Form 3160-3
(June 2015)

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: NMNM0544986

6. If Indian, Allotee or Tribe Name:

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other

1c. Type of Completion: ☐ Hydraulic Fracturing ☐ Single Zone ☑ Multiple Zone

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

8. Lease Name and Well No.: TODD 36-25 STATE FED COM 337H

2. Name of Operator: DEVON ENERGY PRODUCTION COMPANY LP

9. API Well No.: 3001547276

3a. Address: 333 West Sheridan Avenue, Oklahoma City, OK 73102

3b. Phone No. *(include area code)*: (800) 583-3866

10. Field and Pool, or Exploratory: Sand Dune Bone Spring South/BONESPF

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface: SWSE / 180 FSL / 2006 FEL / LAT 32.254163 / LONG -103.729469

At proposed prod. zone: NENW / 20 FNL / 2530 FWL / LAT 32.282632 / LONG -103.731857

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 36/T23S/R31E/NMP

14. Distance in miles and direction from nearest town or post office*

12. County or Parish: EDDY

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 180 feet

16. No of acres in lease: 600

17. Spacing Unit dedicated to this well: 320.0

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 177 feet

19. Proposed Depth: 11700 feet / 21822 feet

20. BLM/BIA Bond No. in file: FED: NMB000801

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 3505 feet

22. Approximate date work will start*: 06/30/2020

23. Estimated duration: 45 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

25. Signature: (Electronic Submission)

Name *(Printed/Typed)*: JENNY HARMS / Ph: (800) 583-3866

Date: 08/26/2019

Title: Regulatory Compliance Professional

Approved by *(Signature)*: (Electronic Submission)

Name *(Printed/Typed)*: Christopher Walls / Ph: (575) 234-2234

Date: 06/09/2020

Title: Petroleum Engineer

Office: Carlsbad Field Office

Application approval 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.
Conditions of approval, if any, are attached.

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.

APPROVED WITH CONDITIONS

Approval Date: 06/09/2020

(Continued on page 2)

*(Instructions on page 2)

DISTRICT I
1625 N. FRENCH DR., HOBBS, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

DISTRICT II
811 S. FIRST ST., ARTESIA, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

DISTRICT III
1000 RIO BRAZOS RD., 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, New Mexico 87505

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
3001547276	53800	Sand Dune Bone Spring South

Property Code	Property Name	Well Number
325417	TODD 36-25 STATE FED COM	337H

OGRID No.	Operator Name	Elevation
6137	DEVON ENERGY PRODUCTION COMPANY, L.P.	3504.5'

Surface Location

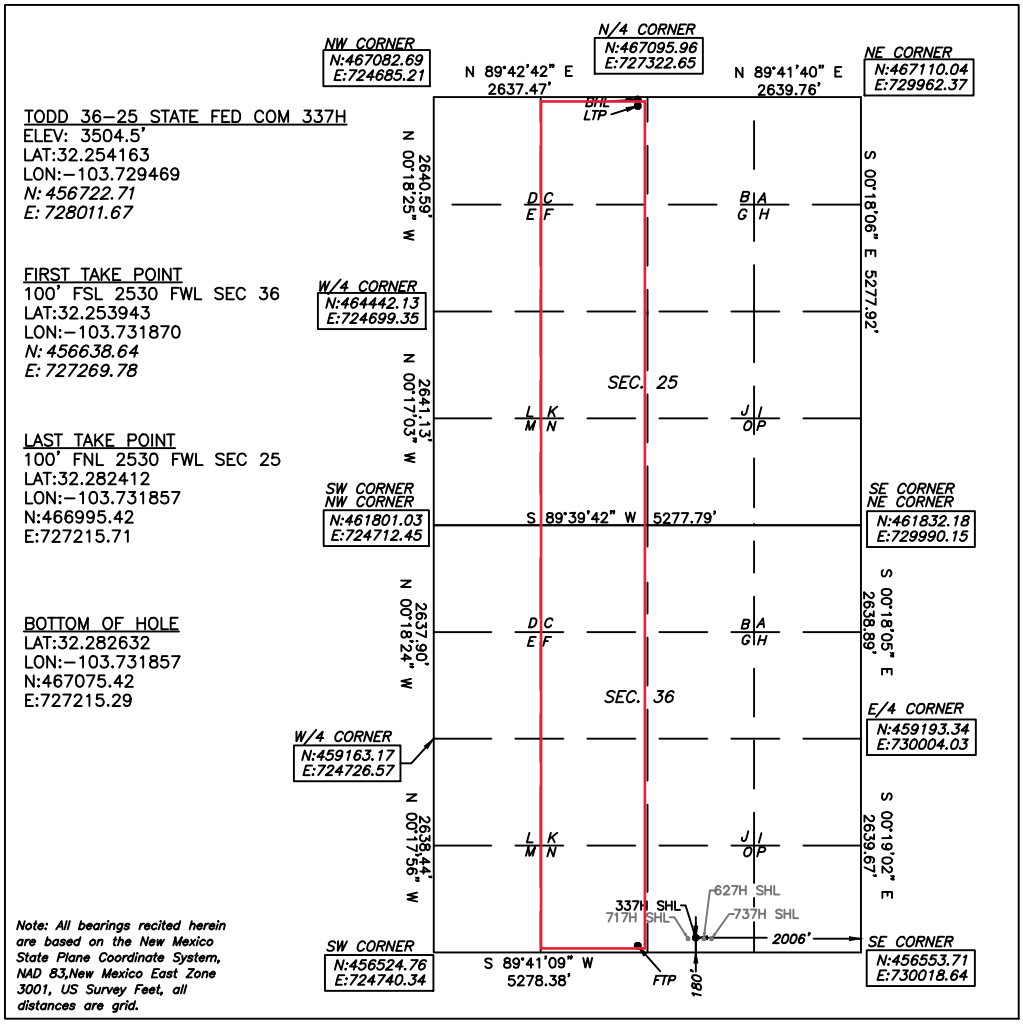
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
O	36	23-S	31-E		180	SOUTH	2006	EAST	EDDY

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	25	23-S	31-E		20	NORTH	2530	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
320			

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



Note: All bearings recited herein are based on the New Mexico State Plane Coordinate System, NAD 83,New Mexico East Zone 3001, US Survey Feet, all distances are grid.

OPERATOR CERTIFICATION

I hereby certify that the information 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 mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Jenny Harms 8-7-2019
Signature Date

Jenny Harms
Printed Name

Jenny.harms@dvn.com
E-mail Address

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

06/2019
Date of Survey

Signature & Seal of Professional Surveyor

B. L. LAMAN
NEW MEXICO
22404
PROFESSIONAL SURVEYOR

07/09/19

Certificate No. 22404 B.L. LAMAN
Date of Survey: 6/29/19 DRAWN BY: JR

Intent [X] As Drilled [ ]

API #

Operator Name:	Property Name:	Well Number
DEVON ENERGY PRODUCTION COMPANY, LP.	TODD 36-25 STATE FED COM	337H

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
N	36	23	31		200 FSL		2530 FWL		EDDY

Latitude	Longitude	NAD
32.254229	-103.731866	83

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
N	36	23	31		100	SOUTH	2530	WEST	EDDY

Latitude	Longitude	NAD
32.253943	103.731870	83

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
C	25	23	31		100	NORTH	2530	WEST	EDDY

Latitude	Longitude	NAD
32.282412	-103.731857	83

Is this well the defining well for the Horizontal Spacing Unit? [NO]

Is this well an infill well? [YES]

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

API #

Operator Name:	Property Name:	Well Number

KZ 06/29/2018

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

State of New Mexico
Energy, Minerals and Natural Resources Department

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

Submit Original
to Appropriate
District Office

GAS CAPTURE PLAN

Date: 8/8/2019

☒ Original Devon & OGRID No.: Devon Energy Production Co., L.P. 6137

☐ Amended - Reason for Amendment: _____

This Gas Capture Plan outlines actions to be taken by the Devon to reduce well/production facility flaring/venting for new completion (new drill, recomplete to new zone, re-frac) activity.

