Devon Energy, Chiles 28 State 1Y 30-025-42600

1. Geologic Formations

TVD of target	11,116'	Pilot hole depth	N/A
MD at TD:	15,306'	Deepest expected fresh water:	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Rustler	1,839	Water	
Top of Salt	2,092	Salt	
Base of Salt	3,637		
Capitan	4,087		
Delaware	5,637	Oil	
Cherry Canyon	5,782	Oil	
Brushy Canyon	7,050	Oil	
Lower Brushy	8,452	Oil	
1st Bone Spring Lime	8,707	Oil	
2nd Bone Spring Sand	10,583	Oil	

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

2. Casing Program

Hole Size	Casing Interval From	To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17.5"	0	1,900'	13.375"	54.5	J-55	BTC	1.40	3.40	9.90
12.25"	0	4,300'	9.625"	40	J-55	BTC	1.40	1.90	3.30
12.25"	4,300'	5,000'	9.625"	40	HCK-55	BTC	1.57	4.63	6.07
8.75"	0	10,315'	7"	29	P-110	BTC	1.80	2.20	3.10
8.75"	10,315'	15,306'	5.5"	17	P-110	BTC	2.10	1.40	2.00
5.5" Production Casing String Option									
8.75	0	15,306	5.5	17	P-110	BTC	2.10	1.40	2.00
				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

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

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	H_2O gal/sk	Yld ft3/ sack	500# Comp. Strength (hours)	Slurry Description
13-3/8" Surface	781	13.5	9.07	1.72	12	Lead: Class C Cement + 4% Bentonite Gel + 0.125 lbs/sack Poly-E-Flake
	422	14.8	6.32	1.33	6	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
9-5/8" Inter.	1160	12.9	9.81	1.85	17	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
9-5/8" Inter. Two Stage Option	396	12.9	9.81	1.87 6	17	Lead: (65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sack Poly-E-Flake
	93	14.8	6.32	1.33	6	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
	DV Tool = 50' into Open Hole					
	162	12.9	9.81	1.86	17	Lead: (65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sack Poly-E-Flake
	63	14.8	6.32	1.33	6	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
7x5.5" Como Prod	520	10.4	16.9	3.17	16	Lead: Tuned Light ® + 0.125 lb/sk Pol-E-Flake
	1290	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
5-1/2" Prod. Option	410	11.9	12.89	2.31	n/a	1st Lead: (50:50) Class H Cement: Poz (Fly Ash) + 10% BWOC Bentonite + 1 lb/sk of Kol-Seal + 0.3% BWOC HR-601 + 0.5lb/sk D-Air 5000
	330	12.5	10.86	1.96	30	2nd Lead: (65:35) Class H Cement: Poz (Fly Ash) + 6% BWOC Bentonite + 0.25% BWOC HR-601 + 0.125 lbs/sack Poly-E-Flake
	1031	14.5	5.31	1.22	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

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%
7x5.5" Production	4800'	25%
5-1/2" Production Casing Option	4800'	25%

4. Pressure Control Equipment

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

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		x	50% testing pressure
			Blind Ram			
			Pipe Ram			
			Double Ram		x	
			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.

Y	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.
Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold.

	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 5M will be installed on the FMC Uni-head wellhead system and will undergo a 250 psi low pressure test followed by a 5,000 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 requests a variance to use a flexible line with flanged ends between the BOP and the choke manifold (choke line). The line will be kept as straight as possible with minimal turns.		

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	1,900'	FW Gel	8.6-8.8	28-34	N/C
1,900'	5,000'	Saturated Brine	10.0-10.2	28-34	N/C
5,000'	15,306'	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 fromTD 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	2880 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

Weatherford

Chiles 28 State 1Y
Lea Co, NM

Plan Data for Chiles 28 State 1Y

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	530722.90	803812.30	0.00	0.00
10415.66	0.00	0.00	10415.66	0.00	0.00	530722.90	803812.30	0.00	0.00
10998.99	70.00	164.80	10864.33	-303.17	82.37	530419.73	803894.67	303.88	12.00
11204.34	90.00	179.50	10900.00	-502.02	108.97	530220.88	803921.27	502.95	12.00
11600.68	90.00	179.50	10900.00	-898.35	112.43	529824.55	803924.73	899.29	0.00
11950.69	86.50	179.50	10910.69	-1248.13	115.49	529474.77	803927.79	1249.09	1.00
15305.49	86.50	179.50	11115.50	-4596.54	144.91	526126.36	803957.21	4597.63	0.00

