

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

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised August 1, 2011

WELL API NO. 30-025-42431
5. Indicate Type of Lease STATE ☒ FEE ☐
6. State Oil & Gas Lease No.
7. Lease Name or Unit Agreement Name THISTLE UNIT
8. Well Number 26H
9. OGRID Number 6137
10. Pool name or Wildcat CRUZ;DELAWARE, NORTHEAST

SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)	
1. Type of Well: Oil Well ☒ Gas Well ☐ Other ☐	
2. Name of Operator Devon Energy Production Company, L.P.	
3. Address of Operator 333 West Sheridan Ave. Oklahoma City, Oklahoma 73102-5010 (405) 552-7848	
4. Well Location Unit Letter <u>M</u> : <u>100</u> feet from the <u>S</u> line and <u>802</u> feet from the <u>W</u> line Section <u>22</u> Township <u>23S</u> Range <u>33E</u> NMPM Lea County New Mexico	
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 3702.6'	

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

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐
TEMPORARILY ABANDON ☐ CHANGE PLANS ☒
PULL OR ALTER CASING ☐ MULTIPLE COMPL ☐
DOWNHOLE COMMINGLE ☐

OTHER: ☐

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐
COMMENCE DRILLING OPNS. ☐ P AND A ☐
CASING/CEMENT JOB ☐

OTHER: ☐

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

Devon Energy Production Co., L.P. respectfully requests approval to change the approved APD as follows:

- Change approved SHL from 660 FWL to 802 FWL, Section 22-23S-33E.

See attached revised C-102, Drill Plan and directional survey.

HOBBS OCD

APR 21 2015

RECEIVED

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

SIGNATURE David H. Cook TITLE Regulatory Specialist DATE 4/17/2015

Type or print name David H. Cook E-mail address: david.cook@dmn.com PHONE: (405) 552-7848

For State Use Only

APPROVED BY: [Signature] TITLE Petroleum Engineer DATE 04/22/15

Conditions of Approval (if any):

E-PRM K2

'APR 22 2015'

HOBBS OCD

APR 21 2015

Form C-102

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 Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

District IV
1220 S. St. Francis Dr., Santa Fe, NM 87503
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION

1220 South St. Francis Dr.

Santa Fe, NM 87505

RECEIVED

Revised August 1, 2011

Submit one copy to appropriate

District Office

☒ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-025-42431	² Pool Code 96724	³ Pool Name CRUZ; DELAWARE, NORTHEAST
⁴ Property Code 30884	⁵ Property Name THISTLE UNIT	⁶ Well Number 26H
⁷ OGRID No. 6137	⁸ Operator Name DEVON ENERGY PRODUCTION COMPANY, L.P.	⁹ Elevation 3702.6

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	22	23 S	33 E		100	SOUTH	802	WEST	LEA

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	22	23 S	33 E		330	NORTH	660	WEST	LEA

¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
160			

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.

N89°40'36"E 2638.92 FT NW CORNER SEC. 22 LAT. = 32.2974757°N LONG. = 103.5687592°W NMSP EAST (FT) N = 472796.48 E = 777580.98 660' 330' BOTTOM OF HOLE BOTTOM OF HOLE LAT. = 32.2965661°N LONG. = 103.5666237°W NMSP EAST (FT) N = 472470.28 E = 778243.22 DNF THISTLE UNIT 26H ELEV. = 3702.6' LAT. = 32.2832220°N (NAD83) LONG. = 103.5661632°W NMSP EAST (FT) N = 467616.75 E = 778420.22 SURFACE LOCATION SW CORNER SEC. 22 LAT. = 32.2829508°N LONG. = 103.5687577°W NMSP EAST (FT) N = 467512.36 E = 777619.12 SQ CORNER SEC. 22 LAT. = 32.2829394°N LONG. = 103.5602131°W NMSP EAST (FT) N = 467527.14 E = 780259.81 SE CORNER SEC. 22 LAT. = 32.2829270°N LONG. = 103.5516698°W NMSP EAST (FT) N = 467541.76 E = 782900.10 802' S89°40'45"W 2641.26 FT S89°40'58"W 2640.85 FT		N89°40'34"E 2641.35 FT NE CORNER SEC. 22 LAT. = 32.2974530°N LONG. = 103.5516745°W NMSP EAST (FT) N = 472826.30 E = 782880.12 500'23.41"E 2639.58 FT 500'28.19"E 2646.15 FT NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83). LISTED NEW MEXICO STATE PLANE EAST COORDINATES ARE GRID (NAD83). BASIS OF BEARING AND DISTANCES USED ARE NEW MEXICO STATE PLANE EAST COORDINATES MODIFIED TO THE SURFACE. E Q CORNER SEC. 22 LAT. = 32.2901991°N LONG. = 103.5516779°W NMSP EAST (FT) N = 470187.30 E = 782878.31	
17 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 undivided mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the Division. <i>David H. Cook</i> 4/17/2015 Signature Date David H. Cook Printed Name david.cook@dvn.com E-mail Address		18 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. APRIL 10, 2015 (12797) Date of Survey <i>Filimon P. Jaramillo</i> Signature and Seal of Professional Surveyor Certificate Number: FILIMON P. JARAMILLO, PLS 12797 SURVEY NO. 3880	

Devon Energy, Thistle Unit 26H

1. Geologic Formations

TVD of target	8,832'	Pilot hole depth	N/A
MD at TD:	13,483'	Deepest expected fresh water:	

Basin

[illegible]

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

Devon Energy, Thistle Unit 26H

2. Casing Program

Hole Size	Casing Interval		Csg Size	Weight (lbs)	Grade	Conn	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	1,450'	13.375"	54.5	J-55	STC	1.28	3.02	5.06
12.25"	0	3,400'	9.625"	36	J-55	LTC			
12.25"	3,400'	5,300'	9.625"	40	J-55	LTC	1.56	1.74	4.41
8.75"	0	8,250'	7"	29	P-110	BTC			
8.75"	8,250'	13,482'	5.5"	17	P-110	BTC	1.42	2.19	2.07
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?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

Devon Energy, Thistle Unit 26H

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	H ₂ O gal/sk	Yld ft ³ / sack	500# Comp. Strength (hours)	Slurry Description
13-3/8" Surface	750	12.9	9.81	1.85	14	Lead: (65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sack Poly-E-Flake
	550	14.8	6.32	1.33	6	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
9-5/8" Inter.	1110	12.9	9.81	1.85	14	Lead: (65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sack Poly-E-Flake
	430	14.8	6.32	1.33	6	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
7 x 5-1/2" Combo Prod.	210	10.4	16.9	3.17	16	Lead: Tuned Light ® + 0.125 lb/sk Pol-E-Flake
	1360	14.5	5.31	1.2	25	Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite

Casing String	TOC	% Excess
13-3/8" Surface	0'	100%
9-5/8" Intermediate	0'	75%
7 x 5-1/2" Production Casing	4800'	25%

Devon Energy, Thistle Unit 26H

4. Pressure Control Equipment

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

Y	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
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Devon Energy, Thistle Unit 26H

Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.
	Y Are anchors required by manufacturer?
Y	A multibowl wellhead 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 (FMC Uni-head). 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 FMC's representatives. - If the welding is performed by a third party, the FMC's representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal. - FMC representative will install the test plug for the initial BOP test. - FMC 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 FMC Uni-head 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 FMC Uni-head. 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 Energy, Thistle Unit 26H

	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	1,450'	FW Gel	8.6-8.8	28-34	N/C
1,450'	5,300'	Saturated Brine	10.0-10.2	28-34	N/C
5,300'	13,483'	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/Pason/Visual Monitoring
---	-----------------------------

6. Logging and Testing Procedures

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

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

Devon Energy, Thistle Unit 26H

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	2328 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	H ₂ S is present
Y	H ₂ S Plan attached

8. Other facets of operation

Is this a walking operation? No.

Will be pre-setting casing? No.