Note: Form C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule (Subsection A of 19.15.18.12 NMAC).

Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
TODD 36-25 STATE FED COM 737H		UNIT O, SEC 36, T23S, R31E	180 FSL 1946 FEL			TODD 36 CTB 3
TODD 36-25 STATE FED COM 717H		UNIT O, SEC 36, T23S, R31E	180 FSL 2036 FEL			TODD 36 CTB 3
TODD 36-25 STATE FED COM 627H		UNIT O, SEC 36, T23S, R31E	180 FSL 1976 FEL			TODD 36 CTB 3
TODD 36-25 STATE FED COM 718H		UNIT P, SEC 36, T23S, R31E	180 FSL 975 FEL			TODD 36 CTB 3
TODD 36-25 STATE FED COM 338H		UNIT P, SEC 36, T23S, R31E	180 FSL 945 FEL			TODD 36 CTB 3
TODD 36-25 STATE FED COM 628H		UNIT P, SEC 36, T23S, R31E	180 FSL 915 FEL			TODD 36 CTB 3
TODD 36-25 STATE FED COM 337H		UNIT O, SEC 36, T23S, R31E	180 FSL 2006 FEL			TODD 36 CTB 3

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if DCP system is in place. The gas produced from production facility is dedicated to DCP and will be connected to DCP low/high pressure gathering system located in Lea County, New Mexico. It will require 0' of pipeline to connect the facility to low/high pressure gathering system. Devon provides (periodically) to DCP a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, Devon and DCP have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at DCP Processing Plant located in Sec 19, Twn. 19S, Rng. 32E, Lea County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on DCP system at that time. Based on current information, it is Devon's belief the system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease

    - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
    - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
    - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

1. Geologic Formations

TVD of target	11700	Pilot hole depth	N/A
MD at TD:	21822	Deepest expected fresh water	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone?	Hazards*
Rustler	823		
Top of Salt	1165		
Base of Salt	4217		
Delaware	4483		
1BSSS	9399		
Bone Spring 2nd	9997		
Bone Spring 3rd	11294		
Wolfcamp	11759		

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

2. Casing Program (Primary Design)

Hole Size	Casing Interval		Csg. Size	Wt (PPF)	Grade	Conn	Min SF Collapse	Min SF Burst	Min SF Tension
	From	To							
17 1/2	0	848 TVD	13 3/8	48.0	H40	STC	1.125	1.25	1.6
9 7/8	0	10022 TVD	7 5/8	29.7	P110	Flushmax III	1.125	1.25	1.6
6 3/4	0	TD	5 1/2	20.0	P110	Vam SG	1.125	1.25	1.6
				BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet

• All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 IILB.1.h Must have table for continengcy casing.
• 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 for collapse rating on intermediate casing. Operator will keep pipe full while running casing.

• Int casing shoe will be selected based on drilling data/gamma, setting depth with be revised accordingly if needed.

• A variance is requested to wave the centralizer requirement for the Intermediate casing and production casing.

• A variance is requested to set intermediate casing in the curve if hole conditions dictate that a higher shoe strength is required.

Casing Program (Alternative Design)

Hole Size	Casing Interval		Csg. Size	Wt (PPF)	Grade	Conn	Min SF Collapse	Min SF Burst	Min SF Tension
	From	To							
17 1/2	0	848 TVD	13 3/8	48.0	H40	STC	1.125	1.25	1.6
9 7/8	0	10022 TVD	8 5/8	32.0	P110	TLW	1.125	1.25	1.6
7 7/8	0	TD	5 1/2	17.0	P110	BTC	1.125	1.25	1.6
				BLM Minimum Safety Factor			1.125	1	1.6 Dry 1.8 Wet

• All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 IILB.1.h Must have table for continengcy casing.
• 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 for collapse rating on intermediate casing. Operator will keep pipe full while running casing.
• Int casing shoe will be selected based on drilling data/gamma, setting depth with be revised accordingly if needed.
• A variance is requested to wave the centralizer requirement for the Intermediate casing and production casing.
•Variance requested to drill 10.625" hole instead of 9.875" for intermediate 1, the 8.625" connection will change from TLW to BTC.
• A variance is requested to set intermediate casing in the curve if hole conditions dictate that a higher shoe strength is required.

	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 specficition 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	TOC	Wt. (lb/gal)	Yld (ft3/sack)	Slurry Description
Surface	652	Surf	13.2	1.44	Lead: Class C Cement + additives
Int 1	887	Surf	9	3.27	Lead: Class C Cement + additives
	104	4000' above shoe	13.2	1.44	Tail: Class H / C + additives
Int 1 Two Stage w/ DV @ TVD of Delaware	782	Surf	9	3.27	1st stage Lead: Class C Cement + additives
	93	500' above shoe	13.2	1.44	1st stage Tail: Class H / C + additives
	404	Surf	9	3.27	2nd stage Lead: Class C Cement + additives
	93	500' above DV	13.2	1.44	2nd stage Tail: Class H / C + additives
Int 1 Intermediate Squeeze	As Needed	Surf	9	1.44	Squeeze Lead: Class C Cement + additives
	887	Surf	9	3.27	Lead: Class C Cement + additives
	104	4000' above shoe	13.2	1.44	Tail: Class H / C + additives
Production	48	9522	9.0	3.3	Lead: Class H /C + additives
	680	11163	13.2	1.4	Tail: Class H / C + additives

If a DV tool is ran the depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. Slurry weights will be adjusted based on estimated fracture gradient of the formation. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. If cement is not returned to surface during the primary cement job on the surface casing string, a planned top job will be conducted immediately after completion of the primary job.

Casing String	% Excess
Surface	50%
Intermediate 1	30%
Intermediate 1 (Two Stage)	25%
Prod	10%

3. Cementing Program (Alternative Design)

Casing	# Sks	TOC	Wt. ppg	Yld (ft3/sack)	Slurry Description
Surface	652	Surf	13.2	1.44	Lead: Class C Cement + additives
Int 1	558	Surf	9	3.27	Lead: Class C Cement + additives
	67	4000' above shoe	13.2	1.44	Tail: Class H / C + additives
Int 1 Two Stage w DV @ ~4500	459	Surf	9	3.27	1st stage Lead: Class C Cement + additives
	55	500' above shoe	13.2	1.44	1st stage Tail: Class H / C + additives
	275	Surf	9	3.27	2nd stage Lead: Class C Cement + additives
	55	500' above DV	13.2	1.44	2nd stage Tail: Class H / C + additives
Int 1 Intermediate Squeeze	As Needed	Surf	13.2	1.44	Squeeze Lead: Class C Cement + additives
	558	Surf	9	3.27	Lead: Class C Cement + additives
	67	4000' above shoe	13.2	1.44	Tail: Class H / C + additives
Int 1 (10.625" Hole Size)	848	Surf	9	3.27	Lead: Class C Cement + additives
	105	4000' above shoe	13.2	1.44	Tail: Class H / C + additives
Production	96	9522	9.0	3.3	Lead: Class H /C + additives
	1411	11163	13.2	1.4	Tail: Class H / C + additives

If a DV tool is ran the depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. Slurry weights will be adjusted based on estimated fracture gradient of the formation. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. If cement is not returned to surface during the primary cement job on the surface casing string, a planned top job will be conducted immediately after completion of the primary job.

