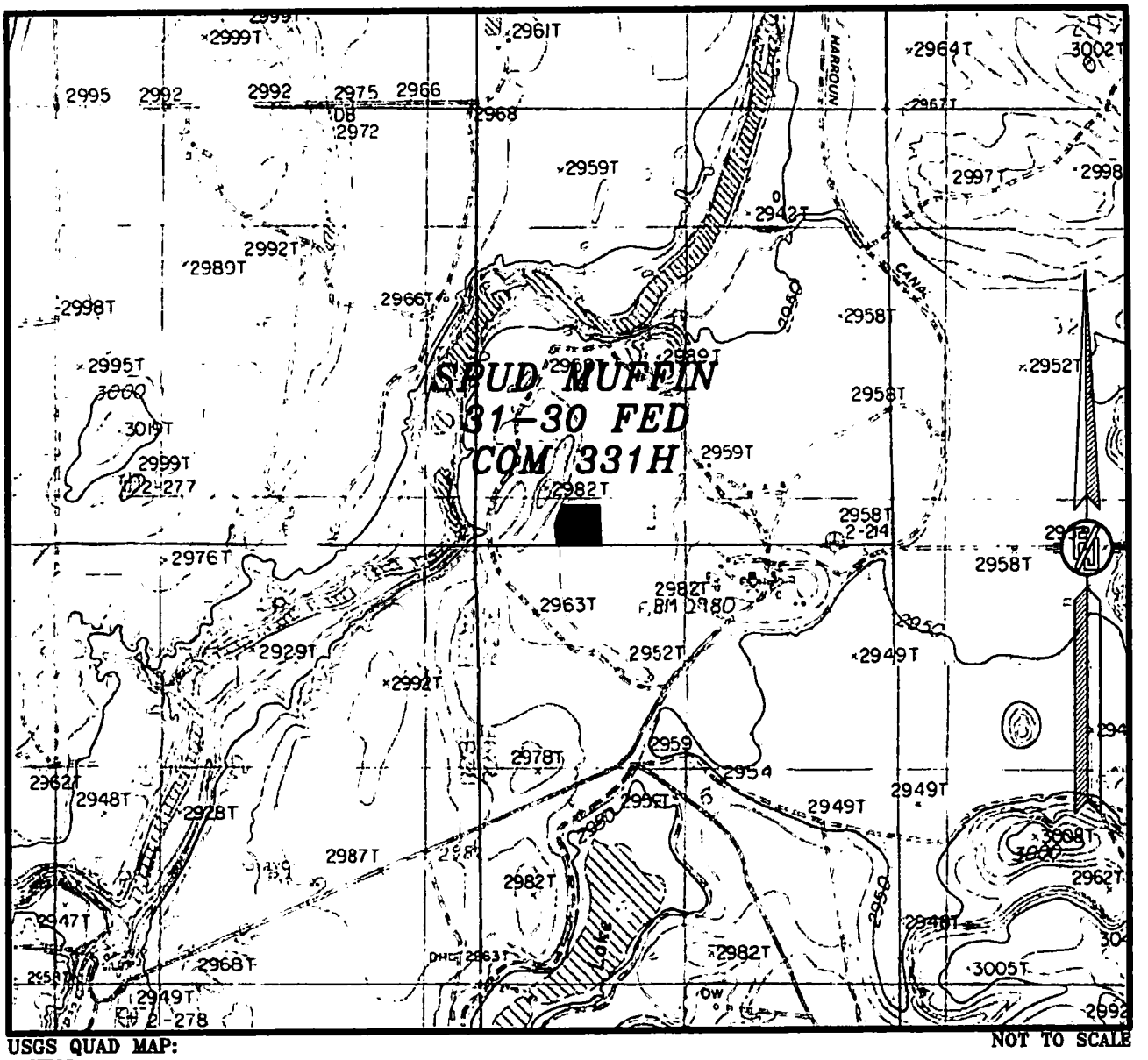
SEPTEMBER 12, 2018

SURVEY NO. 6274C

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 FED COM 331H
LOCATED 270 FT. FROM THE SOUTH LINE
AND 1275 FT. FROM THE WEST LINE OF
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