Attachments

☒ Directional Plan

☐ Other, describe

devon

Thistle Unit 26H
Lea Co, NM



Plan Data for Thistle Unit 26H

Plan Point Information:									
DogLeg Severity Unit: °/100.00ft				Position offsets from Slot centre					
MD	Inc	Az	TVD	+N/-S	+E/-W	Northing	Easting	VSec	DLS
(USft)	(°)	(°)	(USft)	(USft)	(USft)	(USft)	(USft)	(USft)	(DLSU)
0.00	0.00	0.00	0.00	0.00	0.00	467616.75	778420.22	0.00	0.00
8354.54	0.00	0.00	8354.54	0.00	0.00	467616.75	778420.22	0.00	0.00
9104.54	90.00	357.91	8832.00	477.15	-17.40	468093.90	778402.82	477.47	12.00
13483.83	90.00	357.91	8832.00	4853.53	-177.00	472470.28	778243.22	4856.76	0.00

Plan Data for Thistle Unit 26H

Slot: Thistle Unit 26H
Position:
Offset is from Slot centre
+N/-S: -49.28USft Northing: 467616.75USft Latitude: 32°16'59.6"
+E/-W: 142.90USft Easting: 778420.22USft Longitude: -103°33'58.2"
Elevation Above VRD: 3703.00USft

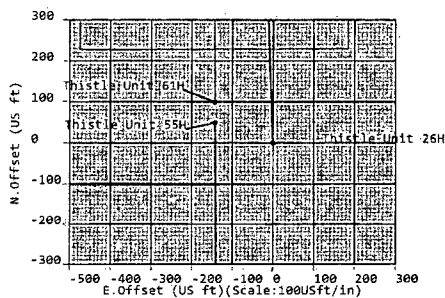
Plan Data for Thistle Unit 26H

Target Set Information:
Name: Thistle Unit 26H
Position offsets from Slot centre
Name TVD +N/-S +E/-W Northing Easting Shape Comment
(USft) (USft) (USft) (USft) (USft)
PBHL 26H 8832.00 4853.53 -177.00 472470.28 778243.22 Cuboid

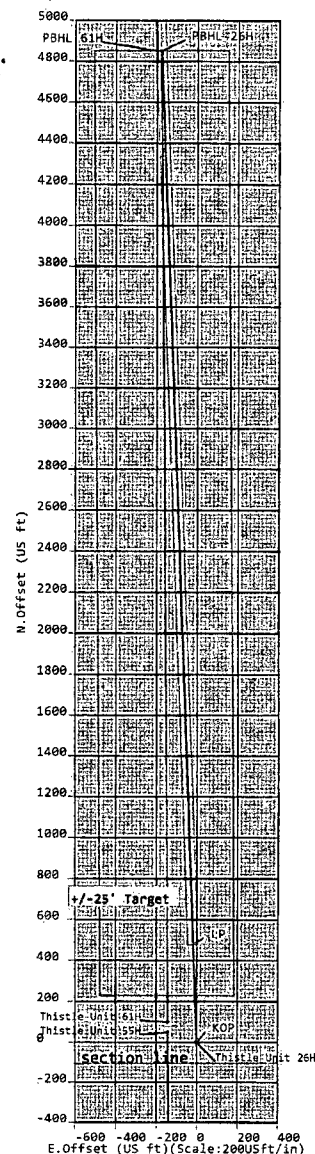
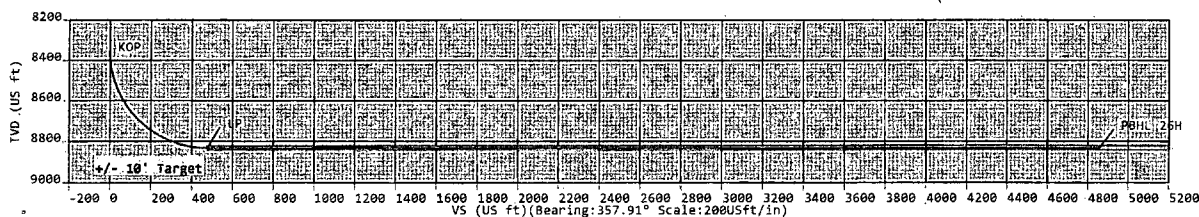
Plan Data for Thistle Unit 26H

Well: Thistle Unit 26H
Type: Main-Well
File Number:
Plan Folder: P1 Plan: P1-V2
Vertical Section: Position offset of origin from Slot centre:
+N/-S: 0.00USft Azimuth: 357.91°
+E/-W: 0.00USft
Magnetic Parameters:
Model: Field Strength: Declination: Dip: Date:
BGM 48221(nT) 7.28° 60.13° 2015-06-15

Thistle Unit 26H
Thistle Unit 55H
Thistle Unit 61H



K8-3728
GL-3703



Sign Off: Russell Joyner

5D Plan Report**Devon Energy**

Field Name: *Lea Co, NM Nad 83 NMEZ*
Site Name: *Thistle Unit 26H,55H 61H Pad*
Well Name: *Thistle Unit 26H*
Plan: *P1:V2*

17 April 2015



Thistle Unit 26H

Field Name Lea Co., NM NAD 83 NMEZ	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 Name Thistle Unit 26H 55H 61H Pad	Units : US ft North Reference : Grid Convergence Angle : 0.41 Position Northing : 467666.03 US ft Latitude : 32° 17' 0.10" Easting : 778277.92 US ft Longitude : -103° 33' 59.84" Elevation above Mean Sea Level: 3701.00 US ft Comment :		
Slot Name Thistle Unit 26H	Position (Offsets relative to Site Centre) +N / -S : 49.28 US ft Northing : 467616.75 US ft Latitude : 32° 16' 59.60" +E / -W : 142.30 US ft Easting : 778420.22 US ft Longitude : -103° 33' 58.19" Slot TVD Reference : Ground Elevation Elevation above Mean Sea Level : 3703.00 US ft Comment :		
Well Name Thistle Unit 26H	Type : Main well UWI : Plan : P1:V2 Rig Height <i>Kelly Bushing</i> : 25.00 US ft Comment : Relative to Mean Sea Level: 3728.00 US ft Closure Distance : 4856.76 US ft Closure Azimuth : 357.911° Vertical Section (Position of Origin Relative to Slot) +N / -S : 0.00 US ft +E / -W : 0.00 US ft Az : 357.91° Magnetic Parameters Model : BGGM Field Strength : 48221.6nT Dec : 7.28° Dip : 60.13° Date : 15/Jun/2015		

Target Set

Name : Thistle Unit 26H **Number of Targets :** 1

Comment :

Target Name PBHC 26H	Position (Relative to Slot centre) +N / -S : 4853.53 US ft Northing : 472470.28 US ft Latitude : 32° 17' 47.64" +E / -W : 177.00 US ft Easting : 778243.22 US ft Longitude : -103° 33' 59.85" Shape : TVD (<i>Kelly Bushing</i>) : 8832.00 US ft Guboid		
	Orientation Azimuth : 357.91° Inclination : 0.00° Dimensions Length : 8758.00 US ft Breadth : 50.00 US ft Height : 20.00 US ft		

Well path created using minimum curvature

SD 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 (°/100 US ft)	R. Rate (°/100 US ft)	T. Rate (°/100 US 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	
8354.54	0.00	0.00	8354.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	KOP
9104.54	90.00	357.91	8832.00	477.15	-17.40	477.47	12.00	12.00	0.00	357.91	LP
13483.83	90.00	357.91	8832.00	4853.53	-177.00	4856.76	0.00	0.00	0.00	0.00	PBHL 26H