Plan Data for Chiles 28 State 1Y

Target Set Information:
Name: Chiles 28 State 1H
Position offsets from Slot centre

Name	TVD (USft)	+N/-S (USft)	+E/-W (USft)	Northing (USft)	Easting (USft)	Shape	Comment
LP	10900.00	-493.08	109.37	530229.82	803921.67	Cuboid	
PBHL 1H	11115.50	-4596.54	144.91	526126.36	803957.21	Cuboid	

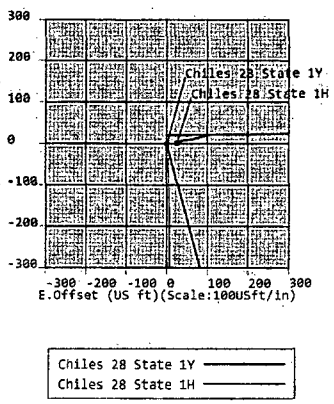
Plan Data for Chiles 28 State 1Y

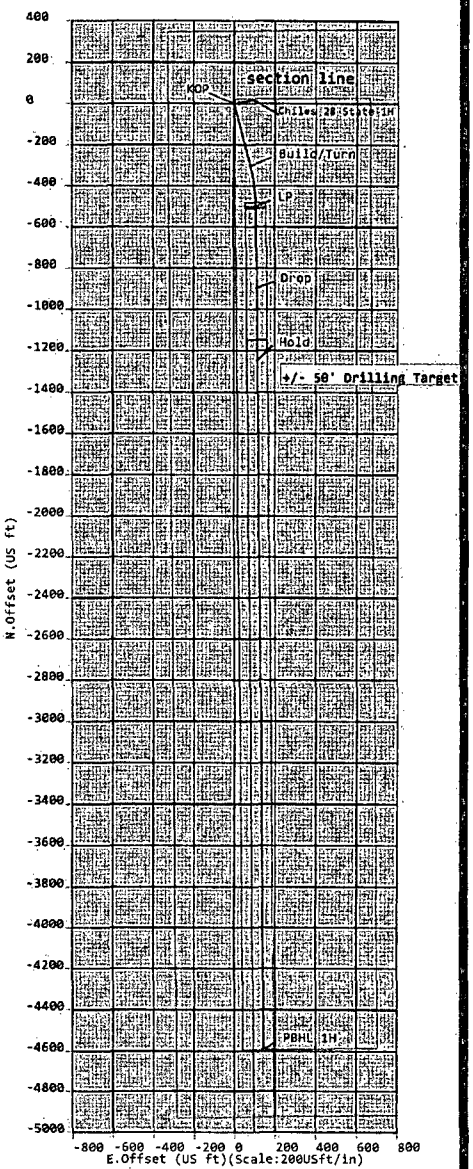
Slot: Chiles 28 State 1Y
Position:
Offset is from Site centre
+N/-S: 0.00USft Northing: 530722.90USft Latitude: 32°27'22.1"
+E/-W: 0.00USft Easting: 803812.30USft Longitude: -103°28'56.6"
Elevation Above VRD: 3712.00USft

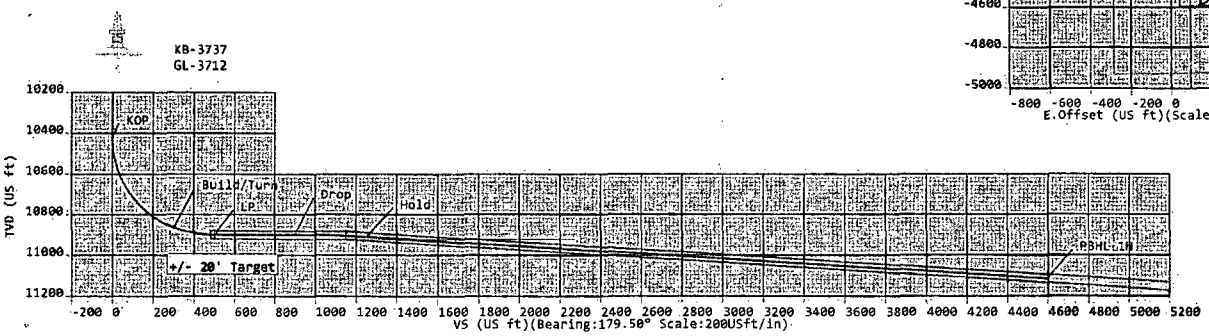
Plan Data for Chiles 28 State 1Y

Well: Chiles 28 State 1Y
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: 179.50°
+E/-W: 0.00USft
Magnetic Parameters:

Model:	Field Strength:	Declination:	Dip:	Date:
BGGM	48395(nT)	7.22°	60.38°	2015-06-15







Sign Off: Russell Joyner

5D Plan Report

Devon Energy

Field Name: *Lea Co, NM Nad 83 NMEZ*
Site Name: *Chiles 28 State 1Y*
Well Name: *Chiles 28 State 1Y*
Plan: *P1:V1*

01 June 2015

Chiles 28 State 1Y

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
Chiles 28 State 1Y

Units : US ft **North Reference** : Grid **Convergence Angle :** 0.46
Position **Northing :** 530722.90 US ft **Latitude :** 32°27'22.13"
Easting : 803812.30 US ft **Longitude :** -103°28'56.57"
Elevation above Mean Sea Level: 3712.00 US ft
Comment :

Slot Name
Chiles 28 State 1Y

Position (Offsets relative to Site Centre)
+N / -S : 0.00 US ft **Northing :** 530722.90 US ft **Latitude :** 32°27'22.13"
+E / -W : 0.00 US ft **Easting :** 803812.30 US ft **Longitude :** -103°28'56.57"
Elevation above Mean Sea Level : 3712.00 US ft
Comment :

Well Name
Chiles 28 State 1Y

Type : Main well **UWI :** **Plan :** P1:V1
Rig Height *Well TVD Reference* : 25.00 US ft **Comment :**
Relative to Mean Sea Level: 3737.00 US ft
Closure Distance : 4598.82 US ft **Closure Azimuth :** 178.194°
Vertical Section (Position of Origin Relative to Slot)
+N / -S : 0.00 US ft **+E / -W :** 0.00 US ft **Az :** 179.10°
Magnetic Parameters
Model : BGGM **Field Strength :** 48395.7nT **Dec :** 7.22° **Dip :** 60.38° **Date :** 15/Jun/2015

Target Set

Name : Chiles 28 State 1H **Number of Targets :** 2

Comment :

Target Name:
LP

Position (Relative to Slot centre)
+N / -S : -493.08 US ft **Northing :** 530229.82 US ft **Latitude :** 32°27'17.24"
+E / -W : 109.37 US ft **Easting :** 803921.67 US ft **Longitude :** -103°28'55.34"

Shape:
Cuboid

TVD (Well TVD Reference) : 10900.00 US ft

Orientation **Azimuth :** 179.50° **Inclination :** 0.00°
Dimensions **Length :** 20.00 US ft **Breadth :** 100.00 US ft **Height :** 40.00 US ft

5D Plan Report

Target Name:	Position (Relative to Slot centre)		
PBHL 1H	+N / -S : -4596.54 US ft	Northing : 526126.36 US ft	Latitude : 32°26'36.63"
	+E / -W : 144.91 US ft	Easting : 803957.21 US ft	Longitude : -103°28'55.31"
Shape:	TVD (Well TVD Reference) : 11115.50 US ft		
Cuboid	Orientation Azimuth : 179.50°	Inclination : -3.50°	
	Dimensions Length : 6907.00 US ft	Breadth : 100.00 US ft	Height : 40.00 US ft

Well path created using minimum curvature

Salient Points (Relative to Slot centre, TVD relative to Well TVD Reference)

MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	VS (US ft)	DLS (°/100 US ft)	B.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	
10415.66	0.00	0.00	10415.66	0.00	0.00	-0.00	0.00	0.00	0.00	0.00	KOP
10998.99	70.00	164.80	10864.33	-303.17	82.37	304.43	12.00	12.00	0.00	164.80	Build/Turn
11204.34	90.00	179.50	10900.00	-502.02	108.97	503.67	12.00	9.74	7.16	37.49	LP
11600.68	90.00	179.50	10900.00	-898.35	112.43	900.00	0.00	0.00	0.00	0.00	Drop
11950.69	86.50	179.50	10910.69	-1248.13	115.49	1249.79	1.00	-1.00	-0.00	180.05	Hold
15305.49	86.50	179.50	11115.50	-4596.54	144.91	4598.25	0.00	0.00	0.00	0.00	PBHL 1H

Interpolated Points (Relative to Slot centre, TVD relative to Well TVD Reference)