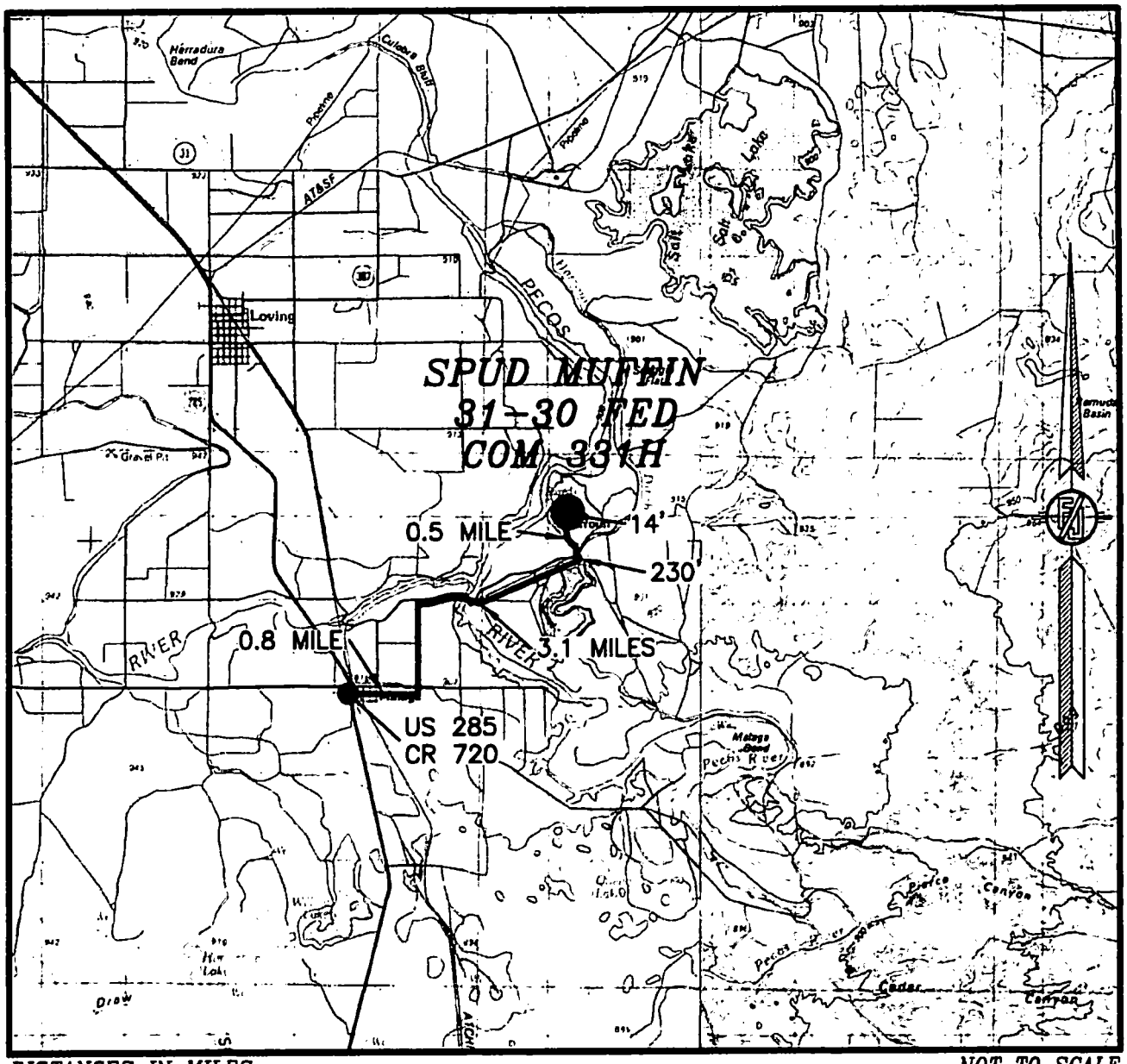
SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

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 NORTH 14' TO THE EXISTING SOUTHWEST PAD CORNER OF HARROUN TRUST 31-30 FED COM 2H & 3H FOR THIS LOCATION.