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 (°/100 US ft)	Northing (US ft)	Easting (US ft)		Comment
8300.00	0.00	0.00	8300.00	0.00	0.00	0.00	0.00	467616.75	778420.22		
8354.54	0.00	0.00	8354.54	0.00	0.00	0.00	0.00	467616.75	778420.22		KOP
8400.00	5.46	357.91	8399.93	2.16	-0.08	2.16	12.00	467618.91	778420.14		
8500.00	17.46	357.91	8497.76	21.97	-0.80	21.99	12.00	467638.72	778419.42		
8600.00	29.46	357.91	8589.33	61.68	-2.25	61.72	12.00	467678.43	778417.97		
8700.00	41.46	357.91	8670.64	119.54	-4.36	119.62	12.00	467736.29	778415.86		
8800.00	53.46	357.91	8738.13	193.03	-7.04	193.16	12.00	467809.78	778413.18		
8900.00	65.46	357.91	8788.86	278.94	-10.17	279.12	12.00	467895.69	778410.05		
9000.00	77.46	357.91	8820.61	373.51	-13.62	373.76	12.00	467990.26	778406.60		
9100.00	89.46	357.91	8831.98	472.61	-17.24	472.92	12.00	468089.36	778402.98		
9104.54	90.00	357.91	8832.00	477.15	-17.40	477.47	12.00	468093.90	778402.82		LP
9200.00	90.00	357.91	8832.00	572.54	-20.88	572.92	0.00	468189.29	778399.34		
9300.00	90.00	357.91	8832.00	672.48	-24.52	672.92	0.00	468289.23	778395.70		
9400.00	90.00	357.91	8832.00	772.41	-28.17	772.92	0.00	468389.16	778392.05		
9500.00	90.00	357.91	8832.00	872.34	-31.81	872.92	0.00	468489.09	778388.41		
9600.00	90.00	357.91	8832.00	972.28	-35.46	972.92	0.00	468589.03	778384.76		
9700.00	90.00	357.91	8832.00	1072.21	-39.10	1072.92	0.00	468688.96	778381.12		
9800.00	90.00	357.91	8832.00	1172.15	-42.75	1172.92	0.00	468788.90	778377.47		
9900.00	90.00	357.91	8832.00	1272.08	-46.39	1272.92	0.00	468888.83	778373.83		
10000.00	90.00	357.91	8832.00	1372.01	-50.03	1372.92	0.00	468988.76	778370.19		
10100.00	90.00	357.91	8832.00	1471.95	-53.68	1472.92	0.00	469088.70	778366.54		
10200.00	90.00	357.91	8832.00	1571.88	-57.32	1572.92	0.00	469188.63	778362.90		
10300.00	90.00	357.91	8832.00	1671.81	-60.97	1672.92	0.00	469288.56	778359.25		
10400.00	90.00	357.91	8832.00	1771.75	-64.61	1772.92	0.00	469388.50	778355.61		
10500.00	90.00	357.91	8832.00	1871.68	-68.26	1872.92	0.00	469488.43	778351.96		
10600.00	90.00	357.91	8832.00	1971.61	-71.90	1972.92	0.00	469588.36	778348.32		
10700.00	90.00	357.91	8832.00	2071.55	-75.55	2072.92	0.00	469688.30	778344.67		
10800.00	90.00	357.91	8832.00	2171.48	-79.19	2172.92	0.00	469788.23	778341.03		
10900.00	90.00	357.91	8832.00	2271.41	-82.83	2272.92	0.00	469888.16	778337.39		
11000.00	90.00	357.91	8832.00	2371.35	-86.48	2372.92	0.00	469988.10	778333.74		
11100.00	90.00	357.91	8832.00	2471.28	-90.12	2472.92	0.00	470088.03	778330.10		
11200.00	90.00	357.91	8832.00	2571.22	-93.77	2572.92	0.00	470187.97	778326.45		
11300.00	90.00	357.91	8832.00	2671.15	-97.41	2672.92	0.00	470287.90	778322.81		
11400.00	90.00	357.91	8832.00	2771.08	-101.06	2772.92	0.00	470387.83	778319.16		
11500.00	90.00	357.91	8832.00	2871.02	-104.70	2872.92	0.00	470487.77	778315.52		
11600.00	90.00	357.91	8832.00	2970.95	-108.35	2972.92	0.00	470587.70	778311.87		
11700.00	90.00	357.91	8832.00	3070.88	-111.99	3072.92	0.00	470687.63	778308.23		
11800.00	90.00	357.91	8832.00	3170.82	-115.63	3172.92	0.00	470787.57	778304.59		
11900.00	90.00	357.91	8832.00	3270.75	-119.28	3272.92	0.00	470887.50	778300.94		
12000.00	90.00	357.91	8832.00	3370.68	-122.92	3372.92	0.00	470987.43	778297.30		
12100.00	90.00	357.91	8832.00	3470.62	-126.57	3472.92	0.00	471087.37	778293.65		
12200.00	90.00	357.91	8832.00	3570.55	-130.21	3572.92	0.00	471187.30	778290.01		
12300.00	90.00	357.91	8832.00	3670.48	-133.86	3672.92	0.00	471287.23	778286.36		
12400.00	90.00	357.91	8832.00	3770.42	-137.50	3772.92	0.00	471387.17	778282.72		
12500.00	90.00	357.91	8832.00	3870.35	-141.15	3872.92	0.00	471487.10	778279.07		
12600.00	90.00	357.91	8832.00	3970.29	-144.79	3972.92	0.00	471587.04	778275.43		
12700.00	90.00	357.91	8832.00	4070.22	-148.43	4072.92	0.00	471686.97	778271.79		
12800.00	90.00	357.91	8832.00	4170.15	-152.08	4172.92	0.00	471786.90	778268.14		
12900.00	90.00	357.91	8832.00	4270.09	-155.72	4272.92	0.00	471886.84	778264.50		
13000.00	90.00	357.91	8832.00	4370.02	-159.37	4372.92	0.00	471986.77	778260.85		
13100.00	90.00	357.91	8832.00	4469.95	-163.01	4472.92	0.00	472086.70	778257.21		

5D Plan Report

Interpolated Points (Relative to Slot centre, TVD relative to Kelly Bushing)										
MD (US ft)	Incl (°)	Az (°)	TVD (US ft)	N Offset (US ft)	E Offset (US ft)	VS (US ft)	DLS (%/100 US ft)	Northing (US ft)	Easting (US ft)	Comment
13200.00	90.00	357.91	8832.00	4569.89	-166.66	4572.92	0.00	472186.64	778253.56	
13300.00	90.00	357.91	8832.00	4669.82	-170.30	4672.92	0.00	472286.57	778249.92	
13400.00	90.00	357.91	8832.00	4769.75	-173.94	4772.92	0.00	472386.50	778246.28	
13483.83	90.00	357.91	8832.00	4853.53	-177.00	4856.76	0.00	472470.28	778243.22	PBHL 26H

5D Anti-Collision Report**Devon Energy****Field Name:** *Lea Co, NM Nad 83 NMEZ***Site Name:** *Thistle Unit 26H,55H 61H Pad***Well Name:** *Thistle Unit 26H*

17 April 2015




Weatherford®
Thistle Unit 26H

Field Name Lea Co. NM Nad 83 NMEZ	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 Name Thistle Unit 26H, 55H, 61H Pad	Units : US ft	North Reference : Grid	Convergence Angle : 0.41	
	Position	Northing : 467666.03 US ft	Latitude : 32° 17' 0.10"	
		Easting : 778277.92 US ft	Longitude : -103° 33' 59.84"	
	Elevation above Mean Sea Level: 3701.00 US ft			
Comment :				
Slot Name Thistle Unit 26H	Position (Offsets relative to Site Centre)			
	+N / -S : 49.28 US ft	Northing : 467616.75 US ft	Latitude : 32° 16' 59.60"	
	+E / -W : 142.30 US ft	Easting : 778420.22 US ft	Longitude : -103° 33' 58.19"	
	Slot TVD Reference : Ground Elevation			
Elevation above Mean Sea Level : 3703.00 US ft				
Comment :				
Well Name Thistle Unit 26H	Type : Main well		UWI :	Plan : Working Plan
	Rig Height : Kelly Bushing : 25.00 US ft		Comment :	
	Relative to Mean Sea Level: 3728.00 US ft			
	Closure Distance : 4856.76 US ft		Closure Azimuth : 357.911°	
	Vertical Section (Position of Origin Relative to Slot)			
	+N / -S : 0.00 US ft		+E / -W : 0.00 US ft	Az : 357.91°
	Magnetic Parameters			
	Model : BGGM	Field Strength : 48221.6nT	Dec : 7.28°	Dip : 60.13° Date : 15/Jun/2015

Collision / Uncertainty Analysis				
Primary Well	Start MD (US ft)	End MD (US ft)	Collision Risk Interval	No. of Std Deviations in Error Computation
Thistle Unit 26H (p)	0.00	13483.83	100.00	2

Secondary Well Names
Thistle Unit 61H (p)
Thistle Unit 55H (p)

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-Ci
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

Separation factors calculated using Pedal Curve (Independent Uncertainty). Well path created using minimum curvature.

5D Anti-Collision Report

Anti-Collision Proximity Summary (TVD Relative to Kelly Bushing)

Secondary Well Name	PH MD (US ft)	Sec MD (US ft)	TVD (US ft)	CC (US ft)	ES (US ft)	SF	Risk
Thistle Unit 61H (p)	8675.00	8650.48	8651.48	138.94	99.69	3.54	
Thistle Unit 55H (p)	8603.91	8590.72	8592.72	140.71	101.80	3.62	

Primary Well: Thistle Unit 26H (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)	Nearest Well	CC (US ft)	ES (US ft)	SF	Risk
0.00	0.00	289.10	0.00	0.00	Thistle Unit 55H (p)	150.60	150.04	265.78	
100.00	100.00	289.10	0.11	0.11	Thistle Unit 55H (p)	150.59	149.81	191.56	
200.00	200.00	289.10	0.34	0.34	Thistle Unit 55H (p)	150.59	149.36	122.06	
300.00	300.00	289.10	0.56	0.56	Thistle Unit 55H (p)	150.59	148.91	89.49	
400.00	400.00	289.10	0.79	0.79	Thistle Unit 55H (p)	150.59	148.46	70.64	
500.00	500.00	289.10	1.01	1.01	Thistle Unit 55H (p)	150.59	148.01	58.34	
600.00	600.00	289.10	1.24	1.24	Thistle Unit 55H (p)	150.59	147.56	49.69	
700.00	700.00	289.10	1.46	1.46	Thistle Unit 55H (p)	150.59	147.11	43.27	
800.00	800.00	289.10	1.69	1.69	Thistle Unit 55H (p)	150.59	146.66	38.32	
900.00	900.00	289.10	1.91	1.91	Thistle Unit 55H (p)	150.59	146.21	34.39	
1000.00	1000.00	289.10	2.14	2.14	Thistle Unit 55H (p)	150.59	145.76	31.19	
1100.00	1100.00	289.10	2.36	2.36	Thistle Unit 55H (p)	150.59	145.31	28.53	
1200.00	1200.00	289.10	2.59	2.59	Thistle Unit 55H (p)	150.59	144.86	26.29	
1300.00	1300.00	289.10	2.81	2.81	Thistle Unit 55H (p)	150.59	144.41	24.38	
1400.00	1400.00	289.10	3.03	3.03	Thistle Unit 55H (p)	150.59	143.96	22.73	
1500.00	1500.00	289.10	3.26	3.26	Thistle Unit 55H (p)	150.59	143.52	21.28	
1600.00	1600.00	289.10	3.48	3.48	Thistle Unit 55H (p)	150.59	143.07	20.01	
1700.00	1700.00	289.10	3.71	3.71	Thistle Unit 55H (p)	150.59	142.62	18.88	
1800.00	1800.00	289.10	3.93	3.93	Thistle Unit 55H (p)	150.59	142.17	17.88	
1900.00	1900.00	289.10	4.16	4.16	Thistle Unit 55H (p)	150.59	141.72	16.97	
2000.00	2000.00	289.10	4.38	4.38	Thistle Unit 55H (p)	150.59	141.27	16.15	
2100.00	2100.00	289.10	4.61	4.61	Thistle Unit 55H (p)	150.59	140.82	15.41	
2200.00	2200.00	289.10	4.83	4.83	Thistle Unit 55H (p)	150.59	140.37	14.73	
2300.00	2300.00	289.10	5.06	5.06	Thistle Unit 55H (p)	150.59	139.92	14.11	
2400.00	2400.00	289.10	5.28	5.28	Thistle Unit 55H (p)	150.59	139.47	13.54	
2500.00	2500.00	289.10	5.51	5.51	Thistle Unit 55H (p)	150.59	139.02	13.01	
2600.00	2600.00	289.10	5.73	5.73	Thistle Unit 55H (p)	150.59	138.57	12.53	
2700.00	2700.00	289.10	5.96	5.96	Thistle Unit 55H (p)	150.59	138.12	12.08	
2800.00	2800.00	289.10	6.18	6.18	Thistle Unit 55H (p)	150.59	137.67	11.66	
2900.00	2900.00	289.10	6.41	6.41	Thistle Unit 55H (p)	150.59	137.22	11.26	
3000.00	3000.00	289.10	6.63	6.63	Thistle Unit 55H (p)	150.59	136.77	10.90	

