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) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

Form C-101
Revised July 18, 2013

Permit 208227

NM OIL CONSERVATION
ARTESIA DISTRICT
AUG 7 2015
RECEIVED

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1. Operator Name and Address	2. OGRID Number
DEVON ENERGY PRODUCTION COMPANY, LP 333 W. Sheridan Avenue Oklahoma City, OK 73102	6137 3. API Number 30-015-43272
4. Property Code 39822 / 5. Property Name LONE TREE DRAW 13 STATE	6. Well No. 015H

7. Surface Location

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
D	13	21S	27E		600	N	860	W	EDDY

8. Proposed Bottom Hole Location

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
M	13	21S	27E	M	330	S	945	W	Eddy

9. Pool Information

~~Avalon East; Bone Spring~~ Cardinal - BS - East 96144

Additional Well Information

11. Work Type	12. Well Type	13. Cable/Rotary	14. Lease Type	15. Ground Level Elevation
New Well	OIL		State	3189
16. Multiple	**17. Proposed Depth**	**18. Formation**	**19. Contractor**	**20. Spud Date**
N	11433	2nd Bone Spring Sand		9/14/2015
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water

☒ **We will be using a closed-loop system in lieu of lined pits**

21. Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	17.5	13.375	48	290	330	0
Int1	12.25	9.625	40	2760	875	0
Prod	8.75	5.5	17	11433	2035	2760

Casing/Cement Program: Additional Comments

Please see attachments for complete drilling plan, and casing/cement program, including options.

22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Annular	3000	3000	
Double Ram	3000	3000	
Annular	3000	3000	
Double Ram	3000	3000	

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief. **I further certify I have complied with 19.15.14.9 (A) NMAC ☐ and/or 19.15.14.9 (B) NMAC ☐, if applicable.** Signature:		OIL CONSERVATION DIVISION	
Printed Name:		Approved By:	
Title:		Title:	
Email Address:		Approved Date:	Expiration Date:
Date:	Phone:	Conditions of Approval Attached	

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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

Form C-102
August 1, 2011

Permit 208227

NM OIL CONSERVATION
ARTESIA DISTRICT
AUG 7 2015

RECEIVED

WELL LOCATION AND ACREAGE DEDICATION PLAT

1. API Number	2. Pool Code	3. Pool Name
30-015-43202	96144	~~Avalon East; Bone Spring~~ Cowbed Bone Spring East
4. Property Code	5. Property Name	6. Well No.
39822	LONE TREE DRAW 13 STATE	015H
7. OGRID No.	8. Operator Name	9. Elevation
6137	DEVON ENERGY PRODUCTION COMPANY, LP	3189

10. Surface Location

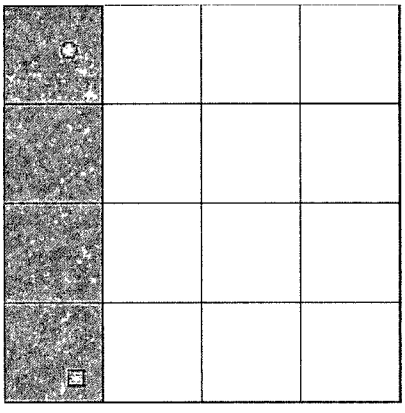
UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
D	13	21S	27E		600	N	860	W	EDDY

11. Bottom Hole Location If Different From Surface

UL - Lot	Section	Township	Range	Lot Idn	Feet From	N/S Line	Feet From	E/W Line	County
M	13	21S	27E		330	S	945	W	EDDY

12. Dedicated Acres	13. Joint or Infill	14. Consolidation Code	15. Order No.
160.00			

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



OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location(s) or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

E-Signed By:
Title:
Date:

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.

Surveyed By: Chad Harcrow
Date of Survey: 7/7/2015
Certificate Number: 17777

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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

Form APD Conditions

Permit 208227

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address:	API Number:
DEVON ENERGY PRODUCTION COMPANY, LP [6137] 333 W. Sheridan Avenue Oklahoma City, OK 73102	Well: LONE TREE DRAW 13 STATE #015H

OCD Reviewer	Condition

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Santa Fe, NM 87505

Form APD Comments

Permit 208227

PERMIT COMMENTS

Operator Name and Address:	API Number:
DEVON ENERGY PRODUCTION COMPANY, LP [6137]	
	Well: LONE TREE DRAW 13 STATE #015H

Created By	Comment	Comment Date
tlaird	Complete drilling plan, directional survey, and C-102 will be sent via Fed Ex, overnight.	8/6/2015

1. Geologic Formations

TVD of target	7,310	Pilot hole depth	N/A
MD at TD:	11,433'	Deepest expected fresh water:	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Quaternary	0	Barren	
Salado (Salt)	376	Barren	
Tansil (Base Salt)	506	Barren	
Yates	692	Barren	
Capitan	936	Barren	
Base of Capitan	2726	Barren	
Delaware	2789	Oil	
Lower Brushy Canyon	5252	Oil	
Bone Spring Lime	5462	Oil	
1st Bone Spring Sand	6648	Oil	
2nd Bone Spring Lime	6886	Oil	
2nd Bone Spring Sand	7349	Oil	
2BSSS UPPER Top	7349	Oil	
2BSSS UPPER Base	7449	Oil	
2BSSS MID Top	7506	Oil	
2BSSS MID Base	7555	Oil	
2BSSS LOWER Top	7627	Oil	
2BSSS LOWER Base	7762	Oil	
3rd Bone Spring Lime	7782	Oil	

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

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	290'	13.375"	48	H-40	STC	5.71	13.34	23.13
12.25"	0'	2,760'	9.625"	40	J-55	LTC	1.63	2.50	4.71
8.75"	0'	11,433'	5.5"	17	L-80	BTC	1.79	2.20	2.04
KOP = 6,737' DV Tool = 340' DV Tool = 2,810'				BLM Minimum Safety Factor			1.125	1.00	1.6 Dry 1.8 Wet

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

Must have table for contingency casing

	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?	Y
If yes, does production casing cement tie back a minimum of 50' above the Reef?	Y
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

Casing	# Sks	Wt. lb/ gal	H_2O gal/sk	Yld ft3/ sack	500# Comp. Strength (hours)	Slurry Description
13-3/8" Surface	330	14.8	6.43	1.34	6	Primary: Class C Cement + 1% Calcium Chloride
9-5/8" Inter.	610	12.9	10.06	1.87	14	Lead: (65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sack Poly-E-Flake
	265	14.8	6.32	1.33	6	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
9-5/8" Inter. Two Stage	610	12.9	10.06	1.87	14	1st Stage Lead: (65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sack Poly-E-Flake
	265	14.8	6.32	1.33	6	1st Stage Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
	DV Tool = 340ft					
	105	14.8	6.43	1.34	6	2nd Stage Primary: Class C Cement + 1% Calcium Chloride
5-1/2" Prod Two Stage	540	11.9	13.27	2.30	n/a	1st Stage Lead: (50:50) Class H Cement: Poz (Fly Ash) + 10% BWOC Bentonite + 1 lb/sk of Kol-Seal + 0.6% BWOC HR-601 + 0.5lb/sk D-Air 5000
	1220	14.5	5.58	1.22	25	1st Stage Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.25% bwoc CFR-3 + 2% bwoc Bentonite
	DV Tool = 2810ft					
	200	11	14.81	2.55	22	2nd Stage Lead: Tuned Light® Cement + 0.125 lb/sk Pol-E-Flake
	25	14.8	6.32	1.33	6	2nd Stage Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
5-1/2" Prod Single Stage	495	11.9	13.27	2.30	n/a	1st Lead: (50:50) Class H Cement: Poz (Fly Ash) + 10% BWOC Bentonite + 1 lb/sk of Kol-Seal + 0.6% BWOC HR-601 + 0.5lb/sk D-Air 5000
	320	12.5	11.08	1.98	30	2nd Lead: (65:35) Class H Cement: Poz (Fly Ash) + 6% BWOC Bentonite + 0.4% BWOC HR-601 + 0.125 lbs/sack Poly-E-Flake + 0.25 lb/sk D-Air 5000
	1220	14.5	5.58	1.22	25	Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.25% bwoc CFR-3 + 2% bwoc Bentonite

DV tool 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	TOC	% Excess
13-3/8" Surface	0'	100%
9-5/8" Intermediate	0'	75%
9-5/8" Intermediate Two Stage Option	1St Stage = 0ft / 2nd Stage = 0'	75%
5-1/2" Production Casing Two Stage Option	1St Stage = 2810ft / 2nd Stage = 800'	25%
5-1/2" Production Casing Single Stage Option	800'	25%

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:
12-1/4"	13-5/8"	3M	Annular	x	50% of working pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	x	
			Other*		
8-3/4"	13-5/8"	3M	Annular	x	50% testing pressure
			Blind Ram		3M
			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.

<table>
<tr><td>Y</td><td>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.</td></tr>
<tr><td rowspan="2">Y</td><td>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.</td></tr>
<tr><td>Y | Are anchors required by manufacturer?</td></tr>
<tr><td>Y</td><td>A multibowl wellhead is being 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 3000 (3M) psi.
• Wellhead will be installed by vendor's representatives.
• If the welding is performed by a third party, vendors's representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
• Vendor representative will install the test plug for the initial BOP test.
• Vendor 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 the 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 3M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 3,000 psi high pressure test. The 3,000 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.
After running the 9-5/8' intermediate casing with a mandrel hanger, the 13-5/8" BOP/BOPE system with a minimum rating of 3M will already be installed on the wellhead.</td></tr>
</table>

	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 3,000 psi WP. 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. See attached schematic.