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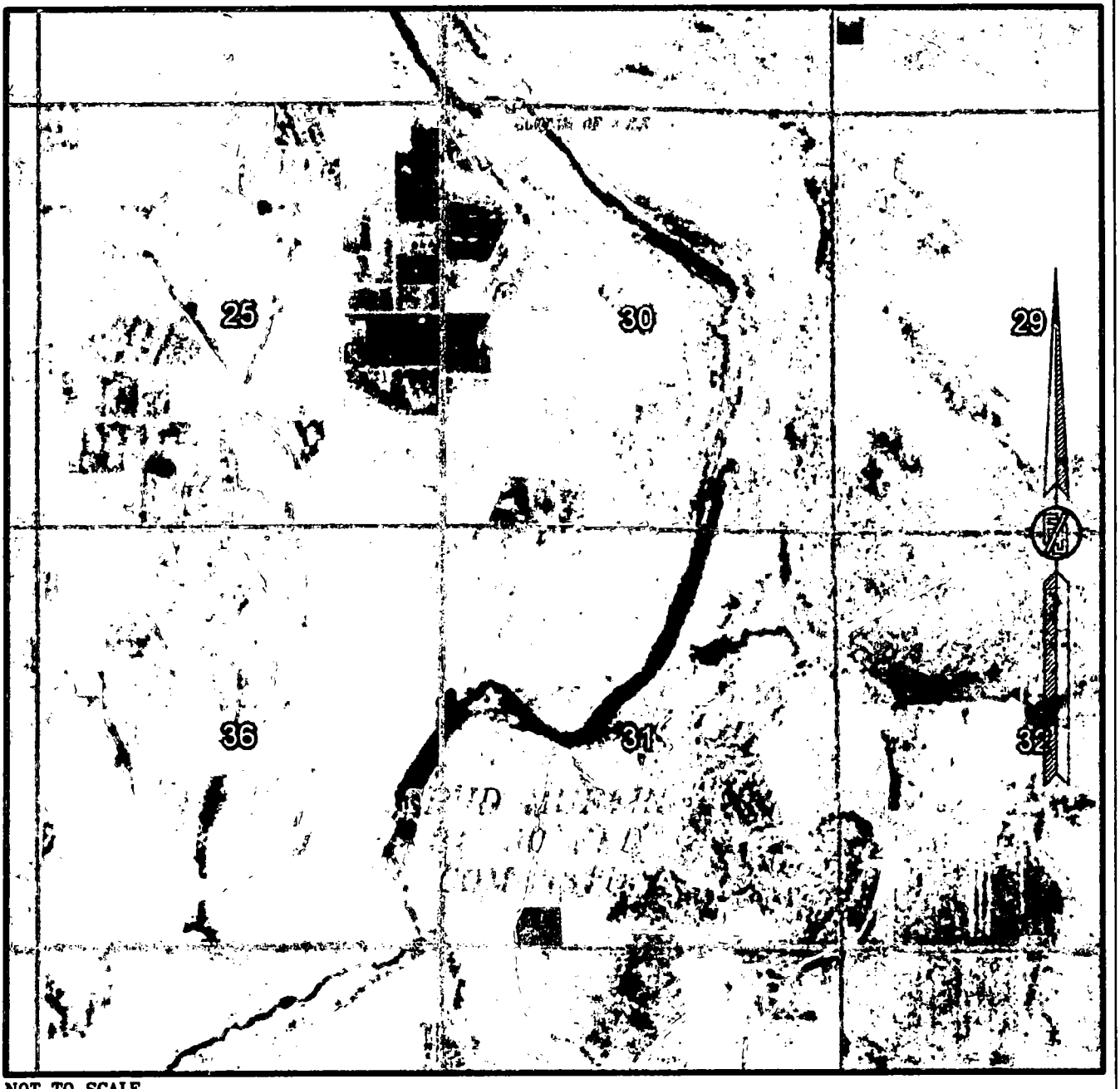
SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

AERIAL PHOTO



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
FEB. 2017

DEVON ENERGY PRODUCTION COMPANY, L.P.