Casing String	% Excess
Surface	50%
Intermediate 1	30%
Intermediate 1 (Two Stage)	25%
Prod	10%

4. Pressure Control Equipment (Three String Design)

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
Int 1	13-58"	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 (5M)		
			Blind Ram		
			Pipe Ram		
			Double Ram		
			Other*		

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
Y	A variance is requested to run a 5 M annular on a 10M system

5. Mud Program (Three String Design)

Section	Type	Weight (ppg)
Surface	FW Gel	8.5-9
Intermediate	DBE / Cut Brine	10-10.5
Production	OBM	8.5-9

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 Rpeort and sbumitted 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	Specfiy what type and where?
BH pressure at deepest TVD	5476
Abnormal temperature	No

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

Hydrogren 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 If operator elects, 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 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 batch 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 pa.
6 The NMOCD will be contacted and notified 24 hours prior to commencing spudder rig operations.
7 Drilling operations will be performed with drilling rig. A 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

Eddy County (NAD 83 NM Eastern)
Sec. 36-T23S-R31E
Todd 36-25 State Fed Com 337H

Wellbore #1

Plan: Permit Plan 1

Standard Planning Report - Geographic

25 July, 2019

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Todd 36-25 State Fed Com 337H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3529.50ft
Project:	Eddy County (NAD 83 NM Eastern)	**MD Reference:**	RKB @ 3529.50ft
Site:	Sec. 36-T23S-R31E	**North Reference:**	Grid
Well:	Todd 36-25 State Fed Com 337H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

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. 36-T23S-R31E

Site Position:		**Northing:**	461,801.03 usft	**Latitude:**	32.268172
From:	Map	**Easting:**	724,712.45 usft	**Longitude:**	-103.740050
Position Uncertainty:	0.00 ft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.32 °

Well Todd 36-25 State Fed Com 337H

Well Position	**+N/-S**	0.00 ft	**Northing:**	456,722.71 usft	**Latitude:**	32.254163
	+E/-W	0.00 ft	**Easting:**	728,011.67 usft	**Longitude:**	-103.729469
Position Uncertainty		0.50 ft	**Wellhead Elevation:**		**Ground Level:**	3,504.50 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	7/23/2019	6.80	60.04	47,723.09939206

Design Permit Plan 1

Audit Notes:

Version:		**Phase:**	PROTOTYPE	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	355.60

Plan Survey Tool Program **Date** 7/25/2019

	Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	21,822.49	Permit Plan 1 (Wellbore #1)	MWD+HDGM	
				OWSG MWD + HDGM	

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,750.00	0.00	0.00	2,750.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,310.19	5.60	271.55	3,309.30	0.74	-27.35	1.00	1.00	0.00	271.55	
10,439.07	5.60	271.55	10,404.13	19.51	-722.99	0.00	0.00	0.00	0.00	
10,812.53	0.00	0.00	10,777.00	20.00	-741.23	1.50	-1.50	0.00	180.00	
11,162.57	0.00	0.00	11,127.04	20.00	-741.23	0.00	0.00	0.00	0.00	
12,062.58	90.00	359.69	11,700.00	592.95	-744.29	10.00	10.00	0.00	359.69	PBHL - Todd 36-25 SI
21,822.49	90.00	359.69	11,700.00	10,352.73	-796.38	0.00	0.00	0.00	0.00	PBHL - Todd 36-25 SI

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Todd 36-25 State Fed Com 337H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3529.50ft
Project:	Eddy County (NAD 83 NM Eastern)	**MD Reference:**	RKB @ 3529.50ft
Site:	Sec. 36-T23S-R31E	**North Reference:**	Grid
Well:	Todd 36-25 State Fed Com 337H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

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	456,722.71	728,011.67	32.254163	-103.729469
100.00	0.00	0.00	100.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
200.00	0.00	0.00	200.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
300.00	0.00	0.00	300.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
400.00	0.00	0.00	400.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
500.00	0.00	0.00	500.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
600.00	0.00	0.00	600.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
700.00	0.00	0.00	700.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
800.00	0.00	0.00	800.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
900.00	0.00	0.00	900.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
1,000.00	0.00	0.00	1,000.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
1,100.00	0.00	0.00	1,100.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
1,200.00	0.00	0.00	1,200.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
1,300.00	0.00	0.00	1,300.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
1,400.00	0.00	0.00	1,400.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
1,500.00	0.00	0.00	1,500.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
1,600.00	0.00	0.00	1,600.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
1,700.00	0.00	0.00	1,700.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
1,800.00	0.00	0.00	1,800.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
1,900.00	0.00	0.00	1,900.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
2,000.00	0.00	0.00	2,000.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
2,100.00	0.00	0.00	2,100.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
2,200.00	0.00	0.00	2,200.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
2,300.00	0.00	0.00	2,300.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
2,400.00	0.00	0.00	2,400.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
2,500.00	0.00	0.00	2,500.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
2,600.00	0.00	0.00	2,600.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
2,700.00	0.00	0.00	2,700.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
2,750.00	0.00	0.00	2,750.00	0.00	0.00	456,722.71	728,011.67	32.254163	-103.729469
2,800.00	0.50	271.55	2,800.00	0.01	-0.22	456,722.72	728,011.45	32.254163	-103.729469
2,900.00	1.50	271.55	2,899.98	0.05	-1.96	456,722.76	728,009.70	32.254163	-103.729475
3,000.00	2.50	271.55	2,999.92	0.15	-5.45	456,722.86	728,006.21	32.254163	-103.729486
3,100.00	3.50	271.55	3,099.78	0.29	-10.68	456,723.00	728,000.98	32.254164	-103.729503
3,200.00	4.50	271.55	3,199.54	0.48	-17.66	456,723.19	727,994.01	32.254164	-103.729526
3,300.00	5.50	271.55	3,299.16	0.71	-26.37	456,723.42	727,985.30	32.254165	-103.729554
3,310.19	5.60	271.55	3,309.30	0.74	-27.35	456,723.45	727,984.31	32.254165	-103.729557
3,400.00	5.60	271.55	3,398.68	0.97	-36.12	456,723.68	727,975.55	32.254166	-103.729586
3,500.00	5.60	271.55	3,498.20	1.24	-45.88	456,723.95	727,965.79	32.254167	-103.729617
3,600.00	5.60	271.55	3,597.72	1.50	-55.63	456,724.21	727,956.03	32.254168	-103.729649
3,700.00	5.60	271.55	3,697.25	1.76	-65.39	456,724.47	727,946.27	32.254169	-103.729680
3,800.00	5.60	271.55	3,796.77	2.03	-75.15	456,724.74	727,936.52	32.254170	-103.729712
3,900.00	5.60	271.55	3,896.29	2.29	-84.91	456,725.00	727,926.76	32.254171	-103.729743
4,000.00	5.60	271.55	3,995.81	2.55	-94.67	456,725.26	727,917.00	32.254171	-103.729775
4,100.00	5.60	271.55	4,095.34	2.82	-104.42	456,725.53	727,907.24	32.254172	-103.729807
4,200.00	5.60	271.55	4,194.86	3.08	-114.18	456,725.79	727,897.48	32.254173	-103.729838
4,300.00	5.60	271.55	4,294.38	3.34	-123.94	456,726.05	727,887.73	32.254174	-103.729870
4,400.00	5.60	271.55	4,393.90	3.61	-133.70	456,726.32	727,877.97	32.254175	-103.729901
4,500.00	5.60	271.55	4,493.43	3.87	-143.46	456,726.58	727,868.21	32.254176	-103.729933
4,600.00	5.60	271.55	4,592.95	4.13	-153.21	456,726.84	727,858.45	32.254177	-103.729964
4,700.00	5.60	271.55	4,692.47	4.40	-162.97	456,727.11	727,848.69	32.254178	-103.729996
4,800.00	5.60	271.55	4,791.99	4.66	-172.73	456,727.37	727,838.94	32.254178	-103.730027
4,900.00	5.60	271.55	4,891.52	4.92	-182.49	456,727.63	727,829.18	32.254179	-103.730059
5,000.00	5.60	271.55	4,991.04	5.19	-192.25	456,727.90	727,819.42	32.254180	-103.730091
5,100.00	5.60	271.55	5,090.56	5.45	-202.00	456,728.16	727,809.66	32.254181	-103.730122
5,200.00	5.60	271.55	5,190.08	5.71	-211.76	456,728.42	727,799.90	32.254182	-103.730154