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	290'	FW	8.3-8.8	28-34	N/C
290'	2,760'	Saturated Brine	10.0-10.2	28-34	N/C
2,760'	11,433'	Cut Brine	8.5-9.3	28-34	N/C

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/Totco/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	3500 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? No.
Will be pre-setting casing? No.

Attachments
_x_ Directional Plan
___ Other, describe

devon

Lone Tree 13 Federal 15H
Eddy Co, NM

Plan Data for Lone Tree 13 Federal 15H

Plan Point Information:
DogLeg Severity Unit: °/100.00ft Position offsets from Slot centre

MD (USft)	Inc (°)	Az (°)	TVD (USft)	+N/-S (USft)	+E/-W (USft)	Northing (USft)	Easting (USft)	VSec (USft)	DLS (DLSU)
0.00	0.00	0.00	0.00	0.00	0.00	540556.60	598159.10	0.00	0.00
6737.07	0.00	0.00	6737.07	0.00	0.00	540556.60	598159.10	0.00	0.00
7631.04	89.40	178.58	7310.00	-566.76	14.00	539989.84	598173.10	566.93	10.00
11433.36	89.40	178.58	7350.00	-4367.70	107.90	536188.90	598267.00	4369.03	0.00

Weatherford

Plan Data for Lone Tree 13 Federal 15H

Slot: Lone Tree 13 Federal 15H
Position:
Offset is from Site centre
+N/-S: 0.00USft Northing: 540556.60USft Latitude: 32.485917°
+E/-W: 0.00USft Easting: 598159.10USft Longitude: -104.149052°
Elevation Above VRD: 3189.00USft

Plan Data for Lone Tree 13 Federal 15H

Well: Lone Tree 13 Federal 15H
Type: Main-Well
File Number:
Plan Folder: P1 Plan: P1:V1
Vertical Section: Position offset of origin from Slot centre:
+N/-S: 0.00USft Azimuth: 178.58°
+E/-W: 0.00USft
Magnetic Parameters:

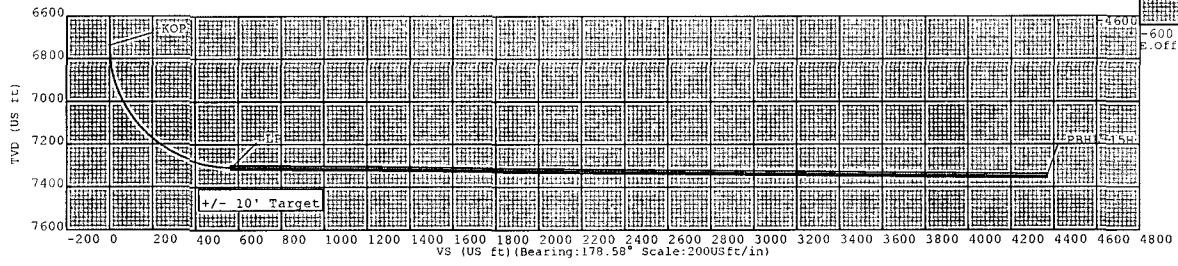
Model:	Field Strength:	Declination:	Dip:	Date:
BGGM	48315(nT)	7.57°	60.26°	2015-08-15

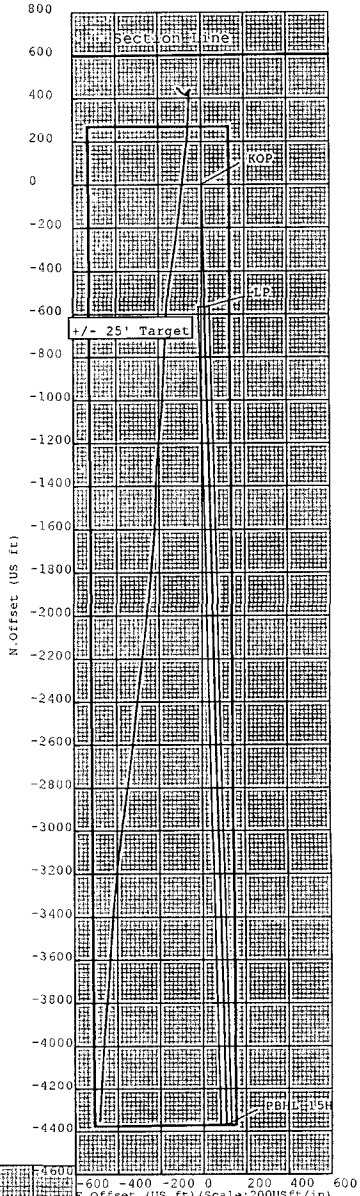
Plan Data for Lone Tree 13 Federal 15H

Target Set Information:
Name: Lone Tree 13 Federal 15H
Position offsets from Slot centre

Name	TVD (USft)	TVD SS (USft)	+N/-S (USft)	+E/-W (USft)	Northing (USft)	Easting (USft)
PBHL 15H	7350.00	-4136.00	-4367.70	107.90	536188.90	598267.00

Lone Tree 13 Federal 15H
Lone Tree Draw 13 State Com 2H Pilot
Lone Tree Draw 13 State Com 2H Lateral





devon

5D Plan Report

Devon Energy

Field Name: *Eddy Co, NM (Nad 83 NME)*
Site Name: *Lone Tree 13 Federal 15H*
Well Name: *Lone Tree 13 Federal 15H*
Plan: *P1:V1*

21 July 2015

Weatherford®

devon

Weatherford

Lone Tree 13 Federal 15H

Field Name: Eddy Co, NM (Nad 83 NME)

Map Units: US ft
Company Name: Devon Energy
Vertical Reference Datum (VRD): Mean Sea Level
Projected Coordinate System: NAD83 / New Mexico East (ftUS)
Comment:

Site: Lone Tree 13 Federal 15H

Units: US ft
North Reference: Grid
Convergence Angle: 0.10
Position: **Northing:** 540556.60US ft **Latitude:** 32° 29' 9.30"
Easting: 598159.10US ft **Longitude:** -104° 8' 56.59"
Elevation above MSL: 3189.00 US ft
Comment:

Slot: Lone Tree 13 Federal 15H

Position (Relative to Site Centre)
+N/-S: 0.00US ft **Northing:** 540556.60US ft **Latitude:** 32°29'9.30"
+E/-W: 0.00US ft **Easting:** 598159.10US ft **Longitude:** -104°8'56.59"
Slot TVD Reference: Ground Elevation
Elevation above MSL: 3189.00US ft
Comment:

Well: Lone Tree 13 Federal 15H

Type: Main well
UWI:
Plan: P1:V1
File Number:
Comment:
Closure Distance: 4369.03US ft
Closure Azimuth: 178.58°
Vertical Section: Position of Origin (Relative to Slot centre)
+N/-S: 0.00US ft **+E/-W:** 0.00US ft **Az:** 178.58°
Magnetic Parameters:
Model: BGGM **Field Strength:** 48315.5nT **Declination:** 7.57° **Dip:** 60.26° **Date:** 15/Aug/2015

Drill floor: Plan: P1:V1

Rig Height (Kelly Bushing): 25.00US ft
Elevation above MSL: 3214.00US ft
Inclination: 0.00°
Azimuth: 0.00°

Target set: Lone Tree 13 Federal 15H Comment:

Target Name	Shape	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (USFt)	Easting (USFt)	Comment
PBHL 15H	Cuboid	7350.00	-4367.70	107.90	536188.90	598267.00	

Wellpath created using minimum curvature.

Tie Point:

MD: 0.00USFt **Inclination:** 0.00° **Azimuth:** 0.00° **TVD:** 0.00USFt **North Offset:** 0.00USFt **East Offset:** 0.00USFt

5D Plan Report

Salient Points: (Relative to Slot centre) (TVD relative to Kelly Bushing)

MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	DLS (°/100US ft)	B.Rate (°/100US ft)	T.Rate (°/100US ft)	T.Face (°)	Comment
0.00	0.00	0.00	0.00	0.00	0.00	-0.00	0.00	0.00	0.00	0.00	
6737.07	0.00	0.00	6737.07	0.00	0.00	-0.00	0.00	0.00	0.00	0.00	KOP
7631.04	89.40	178.58	7310.00	-566.76	14.00	566.93	10.00	10.00	0.00	178.58	LP
11433.36	89.40	178.58	7350.00	-4367.70	107.90	4369.03	0.00	0.00	0.00	0.00	PBHL 15H

Interpolated Points: (Relative to Slot centre) (TVD relative to Kelly Bushing)

MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	DLS (°/100US ft)	Northing (US ft)	Easting (US ft)	Comment
6700.00	0.00	0.00	6700.00	0.00	0.00	-0.00	0.00	540556.60	598159.10	
6737.07	0.00	0.00	6737.07	0.00	0.00	-0.00	0.00	540556.60	598159.10	KOP
6800.00	6.29	178.58	6799.87	-3.45	0.09	3.45	10.00	540553.15	598159.19	
6900.00	16.29	178.58	6897.81	-23.00	0.57	23.01	10.00	540533.60	598159.67	
7000.00	26.29	178.58	6990.87	-59.26	1.46	59.28	10.00	540497.34	598160.56	
7100.00	36.29	178.58	7076.21	-111.12	2.75	111.15	10.00	540445.48	598161.85	
7200.00	46.29	178.58	7151.25	-177.01	4.37	177.06	10.00	540379.59	598163.47	
7300.00	56.29	178.58	7213.71	-254.92	6.30	255.00	10.00	540301.68	598165.40	
7400.00	66.29	178.58	7261.68	-342.49	8.46	342.59	10.00	540214.11	598167.56	
7500.00	76.29	178.58	7293.71	-437.06	10.80	437.19	10.00	540119.54	598169.90	
7600.00	86.29	178.58	7308.83	-535.75	13.24	535.91	10.00	540020.85	598172.34	
7631.04	89.40	178.58	7310.00	-566.76	14.00	566.93	10.00	539989.84	598173.10	LP
7700.00	89.40	178.58	7310.72	-635.69	15.70	635.88	0.00	539920.91	598174.80	
7800.00	89.40	178.58	7311.77	-735.65	18.17	735.88	0.00	539820.95	598177.27	
7900.00	89.40	178.58	7312.83	-835.62	20.64	835.87	0.00	539720.98	598179.74	
8000.00	89.40	178.58	7313.88	-935.58	23.11	935.87	0.00	539621.02	598182.21	
8100.00	89.40	178.58	7314.93	-1035.55	25.58	1035.86	0.00	539521.05	598184.68	
8200.00	89.40	178.58	7315.98	-1135.51	28.05	1135.86	0.00	539421.09	598187.15	
8300.00	89.40	178.58	7317.03	-1235.47	30.52	1235.85	0.00	539321.13	598189.62	
8400.00	89.40	178.58	7318.09	-1335.44	32.99	1335.85	0.00	539221.16	598192.09	
8500.00	89.40	178.58	7319.14	-1435.40	35.46	1435.84	0.00	539121.20	598194.56	
8600.00	89.40	178.58	7320.19	-1535.37	37.93	1535.83	0.00	539021.23	598197.03	
8700.00	89.40	178.58	7321.24	-1635.33	40.40	1635.83	0.00	538921.27	598199.50	
8800.00	89.40	178.58	7322.29	-1735.29	42.87	1735.82	0.00	538821.31	598201.97	
8900.00	89.40	178.58	7323.35	-1835.26	45.34	1835.82	0.00	538721.34	598204.44	
9000.00	89.40	178.58	7324.40	-1935.22	47.81	1935.81	0.00	538621.38	598206.91	
9100.00	89.40	178.58	7325.45	-2035.19	50.28	2035.81	0.00	538521.41	598209.38	
9200.00	89.40	178.58	7326.50	-2135.15	52.75	2135.80	0.00	538421.45	598211.85	
9300.00	89.40	178.58	7327.56	-2235.11	55.22	2235.80	0.00	538321.49	598214.32	
9400.00	89.40	178.58	7328.61	-2335.08	57.69	2335.79	0.00	538221.52	598216.79	
9500.00	89.40	178.58	7329.66	-2435.04	60.16	2435.78	0.00	538121.56	598219.26	
9600.00	89.40	178.58	7330.71	-2535.01	62.62	2535.78	0.00	538021.59	598221.72	
9700.00	89.40	178.58	7331.76	-2634.97	65.09	2635.77	0.00	537921.63	598224.19	
9800.00	89.40	178.58	7332.82	-2734.93	67.56	2735.77	0.00	537821.67	598226.66	
9900.00	89.40	178.58	7333.87	-2834.90	70.03	2835.76	0.00	537721.70	598229.13	
10000.00	89.40	178.58	7334.92	-2934.86	72.50	2935.76	0.00	537621.74	598231.60	
10100.00	89.40	178.58	7335.97	-3034.83	74.97	3035.75	0.00	537521.77	598234.07	
10200.00	89.40	178.58	7337.02	-3134.79	77.44	3135.75	0.00	537421.81	598236.54	
10300.00	89.40	178.58	7338.08	-3234.75	79.91	3235.74	0.00	537321.85	598239.01	
10400.00	89.40	178.58	7339.13	-3334.72	82.38	3335.73	0.00	537221.88	598241.48	
10500.00	89.40	178.58	7340.18	-3434.68	84.85	3435.73	0.00	537121.92	598243.95	
10600.00	89.40	178.58	7341.23	-3534.65	87.32	3535.72	0.00	537021.95	598246.42	
10700.00	89.40	178.58	7342.28	-3634.61	89.79	3635.72	0.00	536921.99	598248.89	
10800.00	89.40	178.58	7343.34	-3734.57	92.26	3735.71	0.00	536822.03	598251.36	
10900.00	89.40	178.58	7344.39	-3834.54	94.73	3835.71	0.00	536722.06	598253.83	
11000.00	89.40	178.58	7345.44	-3934.50	97.20	3935.70	0.00	536622.10	598256.30	
11100.00	89.40	178.58	7346.49	-4034.46	99.67	4035.70	0.00	536522.14	598258.77	
11200.00	89.40	178.58	7347.54	-4134.43	102.14	4135.69	0.00	536422.17	598261.24	
11300.00	89.40	178.58	7348.60	-4234.39	104.61	4235.68	0.00	536322.21	598263.71	
11400.00	89.40	178.58	7349.65	-4334.36	107.08	4335.68	0.00	536222.24	598266.18	
11433.36	89.40	178.58	7350.00	-4367.70	107.90	4369.03	0.00	536188.90	598267.00	PBHL 15H

devon

5D Anti-Collision Report

Devon Energy

Field Name: *Eddy Co, NM (Nad 83 NME)*
Site Name: *Lone Tree 13 Federal 15H*
Well Name: *Lone Tree 13 Federal 15H*

21 July 2015

Weatherford®

devon

Lone Tree 13 Federal 15H

Field Name: Eddy Co, NM (Nad 83 NME)

Map Units: US ft
Company Name: Devon Energy
Vertical Reference Datum (VRD): Mean Sea Level
Projected Coordinate System: NAD83 / New Mexico East (ftUS)
Comment:

Site: Lone Tree 13 Federal 15H

Units: US ft
North Reference: Grid
Convergence Angle: 0.10
Position:
Northing: 540556.60US ft
Latitude: 32° 29' 9.30"
Easting: 598159.10US ft
Longitude: -104° 8' 56.59"
Elevation above MSL: 3189.00 US ft
Comment:

Slot: Lone Tree 13 Federal 15H

Position (Relative to Site Centre)
+N/-S: 0.00US ft
Northing: 540556.60US ft
Latitude: 32°29'9.30"
+E/-W: 0.00US ft
Easting: 598159.10US ft
Longitude: -104°8'56.59"
Slot TVD Reference: Ground Elevation
Elevation above MSL: 3189.00US ft
Comment:

Well: Lone Tree 13 Federal 15H

Type: Main well
UWI:
Plan: Working Plan
File Number:
Comment:
Closure Distance: 4369.03US ft
Closure Azimuth: 178.58°
Vertical Section: Position of Origin (Relative to Slot centre)
+N/-S: 0.00US ft
+E/-W: 0.00US ft
Az: 178.58°
Magnetic Parameters:
Model: BGGM
Field Strength: 48315.5nT
Declination: 7.57°
Dip: 60.26°
Date: 15/Aug/2015

Drill floor: Plan: Working Plan

Rig Height (Kelly Bushing): 25.00US ft
Elevation above MSL: 3214.00US ft
Inclination: 0.00°
Azimuth: 0.00°

Collision / Uncertainty Analysis

Primary Well	Start MD (USFt)	End MD (USFt)	Collision Risk Interval	No. of Std. Deviations in Error Computation
Lone Tree 13 Federal 15H (p)	0.00	11433.36	100.00	2

Secondary Well Names:

Lone Tree Draw 13 State Com 2H Lateral (s)
Lone Tree Draw 13 State Com 2H Pilot (s)

Anti-Collision Report Terminology

S.Minor, S.Major: Radii of the ellipse of uncertainty at the current location as seen in the along hole direction.
PHI: Angle between high-side vector and semi-minor axis
TVD Spread: Total TVD range of the ellipsoid of uncertainty at the current location.
ES: Distance between the extremities of the primary and secondary uncertainty ellipsoids in the direction Cr-Cr.
T.Face to Sec: Angle between the Hi-Side vector of the primary well at the current location and line of closest approach between the two wells.

5D Anti-Collision Report

ACI Filter Info: No filter has been applied.

Separation factors calculated using Pedal Curve (Independent Uncertainty). Surface Uncertainty (S.U.) Not Applied. Wellpath created using minimum curvature.