SPUD MUFFIN 31-30 FED COM 331H

LOCATED 270 FT. FROM THE SOUTH LINE
AND 1275 FT. FROM THE WEST LINE OF
SECTION 31, TOWNSHIP 23 SOUTH,
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EDDY COUNTY, STATE OF NEW MEXICO

SEPTEMBER 12, 2018

SURVEY NO. 6274C

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 FED COM 331H

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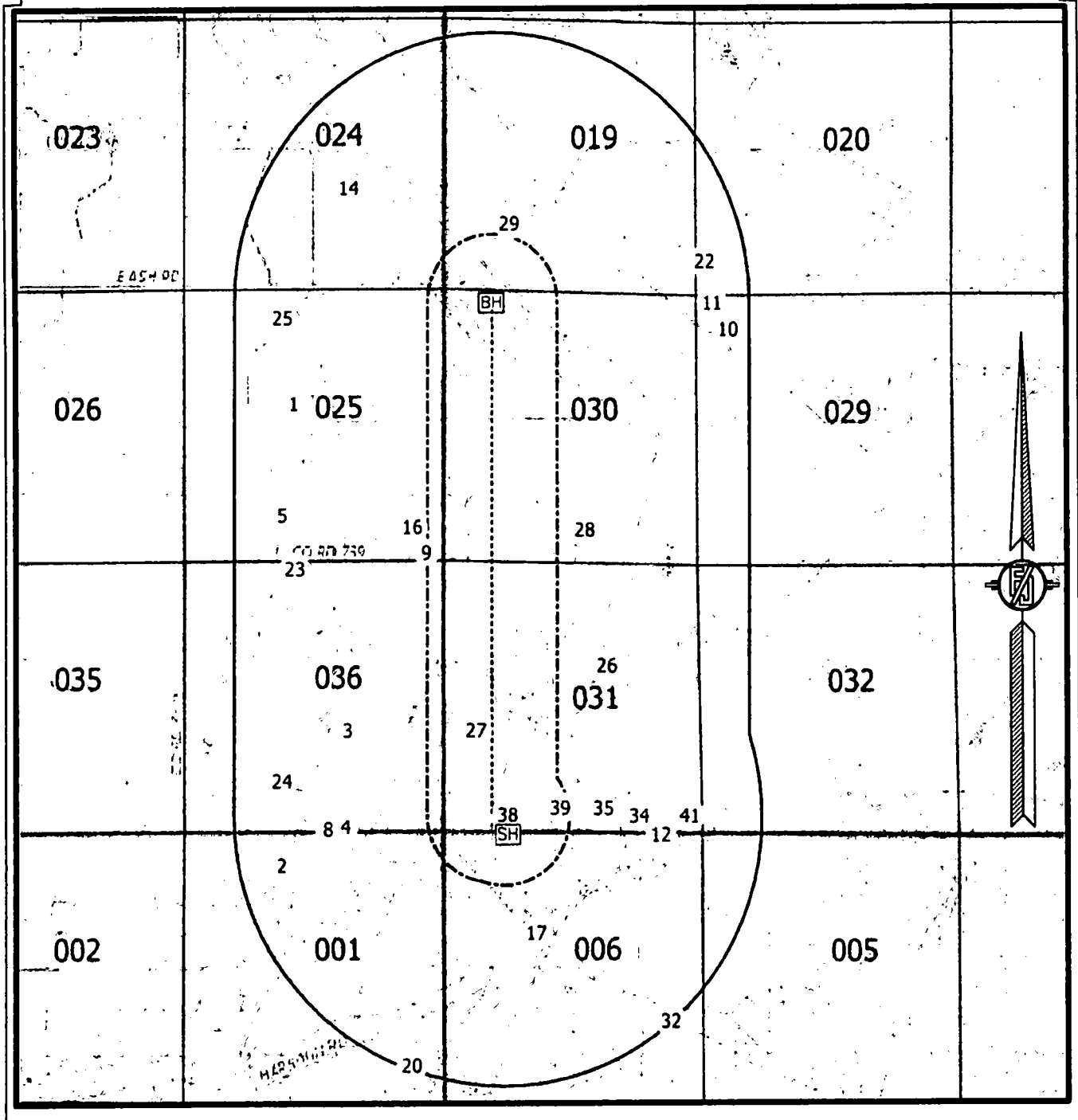
SEPTEMBER 12, 2018