5D Anti-Collision Report

Primary Well: Thistle Unit 26H (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)	Nearest Well	CC (US ft)	ES (US ft)	SF	Risk
3100.00	3100.00	289.10	6.86	6.86	Thistle Unit 55H (p)	150.59	136.32	10.55	
3200.00	3200.00	289.10	7.08	7.08	Thistle Unit 55H (p)	150.59	135.87	10.23	
3300.00	3300.00	289.10	7.31	7.31	Thistle Unit 55H (p)	150.59	135.42	9.93	
3400.00	3400.00	289.10	7.53	7.53	Thistle Unit 55H (p)	150.59	134.97	9.64	
3500.00	3500.00	289.10	7.76	7.76	Thistle Unit 55H (p)	150.59	134.53	9.37	
3600.00	3600.00	289.10	7.98	7.98	Thistle Unit 55H (p)	150.59	134.08	9.12	
3700.00	3700.00	289.10	8.20	8.20	Thistle Unit 55H (p)	150.59	133.63	8.88	
3800.00	3800.00	289.10	8.43	8.43	Thistle Unit 55H (p)	150.59	133.18	8.65	
3900.00	3900.00	289.10	8.65	8.65	Thistle Unit 55H (p)	150.59	132.73	8.43	
4000.00	4000.00	289.10	8.88	8.88	Thistle Unit 55H (p)	150.59	132.28	8.22	
4100.00	4100.00	289.10	9.10	9.10	Thistle Unit 55H (p)	150.59	131.83	8.03	
4200.00	4200.00	289.10	9.33	9.33	Thistle Unit 55H (p)	150.59	131.38	7.84	
4300.00	4300.00	289.10	9.55	9.55	Thistle Unit 55H (p)	150.59	130.93	7.66	
4400.00	4400.00	289.10	9.78	9.78	Thistle Unit 55H (p)	150.59	130.48	7.49	
4500.00	4500.00	289.10	10.00	10.00	Thistle Unit 55H (p)	150.59	130.03	7.32	
4600.00	4600.00	289.10	10.23	10.23	Thistle Unit 55H (p)	150.59	129.58	7.17	
4700.00	4700.00	289.10	10.45	10.45	Thistle Unit 55H (p)	150.59	129.13	7.02	
4800.00	4800.00	289.10	10.68	10.68	Thistle Unit 55H (p)	150.59	128.68	6.87	
4900.00	4900.00	289.10	10.90	10.90	Thistle Unit 55H (p)	150.59	128.23	6.73	
5000.00	5000.00	289.10	11.13	11.13	Thistle Unit 55H (p)	150.59	127.78	6.60	
5100.00	5100.00	289.10	11.35	11.35	Thistle Unit 55H (p)	150.59	127.33	6.47	
5200.00	5200.00	289.10	11.58	11.58	Thistle Unit 55H (p)	150.59	126.88	6.35	
5300.00	5300.00	289.10	11.80	11.80	Thistle Unit 55H (p)	150.59	126.43	6.23	
5400.00	5400.00	289.10	12.03	12.03	Thistle Unit 55H (p)	150.59	125.98	6.12	
5500.00	5500.00	289.10	12.25	12.25	Thistle Unit 55H (p)	150.59	125.53	6.01	
5600.00	5600.00	289.10	12.48	12.48	Thistle Unit 55H (p)	150.59	125.09	5.90	
5700.00	5700.00	289.10	12.70	12.70	Thistle Unit 55H (p)	150.59	124.64	5.80	
5800.00	5800.00	289.10	12.93	12.93	Thistle Unit 55H (p)	150.59	124.19	5.70	
5900.00	5900.00	289.10	13.15	13.15	Thistle Unit 55H (p)	150.59	123.74	5.61	
6000.00	6000.00	289.10	13.37	13.37	Thistle Unit 55H (p)	150.59	123.29	5.52	
6100.00	6100.00	289.10	13.60	13.60	Thistle Unit 55H (p)	150.59	122.84	5.43	
6200.00	6200.00	289.10	13.82	13.82	Thistle Unit 55H (p)	150.59	122.39	5.34	
6300.00	6300.00	289.10	14.05	14.05	Thistle Unit 55H (p)	150.59	121.94	5.26	
6400.00	6400.00	289.10	14.27	14.27	Thistle Unit 55H (p)	150.59	121.49	5.17	
6500.00	6500.00	289.10	14.50	14.50	Thistle Unit 55H (p)	150.59	121.04	5.10	
6600.00	6600.00	289.10	14.72	14.72	Thistle Unit 55H (p)	150.59	120.59	5.02	

SD Anti-Collision Report

Primary Well: Thistle Unit 26H (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)	Nearest Well	CC (US ft)	ES (US ft)	SF	Risk
6700.00	6700.00	289.10	14.95	14.95	Thistle Unit 55H (p)	150.59	120.14	4.95	
6800.00	6800.00	289.10	15.17	15.17	Thistle Unit 55H (p)	150.59	119.69	4.87	
6900.00	6900.00	289.10	15.40	15.40	Thistle Unit 55H (p)	150.59	119.24	4.80	
7000.00	7000.00	289.10	15.62	15.62	Thistle Unit 55H (p)	150.59	118.79	4.74	
7100.00	7100.00	289.10	15.85	15.85	Thistle Unit 55H (p)	150.59	118.34	4.67	
7200.00	7200.00	289.10	16.07	16.07	Thistle Unit 55H (p)	150.59	117.89	4.61	
7300.00	7300.00	289.10	16.30	16.30	Thistle Unit 55H (p)	150.59	117.44	4.54	
7400.00	7400.00	289.10	16.52	16.52	Thistle Unit 55H (p)	150.59	116.99	4.48	
7500.00	7500.00	289.10	16.75	16.75	Thistle Unit 55H (p)	150.59	116.54	4.42	
7600.00	7600.00	289.10	16.97	16.97	Thistle Unit 55H (p)	150.59	116.09	4.37	
7700.00	7700.00	289.10	17.20	17.20	Thistle Unit 55H (p)	150.59	115.65	4.31	
7800.00	7800.00	289.10	17.42	17.42	Thistle Unit 55H (p)	150.59	115.20	4.25	
7900.00	7900.00	289.10	17.65	17.65	Thistle Unit 55H (p)	150.59	114.75	4.20	
8000.00	8000.00	289.10	17.87	17.87	Thistle Unit 55H (p)	150.59	114.30	4.15	
8100.00	8100.00	289.10	18.10	18.10	Thistle Unit 55H (p)	150.59	113.85	4.10	
8200.00	8200.00	289.10	18.32	18.32	Thistle Unit 55H (p)	150.59	113.40	4.05	
8300.00	8300.00	289.10	18.54	18.54	Thistle Unit 55H (p)	150.59	112.95	4.00	
8400.00	8399.93	290.33	18.77	18.68	Thistle Unit 55H (p)	149.82	111.78	3.94	
8500.00	8497.76	282.43	18.98	18.44	Thistle Unit 55H (p)	144.11	105.60	3.74	
8600.00	8589.33	267.41	19.19	17.67	Thistle Unit 55H (p)	140.60	101.76	3.62	
8700.00	8670.64	265.31	19.42	16.51	Thistle Unit 61H (p)	139.77	100.40	3.55	
8800.00	8738.13	249.17	19.74	15.11	Thistle Unit 61H (p)	164.87	125.16	4.15	
8900.00	8788.86	242.42	20.15	13.72	Thistle Unit 61H (p)	223.24	183.22	5.58	
9000.00	8820.61	247.16	20.67	12.69	Thistle Unit 61H (p)	303.09	262.95	7.55	
9100.00	8831.98	268.56	21.32	12.30	Thistle Unit 61H (p)	393.85	353.61	9.79	
9200.00	8832.00	270.00	22.08	12.49	Thistle Unit 61H (p)	488.70	448.51	12.16	
9300.00	8832.00	270.00	22.96	12.71	Thistle Unit 61H (p)	585.26	545.07	14.56	
9400.00	8832.00	270.00	23.95	12.97	Thistle Unit 61H (p)	682.82	642.60	16.98	
9500.00	8832.00	270.00	25.04	13.27	Thistle Unit 61H (p)	780.99	740.75	19.41	
9600.00	8832.00	270.00	26.21	13.60	Thistle Unit 61H (p)	879.57	839.34	21.86	
9700.00	8832.00	270.00	27.46	13.95	Thistle Unit 61H (p)	978.45	938.21	24.32	
9800.00	8832.00	270.00	28.77	14.34	Thistle Unit 61H (p)	1077.53	1037.30	26.79	
9900.00	8832.00	270.00	30.13	14.76	Thistle Unit 61H (p)	1176.76	1136.53	29.25	
10000.00	8832.00	270.00	31.55	15.20	Thistle Unit 61H (p)	1276.12	1235.86	31.70	
10100.00	8832.00	270.00	33.00	15.66	Thistle Unit 61H (p)	1375.57	1335.29	34.15	
10200.00	8832.00	270.00	34.50	16.14	Thistle Unit 61H (p)	1475.09	1434.79	36.61	