Anti-Collision Summary (TVD relative to Kelly Bushing)

SF

Secondary Well Name	Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	ES (US ft)	CC (US ft)	SF	Risk
Lone Tree Draw 13 State Com 2H Lateral (s)	4912.70	4912.70	5103.43	64.80	90.20	3.55	
Lone Tree Draw 13 State Com 2H Pilot (s)	6764.65	6764.64	6774.80	403.78	433.24	14.71	

Primary Well: Lone Tree 13 Federal 15H (p) (TVD relative to Kelly Bushing) (All Azimuth Relative to GRID NORTH)

MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	Nearest Well	ES (US ft)	CC (US ft)	SF	Risk
0.00	0.00	346.00	0.00	0.00	0.00	Lone Tree Draw 13 State Com 2H Pilot (s)	462.44	463.02	811.51	
100.00	100.00	346.02	0.11	0.11	4.60	Lone Tree Draw 13 State Com 2H Pilot (s)	462.11	462.95	549.08	
200.00	200.00	346.04	0.34	0.34	4.62	Lone Tree Draw 13 State Com 2H Pilot (s)	461.47	462.80	347.23	
300.00	300.00	346.07	0.56	0.56	4.65	Lone Tree Draw 13 State Com 2H Pilot (s)	460.77	462.59	253.63	
400.00	400.00	346.11	0.79	0.79	4.69	Lone Tree Draw 13 State Com 2H Pilot (s)	460.00	462.31	199.77	
500.00	500.00	346.17	1.01	1.01	4.75	Lone Tree Draw 13 State Com 2H Pilot (s)	459.11	461.92	164.61	
600.00	600.00	346.25	1.24	1.24	4.81	Lone Tree Draw 13 State Com 2H Pilot (s)	458.05	461.35	139.95	
700.00	700.00	346.36	1.46	1.46	4.88	Lone Tree Draw 13 State Com 2H Pilot (s)	456.81	460.60	121.52	
800.00	800.00	346.47	1.69	1.69	4.97	Lone Tree Draw 13 State Com 2H Pilot (s)	455.18	459.46	107.34	
900.00	900.00	346.62	1.91	1.91	5.06	Lone Tree Draw 13 State Com 2H Pilot (s)	453.33	458.09	96.11	
1000.00	1000.00	346.80	2.14	2.14	5.15	Lone Tree Draw 13 State Com 2H Pilot (s)	451.22	456.48	86.84	
1100.00	1100.00	346.99	2.36	2.36	5.26	Lone Tree Draw 13 State Com 2H Pilot (s)	448.84	454.59	79.03	
1200.00	1200.00	347.17	2.59	2.59	5.37	Lone Tree Draw 13 State Com 2H Pilot (s)	446.04	452.29	72.42	
1300.00	1300.00	347.38	2.81	2.81	5.49	Lone Tree Draw 13 State Com 2H Pilot (s)	442.48	449.22	66.66	
1400.00	1400.00	347.57	3.03	3.03	5.62	Lone Tree Draw 13 State Com 2H Pilot (s)	438.59	445.80	61.82	
1500.00	1500.00	347.75	3.26	3.26	5.74	Lone Tree Draw 13	434.85	442.54	57.55	

5D Anti-Collision Report

Primary Well: Lone Tree 13 Federal 15H (p)(TVD relative to Kelly Bushing)(All Azimuth Relative to GRID NORTH:)

MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	Nearest Well	ES (US ft)	CC (US ft)	SF	Risk
						State Com 2H Pilot (s)				
1600.00	1600.00	347.90	3.48	3.48	5.88	Lone Tree Draw 13 State Com 2H Pilot (s)	431.68	439.85	53.83	
1700.00	1700.00	348.10	3.71	3.71	6.02	Lone Tree Draw 13 State Com 2H Pilot (s)	429.02	437.67	50.58	
1800.00	1800.00	348.32	3.93	3.93	6.16	Lone Tree Draw 13 State Com 2H Pilot (s)	426.82	435.95	47.73	
1900.00	1900.00	348.48	4.16	4.16	6.31	Lone Tree Draw 13 State Com 2H Pilot (s)	425.12	434.73	45.22	
2000.00	2000.00	348.63	4.38	4.38	6.46	Lone Tree Draw 13 State Com 2H Pilot (s)	423.66	433.76	42.92	
2100.00	2100.00	348.77	4.61	4.61	6.61	Lone Tree Draw 13 State Com 2H Pilot (s)	422.28	432.88	40.84	
2200.00	2200.00	348.93	4.83	4.83	6.77	Lone Tree Draw 13 State Com 2H Pilot (s)	420.61	431.70	38.91	
2300.00	2300.00	349.11	5.06	5.06	6.93	Lone Tree Draw 13 State Com 2H Pilot (s)	418.92	430.51	37.15	
2400.00	2400.00	349.30	5.28	5.28	7.10	Lone Tree Draw 13 State Com 2H Pilot (s)	417.27	429.35	35.54	
2500.00	2500.00	349.47	5.51	5.51	7.26	Lone Tree Draw 13 State Com 2H Pilot (s)	415.81	428.38	34.09	
2600.00	2600.00	349.63	5.73	5.73	7.43	Lone Tree Draw 13 State Com 2H Pilot (s)	414.46	427.52	32.74	
2700.00	2700.00	349.78	5.96	5.96	7.61	Lone Tree Draw 13 State Com 2H Pilot (s)	413.06	426.61	31.49	
2800.00	2800.00	349.94	6.18	6.18	7.78	Lone Tree Draw 13 State Com 2H Pilot (s)	411.63	425.66	30.32	
2900.00	2900.00	350.11	6.41	6.41	7.96	Lone Tree Draw 13 State Com 2H Pilot (s)	410.05	424.58	29.22	
3000.00	3000.00	350.28	6.63	6.63	8.14	Lone Tree Draw 13 State Com 2H Pilot (s)	408.51	423.53	28.21	
3100.00	3100.00	350.45	6.86	6.86	8.33	Lone Tree Draw 13 State Com 2H Pilot (s)	407.18	422.67	27.27	
3200.00	3200.00	350.63	7.08	7.08	8.51	Lone Tree Draw 13 State Com 2H Pilot (s)	405.97	421.95	26.41	
3300.00	3300.00	350.86	7.31	7.31	8.70	Lone Tree Draw 13 State Com 2H Pilot (s)	404.95	421.39	25.63	
3400.00	3400.00	351.10	7.53	7.53	8.90	Lone Tree Draw 13 State Com 2H Pilot (s)	404.20	421.10	24.92	
3500.00	3500.00	351.30	7.76	7.76	9.09	Lone Tree Draw 13	403.75	421.11	24.25	

5D Anti-Collision Report

Primary Well: Lone Tree 13 Federal 15H (p)(TVD relative to Kelly Bushing)(All Azimuth Relative to GRID NORTH)									
MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	Nearest Well	ES (US ft)	CC (US ft)	SF	Risk
						State Com 2H Pilot (s)				
3600.00	3600.00	351.47	7.98	7.98	9.29	Lone Tree Draw 13 State Com 2H Pilot (s)	403.48	421.29	23.65	
3700.00	3700.00	351.62	8.20	8.20	9.49	Lone Tree Draw 13 State Com 2H Pilot (s)	403.49	421.72	23.13	
3800.00	3800.00	351.77	8.43	8.43	9.70	Lone Tree Draw 13 State Com 2H Pilot (s)	403.85	422.48	22.68	
3900.00	3900.00	351.90	8.65	8.65	9.90	Lone Tree Draw 13 State Com 2H Pilot (s)	404.41	423.41	22.28	
4000.00	4000.00	352.04	8.88	8.88	10.11	Lone Tree Draw 13 State Com 2H Pilot (s)	404.87	424.24	21.90	
4100.00	4100.00	352.14	9.10	9.10	10.33	Lone Tree Draw 13 State Com 2H Pilot (s)	405.31	425.05	21.53	
4200.00	4200.00	352.23	9.33	9.33	10.55	Lone Tree Draw 13 State Com 2H Pilot (s)	405.68	425.80	21.16	
4300.00	4300.00	352.33	9.55	9.55	10.77	Lone Tree Draw 13 State Com 2H Lateral (s)	406.28	427.77	19.91	
4400.00	4400.00	351.93	9.78	9.78	10.99	Lone Tree Draw 13 State Com 2H Lateral (s)	394.65	416.01	19.48	
4500.00	4500.00	348.24	10.00	10.00	11.22	Lone Tree Draw 13 State Com 2H Lateral (s)	355.64	374.83	19.54	
4600.00	4600.00	336.87	10.23	10.23	11.45	Lone Tree Draw 13 State Com 2H Lateral (s)	285.56	302.69	17.66	
4700.00	4700.00	319.96	10.45	10.45	11.68	Lone Tree Draw 13 State Com 2H Lateral (s)	203.25	220.52	12.77	
4800.00	4800.00	296.38	10.68	10.68	11.92	Lone Tree Draw 13 State Com 2H Lateral (s)	121.26	140.86	7.19	
4900.00	4900.00	278.28	10.90	10.90	12.16	Lone Tree Draw 13 State Com 2H Lateral (s)	65.81	90.97	3.62	
5000.00	5000.00	265.17	11.13	11.13	12.41	Lone Tree Draw 13 State Com 2H Lateral (s)	103.14	124.31	5.87	
5100.00	5100.00	255.76	11.35	11.35	12.66	Lone Tree Draw 13 State Com 2H Lateral (s)	187.06	204.48	11.74	
5200.00	5200.00	352.86	11.58	11.58	12.91	Lone Tree Draw 13 State Com 2H Pilot (s)	411.37	435.19	18.27	
5300.00	5300.00	353.01	11.80	11.80	13.17	Lone Tree Draw 13	412.82	437.06	18.03	

Primary Well: Lone Tree 13 Federal 15H (p)(TVD relative to Kelly Bushing)(All Azimuth Relative to GRID NORTH)

MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	Nearest Well	ES (US ft)	CC (US ft)	SF	Risk
						State Com 2H Pilot (s)				
5400.00	5400.00	353.14	12.03	12.03	13.43	Lone Tree Draw 13 State Com 2H Pilot (s)	414.27	438.90	17.82	
5500.00	5500.00	353.24	12.25	12.25	13.70	Lone Tree Draw 13 State Com 2H Pilot (s)	415.81	440.81	17.63	
5600.00	5600.00	353.35	12.48	12.48	13.97	Lone Tree Draw 13 State Com 2H Pilot (s)	417.24	442.65	17.43	
5700.00	5700.00	353.44	12.70	12.70	14.24	Lone Tree Draw 13 State Com 2H Pilot (s)	418.07	443.91	17.18	
5800.00	5800.00	353.55	12.93	12.93	14.52	Lone Tree Draw 13 State Com 2H Pilot (s)	418.07	444.38	16.89	
5900.00	5900.00	353.64	13.15	13.15	14.80	Lone Tree Draw 13 State Com 2H Pilot (s)	417.09	443.85	16.58	
6000.00	6000.00	353.68	13.37	13.37	15.09	Lone Tree Draw 13 State Com 2H Pilot (s)	415.53	442.70	16.30	
6100.00	6100.00	353.65	13.60	13.60	15.38	Lone Tree Draw 13 State Com 2H Pilot (s)	413.80	441.30	16.05	
6200.00	6200.00	353.55	13.82	13.82	15.68	Lone Tree Draw 13 State Com 2H Pilot (s)	412.17	439.99	15.81	
6300.00	6300.00	353.34	14.05	14.05	15.98	Lone Tree Draw 13 State Com 2H Pilot (s)	411.16	439.28	15.62	
6400.00	6400.00	352.93	14.27	14.27	16.29	Lone Tree Draw 13 State Com 2H Pilot (s)	410.40	438.80	15.45	
6500.00	6500.00	352.53	14.50	14.50	16.60	Lone Tree Draw 13 State Com 2H Pilot (s)	408.74	437.39	15.27	
6600.00	6600.00	352.16	14.72	14.72	16.91	Lone Tree Draw 13 State Com 2H Pilot (s)	406.44	435.40	15.03	
6700.00	6700.00	351.86	14.95	14.95	17.23	Lone Tree Draw 13 State Com 2H Pilot (s)	404.27	433.55	14.81	
6800.00	6799.87	173.04	15.15	15.09	17.56	Lone Tree Draw 13 State Com 2H Pilot (s)	406.00	435.53	14.75	
6900.00	6897.81	172.80	15.31	14.91	17.85	Lone Tree Draw 13 State Com 2H Pilot (s)	423.81	453.62	15.22	
7000.00	6990.87	172.45	15.48	14.43	18.11	Lone Tree Draw 13 State Com 2H Pilot (s)	459.01	489.02	16.30	
7100.00	7076.21	171.35	15.69	13.70	18.33	Lone Tree Draw 13 State Com 2H Pilot (s)	520.09	549.84	18.48	
7200.00	7151.25	168.89	15.99	12.80	18.52	Lone Tree Draw 13 State Com 2H Pilot (s)	601.88	631.22	21.52	
7300.00	7213.71	162.40	16.40	11.81	18.72	Lone Tree Draw 13	695.23	724.26	24.95	

5D Anti-Collision Report

Primary Well: Lone Tree 13 Federal 15H (p)(TVD relative to Kelly Bushing)(All Azimuth Relative to GRID NORTH)

MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	Nearest Well	ES (US ft)	CC (US ft)	SF	Risk
						State Com 2H Pilot (s)				
7400.00	7261.68	128.96	16.97	10.90	18.97	Lone Tree Draw 13 State Com 2H Pilot (s)	793.79	822.71	28.45	
7500.00	7293.71	28.18	17.69	10.21	19.28	Lone Tree Draw 13 State Com 2H Pilot (s)	893.34	922.32	31.83	
7600.00	7308.83	11.79	18.56	9.92	19.69	Lone Tree Draw 13 State Com 2H Pilot (s)	991.02	1020.19	34.98	
7700.00	7310.72	9.89	19.55	10.10	20.19	Lone Tree Draw 13 State Com 2H Pilot (s)	1086.13	1115.53	37.95	
7800.00	7311.77	9.89	20.67	10.40	20.78	Lone Tree Draw 13 State Com 2H Pilot (s)	1181.81	1211.41	40.93	
7900.00	7312.83	9.89	21.87	10.74	21.46	Lone Tree Draw 13 State Com 2H Pilot (s)	1278.15	1307.90	43.96	
8000.00	7313.88	9.89	23.17	11.12	22.22	Lone Tree Draw 13 State Com 2H Pilot (s)	1375.01	1404.89	47.01	
8100.00	7314.93	9.89	24.53	11.53	23.04	Lone Tree Draw 13 State Com 2H Pilot (s)	1472.28	1502.27	50.09	
8200.00	7315.98	9.89	25.95	11.97	23.92	Lone Tree Draw 13 State Com 2H Pilot (s)	1569.89	1599.98	53.18	
8300.00	7317.03	9.89	27.42	12.44	24.86	Lone Tree Draw 13 State Com 2H Pilot (s)	1667.79	1697.95	56.29	
8400.00	7318.09	9.89	28.94	12.93	25.85	Lone Tree Draw 13 State Com 2H Pilot (s)	1765.92	1796.14	59.43	
8500.00	7319.14	9.89	30.49	13.45	26.88	Lone Tree Draw 13 State Com 2H Pilot (s)	1864.26	1894.53	62.59	
8600.00	7320.19	9.89	32.07	13.99	27.96	Lone Tree Draw 13 State Com 2H Pilot (s)	1962.73	1993.07	65.68	
8700.00	7321.24	9.89	33.67	14.54	29.06	Lone Tree Draw 13 State Com 2H Pilot (s)	2061.33	2091.76	68.74	
8800.00	7322.29	6.60	35.30	15.11	30.20	Lone Tree Draw 13 State Com 2H Lateral (s)	2360.65	2393.96	71.87	
8900.00	7323.35	6.83	36.95	15.69	31.36	Lone Tree Draw 13 State Com 2H Lateral (s)	2361.99	2396.58	69.30	
9000.00	7324.40	7.11	38.62	16.28	32.55	Lone Tree Draw 13 State Com 2H Lateral (s)	2363.14	2399.16	66.61	
9100.00	7325.45	7.32	40.30	16.89	33.76	Lone Tree Draw 13 State Com 2H Lateral (s)	2364.66	2402.04	64.26	
9200.00	7326.50	7.50	42.00	17.50	34.99	Lone Tree Draw 13 State Com	2367.67	2406.19	62.46	

5D Anti-Collision Report

Primary Well: Lone Tree 13 Federal 15H (p)(TVD relative to Kelly Bushing)(All Azimuth Relative to GRID NORTH)

MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	Nearest Well	ES (US ft)	CC (US ft)	SF	Risk
						2H Lateral (s)				
9300.00	7327.56	7.76	43.70	18.13	36.24	Lone Tree Draw 13 State Com 2H Lateral (s)	2371.78	2411.64	60.50	
9400.00	7328.61	8.04	45.42	18.76	37.50	Lone Tree Draw 13 State Com 2H Lateral (s)	2376.23	2417.55	58.52	
9500.00	7329.66	8.77	47.15	19.40	38.78	Lone Tree Draw 13 State Com 2H Lateral (s)	2378.42	2422.44	55.03	
9600.00	7330.71	9.11	48.88	20.04	40.07	Lone Tree Draw 13 State Com 2H Lateral (s)	2377.80	2423.45	53.09	
9700.00	7331.76	9.46	50.62	20.70	41.37	Lone Tree Draw 13 State Com 2H Lateral (s)	2376.83	2424.15	51.22	
9800.00	7332.82	9.77	52.37	21.35	42.69	Lone Tree Draw 13 State Com 2H Lateral (s)	2376.24	2425.12	49.61	
9900.00	7333.87	10.14	54.13	22.01	44.01	Lone Tree Draw 13 State Com 2H Lateral (s)	2375.58	2426.16	47.96	
10000.00	7334.92	10.50	55.89	22.68	45.34	Lone Tree Draw 13 State Com 2H Lateral (s)	2375.22	2427.44	46.48	
10100.00	7335.97	10.87	57.65	23.35	46.68	Lone Tree Draw 13 State Com 2H Lateral (s)	2374.79	2428.71	45.05	
10200.00	7337.02	11.13	59.42	24.02	48.03	Lone Tree Draw 13 State Com 2H Lateral (s)	2375.49	2430.89	43.88	
10300.00	7338.08	11.46	61.20	24.70	49.38	Lone Tree Draw 13 State Com 2H Lateral (s)	2375.91	2433.19	42.47	
10400.00	7339.13	11.61	62.97	25.38	50.74	Lone Tree Draw 13 State Com 2H Lateral (s)	2377.83	2436.48	41.55	
10500.00	7340.18	11.83	64.75	26.06	52.11	Lone Tree Draw 13 State Com 2H Lateral (s)	2380.86	2441.12	40.51	
10600.00	7341.23	12.05	66.54	26.75	53.48	Lone Tree Draw 13 State Com 2H Lateral (s)	2383.99	2446.00	39.45	
10700.00	7342.28	12.35	68.33	27.44	54.86	Lone Tree Draw 13 State Com 2H Lateral (s)	2385.28	2449.59	38.09	
10800.00	7343.34	12.51	70.12	28.13	56.24	Lone Tree Draw 13 State Com 2H Lateral (s)	2386.58	2452.49	37.21	

5D Anti-Collision Report

Primary Well: Lone Tree 13 Federal 15H (p) (TVD relative to Kelly Bushing) (All Azimuth Relative to GRID NORTH)										
MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	Nearest Well	ES (US ft)	CC (US ft)	SF	Risk
10900.00	7344.39	12.68	71.91	28.82	57.62	Lone Tree Draw 13 State Com 2H Lateral (s)	2389.03	2456.45	36.43	
11000.00	7345.44	13.25	73.70	29.51	59.01	Lone Tree Draw 13 State Com 2H Lateral (s)	2389.37	2459.96	34.85	
11100.00	7346.49	13.48	75.50	30.21	60.40	Lone Tree Draw 13 State Com 2H Lateral (s)	2385.87	2458.38	33.90	
11200.00	7347.54	13.65	77.30	30.91	61.80	Lone Tree Draw 13 State Com 2H Lateral (s)	2383.21	2457.46	33.10	
11300.00	7348.60	13.91	79.10	31.61	63.20	Lone Tree Draw 13 State Com 2H Lateral (s)	2380.08	2456.35	32.21	
11400.00	7349.65	14.00	80.90	32.31	64.60	Lone Tree Draw 13 State Com 2H Lateral (s)	2378.08	2455.63	31.67	
11433.36	7350.00	14.00	81.51	32.54	65.07	Lone Tree Draw 13 State Com 2H Lateral (s)	2378.36	2456.20	31.56	