SURVEY NO. 6274C

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

1-MILE WELL MAP



WELL DATA FROM NMOCD GIS – 6/6/18

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 FED COM 331H

LOCATED 270 FT. FROM THE SOUTH LINE AND 1275 FT. FROM THE WEST LINE OF SECTION 31, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO

SEPTEMBER 12, 2018

SURVEY NO. 6274C

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Geologic Formations

TVD of target	9630	Pilot hole depth	N/A
MD at TD:	19963	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		

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

2. **Casing Program (Primary)**

Hole Size	Casing Interval From	Casing Interval To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17.5"	0	400'	13.375"	48	J-55	STC	1.125	1.25	1.6
~~12.25"~~ 9 7/8"	0	2700'	~~10.75"~~ 8 5/8"	~~40.5~~ 32	~~J-55~~ P110	~~STC~~ HSCY	1.125	1.25	1.6
8.75"	0'	7900'	7.625"	29.7	P110	Flushmax III	1.125	1.25	1.6
6.75"	0	19963'	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 From	Casing Interval To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17.5"	0	400'	13.375"	48	J-55	STC	1.125	1.25	1.6
~~12.25"~~	~~0~~	~~2700'~~	~~10.75"~~	~~45.5~~	~~J-55~~	~~STC~~	~~1.125~~	~~1.25~~	~~1.6~~
9.875"	0	7900'	8.625"	32	P110EC	VAM FJL	1.125	1.25	1.6
7.875"	0	19963'	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.

Casing Program (Alternate Design II)

Hole Size	Casing Interval From	Casing Interval To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17.5"	0	400'	13.375"	48	J-55	STC	1.125	1.25	1.6
9.875"	0	7900'	8.625"	32	P110EC	VAM FJL	1.125	1.25	1.6
7.875"	0	19963'	5.5"	20	P110	Vam SG	1.125	1.25	1.6

	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 3rd 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 2nd 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?	

3. Cementing Program (Primary Design)

Casing	# Sks	Wt. lb/ gal	H_2O gal/sk	Yld ft3/ 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	300	9	5.31	3.27	Lead: Tuned Light® Cement
	108	14.5	3.31	1.6	Tail: Class H/C + additives
Intermediate II (Bradenhead)	600	14.8	6.32	1.33	Class C Cement + 0.125 lbs/sack Poly-E-Flake
	300	13.2	5.31	1.6	Lead: Class H/C + additives
	108	14.5	3.31	1.6	Tail: Class H/C + additives
Production	986	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_2O gal/sk	Yld ft3/ 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	480	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	2045	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 II)

Casing	# Sks	Wt. lb/ gal	H_2O gal/sk	Yld ft3/ sack	Slurry Description
Surface	310	14.8	6.34	1.34	Tail: Class C Cement + 1% Calcium Chloride
Int	450	9	5.31	3.27	Lead: Tuned Light® Cement
	108	14.5	3.31	1.6	Tail: Class H/C + additives
Intermediate (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	2045	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	13-5/8"	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			
			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 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/DBE	9.5-10.1	34-40	N/C - 6
2700'	7900'	Cut Brine/DBE	9.0-9.8	32-36	N/C - 6
7900'	TD	WBM/OBM	9.5-10	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.

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

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	6300 psi
Abnormal Temperature	No

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

Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S 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	H2S is present
Y	H2S 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.