5D Anti-Collision Report

Primary Well: Thistle Unit 26H (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)	Nearest Well	CC (US ft)	ES (US ft)	SF	Risk
10300.00	8832.00	270.00	36.02	16.64	Thistle Unit 61H (p)	1574.67	1534.36	39.06	
10400.00	8832.00	270.00	37.57	17.15	Thistle Unit 61H (p)	1674.31	1633.97	41.51	
10500.00	8832.00	270.00	39.15	17.69	Thistle Unit 61H (p)	1773.98	1733.63	43.96	
10600.00	8832.00	270.00	40.75	18.23	Thistle Unit 61H (p)	1873.69	1833.32	46.41	
10700.00	8832.00	270.00	42.37	18.79	Thistle Unit 61H (p)	1973.43	1933.04	48.86	
10800.00	8832.00	270.00	44.00	19.36	Thistle Unit 61H (p)	2073.19	2032.79	51.31	
10900.00	8832.00	270.00	45.65	19.90	Thistle Unit 61H (p)	2172.98	2132.59	53.80	
11000.00	8832.00	270.00	47.32	20.50	Thistle Unit 61H (p)	2272.78	2232.33	56.18	
11100.00	8832.00	270.00	49.00	21.12	Thistle Unit 61H (p)	2372.60	2332.13	58.63	
11200.00	8832.00	181.60	50.69	21.73	Thistle Unit 61H (p)	2390.42	2343.14	50.55	
11300.00	8832.00	181.53	52.39	22.35	Thistle Unit 61H (p)	2389.66	2341.25	49.36	
11400.00	8832.00	181.46	54.10	22.97	Thistle Unit 61H (p)	2388.90	2339.35	48.20	
11500.00	8832.00	181.39	55.81	23.60	Thistle Unit 61H (p)	2388.15	2337.51	47.15	
11600.00	8832.00	181.32	57.54	24.23	Thistle Unit 61H (p)	2387.40	2335.47	45.97	
11700.00	8832.00	181.25	59.27	24.87	Thistle Unit 61H (p)	2386.66	2333.59	44.97	
11800.00	8832.00	181.18	61.01	25.52	Thistle Unit 61H (p)	2385.91	2331.64	43.96	
11900.00	8832.00	181.11	62.75	26.17	Thistle Unit 61H (p)	2385.18	2329.63	42.94	
12000.00	8832.00	181.05	64.50	26.82	Thistle Unit 61H (p)	2384.44	2327.65	41.99	
12100.00	8832.00	180.98	66.25	27.48	Thistle Unit 61H (p)	2383.71	2325.68	41.08	
12200.00	8832.00	180.91	68.01	28.14	Thistle Unit 61H (p)	2382.98	2323.71	40.20	
12300.00	8832.00	180.84	69.77	28.81	Thistle Unit 61H (p)	2382.25	2321.73	39.36	
12400.00	8832.00	180.77	71.54	29.47	Thistle Unit 61H (p)	2381.53	2319.76	38.55	
12500.00	8832.00	180.70	73.31	30.15	Thistle Unit 61H (p)	2380.82	2317.78	37.77	
12600.00	8832.00	180.63	75.08	30.82	Thistle Unit 61H (p)	2380.10	2315.80	37.02	
12700.00	8832.00	180.56	76.86	31.50	Thistle Unit 61H (p)	2379.39	2313.81	36.28	
12800.00	8832.00	180.49	78.64	32.18	Thistle Unit 61H (p)	2378.68	2311.81	35.57	
12900.00	8832.00	180.42	80.42	32.86	Thistle Unit 61H (p)	2377.98	2309.79	34.87	
13000.00	8832.00	180.35	82.20	33.54	Thistle Unit 61H (p)	2377.28	2307.76	34.20	
13100.00	8832.00	180.28	83.99	34.23	Thistle Unit 61H (p)	2376.58	2305.73	33.54	
13200.00	8832.00	180.21	85.78	34.92	Thistle Unit 61H (p)	2375.89	2303.70	32.91	
13300.00	8832.00	180.14	87.57	35.61	Thistle Unit 61H (p)	2375.20	2301.67	32.30	
13400.00	8832.00	180.07	89.36	36.30	Thistle Unit 61H (p)	2374.51	2299.64	31.72	
13483.83	8832.00	180.02	90.87	36.88	Thistle Unit 61H (p)	2374.00	2298.14	31.29	

Secondary Well: Thistle Unit 61H (p) (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)	CC (US ft)	ES (US ft)	SF	Risk
0.00	1.00	0.00	304.83	0.00	0.00	173.79	173.22	306.70	