Secondary Well: Lone Tree Draw 13 State Com 2H Lateral (s) (TVD relative to Kelly Bushing) (All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
0.00	4328.71	4332.42	352.33	10.47	10.45	3.33	4346.18	4349.70	1235.95	
100.00	4328.71	4332.42	352.33	10.47	10.45	3.33	4244.37	4250.19	730.65	
200.00	4328.71	4332.42	352.33	10.47	10.45	3.33	4144.87	4150.71	710.61	
300.00	4328.71	4332.42	352.33	10.47	10.45	3.33	4045.38	4051.25	689.88	
400.00	4328.71	4332.42	352.33	10.47	10.45	3.33	3945.91	3951.82	668.64	
500.00	4328.71	4332.42	352.33	10.47	10.45	3.33	3846.47	3852.42	647.01	
600.00	4328.71	4332.42	352.33	10.47	10.45	3.33	3747.05	3753.05	625.07	
700.00	4328.71	4332.42	352.33	10.47	10.45	3.33	3647.66	3653.72	602.93	
800.00	4328.71	4332.42	352.33	10.47	10.45	3.33	3548.30	3554.42	580.68	
900.00	4328.71	4332.42	352.33	10.47	10.45	3.33	3448.98	3455.17	558.15	
1000.00	4328.71	4332.42	352.33	10.47	10.45	3.33	3349.69	3355.96	535.48	
1100.00	4328.71	4332.42	352.33	10.47	10.45	3.33	3250.45	3256.79	512.95	
1200.00	4328.71	4332.42	352.33	10.47	10.45	3.33	3151.25	3157.68	490.61	
1300.00	4328.71	4332.42	352.33	10.47	10.45	3.33	3052.10	3058.63	468.53	
1400.00	4328.71	4332.42	352.33	10.47	10.45	3.33	2953.02	2959.64	446.74	
1500.00	4328.71	4332.42	352.33	10.47	10.45	3.33	2854.00	2860.72	425.13	
1600.00	4328.71	4332.42	352.33	10.47	10.45	3.33	2755.04	2761.88	403.63	
1700.00	4328.71	4332.42	352.33	10.47	10.45	3.33	2656.17	2663.13	382.54	
1800.00	4328.71	4332.42	352.33	10.47	10.45	3.33	2557.39	2564.47	361.89	
1900.00	4328.71	4332.42	352.33	10.47	10.45	3.33	2458.71	2465.92	341.68	
2000.00	4328.71	4332.42	352.33	10.47	10.45	3.33	2360.14	2367.50	321.93	
2100.00	4328.71	4332.42	352.33	10.47	10.45	3.33	2261.71	2269.21	302.66	
2200.00	4328.71	4332.42	352.33	10.47	10.45	3.33	2163.41	2171.07	283.48	
2300.00	4328.71	4332.42	352.33	10.47	10.45	3.33	2065.29	2073.12	264.79	
2400.00	4328.71	4332.42	352.33	10.47	10.45	3.33	1967.35	1975.37	246.47	
2500.00	4328.71	4332.42	352.33	10.47	10.45	3.33	1869.63	1877.85	228.48	
2600.00	4328.71	4332.42	352.33	10.47	10.45	3.33	1772.18	1780.61	211.05	
2700.00	4328.71	4332.42	352.33	10.47	10.45	3.33	1675.03	1683.70	194.19	
2800.00	4328.71	4332.42	352.33	10.47	10.45	3.33	1578.25	1587.17	177.90	
2900.00	4328.71	4332.42	352.33	10.47	10.45	3.33	1481.89	1491.09	162.04	

5D Anti-Collision Report

Secondary Well: Lone Tree Draw 13 State Com 2H Lateral (s) (TVD relative to Kelly Bushing) (All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
3000.00	4328.71	4332.42	352.33	10.47	10.45	3.33	1386.05	1395.57	146.54	
3100.00	4328.71	4332.42	352.33	10.47	10.45	3.33	1290.83	1300.72	131.53	
3200.00	4328.71	4332.42	352.33	10.47	10.45	3.33	1196.40	1206.71	117.13	
3300.00	4328.71	4332.42	352.33	10.47	10.45	3.33	1102.97	1113.73	103.48	
3400.00	4328.71	4332.42	352.33	10.47	10.45	3.33	1010.76	1022.08	90.24	
3500.00	4328.71	4332.42	352.33	10.47	10.45	3.33	920.19	932.16	77.87	
3600.00	4328.71	4332.42	352.33	10.47	10.45	3.33	831.79	844.50	66.45	
3700.00	4328.71	4332.42	352.33	10.47	10.45	3.33	746.23	759.89	55.62	
3800.00	4328.71	4332.42	352.33	10.47	10.45	3.33	664.72	679.48	46.05	
3900.00	4328.71	4332.42	352.33	10.47	10.45	3.33	588.85	604.94	37.60	
4000.00	4328.71	4332.42	352.33	10.47	10.45	3.33	521.14	538.71	30.67	
4100.00	4328.71	4332.42	352.33	10.47	10.45	3.33	465.07	484.22	25.29	
4200.00	4328.71	4332.42	352.33	10.47	10.45	3.33	425.17	445.79	21.63	
4300.00	4328.71	4332.42	352.33	10.47	10.45	3.33	406.28	427.77	19.91	
4400.00	4498.69	4504.27	351.93	10.49	10.26	11.17	394.65	416.01	19.48	
4500.00	4726.67	4758.33	348.24	10.78	8.93	11.46	355.64	374.83	19.54	
4600.00	4841.84	4929.28	336.87	11.52	7.50	11.64	285.56	302.69	17.66	
4700.00	4882.05	5012.37	319.96	12.12	7.01	11.85	203.25	220.52	12.77	
4800.00	4903.04	5069.37	296.38	12.63	6.62	12.05	121.26	140.86	7.19	
4900.00	4911.47	5100.39	278.28	12.93	6.50	12.18	65.81	90.97	3.62	
5000.00	4916.43	5121.85	265.17	13.15	6.47	12.28	103.14	124.31	5.87	
5100.00	4919.76	5138.31	255.76	13.33	6.45	12.37	187.06	204.48	11.74	
5200.00	4922.08	5151.33	249.03	13.47	6.44	12.44	279.92	296.00	18.40	
5300.00	4923.89	5162.55	243.80	13.60	6.44	12.51	375.57	391.17	25.08	
5400.00	4925.28	5171.92	239.84	13.71	6.44	12.56	472.56	487.94	31.71	
5500.00	4926.35	5179.87	236.77	13.80	6.45	12.61	570.24	585.60	38.14	
5600.00	4927.31	5187.42	234.08	13.89	6.46	12.66	668.40	683.78	44.45	
5700.00	4928.11	5194.20	231.84	13.97	6.47	12.70	766.88	782.31	50.68	
5800.00	4928.78	5200.22	229.98	14.04	6.48	12.74	865.58	881.09	56.81	
5900.00	4929.35	5205.60	228.41	14.10	6.49	12.78	964.43	980.05	62.74	
6000.00	4929.83	5210.44	227.08	14.16	6.49	12.81	1063.42	1079.16	68.56	
6100.00	4930.27	5215.01	225.87	14.21	6.50	12.84	1162.51	1178.38	74.23	
6200.00	4930.66	5219.29	224.80	14.27	6.51	12.87	1261.67	1277.69	79.76	
6300.00	4931.00	5223.22	223.86	14.31	6.52	12.89	1360.90	1377.07	85.17	
6400.00	4931.30	5226.84	223.02	14.36	6.53	12.92	1460.19	1476.51	90.47	
6500.00	4931.57	5230.18	222.27	14.40	6.54	12.94	1559.53	1576.01	95.67	
6600.00	4931.81	5233.29	221.60	14.44	6.55	12.96	1658.92	1675.55	100.76	
6700.00	4932.03	5236.18	221.00	14.47	6.55	12.98	1758.34	1775.13	105.74	
6800.00	4932.31	5240.11	18.53	14.52	6.56	13.01	1857.45	1874.39	110.61	
6900.00	4932.74	5246.62	9.47	14.60	6.57	13.05	1953.78	1970.87	115.35	
7000.00	4933.10	5253.50	6.39	14.69	6.58	13.10	2044.87	2062.07	119.92	
7100.00	4933.38	5262.33	4.89	14.80	6.60	13.17	2128.64	2145.93	124.06	
7200.00	4933.48	5272.76	4.05	14.93	6.62	13.24	2203.32	2220.73	127.52	
7300.00	4933.08	5297.35	3.57	15.24	6.70	13.43	2267.24	2284.85	129.69	
7400.00	4934.29	5495.69	3.97	17.64	7.60	15.16	2313.66	2332.35	124.76	
7500.00	4935.26	5553.46	3.97	18.44	7.88	15.74	2344.67	2363.82	123.47	
7600.00	4935.46	5643.78	4.18	19.73	8.34	16.68	2359.87	2379.71	119.92	
7700.00	4936.08	5768.13	4.43	21.48	9.03	18.04	2360.94	2381.76	114.35	
7800.00	4937.43	5883.71	4.62	23.15	9.71	19.38	2360.32	2382.18	108.99	
7900.00	4940.65	6024.67	4.87	25.24	10.58	21.09	2358.55	2381.64	103.14	
8000.00	4943.50	6108.80	5.03	26.53	11.10	22.14	2355.98	2380.00	99.06	
8100.00	4944.66	6166.35	5.15	27.44	11.45	22.87	2355.08	2379.88	95.97	
8200.00	4944.68	6211.93	5.27	28.17	11.71	23.45	2356.31	2381.88	93.15	
8300.00	4943.36	6273.86	5.45	29.16	12.09	24.24	2359.65	2386.10	90.22	
8400.00	4942.21	6479.38	5.94	32.39	13.48	26.94	2360.29	2388.75	83.92	
8500.00	4943.29	6575.13	6.06	33.93	14.12	28.21	2359.57	2389.25	80.49	
8600.00	4944.09	6659.51	6.18	35.33	14.68	29.35	2359.16	2390.00	77.51	
8700.00	4944.20	6735.10	6.34	36.59	15.19	30.37	2359.88	2391.85	74.84	