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 nippled 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

_x_ Directional Plan

___ Other, describe

WCDSC Permian NM

WELL DETAILS: Spud Muffin 31-30 Fed Com 331H

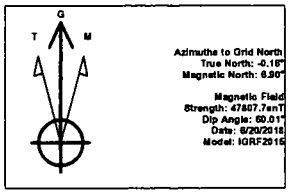
RKB @ 2984.70ft
2959.70

Northing	Easting	Latitude	Longitude
456646.84	635655.52	32.255029	-104.028223

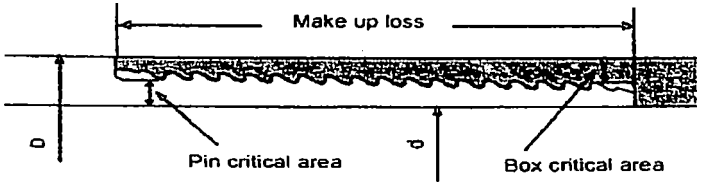
SECTION DETAILS Permit Plan 2

	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	
	2916.57	4.17	237.70	2916.21	-8.09	-12.79	1.00	-7.66	
	8236.95	4.17	237.70	8222.53	-214.61	-339.47	0.00	-203.13	
5	8514.67	0.00	0.00	8500.00	-220.00	-348.00	1.50	-208.24	
6	9071.71	0.00	0.00	9057.04	-220.00	-348.00	0.00	-208.24	KOP @ 9072' MD, 50' FSL, 927' FWL
7	9971.71	90.00	0.01	9630.00	352.96	-347.90	10.00	364.40	
8	19963.90	90.00	0.01	9630.00	10345.15	-346.18	0.00	10350.94	

devon



Metal One Corp	FLUSHMAX-III Connection Data Sheet	Page	44-O
		Date	1-Oct-15
		Rev.	N-0



Pipe Body	Imperial		S.I.	
Grade	P110		P110	
Pipe OD (D)	7 5/8	in	193.68	mm
Weight	29.7	lb/ft	44.25	kg/m
Actual weight	29.0	lb/ft	43.26	kg/m
Wall thickness (t)	0.375	in	9.53	mm
Pipe ID (d)	6.875	in	174.63	mm
Pipe body cross section	8.537	in^2	5,508	mm^2
Drift Dia.	6.750	in	171.45	mm

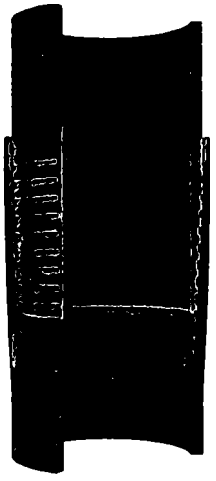
Connection				
Box OD (W)	7.625	in	193.68	mm
PIN ID	6.875	in	174.63	mm
Pin critical area	4.420	in^2	2,852	mm^2
Box critical area	4.424	in^2	2,854	mm^2
Joint load efficiency	60	%	60	%
Make up loss	3.040	in	77.22	mm
Thread taper	1/16 (3/4 in per ft)			
Number of threads	5 thread per in.			

Connection Performance Properties				
Tensile Yield load	563.4	kips	2,506	kN
M.I.Y.P.	7,574	psi	52.2	MPa
Collapse strength	5,350	psi	36.9	MPa

Note
M.I.Y.P. = Minimum Internal Yield Pressure of the connection

Torque Recommended				
Min.	8,700	ft-lb	11,700	N-m
Opti.	9,700	ft-lb	13,100	N-m
Max.	10,700	ft-lb	14,500	N-m
Operational Max.	23,600	ft-lb	32,000	N-m

Note : Operational Max. torque can be applied for high torque application



TEC-LOCK WEDGE

8.625" 32.00 LB/FT (.352" Wall)
BORUSAN MANNESMANNP110 HSCY

Pipe Body Data

Nominal OD:	8.625	in
Nominal Wall:	.352	in
Nominal Weight:	32.00	lb/ft
Plain End Weight:	31.13	lb/ft
Material Grade:	P110 HSCY	
Mill/Specification:	BORUSAN MANNESMANN	
Yield Strength:	125,000	psi
Tensile Strength:	125,000	psi
Nominal ID:	7.921	in
API Drift Diameter:	7.796	in
Special Drift Diameter:	7.875	in
RBW:	87.5 %	
Body Yield:	1,144,000	lbf
Burst:	8,930	psi
Collapse:	4,230	psi