SD Anti-Collision Report

Secondary Well: Thistle Unit G1H (p) (TVD Relative to Kelly Bushing (Primary)) All Azimuth Relative to GRID (NORTH)									Risk
Prim MD (US ft)	TVD (US ft)	Sec MD (US ft)	T Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	ICC (US ft)	ES (US ft)	SF	
100.00	100.00	99.00	304.83	0.11	0.11	173.79	173.00	221.12	
200.00	200.00	199.00	304.83	0.34	0.34	173.79	172.55	140.95	
300.00	300.00	299.00	304.83	0.56	0.56	173.79	172.11	103.40	
400.00	400.00	399.00	304.83	0.78	0.78	173.79	171.66	81.65	
500.00	500.00	499.00	304.83	1.01	1.01	173.79	171.21	67.45	
600.00	600.00	599.00	304.83	1.23	1.23	173.79	170.76	57.46	
700.00	700.00	699.00	304.83	1.46	1.46	173.79	170.31	50.05	
800.00	800.00	799.00	304.83	1.68	1.68	173.79	169.87	44.33	
900.00	900.00	899.00	304.83	1.91	1.91	173.79	169.42	39.78	
1000.00	1000.00	999.00	304.83	2.13	2.13	173.79	168.97	36.08	
1100.00	1100.00	1099.00	304.83	2.36	2.36	173.79	168.52	33.01	
1200.00	1200.00	1199.00	304.83	2.58	2.58	173.79	168.07	30.42	
1300.00	1300.00	1299.00	304.83	2.81	2.81	173.79	167.63	28.21	
1400.00	1400.00	1399.00	304.83	3.03	3.03	173.79	167.18	26.30	
1500.00	1500.00	1499.00	304.83	3.26	3.26	173.79	166.73	24.63	
1600.00	1600.00	1599.00	304.83	3.48	3.48	173.79	166.28	23.16	
1700.00	1700.00	1699.00	304.83	3.71	3.71	173.79	165.83	21.85	
1800.00	1800.00	1799.00	304.83	3.93	3.93	173.79	165.39	20.69	
1900.00	1900.00	1899.00	304.83	4.16	4.16	173.79	164.94	19.64	
2000.00	2000.00	1999.00	304.83	4.38	4.38	173.79	164.49	18.70	
2100.00	2100.00	2099.00	304.83	4.61	4.61	173.79	164.04	17.84	
2200.00	2200.00	2199.00	304.83	4.83	4.83	173.79	163.59	17.05	
2300.00	2300.00	2299.00	304.83	5.06	5.06	173.79	163.15	16.33	
2400.00	2400.00	2399.00	304.83	5.28	5.28	173.79	162.70	15.67	
2500.00	2500.00	2499.00	304.83	5.51	5.51	173.79	162.25	15.07	
2600.00	2600.00	2599.00	304.83	5.73	5.73	173.79	161.80	14.50	
2700.00	2700.00	2699.00	304.83	5.95	5.95	173.79	161.35	13.98	
2800.00	2800.00	2799.00	304.83	6.18	6.18	173.79	160.91	13.49	
2900.00	2900.00	2899.00	304.83	6.40	6.40	173.79	160.46	13.04	
3000.00	3000.00	2999.00	304.83	6.63	6.63	173.79	160.01	12.62	
3100.00	3100.00	3099.00	304.83	6.85	6.85	173.79	159.56	12.22	
3200.00	3200.00	3199.00	304.83	7.08	7.08	173.79	159.11	11.85	
3300.00	3300.00	3299.00	304.83	7.30	7.30	173.79	158.67	11.49	
3400.00	3400.00	3399.00	304.83	7.53	7.53	173.79	158.22	11.16	
3500.00	3500.00	3499.00	304.83	7.75	7.75	173.79	157.77	10.85	
3600.00	3600.00	3599.00	304.83	7.98	7.98	173.79	157.32	10.56	
3700.00	3700.00	3699.00	304.83	8.20	8.20	173.79	156.87	10.28	
3800.00	3800.00	3799.00	304.83	8.43	8.43	173.79	156.43	10.01	
3900.00	3900.00	3899.00	304.83	8.65	8.65	173.79	155.98	9.76	
4000.00	4000.00	3999.00	304.83	8.88	8.88	173.79	155.53	9.52	
4100.00	4100.00	4099.00	304.83	9.10	9.10	173.79	155.08	9.29	
4200.00	4200.00	4199.00	304.83	9.33	9.33	173.79	154.63	9.07	
4300.00	4300.00	4299.00	304.83	9.55	9.55	173.79	154.19	8.87	
4400.00	4400.00	4399.00	304.83	9.78	9.78	173.79	153.74	8.67	
4500.00	4500.00	4499.00	304.83	10.00	10.00	173.79	153.29	8.48	
4600.00	4600.00	4599.00	304.83	10.23	10.23	173.79	152.84	8.30	
4700.00	4700.00	4699.00	304.83	10.45	10.45	173.79	152.39	8.12	
4800.00	4800.00	4799.00	304.83	10.68	10.68	173.79	151.95	7.96	
4900.00	4900.00	4899.00	304.83	10.90	10.90	173.79	151.50	7.80	
5000.00	5000.00	4999.00	304.83	11.12	11.12	173.79	151.05	7.64	
5100.00	5100.00	5099.00	304.83	11.35	11.35	173.79	150.60	7.50	
5200.00	5200.00	5199.00	304.83	11.57	11.57	173.79	150.16	7.35	
5300.00	5300.00	5299.00	304.83	11.80	11.80	173.79	149.71	7.22	
5400.00	5400.00	5399.00	304.83	12.02	12.02	173.79	149.26	7.09	
5500.00	5500.00	5499.00	304.83	12.25	12.25	173.79	148.81	6.96	
5600.00	5600.00	5599.00	304.83	12.47	12.47	173.79	148.36	6.84	
5700.00	5700.00	5699.00	304.83	12.70	12.70	173.79	147.92	6.72	
5800.00	5800.00	5799.00	304.83	12.92	12.92	173.79	147.47	6.60	

SD Anti-Collision Report

Secondary Well - Thisle Unit 61H (p) (TVD Relative to Kelly Bushing (Primary)) - 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)	CC (US ft)	ES (US ft)	SF	Risk
5900.00	5900.00	5899.00	304.83	13.15	13.15	173.79	147.02	6.49	
6000.00	6000.00	5999.00	304.83	13.37	13.37	173.79	146.57	6.39	
6100.00	6100.00	6099.00	304.83	13.60	13.60	173.79	146.12	6.28	
6200.00	6200.00	6199.00	304.83	13.82	13.82	173.79	145.68	6.18	
6300.00	6300.00	6299.00	304.83	14.05	14.05	173.79	145.23	6.09	
6400.00	6400.00	6399.00	304.83	14.27	14.27	173.79	144.78	5.99	
6500.00	6500.00	6499.00	304.83	14.50	14.50	173.79	144.33	5.90	
6600.00	6600.00	6599.00	304.83	14.72	14.72	173.79	143.88	5.81	
6700.00	6700.00	6699.00	304.83	14.95	14.95	173.79	143.44	5.73	
6800.00	6800.00	6799.00	304.83	15.17	15.17	173.79	142.99	5.64	
6900.00	6900.00	6899.00	304.83	15.40	15.40	173.79	142.54	5.56	
7000.00	7000.00	6999.00	304.83	15.62	15.62	173.79	142.09	5.48	
7100.00	7100.00	7099.00	304.83	15.85	15.85	173.79	141.64	5.41	
7200.00	7200.00	7199.00	304.83	16.07	16.07	173.79	141.20	5.33	
7300.00	7300.00	7299.00	304.83	16.29	16.29	173.79	140.75	5.26	
7400.00	7400.00	7399.00	304.83	16.52	16.52	173.79	140.30	5.19	
7500.00	7500.00	7499.00	304.83	16.74	16.74	173.79	139.85	5.12	
7600.00	7600.00	7599.00	304.83	16.97	16.97	173.79	139.40	5.05	
7700.00	7700.00	7699.00	304.83	17.19	17.19	173.79	138.96	4.99	
7800.00	7800.00	7799.00	304.83	17.42	17.42	173.79	138.51	4.93	
7900.00	7900.00	7899.00	304.83	17.64	17.64	173.79	138.06	4.86	
8000.00	8000.00	7999.00	304.83	17.87	17.87	173.79	137.61	4.80	
8100.00	8100.00	8099.00	304.83	18.09	18.09	173.79	137.16	4.75	
8200.00	8200.00	8199.00	304.83	18.32	18.32	173.79	136.72	4.69	
8300.00	8300.00	8299.00	304.83	18.54	18.54	173.79	136.27	4.63	
8400.00	8399.93	8398.93	306.22	18.77	18.77	172.50	134.46	4.54	
8500.00	8497.76	8496.76	299.50	18.99	18.99	161.54	123.08	4.20	
8600.00	8589.33	8588.33	284.97	19.19	19.19	145.34	106.51	3.74	
8700.00	8670.64	8669.64	265.31	19.38	19.38	139.77	100.40	3.55	
8800.00	8738.13	8737.13	249.17	19.53	19.53	164.87	125.16	4.15	
8900.00	8788.86	8787.86	242.42	19.64	19.64	223.24	183.22	5.58	
9000.00	8820.61	8819.61	247.16	19.71	19.71	303.09	262.95	7.55	
9100.00	8831.98	8830.98	268.56	19.74	19.74	393.85	353.61	9.79	
9200.00	8832.00	8831.00	270.00	19.74	19.74	488.70	448.51	12.16	
9300.00	8832.00	8831.00	270.00	19.74	19.74	585.26	545.07	14.56	
9400.00	8832.00	8831.00	270.00	19.74	19.74	682.82	642.60	16.98	
9500.00	8832.00	8831.00	270.00	19.74	19.74	780.99	740.75	19.41	
9600.00	8832.00	8831.00	270.00	19.74	19.74	879.57	839.34	21.86	
9700.00	8832.00	8831.00	270.00	19.74	19.74	978.45	938.21	24.32	
9800.00	8832.00	8831.00	270.00	19.74	19.74	1077.53	1037.30	26.79	
9900.00	8832.00	8831.00	270.00	19.74	19.74	1176.76	1136.53	29.25	
10000.00	8832.00	8831.00	270.00	19.74	19.74	1276.12	1235.86	31.70	
10100.00	8832.00	8831.00	270.00	19.74	19.74	1375.57	1335.29	34.15	
10200.00	8832.00	8831.00	270.00	19.74	19.74	1475.09	1434.79	36.61	
10300.00	8832.00	8831.00	270.00	19.74	19.74	1574.67	1534.36	39.06	
10400.00	8832.00	8831.00	270.00	19.74	19.74	1674.31	1633.97	41.51	
10500.00	8832.00	8831.00	270.00	19.74	19.74	1773.98	1733.63	43.96	
10600.00	8832.00	8831.00	270.00	19.74	19.74	1873.69	1833.32	46.41	
10700.00	8832.00	8831.00	270.00	19.74	19.74	1973.43	1933.04	48.86	
10800.00	8832.00	8831.00	270.00	19.74	19.74	2073.19	2032.79	51.31	
10900.00	8832.00	8831.00	270.00	19.74	19.74	2172.98	2132.59	53.80	
11000.00	8832.00	8831.00	270.00	19.74	19.74	2272.78	2232.33	56.18	
11100.00	8832.00	8831.00	270.00	19.74	19.74	2372.60	2332.13	58.63	
11200.00	11221.42	13517.00	181.60	51.32	24.99	2390.42	2343.14	50.55	
11300.00	11220.74	13616.96	181.53	52.93	25.52	2389.66	2341.25	49.36	
11400.00	11220.06	13716.91	181.46	54.54	26.04	2388.90	2339.35	48.20	
11500.00	11219.38	13816.87	181.39	56.17	26.50	2388.15	2337.51	47.15	
11600.00	11218.70	13916.82	181.32	57.81	27.15	2387.40	2335.47	45.97	