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Todd 36-25 State Fed Com 337H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3529.50ft
Project:	Eddy County (NAD 83 NM Eastern)	**MD Reference:**	RKB @ 3529.50ft
Site:	Sec. 36-T23S-R31E	**North Reference:**	Grid
Well:	Todd 36-25 State Fed Com 337H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,300.00	5.60	271.55	5,289.60	5.98	-221.52	456,728.69	727,790.15	32.254183	-103.730185
5,400.00	5.60	271.55	5,389.13	6.24	-231.28	456,728.95	727,780.39	32.254184	-103.730217
5,500.00	5.60	271.55	5,488.65	6.50	-241.04	456,729.21	727,770.63	32.254185	-103.730248
5,600.00	5.60	271.55	5,588.17	6.77	-250.79	456,729.48	727,760.87	32.254185	-103.730280
5,700.00	5.60	271.55	5,687.69	7.03	-260.55	456,729.74	727,751.11	32.254186	-103.730311
5,800.00	5.60	271.55	5,787.22	7.29	-270.31	456,730.00	727,741.36	32.254187	-103.730343
5,900.00	5.60	271.55	5,886.74	7.56	-280.07	456,730.27	727,731.60	32.254188	-103.730375
6,000.00	5.60	271.55	5,986.26	7.82	-289.83	456,730.53	727,721.84	32.254189	-103.730406
6,100.00	5.60	271.55	6,085.78	8.08	-299.58	456,730.79	727,712.08	32.254190	-103.730438
6,200.00	5.60	271.55	6,185.31	8.35	-309.34	456,731.06	727,702.32	32.254191	-103.730469
6,300.00	5.60	271.55	6,284.83	8.61	-319.10	456,731.32	727,692.57	32.254192	-103.730501
6,400.00	5.60	271.55	6,384.35	8.87	-328.86	456,731.58	727,682.81	32.254192	-103.730532
6,500.00	5.60	271.55	6,483.87	9.14	-338.62	456,731.85	727,673.05	32.254193	-103.730564
6,600.00	5.60	271.55	6,583.40	9.40	-348.38	456,732.11	727,663.29	32.254194	-103.730596
6,700.00	5.60	271.55	6,682.92	9.66	-358.13	456,732.37	727,653.53	32.254195	-103.730627
6,800.00	5.60	271.55	6,782.44	9.93	-367.89	456,732.64	727,643.78	32.254196	-103.730659
6,900.00	5.60	271.55	6,881.96	10.19	-377.65	456,732.90	727,634.02	32.254197	-103.730690
7,000.00	5.60	271.55	6,981.49	10.45	-387.41	456,733.16	727,624.26	32.254198	-103.730722
7,100.00	5.60	271.55	7,081.01	10.72	-397.17	456,733.43	727,614.50	32.254199	-103.730753
7,200.00	5.60	271.55	7,180.53	10.98	-406.92	456,733.69	727,604.74	32.254199	-103.730785
7,300.00	5.60	271.55	7,280.05	11.24	-416.68	456,733.95	727,594.99	32.254200	-103.730816
7,400.00	5.60	271.55	7,379.58	11.51	-426.44	456,734.22	727,585.23	32.254201	-103.730848
7,500.00	5.60	271.55	7,479.10	11.77	-436.20	456,734.48	727,575.47	32.254202	-103.730880
7,600.00	5.60	271.55	7,578.62	12.03	-445.96	456,734.74	727,565.71	32.254203	-103.730911
7,700.00	5.60	271.55	7,678.14	12.30	-455.71	456,735.01	727,555.95	32.254204	-103.730943
7,800.00	5.60	271.55	7,777.67	12.56	-465.47	456,735.27	727,546.20	32.254205	-103.730974
7,900.00	5.60	271.55	7,877.19	12.82	-475.23	456,735.53	727,536.44	32.254205	-103.731006
8,000.00	5.60	271.55	7,976.71	13.09	-484.99	456,735.80	727,526.68	32.254206	-103.731037
8,100.00	5.60	271.55	8,076.23	13.35	-494.75	456,736.06	727,516.92	32.254207	-103.731069
8,200.00	5.60	271.55	8,175.76	13.61	-504.50	456,736.32	727,507.16	32.254208	-103.731100
8,300.00	5.60	271.55	8,275.28	13.88	-514.26	456,736.59	727,497.41	32.254209	-103.731132
8,400.00	5.60	271.55	8,374.80	14.14	-524.02	456,736.85	727,487.65	32.254210	-103.731164
8,500.00	5.60	271.55	8,474.32	14.40	-533.78	456,737.11	727,477.89	32.254211	-103.731195
8,600.00	5.60	271.55	8,573.84	14.67	-543.54	456,737.38	727,468.13	32.254212	-103.731227
8,700.00	5.60	271.55	8,673.37	14.93	-553.29	456,737.64	727,458.37	32.254212	-103.731258
8,800.00	5.60	271.55	8,772.89	15.19	-563.05	456,737.90	727,448.61	32.254213	-103.731290
8,900.00	5.60	271.55	8,872.41	15.46	-572.81	456,738.17	727,438.86	32.254214	-103.731321
9,000.00	5.60	271.55	8,971.93	15.72	-582.57	456,738.43	727,429.10	32.254215	-103.731353
9,100.00	5.60	271.55	9,071.46	15.98	-592.33	456,738.69	727,419.34	32.254216	-103.731384
9,200.00	5.60	271.55	9,170.98	16.25	-602.08	456,738.96	727,409.58	32.254217	-103.731416
9,300.00	5.60	271.55	9,270.50	16.51	-611.84	456,739.22	727,399.82	32.254218	-103.731448
9,400.00	5.60	271.55	9,370.02	16.77	-621.60	456,739.48	727,390.07	32.254219	-103.731479
9,500.00	5.60	271.55	9,469.55	17.04	-631.36	456,739.75	727,380.31	32.254219	-103.731511
9,600.00	5.60	271.55	9,569.07	17.30	-641.12	456,740.01	727,370.55	32.254220	-103.731542
9,700.00	5.60	271.55	9,668.59	17.56	-650.88	456,740.27	727,360.79	32.254221	-103.731574
9,800.00	5.60	271.55	9,768.11	17.83	-660.63	456,740.54	727,351.03	32.254222	-103.731605
9,900.00	5.60	271.55	9,867.64	18.09	-670.39	456,740.80	727,341.28	32.254223	-103.731637
10,000.00	5.60	271.55	9,967.16	18.35	-680.15	456,741.06	727,331.52	32.254224	-103.731669
10,100.00	5.60	271.55	10,066.68	18.62	-689.91	456,741.33	727,321.76	32.254225	-103.731700
10,200.00	5.60	271.55	10,166.20	18.88	-699.67	456,741.59	727,312.00	32.254226	-103.731732
10,300.00	5.60	271.55	10,265.73	19.14	-709.42	456,741.85	727,302.24	32.254226	-103.731763
10,400.00	5.60	271.55	10,365.25	19.41	-719.18	456,742.12	727,292.49	32.254227	-103.731795
10,439.07	5.60	271.55	10,404.13	19.51	-722.99	456,742.22	727,288.67	32.254228	-103.731807
10,500.00	4.69	271.55	10,464.82	19.66	-728.46	456,742.37	727,283.21	32.254228	-103.731825
10,600.00	3.19	271.55	10,564.58	19.84	-735.32	456,742.55	727,276.35	32.254229	-103.731847