Connection Data

Standard OD:	9.000	in
Pin Bored ID:	7.921	in
Critical Section Area:	8.61433	in^2
Tensile Efficiency:	94.2 %	
Compressive Efficiency:	100.0 %	
Longitudinal Yield Strength:	1,077,000	lbf
Compressive Limit:	1,144,000	lbf
Internal Pressure Rating:	8,930	psi
External Pressure Rating:	4,230	psi
Maximum Bend:	62.6	°/100

Operational Data

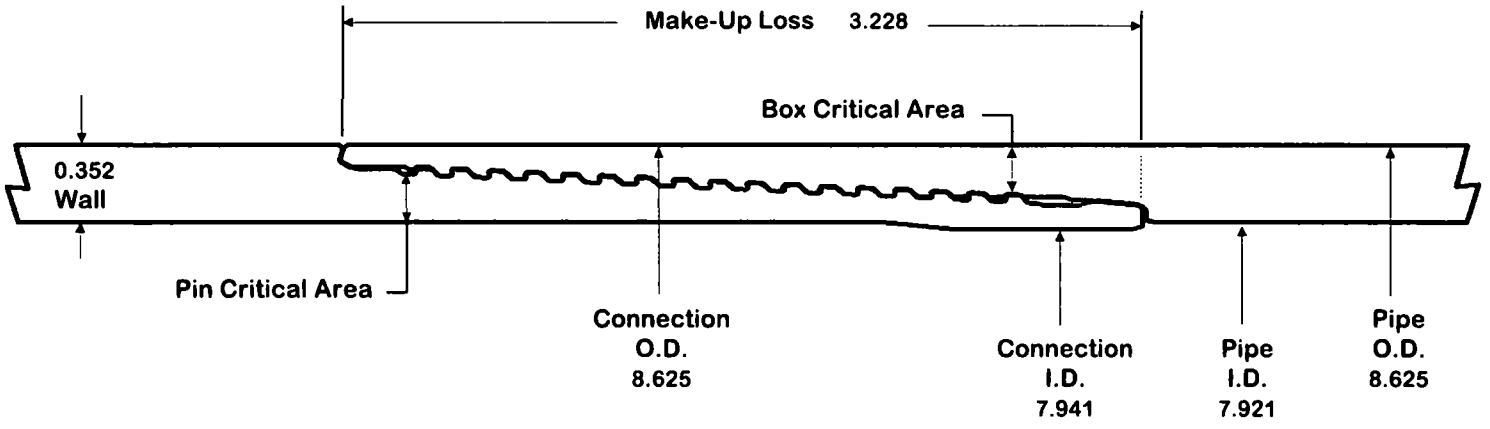
Minimum Makeup Torque:	29,900	ft*lbf
Optimum Makeup Torque:	37,375	ft*lbf
Maximum Makeup Torque:	80,900	ft*lbf
Minimum Yield:	89,900	ft*lbf
Makeup Loss:	5.97	in

Notes

Operational Torque is equivalent to the Maximum Make-Up Torque.

HUNTING

VAM® FJL NA



O.D.	WEIGHT	WALL	GRADE	*SP DRIFT*
8.625	32.00	0.352	VST P110EC	7.875

PIPE BODY PROPERTIES

Material Grade	VST P110EC
Min. Yield Strength	125 ksi
Min. Tensile Strength	135 ksi
Outside Diameter	8.625 in
Inside Diameter	7.921 in
Nominal Area	9.149 sq.in.
Yield Strength	1,144 kips
Ultimate Strength	1,235 kips
Min Internal Yield	8,930 psi
Collapse	3,470 psi