5D Anti-Collision Report

Secondary Well: Thistle Unit 61H (p) (TVD Relative to Kelly Bushing (Primary)) (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)	CC (US ft)	ES (US ft)	SF	Risk
11700.00	11218.02	14016.78	181.25	59.46	27.64	2386.66	2333.59	44.97	
11800.00	11217.34	14116.73	181.18	61.13	28.21	2385.91	2331.64	43.96	
11900.00	11216.66	14216.69	181.11	62.80	28.82	2385.18	2329.63	42.94	
12000.00	11215.98	14316.64	181.05	64.48	29.41	2384.44	2327.65	41.99	
12100.00	11215.30	14416.60	180.98	66.17	30.00	2383.71	2325.68	41.08	
12200.00	11214.62	14516.56	180.91	67.86	30.58	2382.98	2323.71	40.20	
12300.00	11213.94	14616.51	180.84	69.56	31.16	2382.25	2321.73	39.36	
12400.00	11213.26	14716.47	180.77	71.27	31.74	2381.53	2319.76	38.55	
12500.00	11212.58	14816.42	180.70	72.98	32.33	2380.82	2317.78	37.77	
12600.00	11211.90	14916.38	180.63	74.70	32.92	2380.10	2315.80	37.02	
12700.00	11211.22	15016.33	180.56	76.43	33.52	2379.39	2313.81	36.28	
12800.00	11210.54	15116.29	180.49	78.16	34.13	2378.68	2311.81	35.57	
12900.00	11209.86	15216.24	180.42	79.89	34.77	2377.98	2309.79	34.87	
13000.00	11209.18	15316.20	180.35	81.63	35.42	2377.28	2307.76	34.20	
13100.00	11208.50	15416.16	180.28	83.37	36.06	2376.58	2305.73	33.54	
13200.00	11207.82	15516.11	180.21	85.12	36.71	2375.89	2303.70	32.91	
13300.00	11207.14	15616.07	180.14	86.86	37.36	2375.20	2301.67	32.30	
13400.00	11206.46	15716.02	180.07	88.62	38.01	2374.51	2299.64	31.72	
13483.83	11206.00	15783.03	180.02	89.79	38.45	2374.00	2298.14	31.29	

Secondary Well: Thistle Unit 55H (p) (TVD Relative to Kelly Bushing (Primary)) (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)	CC (US ft)	ES (US ft)	SF	Risk
0.00	2.00	0.00	289.10	0.00	0.00	150.60	150.04	265.78	
100.00	100.00	98.00	289.10	0.11	0.11	150.59	149.81	191.56	
200.00	200.00	198.00	289.10	0.33	0.33	150.59	149.36	122.06	
300.00	300.00	298.00	289.10	0.56	0.56	150.59	148.91	89.49	
400.00	400.00	398.00	289.10	0.78	0.78	150.59	148.46	70.64	
500.00	500.00	498.00	289.10	1.01	1.01	150.59	148.01	58.34	
600.00	600.00	598.00	289.10	1.23	1.23	150.59	147.56	49.69	
700.00	700.00	698.00	289.10	1.46	1.46	150.59	147.11	43.27	
800.00	800.00	798.00	289.10	1.68	1.68	150.59	146.66	38.32	
900.00	900.00	898.00	289.10	1.91	1.91	150.59	146.21	34.39	
1000.00	1000.00	998.00	289.10	2.13	2.13	150.59	145.76	31.19	
1100.00	1100.00	1098.00	289.10	2.36	2.36	150.59	145.31	28.53	
1200.00	1200.00	1198.00	289.10	2.58	2.58	150.59	144.86	26.29	
1300.00	1300.00	1298.00	289.10	2.81	2.81	150.59	144.41	24.38	
1400.00	1400.00	1398.00	289.10	3.03	3.03	150.59	143.96	22.73	
1500.00	1500.00	1498.00	289.10	3.26	3.26	150.59	143.52	21.28	
1600.00	1600.00	1598.00	289.10	3.48	3.48	150.59	143.07	20.01	
1700.00	1700.00	1698.00	289.10	3.70	3.70	150.59	142.62	18.88	
1800.00	1800.00	1798.00	289.10	3.93	3.93	150.59	142.17	17.88	
1900.00	1900.00	1898.00	289.10	4.15	4.15	150.59	141.72	16.97	
2000.00	2000.00	1998.00	289.10	4.38	4.38	150.59	141.27	16.15	
2100.00	2100.00	2098.00	289.10	4.60	4.60	150.59	140.82	15.41	
2200.00	2200.00	2198.00	289.10	4.83	4.83	150.59	140.37	14.73	
2300.00	2300.00	2298.00	289.10	5.05	5.05	150.59	139.92	14.11	
2400.00	2400.00	2398.00	289.10	5.28	5.28	150.59	139.47	13.54	
2500.00	2500.00	2498.00	289.10	5.50	5.50	150.59	139.02	13.01	
2600.00	2600.00	2598.00	289.10	5.73	5.73	150.59	138.57	12.53	
2700.00	2700.00	2698.00	289.10	5.95	5.95	150.59	138.12	12.08	
2800.00	2800.00	2798.00	289.10	6.18	6.18	150.59	137.67	11.66	
2900.00	2900.00	2898.00	289.10	6.40	6.40	150.59	137.22	11.26	
3000.00	3000.00	2998.00	289.10	6.63	6.63	150.59	136.77	10.90	
3100.00	3100.00	3098.00	289.10	6.85	6.85	150.59	136.32	10.55	
3200.00	3200.00	3198.00	289.10	7.08	7.08	150.59	135.87	10.23	
3300.00	3300.00	3298.00	289.10	7.30	7.30	150.59	135.42	9.93	
3400.00	3400.00	3398.00	289.10	7.53	7.53	150.59	134.97	9.64	
3500.00	3500.00	3498.00	289.10	7.75	7.75	150.59	134.53	9.37	

5D Anti-Collision Report

Secondary Well: Thistle Unit 55H (p) (TVD) Relative to Kelly Bushing (Primary): 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)	CC (US ft)	ES (US ft)	SF	Risk
3600.00	3600.00	3598.00	289.10	7.98	7.98	150.59	134.08	9.12	
3700.00	3700.00	3698.00	289.10	8.20	8.20	150.59	133.63	8.88	
3800.00	3800.00	3798.00	289.10	8.43	8.43	150.59	133.18	8.65	
3900.00	3900.00	3898.00	289.10	8.65	8.65	150.59	132.73	8.43	
4000.00	4000.00	3998.00	289.10	8.87	8.87	150.59	132.28	8.22	
4100.00	4100.00	4098.00	289.10	9.10	9.10	150.59	131.83	8.03	
4200.00	4200.00	4198.00	289.10	9.32	9.32	150.59	131.38	7.84	
4300.00	4300.00	4298.00	289.10	9.55	9.55	150.59	130.93	7.66	
4400.00	4400.00	4398.00	289.10	9.77	9.77	150.59	130.48	7.49	
4500.00	4500.00	4498.00	289.10	10.00	10.00	150.59	130.03	7.32	
4600.00	4600.00	4598.00	289.10	10.22	10.22	150.59	129.58	7.17	
4700.00	4700.00	4698.00	289.10	10.45	10.45	150.59	129.13	7.02	
4800.00	4800.00	4798.00	289.10	10.67	10.67	150.59	128.68	6.87	
4900.00	4900.00	4898.00	289.10	10.90	10.90	150.59	128.23	6.73	
5000.00	5000.00	4998.00	289.10	11.12	11.12	150.59	127.78	6.60	
5100.00	5100.00	5098.00	289.10	11.35	11.35	150.59	127.33	6.47	
5200.00	5200.00	5198.00	289.10	11.57	11.57	150.59	126.88	6.35	
5300.00	5300.00	5298.00	289.10	11.80	11.80	150.59	126.43	6.23	
5400.00	5400.00	5398.00	289.10	12.02	12.02	150.59	125.98	6.12	
5500.00	5500.00	5498.00	289.10	12.25	12.25	150.59	125.53	6.01	
5600.00	5600.00	5598.00	289.10	12.47	12.47	150.59	125.09	5.90	
5700.00	5700.00	5698.00	289.10	12.70	12.70	150.59	124.64	5.80	
5800.00	5800.00	5798.00	289.10	12.92	12.92	150.59	124.19	5.70	
5900.00	5900.00	5898.00	289.10	13.15	13.15	150.59	123.74	5.61	
6000.00	6000.00	5998.00	289.10	13.37	13.37	150.59	123.29	5.52	
6100.00	6100.00	6098.00	289.10	13.60	13.60	150.59	122.84	5.43	
6200.00	6200.00	6198.00	289.10	13.82	13.82	150.59	122.39	5.34	
6300.00	6300.00	6298.00	289.10	14.04	14.04	150.59	121.94	5.26	
6400.00	6400.00	6398.00	289.10	14.27	14.27	150.59	121.49	5.17	
6500.00	6500.00	6498.00	289.10	14.49	14.49	150.59	121.04	5.10	
6600.00	6600.00	6598.00	289.10	14.72	14.72	150.59	120.59	5.02	
6700.00	6700.00	6698.00	289.10	14.94	14.94	150.59	120.14	4.95	
6800.00	6800.00	6798.00	289.10	15.17	15.17	150.59	119.69	4.87	
6900.00	6900.00	6898.00	289.10	15.39	15.39	150.59	119.24	4.80	
7000.00	7000.00	6998.00	289.10	15.62	15.62	150.59	118.79	4.74	
7100.00	7100.00	7098.00	289.10	15.84	15.84	150.59	118.34	4.67	
7200.00	7200.00	7198.00	289.10	16.07	16.07	150.59	117.89	4.61	
7300.00	7300.00	7298.00	289.10	16.29	16.29	150.59	117.44	4.54	
7400.00	7400.00	7398.00	289.10	16.52	16.52	150.59	116.99	4.48	
7500.00	7500.00	7498.00	289.10	16.74	16.74	150.59	116.54	4.42	
7600.00	7600.00	7598.00	289.10	16.97	16.97	150.59	116.09	4.37	
7700.00	7700.00	7698.00	289.10	17.19	17.19	150.59	115.65	4.31	
7800.00	7800.00	7798.00	289.10	17.42	17.42	150.59	115.20	4.25	
7900.00	7900.00	7898.00	289.10	17.64	17.64	150.59	114.75	4.20	
8000.00	8000.00	7998.00	289.10	17.87	17.87	150.59	114.30	4.15	
8100.00	8100.00	8098.00	289.10	18.09	18.09	150.59	113.85	4.10	
8200.00	8200.00	8198.00	289.10	18.32	18.32	150.59	113.40	4.05	
8300.00	8300.00	8298.00	289.10	18.54	18.54	150.59	112.95	4.00	
8400.00	8399.93	8397.93	290.33	18.77	18.77	149.82	111.78	3.94	
8500.00	8497.76	8495.76	282.43	18.98	18.98	144.11	105.60	3.74	
8600.00	8589.33	8587.33	267.41	19.19	19.19	140.60	101.76	3.62	
8700.00	8670.64	8668.64	250.82	19.37	19.37	154.80	115.47	3.94	
8800.00	8738.13	8736.13	239.53	19.53	19.53	197.38	157.69	4.97	
8900.00	8788.86	8786.86	236.39	19.64	19.64	264.95	224.98	6.63	
9000.00	8820.61	8818.61	243.71	19.71	19.71	348.83	308.75	8.70	
9100.00	8831.98	8829.98	268.38	19.74	19.74	441.42	401.24	10.99	
9200.00	8832.00	8830.00	270.00	19.74	19.74	537.17	497.00	13.37	
9300.00	8832.00	8830.00	270.00	19.74	19.74	634.23	594.06	15.79	