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
10400.00	0.00	0.00	10400.00	0.00	0.00	-0.00	0.00	530722.90	803812.30	
10415.66	0.00	0.00	10415.66	0.00	0.00	-0.00	0.00	530722.90	803812.30	KOP
10500.00	10.12	164.80	10499.56	-7.17	1.95	7.20	12.00	530715.73	803814.25	
10600.00	22.12	164.80	10595.45	-33.92	9.21	34.06	12.00	530688.98	803821.51	
10700.00	34.12	164.80	10683.49	-79.32	21.55	79.65	12.00	530643.58	803833.85	
10800.00	46.12	164.80	10759.82	-141.39	38.41	141.98	12.00	530581.51	803850.71	
10900.00	58.12	164.80	10821.11	-217.42	59.07	218.32	12.00	530505.48	803871.37	
10998.99	70.00	164.80	10864.33	-303.17	82.37	304.43	12.00	530419.73	803894.67	Build/Turn
11000.00	70.10	164.88	10864.67	-304.09	82.62	305.35	12.00	530418.81	803894.92	
11100.00	79.76	172.26	10890.68	-398.57	101.58	400.12	12.00	530324.33	803913.88	
11200.00	89.57	179.20	10899.98	-497.68	108.92	499.33	12.00	530225.22	803921.22	
11204.34	90.00	179.50	10900.00	-502.02	108.97	503.67	12.00	530220.88	803921.27	LP
11300.00	90.00	179.50	10900.00	-597.68	109.81	599.33	0.00	530125.22	803922.11	
11400.00	90.00	179.50	10900.00	-697.67	110.68	699.33	0.00	530025.23	803922.98	
11500.00	90.00	179.50	10900.00	-797.67	111.55	799.32	0.00	529925.23	803923.85	
11600.00	90.00	179.50	10900.00	-897.67	112.43	899.32	0.00	529825.23	803924.73	
11600.68	90.00	179.50	10900.00	-898.35	112.43	900.00	0.00	529824.55	803924.73	Drop
11700.00	89.01	179.50	10900.86	-997.66	113.30	999.31	1.00	529725.24	803925.60	
11800.00	88.01	179.50	10903.46	-1097.62	114.17	1099.28	1.00	529625.28	803926.47	
11900.00	87.01	179.50	10907.81	-1197.52	115.05	1199.18	1.00	529525.38	803927.35	
11950.69	86.50	179.50	10910.69	-1248.13	115.49	1249.79	1.00	529474.77	803927.79	Hold
12000.00	86.50	179.50	10913.70	-1297.34	115.93	1299.00	0.00	529425.56	803928.23	
12100.00	86.50	179.50	10919.80	-1397.15	116.80	1398.81	0.00	529325.75	803929.10	
12200.00	86.50	179.50	10925.91	-1496.96	117.68	1498.62	0.00	529225.94	803929.98	
12300.00	86.50	179.50	10932.01	-1596.77	118.56	1598.44	0.00	529126.13	803930.86	
12400.00	86.50	179.50	10938.12	-1696.58	119.43	1698.25	0.00	529026.32	803931.73	
12500.00	86.50	179.50	10944.22	-1796.39	120.31	1798.06	0.00	528926.51	803932.61	
12600.00	86.50	179.50	10950.33	-1896.20	121.19	1897.87	0.00	528826.70	803933.49	
12700.00	86.50	179.50	10956.43	-1996.01	122.06	1997.68	0.00	528726.89	803934.36	
12800.00	86.50	179.50	10962.54	-2095.82	122.94	2097.49	0.00	528627.08	803935.24	
12900.00	86.50	179.50	10968.64	-2195.63	123.82	2197.30	0.00	528527.27	803936.12	
13000.00	86.50	179.50	10974.75	-2295.44	124.70	2297.11	0.00	528427.46	803937.00	
13100.00	86.50	179.50	10980.85	-2395.25	125.57	2396.92	0.00	528327.65	803937.87	

5D Plan Report

Interpolated Points (Relative to Slot centre, TVD relative to Well TVD Reference)