5D Anti-Collision Report

Secondary Well: Lone Tree Draw 13 State Com 2H Lateral (s) (TVD relative to Kelly Bushing) (All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
8800.00	4944.36	6836.79	6.60	38.25	15.88	31.76	2360.65	2393.96	71.87	
8900.00	4944.16	6921.15	6.83	39.65	16.45	32.92	2361.99	2396.58	69.30	
9000.00	4943.95	7029.53	7.11	41.45	17.20	34.41	2363.14	2399.16	66.61	
9100.00	4943.64	7110.78	7.32	42.80	17.76	35.54	2364.66	2402.04	64.26	
9200.00	4942.71	7172.96	7.50	43.85	18.17	36.40	2367.67	2406.19	62.46	
9300.00	4940.54	7256.39	7.76	45.27	18.74	37.56	2371.78	2411.64	60.50	
9400.00	4938.02	7342.73	8.04	46.74	19.34	38.77	2376.23	2417.55	58.52	
9500.00	4935.52	7565.95	8.77	50.45	20.97	41.90	2378.42	2422.44	55.03	
9600.00	4937.80	7675.09	9.11	52.25	21.75	43.45	2377.80	2423.45	53.09	
9700.00	4940.56	7781.50	9.46	54.00	22.50	44.95	2376.83	2424.15	51.22	
9800.00	4942.86	7871.27	9.77	55.49	23.14	46.23	2376.24	2425.12	49.61	
9900.00	4945.62	7974.28	10.14	57.22	23.87	47.70	2375.58	2426.16	47.96	
10000.00	4948.15	8069.02	10.50	58.79	24.55	49.05	2375.22	2427.44	46.48	
10100.00	4950.85	8165.04	10.87	60.41	25.23	50.42	2374.79	2428.71	45.05	
10200.00	4952.17	8236.90	11.13	61.62	25.74	51.44	2375.49	2430.89	43.88	
10300.00	4953.57	8345.56	11.46	63.45	26.51	53.00	2375.91	2433.19	42.47	
10400.00	4953.64	8404.26	11.61	64.44	26.91	53.84	2377.83	2436.48	41.55	
10500.00	4952.55	8488.04	11.83	65.84	27.50	55.04	2380.86	2441.12	40.51	
10600.00	4950.86	8586.32	12.05	67.50	28.20	56.45	2383.99	2446.00	39.45	
10700.00	4949.71	8741.91	12.35	70.09	29.34	58.69	2385.28	2449.59	38.09	
10800.00	4949.71	8825.42	12.51	71.54	29.94	59.89	2386.58	2452.49	37.21	
10900.00	4949.34	8895.01	12.68	72.76	30.43	60.89	2389.03	2456.45	36.43	
11000.00	4951.37	9126.87	13.25	76.62	32.15	64.23	2389.37	2459.96	34.85	
11100.00	4956.43	9240.53	13.48	78.53	32.97	65.87	2385.87	2458.38	33.90	
11200.00	4959.96	9329.99	13.65	80.08	33.61	67.17	2383.21	2457.46	33.10	
11300.00	4965.13	9448.43	13.91	82.10	34.47	68.88	2380.08	2456.35	32.21	
11400.00	4966.91	9485.00	14.00	82.72	34.73	69.41	2378.08	2455.63	31.67	
11433.36	4966.91	9485.00	14.00	82.72	34.73	69.41	2378.36	2456.20	31.56	

Secondary Well: Lone Tree Draw 13 State Com 2H Pilot (s) (TVD relative to Kelly Bushing) (All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
0.00	0.02	3.02	346.00	0.01	0.01	0.10	462.44	463.02	811.51	
100.00	100.54	103.54	346.02	0.17	0.17	2.63	462.11	462.95	549.08	
200.00	200.82	203.82	346.04	0.43	0.43	2.63	461.47	462.80	347.23	
300.00	301.12	304.12	346.07	0.70	0.70	2.63	460.77	462.59	253.63	
400.00	401.51	404.52	346.11	0.97	0.97	2.64	460.00	462.31	199.77	
500.00	502.23	505.23	346.17	1.23	1.23	2.64	459.11	461.92	164.61	
600.00	602.89	605.90	346.25	1.50	1.50	2.65	458.05	461.35	139.95	
700.00	704.44	707.45	346.36	1.77	1.77	2.65	456.81	460.60	121.52	
800.00	805.74	808.76	346.47	2.04	2.04	2.66	455.18	459.46	107.34	
900.00	906.92	909.96	346.62	2.30	2.30	2.67	453.33	458.09	96.11	
1000.00	1007.73	1010.80	346.80	2.57	2.57	2.68	451.22	456.48	86.84	
1100.00	1109.67	1112.76	346.99	2.84	2.84	2.69	448.84	454.59	79.03	
1200.00	1211.17	1214.31	347.17	3.10	3.10	2.70	446.04	452.29	72.42	
1300.00	1315.83	1319.02	347.38	3.38	3.37	2.71	442.48	449.22	66.66	
1400.00	1414.85	1418.11	347.57	3.63	3.63	2.72	438.59	445.80	61.82	
1500.00	1513.61	1516.93	347.75	3.89	3.88	2.73	434.85	442.54	57.55	
1600.00	1610.47	1613.84	347.90	4.14	4.13	2.74	431.68	439.85	53.83	
1700.00	1708.58	1711.99	348.10	4.40	4.39	2.76	429.02	437.67	50.58	
1800.00	1806.38	1809.82	348.32	4.66	4.65	2.77	426.82	435.95	47.73	
1900.00	1904.57	1908.02	348.48	4.92	4.91	2.78	425.12	434.73	45.22	
2000.00	2003.90	2007.35	348.63	5.18	5.17	2.79	423.66	433.76	42.92	
2100.00	2104.38	2107.85	348.77	5.45	5.44	2.81	422.28	432.88	40.84	
2200.00	2205.24	2208.72	348.93	5.71	5.71	2.82	420.61	431.70	38.91	
2300.00	2305.14	2308.63	349.11	5.98	5.97	2.84	418.92	430.51	37.15	
2400.00	2404.60	2408.11	349.30	6.24	6.23	2.85	417.27	429.35	35.54	
2500.00	2503.75	2507.28	349.47	6.51	6.50	2.87	415.81	428.38	34.09	
2600.00	2603.85	2607.39	349.63	6.77	6.76	2.88	414.46	427.52	32.74	