CONNECTION PROPERTIES

Connection OD	8.625 in
Connection ID	7.941 in
Make up Loss	3.228 in
Box Critical Area	4.945 sq.in.
%PB Section Area	54.0%
Pin Critical Area	5.235 sq.in.
%PB Section Area	57.2%
Yield Strength	618 kips
Parting Load	668 kips
Min Internal Yield	8,930 psi
Ext Pressure	3,470 psi
Wk Compression	247 kips
Max Pure Bending	10 °/100 ft

TORQUE DATA ft-lb

min	opt	max
10,850	11,950	13,050

Contact: tech.support@vam-usa.com
Ref. Drawing: SI-PD 100239 Rev.A
Date: 15-Dec-17
Time: 4:44 PM

Haque, Mustafa <mhaque@blm.gov>

[EXTERNAL] FW: Annular Clearance Variance Request - 10-3/4" Casing

Workman, Erin <Erin.Workman@dvn.com> Thu, Dec 13, 2018 at 12:31 PM
To: "Haque, Mustafa" <mhaque@blm.gov>
Cc: "Hart, Jamison" <Jamison.Hart@dvn.com>, "Norwalk, Ian" <Ian.Norwalk@dvn.com>

Good afternoon,

We withdraw the variance for the 10 3/4 BTC csg in the 12 ¼ hole. Below is our variance request:

- Variance to allow for the option to drill intermediate hole with 9.875" bit and run 8.625" P-110HSCY 32 PPF TLW

Attached is the spec sheet for the Tech-Lock Wedge. Let me know if you need any additional information.

Thanks,

Erin Workman

Regulatory Compliance Professional

Devon Energy Corporation

Devon Energy Center 30.318

333 W. Sheridan Avenue

OKC, OK 73102

405.552.7970 Direct

John 13:35, "By this everyone will know that you are my disciples, if you love one another." (NIV)

From: Haque, Mustafa [mailto:mhaque@blm.gov]
Sent: Tuesday, December 11, 2018 8:20 AM
To: Workman, Erin <Erin.Workman@dvn.com>

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	DEVON ENERGY PRODUCTION COMPANY LP
LEASE NO.:	NMNM082886
WELL NAME & NO.:	SPUD MUFFIN 31-30 FED COM 331H
SURFACE HOLE FOOTAGE:	270'/S & 1275'/W
BOTTOM HOLE FOOTAGE	20'/N & 927'/W
LOCATION:	SECTION 31, T23S, R29E, NMPM
COUNTY:	EDDY

Potash	◉ None	○ Secretary	○ R-111-P
Cave/Karst Potential	○ Low	◉ Medium	○ High
Variance	○ None	◉ Flex Hose	○ Other
Wellhead	○ Conventional	◉ Multibowl	
Other	☐4 String Area	☐Capitan Reef	☐WIPP

All previous COAs still apply except for the following:

A. CASING

1. The **13 3/8** inch surface casing shall be set at approximately **400** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **8 5/8** inch first intermediate casing is:

Option 1 (Single Stage):

- Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

Option 2:

Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.

b. Second stage above DV tool:

- Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

For the 'Alternate Design II', operator has proposed to pump down 13 3/8" X 8 5/8" annulus. Operator must run a CBL from TD of the 8 5/8'' casing to surface. Submit results to the BLM.

❖ In **Medium Cave/Karst Areas** if cement does not circulate to surface on the first two casing strings , the cement on the 3rd casing string must come to surface.

3. The minimum required fill of cement behind the **7 5/8** inch second intermediate casing is:

- Cement as proposed. If cement does not circulate, contact the appropriate BLM office.

In the case of lost circulation, operator has proposed to pump down 8 5/8" X 7 5/8" annulus. Operator must run a CBL from TD of the 7 5/8'' casing to surface. Submit results to the BLM.

4. The minimum required fill of cement behind the **5 1/2** inch production casing is:

- Cement should tie-back at least **200** feet into previous casing string. Operator shall provide method of verification.

MHH 12182018

GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ Chaves and Roosevelt Counties
Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
During office hours call (575) 627-0272.
After office hours call (575)

☒ Eddy County
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 393-3612

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log.

3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.

4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

6. 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. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.