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Todd 36-25 State Fed Com 337H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3529.50ft
Project:	Eddy County (NAD 83 NM Eastern)	**MD Reference:**	RKB @ 3529.50ft
Site:	Sec. 36-T23S-R31E	**North Reference:**	Grid
Well:	Todd 36-25 State Fed Com 337H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,700.00	1.69	271.55	10,664.48	19.96	-739.57	456,742.67	727,272.09	32.254229	-103.731861
10,800.00	0.19	271.55	10,764.47	20.00	-741.21	456,742.71	727,270.46	32.254229	-103.731866
10,812.53	0.00	0.00	10,777.00	20.00	-741.23	456,742.71	727,270.44	32.254229	-103.731866
10,900.00	0.00	0.00	10,864.47	20.00	-741.23	456,742.71	727,270.44	32.254229	-103.731866
11,000.00	0.00	0.00	10,964.47	20.00	-741.23	456,742.71	727,270.44	32.254229	-103.731866
11,100.00	0.00	0.00	11,064.47	20.00	-741.23	456,742.71	727,270.44	32.254229	-103.731866
11,162.57	0.00	0.00	11,127.04	20.00	-741.23	456,742.71	727,270.44	32.254229	-103.731866
KOP & FTP @ 11163' MD, 200' FSL, 2530' FWL									
11,200.00	3.74	359.69	11,164.44	21.22	-741.24	456,743.93	727,270.43	32.254233	-103.731866
11,300.00	13.74	359.69	11,263.15	36.40	-741.32	456,759.11	727,270.35	32.254274	-103.731866
11,400.00	23.74	359.69	11,357.73	68.49	-741.49	456,791.20	727,270.18	32.254363	-103.731866
11,500.00	33.74	359.69	11,445.30	116.52	-741.75	456,839.23	727,269.92	32.254495	-103.731866
11,600.00	43.74	359.69	11,523.20	179.02	-742.08	456,901.73	727,269.59	32.254666	-103.731866
11,700.00	53.74	359.69	11,589.06	254.10	-742.48	456,976.81	727,269.19	32.254873	-103.731866
11,800.00	63.74	359.69	11,640.88	339.47	-742.94	457,062.18	727,268.73	32.255108	-103.731866
11,900.00	73.74	359.69	11,677.09	432.55	-743.43	457,155.26	727,268.24	32.255363	-103.731866
12,000.00	83.74	359.69	11,696.59	530.50	-743.95	457,253.21	727,267.71	32.255633	-103.731866
12,062.58	90.00	359.69	11,700.00	592.95	-744.29	457,315.66	727,267.38	32.255804	-103.731866
12,100.00	90.00	359.69	11,700.00	630.38	-744.49	457,353.08	727,267.18	32.255907	-103.731866
12,200.00	90.00	359.69	11,700.00	730.37	-745.02	457,453.08	727,266.65	32.256182	-103.731865
12,300.00	90.00	359.69	11,700.00	830.37	-745.56	457,553.08	727,266.11	32.256457	-103.731865
12,400.00	90.00	359.69	11,700.00	930.37	-746.09	457,653.08	727,265.58	32.256732	-103.731865
12,500.00	90.00	359.69	11,700.00	1,030.37	-746.62	457,753.08	727,265.04	32.257007	-103.731865
12,600.00	90.00	359.69	11,700.00	1,130.37	-747.16	457,853.08	727,264.51	32.257282	-103.731865
12,700.00	90.00	359.69	11,700.00	1,230.37	-747.69	457,953.07	727,263.98	32.257556	-103.731865
12,800.00	90.00	359.69	11,700.00	1,330.37	-748.22	458,053.07	727,263.44	32.257831	-103.731865
12,900.00	90.00	359.69	11,700.00	1,430.36	-748.76	458,153.07	727,262.91	32.258106	-103.731865
13,000.00	90.00	359.69	11,700.00	1,530.36	-749.29	458,253.07	727,262.38	32.258381	-103.731865
13,100.00	90.00	359.69	11,700.00	1,630.36	-749.83	458,353.07	727,261.84	32.258656	-103.731865
13,200.00	90.00	359.69	11,700.00	1,730.36	-750.36	458,453.07	727,261.31	32.258931	-103.731865
13,300.00	90.00	359.69	11,700.00	1,830.36	-750.89	458,553.06	727,260.77	32.259206	-103.731865
13,400.00	90.00	359.69	11,700.00	1,930.36	-751.43	458,653.06	727,260.24	32.259481	-103.731864
13,500.00	90.00	359.69	11,700.00	2,030.36	-751.96	458,753.06	727,259.71	32.259755	-103.731864
13,600.00	90.00	359.69	11,700.00	2,130.35	-752.49	458,853.06	727,259.17	32.260030	-103.731864
13,700.00	90.00	359.69	11,700.00	2,230.35	-753.03	458,953.06	727,258.64	32.260305	-103.731864
13,800.00	90.00	359.69	11,700.00	2,330.35	-753.56	459,053.06	727,258.11	32.260580	-103.731864
13,900.00	90.00	359.69	11,700.00	2,430.35	-754.10	459,153.05	727,257.57	32.260855	-103.731864
14,000.00	90.00	359.69	11,700.00	2,530.35	-754.63	459,253.05	727,257.04	32.261130	-103.731864
14,100.00	90.00	359.69	11,700.00	2,630.35	-755.16	459,353.05	727,256.50	32.261405	-103.731864
14,200.00	90.00	359.69	11,700.00	2,730.35	-755.70	459,453.05	727,255.97	32.261680	-103.731864
14,300.00	90.00	359.69	11,700.00	2,830.34	-756.23	459,553.05	727,255.44	32.261954	-103.731864
14,400.00	90.00	359.69	11,700.00	2,930.34	-756.76	459,653.05	727,254.90	32.262229	-103.731864
14,500.00	90.00	359.69	11,700.00	3,030.34	-757.30	459,753.05	727,254.37	32.262504	-103.731863
14,600.00	90.00	359.69	11,700.00	3,130.34	-757.83	459,853.04	727,253.84	32.262779	-103.731863
14,700.00	90.00	359.69	11,700.00	3,230.34	-758.37	459,953.04	727,253.30	32.263054	-103.731863
14,800.00	90.00	359.69	11,700.00	3,330.34	-758.90	460,053.04	727,252.77	32.263329	-103.731863
14,900.00	90.00	359.69	11,700.00	3,430.34	-759.43	460,153.04	727,252.23	32.263604	-103.731863
15,000.00	90.00	359.69	11,700.00	3,530.33	-759.97	460,253.04	727,251.70	32.263879	-103.731863
15,100.00	90.00	359.69	11,700.00	3,630.33	-760.50	460,353.04	727,251.17	32.264153	-103.731863
15,200.00	90.00	359.69	11,700.00	3,730.33	-761.03	460,453.03	727,250.63	32.264428	-103.731863
15,300.00	90.00	359.69	11,700.00	3,830.33	-761.57	460,553.03	727,250.10	32.264703	-103.731863
15,400.00	90.00	359.69	11,700.00	3,930.33	-762.10	460,653.03	727,249.57	32.264978	-103.731863
15,500.00	90.00	359.69	11,700.00	4,030.33	-762.64	460,753.03	727,249.03	32.265253	-103.731863
15,600.00	90.00	359.69	11,700.00	4,130.33	-763.17	460,853.03	727,248.50	32.265528	-103.731863