SD Anti-Collision Report

Secondary Well: Thistle Unit 55H (p) (TVD Relative to Kelly Bushing (Primary)) - 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)	CC (US ft)	ES (US ft)	SF	Risk
9400.00	8832.00	8830.00	270.00	19.74	19.74	732.08	691.87	18.21	
9500.00	8832.00	8830.00	270.00	19.74	19.74	830.45	790.23	20.65	
9600.00	8832.00	8830.00	270.00	19.74	19.74	929.16	888.94	23.10	
9700.00	8832.00	8830.00	270.00	19.74	19.74	1028.12	987.91	25.57	
9800.00	8832.00	8830.00	270.00	19.74	19.74	1127.27	1087.07	28.04	
9900.00	8832.00	8830.00	270.00	19.74	19.74	1226.55	1186.33	30.49	
10000.00	8832.00	8830.00	270.00	19.74	19.74	1325.95	1285.70	32.94	
10100.00	8832.00	8830.00	270.00	19.74	19.74	1425.42	1385.16	35.40	
10200.00	8832.00	8830.00	270.00	19.74	19.74	1524.97	1484.68	37.85	
10300.00	8832.00	8830.00	270.00	19.74	19.74	1624.57	1584.26	40.31	
10400.00	8832.00	8830.00	270.00	19.74	19.74	1724.22	1683.89	42.76	
10500.00	8832.00	8830.00	270.00	19.74	19.74	1823.90	1783.56	45.21	
10600.00	8832.00	8830.00	270.00	19.74	19.74	1923.62	1883.26	47.66	
10700.00	8832.00	8830.00	270.00	19.74	19.74	2023.37	1982.99	50.11	
10800.00	8832.00	8830.00	270.00	19.74	19.74	2123.14	2082.74	52.56	
10900.00	8832.00	8830.00	270.00	19.74	19.74	2222.93	2182.54	55.04	
11000.00	8832.00	8830.00	270.00	19.74	19.74	2322.74	2282.29	57.42	
11100.00	8832.00	8830.00	270.00	19.74	19.74	2422.56	2382.10	59.87	
11200.00	8832.00	8830.00	270.00	19.74	19.74	2522.40	2481.92	62.30	
11300.00	8832.00	8830.00	270.00	19.74	19.74	2622.25	2581.75	64.73	
11400.00	8832.00	8830.00	270.00	19.74	19.74	2722.12	2681.58	67.16	
11500.00	8832.00	8830.00	270.00	19.74	19.74	2821.99	2781.43	69.58	
11600.00	8832.00	8830.00	270.00	19.74	19.74	2921.87	2881.29	72.00	
11700.00	8832.00	8830.00	270.00	19.74	19.74	3021.76	2981.15	74.41	
11800.00	8832.00	8830.00	270.00	19.74	19.74	3121.65	3081.02	76.82	
11900.00	8832.00	8830.00	270.00	19.74	19.74	3221.55	3180.89	79.23	
12000.00	8832.00	8830.00	270.00	19.74	19.74	3321.46	3280.77	81.63	
12100.00	8832.00	8830.00	270.00	19.74	19.74	3421.37	3380.65	84.02	
12200.00	8832.00	8830.00	270.00	19.74	19.74	3521.29	3480.54	86.41	
12300.00	8832.00	8830.00	270.00	19.74	19.74	3621.21	3580.43	88.80	
12400.00	8832.00	8830.00	270.00	19.74	19.74	3721.14	3680.33	91.18	
12500.00	8832.00	8830.00	270.00	19.74	19.74	3821.07	3780.23	93.55	
12600.00	8832.00	8830.00	270.00	19.74	19.74	3921.01	3880.13	95.92	
12700.00	8832.00	8830.00	270.00	19.74	19.74	4020.94	3980.03	98.28	
12800.00	8832.00	8830.00	270.00	19.74	19.74	4120.88	4079.94	100.63	
12900.00	8832.00	8830.00	270.00	19.74	19.74	4220.83	4179.84	102.98	
13000.00	8832.00	8830.00	270.00	19.74	19.74	4320.77	4279.75	105.33	
13100.00	8832.00	8830.00	270.00	19.74	19.74	4420.72	4379.66	107.66	
13200.00	8832.00	8830.00	270.00	19.74	19.74	4520.67	4479.57	110.00	
13300.00	8832.00	8830.00	270.00	19.74	19.74	4620.63	4579.49	112.32	
13400.00	8832.00	8830.00	270.00	19.74	19.74	4720.58	4679.40	114.64	
13483.83	8832.00	8830.00	270.00	19.74	19.74	4804.38	4763.16	116.58	

**Weatherford**

Weatherford Drilling Services

GeoDec4 v2.1.0.0

Report Date: April 16, 2015
Job Number: _____
Customer: Devon Energy
Well Name: Thistle Unit 26H
API Number: _____
Rig Name: _____
Location: Lea Co, NM Nad83 NME
Block: _____
Engineer: RWJ

NAD83 / New Mexico East (ftUS)	NAD83 (1986)
Projected Coordinate System	Geodetic Coordinate System
Datum: North American Datum 1983 (1986)	Datum: North American Datum 1983 (1986)
Ellipsoid: GRS 1980	Ellipsoid: GRS 1980
EPSG: 2257	EPSG: 4269
North: 467616.75 US Survey Foot	Latitude: 32.283222 Degree
East: 778420.22 US Survey Foot	Longitude: -103.566163 Degree
Convergence: 0.41°	
<u>Declination: 7.28°</u>	
Total Correction: 6.87°	
Datum Transformation: none	

Geodetic Location WGS84

MSL Elevation = 0 m
Latitude = 32° 16' 59.60" N
Longitude = 103° 33' 58.19" W

Magnetic Declination = 7.28 deg	[True North Offset]
Local Gravity = .9988 g	Checksum = 6575
Local Field Strength = 48222 nT	Magnetic Vector X = 23819 nT
Magnetic Dip = 60.13 deg	Magnetic Vector Y = 3042 nT
Magnetic Model = bggm2014.dat	Magnetic Vector Z = 41818 nT
Run Date = June 15, 2015	Magnetic Vector H = 24013 nT

Signed: _____ Date: _____

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