5D Anti-Collision Report

Secondary Well: Lone Tree Draw 13 State Com 2H Pilot (s)(TVD relative to Kelly Bushing)(All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
2700.00	2703.84	2707.38	349.78	7.03	7.02	2.90	413.06	426.61	31.49	
2800.00	2804.34	2807.90	349.94	7.30	7.29	2.92	411.63	425.66	30.32	
2900.00	2904.88	2908.46	350.11	7.57	7.56	2.93	410.05	424.58	29.22	
3000.00	3003.92	3007.51	350.28	7.83	7.82	2.95	408.51	423.53	28.21	
3100.00	3103.32	3106.92	350.45	8.09	8.08	2.97	407.18	422.67	27.27	
3200.00	3202.77	3206.38	350.63	8.35	8.34	2.99	405.97	421.95	26.41	
3300.00	3301.89	3305.52	350.86	8.60	8.59	3.02	404.95	421.39	25.63	
3400.00	3400.54	3404.18	351.10	8.84	8.83	3.04	404.20	421.10	24.92	
3500.00	3499.50	3503.16	351.30	9.07	9.06	3.06	403.75	421.11	24.25	
3600.00	3598.83	3602.49	351.47	9.28	9.27	3.09	403.48	421.29	23.65	
3700.00	3697.50	3701.17	351.62	9.48	9.46	3.12	403.49	421.72	23.13	
3800.00	3796.30	3799.98	351.77	9.65	9.63	3.14	403.85	422.48	22.68	
3900.00	3896.16	3899.85	351.90	9.80	9.79	3.17	404.41	423.41	22.28	
4000.00	3996.58	4000.27	352.04	9.96	9.95	3.21	404.87	424.24	21.90	
4100.00	4096.69	4100.39	352.14	10.12	10.11	3.24	405.31	425.05	21.53	
4200.00	4196.78	4200.48	352.23	10.27	10.26	3.28	405.68	425.80	21.16	
4300.00	4296.73	4300.44	352.30	10.42	10.41	3.31	406.06	426.57	20.80	
4400.00	4396.93	4400.64	352.37	10.57	10.56	3.35	406.43	427.32	20.46	
4500.00	4496.93	4500.65	352.44	10.72	10.71	3.40	406.76	428.03	20.12	
4600.00	4596.90	4600.62	352.51	10.88	10.86	3.44	407.10	428.75	19.80	
4700.00	4697.02	4700.75	352.56	11.03	11.01	3.49	407.43	429.46	19.50	
4800.00	4796.80	4800.53	352.60	11.16	11.15	3.54	407.79	430.18	19.22	
4900.00	4896.14	4899.87	352.62	11.28	11.26	3.59	408.27	431.00	18.97	
5000.00	4994.60	4998.34	352.65	11.40	11.39	3.64	409.01	432.07	18.74	
5100.00	5093.12	5096.88	352.73	11.55	11.54	3.70	410.09	433.49	18.52	
5200.00	5192.18	5195.95	352.86	11.72	11.71	3.76	411.37	435.19	18.27	
5300.00	5291.69	5295.48	353.01	11.89	11.88	3.83	412.82	437.06	18.03	
5400.00	5391.94	5395.76	353.14	12.07	12.06	3.89	414.27	438.90	17.82	
5500.00	5491.51	5495.35	353.24	12.24	12.23	3.96	415.81	440.81	17.63	
5600.00	5592.83	5596.69	353.35	12.41	12.40	4.04	417.24	442.65	17.43	
5700.00	5696.03	5699.90	353.44	12.61	12.60	4.12	418.07	443.91	17.18	
5800.00	5800.21	5804.08	353.55	12.85	12.84	4.20	418.07	444.38	16.89	
5900.00	5904.02	5907.90	353.64	13.08	13.07	4.29	417.09	443.85	16.58	
6000.00	6005.87	6009.75	353.68	13.27	13.26	4.37	415.53	442.70	16.30	
6100.00	6106.23	6110.12	353.65	13.41	13.39	4.46	413.80	441.30	16.05	
6200.00	6205.10	6209.00	353.55	13.50	13.48	4.56	412.17	439.99	15.81	
6300.00	6300.74	6304.67	353.34	13.55	13.53	4.65	411.16	439.28	15.62	
6400.00	6404.59	6408.57	352.93	13.58	13.56	4.75	410.40	438.80	15.45	
6500.00	6507.63	6511.66	352.53	13.63	13.62	4.86	408.74	437.39	15.27	
6600.00	6609.22	6613.30	352.16	13.70	13.69	4.96	406.44	435.40	15.03	
6700.00	6707.02	6711.15	351.86	13.78	13.77	5.07	404.27	433.55	14.81	
6800.00	6805.72	6809.88	173.04	13.86	13.85	5.18	406.00	435.53	14.75	
6900.00	6903.73	6907.94	172.80	13.94	13.92	5.30	423.81	453.62	15.22	
7000.00	6974.18	6978.42	172.45	13.99	13.98	5.38	459.01	489.02	16.30	
7100.00	6974.18	6978.42	171.35	13.99	13.98	5.38	520.09	549.84	18.48	
7200.00	6974.18	6978.42	168.89	13.99	13.98	5.38	601.88	631.22	21.52	
7300.00	6974.18	6978.42	162.40	13.99	13.98	5.38	695.23	724.26	24.95	
7400.00	6974.18	6978.42	128.96	13.99	13.98	5.38	793.79	822.71	28.45	
7500.00	6974.18	6978.42	28.18	13.99	13.98	5.38	893.34	922.32	31.83	
7600.00	6974.18	6978.42	11.79	13.99	13.98	5.38	991.02	1020.19	34.98	
7700.00	6974.18	6978.42	9.89	13.99	13.98	5.38	1086.13	1115.53	37.95	
7800.00	6974.18	6978.42	9.89	13.99	13.98	5.38	1181.81	1211.41	40.93	
7900.00	6974.18	6978.42	9.89	13.99	13.98	5.38	1278.15	1307.90	43.96	
8000.00	6974.18	6978.42	9.89	13.99	13.98	5.38	1375.01	1404.89	47.01	
8100.00	6974.18	6978.42	9.89	13.99	13.98	5.38	1472.28	1502.27	50.09	
8200.00	6974.18	6978.42	9.89	13.99	13.98	5.38	1569.89	1599.98	53.18	
8300.00	6974.18	6978.42	9.89	13.99	13.98	5.38	1667.79	1697.95	56.29	
8400.00	6974.18	6978.42	9.89	13.99	13.98	5.38	1765.92	1796.14	59.43	

5D Anti-Collision Report

Secondary Well: Lone Tree Draw 13 State Com 2H Pilot (s) (TVD relative to Kelly Bushing) (All Azimuth Relative to GRID NORTH)										
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Risk
8500.00	6974.18	6978.42	9.89	13.99	13.98	5.38	1864.26	1894.53	62.59	
8600.00	6974.18	6978.42	9.89	13.99	13.98	5.38	1962.73	1993.07	65.68	
8700.00	6974.18	6978.42	9.89	13.99	13.98	5.38	2061.33	2091.76	68.74	
8800.00	6974.18	6978.42	9.89	13.99	13.98	5.38	2160.10	2190.56	71.91	
8900.00	6974.18	6978.42	9.89	13.99	13.98	5.38	2258.94	2289.47	75.00	
9000.00	6974.18	6978.42	9.89	13.99	13.98	5.38	2357.88	2388.46	78.10	
9100.00	6974.18	6978.42	9.89	13.99	13.98	5.38	2456.90	2487.54	81.19	
9200.00	6974.18	6978.42	9.89	13.99	13.98	5.38	2556.00	2586.69	84.29	
9300.00	6974.18	6978.42	9.89	13.99	13.98	5.38	2655.18	2685.90	87.42	
9400.00	6974.18	6978.42	9.89	13.99	13.98	5.38	2754.45	2785.17	90.65	
9500.00	6974.18	6978.42	9.89	13.99	13.98	5.38	2853.70	2884.49	93.68	
9600.00	6974.18	6978.42	9.89	13.99	13.98	5.38	2953.02	2983.85	96.76	
9700.00	6974.18	6978.42	9.89	13.99	13.98	5.38	3052.38	3083.26	99.86	
9800.00	6974.18	6978.42	9.89	13.99	13.98	5.38	3151.79	3182.70	102.95	
9900.00	6974.18	6978.42	9.89	13.99	13.98	5.38	3251.23	3282.18	106.04	
10000.00	6974.18	6978.42	9.89	13.99	13.98	5.38	3350.70	3381.69	109.12	
10100.00	6974.18	6978.42	9.89	13.99	13.98	5.38	3450.20	3481.22	112.20	
10200.00	6974.18	6978.42	9.89	13.99	13.98	5.38	3549.72	3580.78	115.27	
10300.00	6974.18	6978.42	9.89	13.99	13.98	5.38	3649.27	3680.37	118.33	
10400.00	6974.18	6978.42	9.89	13.99	13.98	5.38	3748.83	3779.98	121.38	
10500.00	6974.18	6978.42	9.89	13.99	13.98	5.38	3848.42	3879.60	124.42	
10600.00	6974.18	6978.42	9.89	13.99	13.98	5.38	3948.03	3979.25	127.44	
10700.00	6974.18	6978.42	9.89	13.99	13.98	5.38	4047.64	4078.91	130.43	
10800.00	6974.18	6978.42	9.89	13.99	13.98	5.38	4147.27	4178.59	133.42	
10900.00	6974.18	6978.42	9.89	13.99	13.98	5.38	4246.92	4278.29	136.40	
11000.00	6974.18	6978.42	9.89	13.99	13.98	5.38	4346.58	4378.00	139.37	
11100.00	6974.18	6978.42	9.89	13.99	13.98	5.38	4446.26	4477.72	142.32	
11200.00	6974.18	6978.42	9.89	13.99	13.98	5.38	4545.94	4577.45	145.27	
11300.00	6974.18	6978.42	9.89	13.99	13.98	5.38	4645.64	4677.20	148.21	
11400.00	6974.18	6978.42	9.89	13.99	13.98	5.38	4745.35	4776.95	151.14	
11433.36	6974.18	6978.42	9.89	13.99	13.98	5.38	4778.60	4810.23	152.11	

Weatherford

Weatherford Drilling Services

GeoDec4 v2.1.0.0

Report Date:	July 21, 2015
Job Number:	
Customer:	Devon Energy
Well Name:	Lone Tree 13 Federal 15H
API Number:	
Rig Name:	
Location:	Eddy Co, NM Nad83 NME
Block:	
Engineer:	RWJ

NAD83 / New Mexico East (ftUS)
Projected Coordinate System
Datum: North American Datum 1983 (1986)
Ellipsoid: GRS 1980
EPSG: 2257
North: 540556.60 US Survey Foot
East: 598159.10 US Survey Foot
Convergence: 0.10°
Declination: 7.57°
Total Correction: 7.47°
Datum Transformation: none

NAD83 (1986)
Geodetic Coordinate System
Datum: North American Datum 1983 (1986)
Ellipsoid: GRS 1980
EPSG: 4269
Latitude: 32.485917 Degree
Longitude: -104.149052 Degree

Geodetic Location WGS84

MSL Elevation	=	0 m
Latitude	=	32° 29' 09.30" N
Longitude	=	104° 08' 56.59" W

Magnetic Declination	=	7.57 deg	[True North Offset]		
Local Gravity	=	.9988 g	CheckSum	=	6623
Local Field Strength	=	48315 nT	Magnetic Vector X	=	23758 nT
Magnetic Dip	=	60.26 deg	Magnetic Vector Y	=	3158 nT
Magnetic Model	=	bggm2015.dat	Magnetic Vector Z	=	41952 nT
Run Date	=	August 15, 2015	Magnetic Vector H	=	23967 nT

Signed:_____ Date:_____