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Todd 36-25 State Fed Com 337H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3529.50ft
Project:	Eddy County (NAD 83 NM Eastern)	**MD Reference:**	RKB @ 3529.50ft
Site:	Sec. 36-T23S-R31E	**North Reference:**	Grid
Well:	Todd 36-25 State Fed Com 337H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
15,700.00	90.00	359.69	11,700.00	4,230.32	-763.70	460,953.03	727,247.96	32.265803	-103.731862
15,800.00	90.00	359.69	11,700.00	4,330.32	-764.24	461,053.02	727,247.43	32.266078	-103.731862
15,900.00	90.00	359.69	11,700.00	4,430.32	-764.77	461,153.02	727,246.90	32.266352	-103.731862
16,000.00	90.00	359.69	11,700.00	4,530.32	-765.30	461,253.02	727,246.36	32.266627	-103.731862
16,100.00	90.00	359.69	11,700.00	4,630.32	-765.84	461,353.02	727,245.83	32.266902	-103.731862
16,200.00	90.00	359.69	11,700.00	4,730.32	-766.37	461,453.02	727,245.30	32.267177	-103.731862
16,300.00	90.00	359.69	11,700.00	4,830.32	-766.91	461,553.02	727,244.76	32.267452	-103.731862
16,400.00	90.00	359.69	11,700.00	4,930.31	-767.44	461,653.01	727,244.23	32.267727	-103.731862
16,500.00	90.00	359.69	11,700.00	5,030.31	-767.97	461,753.01	727,243.69	32.268002	-103.731862
16,569.00	90.00	359.69	11,700.00	5,099.31	-768.34	461,822.01	727,243.33	32.268191	-103.731862
Cross section @ 16569' MD, 0' FSL, 2530' FWL									
16,600.00	90.00	359.69	11,700.00	5,130.31	-768.51	461,853.01	727,243.16	32.268277	-103.731862
16,700.00	90.00	359.69	11,700.00	5,230.31	-769.04	461,953.01	727,242.63	32.268552	-103.731862
16,800.00	90.00	359.69	11,700.00	5,330.31	-769.57	462,053.01	727,242.09	32.268826	-103.731862
16,900.00	90.00	359.69	11,700.00	5,430.31	-770.11	462,153.01	727,241.56	32.269101	-103.731861
17,000.00	90.00	359.69	11,700.00	5,530.31	-770.64	462,253.00	727,241.03	32.269376	-103.731861
17,100.00	90.00	359.69	11,700.00	5,630.30	-771.18	462,353.00	727,240.49	32.269651	-103.731861
17,200.00	90.00	359.69	11,700.00	5,730.30	-771.71	462,453.00	727,239.96	32.269926	-103.731861
17,300.00	90.00	359.69	11,700.00	5,830.30	-772.24	462,553.00	727,239.42	32.270201	-103.731861
17,400.00	90.00	359.69	11,700.00	5,930.30	-772.78	462,653.00	727,238.89	32.270476	-103.731861
17,500.00	90.00	359.69	11,700.00	6,030.30	-773.31	462,753.00	727,238.36	32.270751	-103.731861
17,600.00	90.00	359.69	11,700.00	6,130.30	-773.84	462,852.99	727,237.82	32.271025	-103.731861
17,700.00	90.00	359.69	11,700.00	6,230.30	-774.38	462,952.99	727,237.29	32.271300	-103.731861
17,800.00	90.00	359.69	11,700.00	6,330.29	-774.91	463,052.99	727,236.76	32.271575	-103.731861
17,900.00	90.00	359.69	11,700.00	6,430.29	-775.45	463,152.99	727,236.22	32.271850	-103.731861
18,000.00	90.00	359.69	11,700.00	6,530.29	-775.98	463,252.99	727,235.69	32.272125	-103.731860
18,100.00	90.00	359.69	11,700.00	6,630.29	-776.51	463,352.99	727,235.15	32.272400	-103.731860
18,200.00	90.00	359.69	11,700.00	6,730.29	-777.05	463,452.99	727,234.62	32.272675	-103.731860
18,300.00	90.00	359.69	11,700.00	6,830.29	-777.58	463,552.98	727,234.09	32.272950	-103.731860
18,400.00	90.00	359.69	11,700.00	6,930.29	-778.11	463,652.98	727,233.55	32.273224	-103.731860
18,500.00	90.00	359.69	11,700.00	7,030.28	-778.65	463,752.98	727,233.02	32.273499	-103.731860
18,600.00	90.00	359.69	11,700.00	7,130.28	-779.18	463,852.98	727,232.49	32.273774	-103.731860
18,700.00	90.00	359.69	11,700.00	7,230.28	-779.72	463,952.98	727,231.95	32.274049	-103.731860
18,800.00	90.00	359.69	11,700.00	7,330.28	-780.25	464,052.98	727,231.42	32.274324	-103.731860
18,900.00	90.00	359.69	11,700.00	7,430.28	-780.78	464,152.97	727,230.88	32.274599	-103.731860
19,000.00	90.00	359.69	11,700.00	7,530.28	-781.32	464,252.97	727,230.35	32.274874	-103.731860
19,100.00	90.00	359.69	11,700.00	7,630.28	-781.85	464,352.97	727,229.82	32.275149	-103.731860
19,200.00	90.00	359.69	11,700.00	7,730.27	-782.38	464,452.97	727,229.28	32.275423	-103.731859
19,300.00	90.00	359.69	11,700.00	7,830.27	-782.92	464,552.97	727,228.75	32.275698	-103.731859
19,400.00	90.00	359.69	11,700.00	7,930.27	-783.45	464,652.97	727,228.22	32.275973	-103.731859
19,500.00	90.00	359.69	11,700.00	8,030.27	-783.99	464,752.96	727,227.68	32.276248	-103.731859
19,600.00	90.00	359.69	11,700.00	8,130.27	-784.52	464,852.96	727,227.15	32.276523	-103.731859
19,700.00	90.00	359.69	11,700.00	8,230.27	-785.05	464,952.96	727,226.62	32.276798	-103.731859
19,800.00	90.00	359.69	11,700.00	8,330.27	-785.59	465,052.96	727,226.08	32.277073	-103.731859
19,900.00	90.00	359.69	11,700.00	8,430.26	-786.12	465,152.96	727,225.55	32.277348	-103.731859
20,000.00	90.00	359.69	11,700.00	8,530.26	-786.65	465,252.96	727,225.01	32.277622	-103.731859
20,100.00	90.00	359.69	11,700.00	8,630.26	-787.19	465,352.95	727,224.48	32.277897	-103.731859
20,200.00	90.00	359.69	11,700.00	8,730.26	-787.72	465,452.95	727,223.95	32.278172	-103.731859
20,300.00	90.00	359.69	11,700.00	8,830.26	-788.26	465,552.95	727,223.41	32.278447	-103.731858
20,400.00	90.00	359.69	11,700.00	8,930.26	-788.79	465,652.95	727,222.88	32.278722	-103.731858
20,500.00	90.00	359.69	11,700.00	9,030.26	-789.32	465,752.95	727,222.35	32.278997	-103.731858
20,600.00	90.00	359.69	11,700.00	9,130.25	-789.86	465,852.95	727,221.81	32.279272	-103.731858
20,700.00	90.00	359.69	11,700.00	9,230.25	-790.39	465,952.94	727,221.28	32.279547	-103.731858
20,800.00	90.00	359.69	11,700.00	9,330.25	-790.92	466,052.94	727,220.74	32.279821	-103.731858

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Todd 36-25 State Fed Com 337H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3529.50ft
Project:	Eddy County (NAD 83 NM Eastern)	**MD Reference:**	RKB @ 3529.50ft
Site:	Sec. 36-T23S-R31E	**North Reference:**	Grid
Well:	Todd 36-25 State Fed Com 337H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
20,900.00	90.00	359.69	11,700.00	9,430.25	-791.46	466,152.94	727,220.21	32.280096	-103.731858
21,000.00	90.00	359.69	11,700.00	9,530.25	-791.99	466,252.94	727,219.68	32.280371	-103.731858
21,100.00	90.00	359.69	11,700.00	9,630.25	-792.53	466,352.94	727,219.14	32.280646	-103.731858
21,200.00	90.00	359.69	11,700.00	9,730.25	-793.06	466,452.94	727,218.61	32.280921	-103.731858
21,300.00	90.00	359.69	11,700.00	9,830.24	-793.59	466,552.93	727,218.08	32.281196	-103.731858
21,400.00	90.00	359.69	11,700.00	9,930.24	-794.13	466,652.93	727,217.54	32.281471	-103.731858
21,500.00	90.00	359.69	11,700.00	10,030.24	-794.66	466,752.93	727,217.01	32.281746	-103.731857
21,600.00	90.00	359.69	11,700.00	10,130.24	-795.19	466,852.93	727,216.47	32.282020	-103.731857
21,700.00	90.00	359.69	11,700.00	10,230.24	-795.73	466,952.93	727,215.94	32.282295	-103.731857
21,742.49	90.00	359.69	11,700.00	10,272.73	-795.95	466,995.42	727,215.71	32.282412	-103.731857
LTP @ 21742' MD, 100' FNL, 2530' FWL									
21,800.00	90.00	359.69	11,700.00	10,330.24	-796.26	467,052.93	727,215.41	32.282570	-103.731857
21,822.48	90.00	359.69	11,700.00	10,352.72	-796.38	467,075.41	727,215.29	32.282632	-103.731857
PBHL; 20' FNL, 2530' FWL									
21,822.49	90.00	359.69	11,700.00	10,352.73	-796.38	467,075.42	727,215.29	32.282632	-103.731857

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 - Todd 36-25 State	0.00	0.00	0.00	10,352.73	-796.38	467,075.42	727,215.29	32.282632	-103.731857
- plan misses target center by 10383.32ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
11,162.57	11,127.04	20.00	-741.23	KOP & FTP @ 11163' MD, 200' FSL, 2530' FWL
16,569.00	11,700.00	5,099.31	-768.34	Cross section @ 16569' MD, 0' FSL, 2530' FWL
21,742.49	11,700.00	10,272.73	-795.95	LTP @ 21742' MD, 100' FNL, 2530' FWL
21,822.48	11,700.00	10,352.72	-796.38	PBHL; 20' FNL, 2530' FWL

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Devon Energy Production Company LP**
LEASE NO.:	**NMNM0544986**
LOCATION:	Section 36, T.23 S., R.31 E., NMPM
COUNTY:	Eddy County, New Mexico

WELL NAME & NO.:	Todd 36-25 State Fed Com 337H
SURFACE HOLE FOOTAGE:	180'/S & 2006'/E
BOTTOM HOLE FOOTAGE	20'/N & 2530'/W

WELL NAME & NO.:	Todd 36-25 State Fed Com 717H
SURFACE HOLE FOOTAGE:	180'/S & 2036'/E
BOTTOM HOLE FOOTAGE	20'/N & 2430'/W

WELL NAME & NO.:	Todd 36-25 State Fed Com 737H
SURFACE HOLE FOOTAGE:	180'/S & 1946'/E
BOTTOM HOLE FOOTAGE	20'/N & 1950'/E

COA

H2S	☐ Yes	☉ No	
Potash	☐ None	☉ Secretary	☐ R-111-P
Cave/Karst Potential	☉ Low	☐ Medium	☐ High
Cave/Karst Potential	☐ Critical		
Variance	☐ None	☉ Flex Hose	☐ Other
Wellhead	☐ Conventional	☉ Multibowl	☐ Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP
Other	☑ Fluid Filled	☑ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☑ COM	☐ Unit

OPERATOR IS ONLY APPROVED FOR THE FOLLOWING DESIGN, OTHER DESIGNS SUBMITTED WILL BE VOID.

A. HYDROGEN SULFIDE

Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

B. CASING

Alternate Casing Design:

1. The **13-3/8** inch surface casing shall be set at approximately **848 feet** (a minimum of **70 feet (Eddy County)** 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 **24 hours in the Potash Area** 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.

    Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.

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

    - 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 or potash.**

    ❖ In Secretary Potash 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.

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 BLM.

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

    - Cement should tie-back at least **500 feet** into previous casing string. Operator shall provide method of verification.
      Cement excess is less than 25%, more cement might be required.

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'

2. Operator has proposed 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.

    a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
    b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
    c. Manufacturer representative shall install the test plug for the initial BOP test.
    d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
    e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

D. SPECIAL REQUIREMENT (S)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

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)

☒ 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

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

   a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
   b. When the operator proposes to set surface casing with Spudder Rig
      - Notify the BLM when moving in and removing the Spudder Rig.
      - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
      - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

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. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

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. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

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.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:

    a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
    b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
    c. Manufacturer representative shall install the test plug for the initial BOP test.
    d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
    e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not

hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

e. The results of the test shall be reported to the appropriate BLM office.

f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

devon

Commitment Runs Deep

Design Plan
Operation and Maintenance Plan
Closure Plan

SENM – Closed Loop Systems
June 2010

I. Design Plan

Devon uses MI SWACO closed loop system (CLS). The MI SWACO CLS is designed to maintain drill solids at or below 5%. The equipment is arranged to progressively remove solids from the largest to the smallest size. Drilling fluids can thus be reused and savings is realized on mud and disposal costs. Dewatering may be required with the centrifuges to insure removal of ultra fine solids.

The drilling location is constructed to allow storm water to flow to a central sump normally the cellar. This insures no contamination leaves the drilling pad in the event of a spill. Storm water is reused in the mud system or stored in a reserve fluid tank farm until it can be reused. All lubricants, oils, or chemicals are removed immediately from the ground to prevent the contamination of storm water. An oil trap is normally installed on the sump if an oil spill occurs during a storm.

A tank farm is utilized to store drilling fluids including fresh water and brine fluids. The tank farm is constructed on a 20 ml plastic lined, bermed pad to prevent the contamination of the drilling site during a spill. Fluids from other sites may be stored in these tanks for processing by the solids control equipment and reused in the mud system. At the end of the well the fluids are transported from the tank farm to an adjoining well or to the next well for the rig.

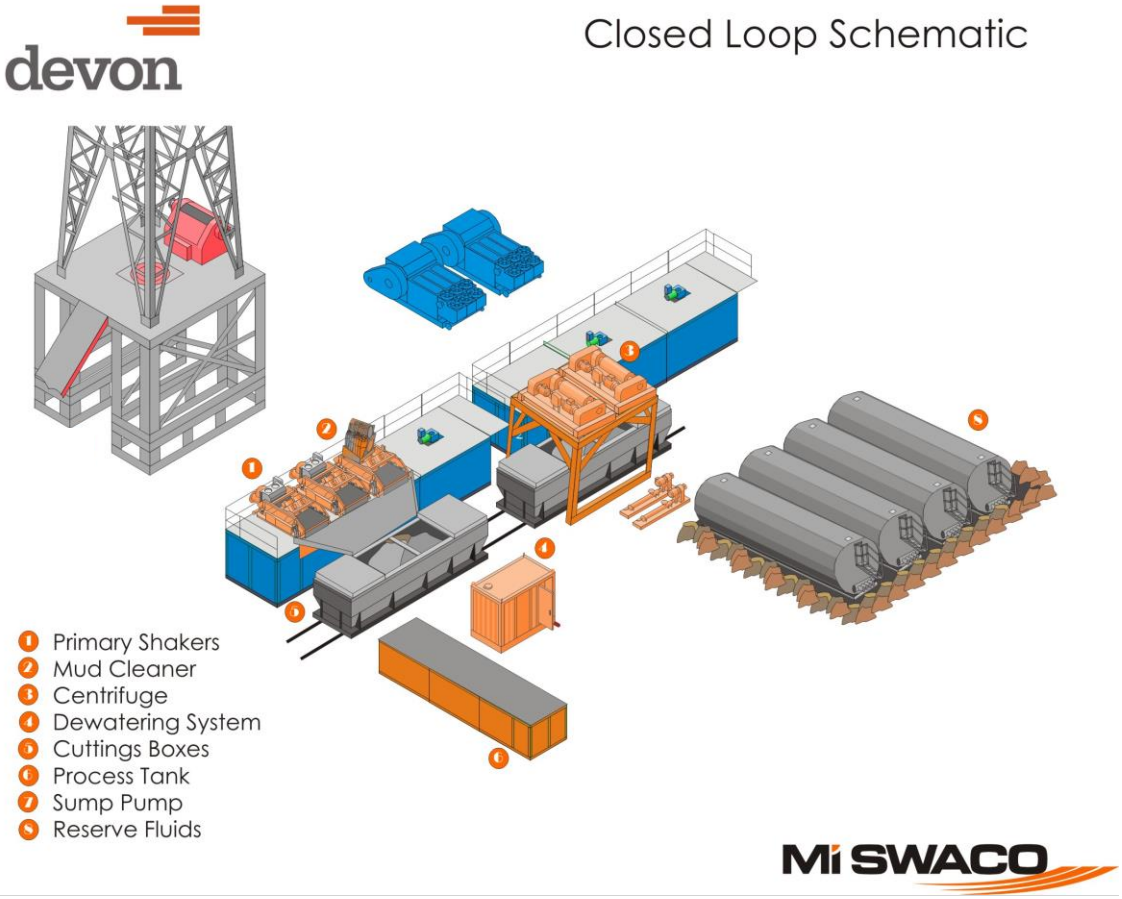
Prior to installing a closed-loop system on site, the topsoil, if present, will be stripped and stockpiled for use as the final cover or fill at the time of closure.

Signs will be posted on the fence surrounding the closed-loop system unless the closed-loop system is located on a site where there is an existing well, that is operated by Devon.

II. Operations and Maintenance Plan

Primary Shakers: The primary shakers make the first removal of drill solids from the drilling mud as it leaves the well bore. The shakers are sized to handle maximum drilling rate at optimal screen size. The shakers normally remove solids down to 74 microns.

Mud Cleaner: The Mud Cleaner cleans the fluid after it leaves the shakers. A set of hydrocyclones are sized to handle 1.25 to 1.5 times the maximum circulating rate. This ensures all the fluid is being processed to an average cut point of 25 microns. The wet discharged is dewatered on a shaker equipped with ultra fine mesh screens and generally cut at 40 microns.



Centrifuges: The centrifuges can be one or two in number depending on the well geometry or depth of well. The centrifuges are sized to maintain low gravity solids at 5% or below. They may or may not need a dewatering system to enhance the removal rates. The centrifuges can make a cut point of 8-10 microns depending on bowl speed, feed rate, solids loading and other factors.

The centrifuge system is designed to work on the active system and be flexible to process incoming fluids from other locations. This set-up is also dependant on well factors.

Dewatering System: The dewatering system is a chemical mixing and dosing system designed to enhance the solids removal of the centrifuge. Not commonly used in shallow wells. It may contain pH adjustment, coagulant mixing and dosing, and polymer mixing and dosing. Chemical flocculation binds ultra fine solids into a mass that is within the centrifuge operating design. The

dewatering system improves the centrifuge cut point to infinity or allows for the return of clear water or brine fluid. This ability allows for the ultimate control of low gravity solids.

Cuttings Boxes: Cuttings boxes are utilized to capture drill solids that are discarded from the solids control equipment. These boxes are set upon a rail system that allows for the removal and replacement of a full box of cuttings with an empty one. They are equipped with a cover that insures no product is spilled into the environment during the transportation phase.

Process Tank: (Optional) The process tank allows for the holding and process of fluids that are being transferred into the mud system. Additionally, during times of lost circulation the process tank may hold active fluids that are removed for additional treatment. It can further be used as a mixing tank during well control conditions.

Sump and Sump Pump: The sump is used to collect storm water and the pump is used to transfer this fluid to the active system or to the tank for to hold in reserve. It can also be used to collect fluids that may escape during spills. The location contains drainage ditches that allow the location fluids to drain to the sump.

Reserve Fluids (Tank Farm): A series of frac tanks are used to replace the reserve pit. These are steel tanks that are equipped with a manifold system and a transfer pump. These tanks can contain any number of fluids used during the drilling process. These can include fresh water, cut brine, and saturated salt fluid. The fluid can be from the active well or reclaimed fluid from other locations. A 20 ml liner and berm system is employed to ensure the fluids do not migrate to the environment during a spill.

If a leak develops, the appropriate division district office will be notified within 48 hours of the discovery and the leak will be addressed. Spill prevention is accomplished by maintaining pump packing, hoses, and pipe fittings to insure no leaks are occurring. During an upset condition the source of the spill is isolated and repaired as soon as it is discovered. Free liquid is removed by a diaphragm pump and returned to the mud system. Loose topsoil may be used to stabilize the spill and the contaminated soil is excavated and placed in the cuttings boxes. After the well is finished and the rig has moved, the entire location is scrapped and testing will be performed to determine if a release has occurred.

All trash is kept in a wire mesh enclosure and removed to an approved landfill when full. All spent motor oils are kept in separate containers and they are removed and sent to an approved recycling center. Any spilled lubricants, pipe

dope, or regulated chemicals are removed from soil and sent to landfills approved for these products.

These operations are monitored by Mi Swaco service technicians. Daily logs are maintained to ensure optimal equipment operation and maintenance. Screen and chemical use is logged to maintain inventory control. Fluid properties are monitored and recorded and drilling mud volumes are accounted for in the mud storage farm. This data is kept for end of well review to insure performance goals are met. Lessons learned are logged and used to help with continuous improvement.

A MI SWACO field supervisor manages from 3-5 wells. They are responsible for training personnel, supervising installations, and inspecting sites for compliance of MI SWACO safety and operational policy.

III. Closure Plan

A maximum 340' X 340' caliche pad is built per well. All of the trucks and steel tanks fit on this pad. All fluid cuttings go to the steel tanks to be hauled by various trucking companies to an agency approved disposal.