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
13200.00	86.50	179.50	10986.96	-2495.06	126.45	2496.74	0.00	528227.84	803938.75	
13300.00	86.50	179.50	10993.06	-2594.87	127.33	2596.55	0.00	528128.03	803939.63	
13400.00	86.50	179.50	10999.17	-2694.68	128.20	2696.36	0.00	528028.22	803940.50	
13500.00	86.50	179.50	11005.27	-2794.49	129.08	2796.17	0.00	527928.41	803941.38	
13600.00	86.50	179.50	11011.38	-2894.30	129.96	2895.98	0.00	527828.60	803942.26	
13700.00	86.50	179.50	11017.48	-2994.11	130.83	2995.79	0.00	527728.79	803943.13	
13800.00	86.50	179.50	11023.59	-3093.91	131.71	3095.60	0.00	527628.99	803944.01	
13900.00	86.50	179.50	11029.69	-3193.72	132.59	3195.41	0.00	527529.18	803944.89	
14000.00	86.50	179.50	11035.80	-3293.53	133.46	3295.22	0.00	527429.37	803945.76	
14100.00	86.50	179.50	11041.90	-3393.34	134.34	3395.04	0.00	527329.56	803946.64	
14200.00	86.50	179.50	11048.01	-3493.15	135.22	3494.85	0.00	527229.75	803947.52	
14300.00	86.50	179.50	11054.11	-3592.96	136.09	3594.66	0.00	527129.94	803948.39	
14400.00	86.50	179.50	11060.22	-3692.77	136.97	3694.47	0.00	527030.13	803949.27	
14500.00	86.50	179.50	11066.32	-3792.58	137.85	3794.28	0.00	526930.32	803950.15	
14600.00	86.50	179.50	11072.43	-3892.39	138.72	3894.09	0.00	526830.51	803951.02	
14700.00	86.50	179.50	11078.53	-3992.20	139.60	3993.90	0.00	526730.70	803951.90	
14800.00	86.50	179.50	11084.64	-4092.01	140.48	4093.71	0.00	526630.89	803952.78	
14900.00	86.50	179.50	11090.74	-4191.82	141.35	4193.52	0.00	526531.08	803953.65	
15000.00	86.50	179.50	11096.85	-4291.63	142.23	4293.33	0.00	526431.27	803954.53	
15100.00	86.50	179.50	11102.95	-4391.44	143.11	4393.15	0.00	526331.46	803955.41	
15200.00	86.50	179.50	11109.06	-4491.25	143.99	4492.96	0.00	526231.65	803956.29	
15300.00	86.50	179.50	11115.16	-4591.06	144.86	4592.77	0.00	526131.84	803957.16	
15305.49	86.50	179.50	11115.50	-4596.54	144.91	4598.25	0.00	526126.36	803957.21	PBHL 1H

5D Anti-Collision Report

Devon Energy

Field Name: *Lea Co, NM Nad 83 NMEZ*
Site Name: *Chiles 28 State 1Y*
Well Name: *Chiles 28 State 1Y*

01 June 2015

Weatherford

Chiles 28 State 1Y

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
Chiles 28 State 1Y

Units : US ft **North Reference** : Grid **Convergence Angle :** 0.46
Position **Northing :** 530722.90 US ft **Latitude :** 32° 27' 22.13"
Easting : 803812.30 US ft **Longitude :** -103° 28' 56.57"
Elevation above Mean Sea Level: 3712.00 US ft
Comment :

Slot Name
Chiles 28 State 1Y

Position (Offsets relative to Site Centre)
+N / -S : 0.00 US ft **Northing :** 530722.90 US ft **Latitude :** 32°27'22.13"
+E / -W : 0.00 US ft **Easting :** 803812.30 US ft **Longitude :** -103°28'56.57"
Elevation above Mean Sea Level : 3712.00 US ft
Comment :

Well Name
Chiles 28 State 1Y

Type : Main well **UWI :** **Plan :** Working Plan
Rig Height ***Well TVD Reference*** **:** 25.00 US ft **Comment :**
Relative to Mean Sea Level: 3737.00 US ft
Closure Distance : 4598.82 US ft **Closure Azimuth :** 178.194°
Vertical Section (Position of Origin Relative to Slot)
+N / -S : 0.00 US ft **+E / -W :** 0.00 US ft **Az :** 179.10°
Magnetic Parameters
Model : BGGM **Field Strength :** 48395.7nT **Dec :** 7.22° **Dip :** 60.38° **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
Chiles 28 State 1Y (p)	0.00	15305.49	100.00	2

Secondary Well Names

Chiles 28 State 1H (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

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 Well TVD Reference)

SF

Secondary Well Name	Pri MD (US ft)	Sec MD (US ft)	TVD (US ft)	CC (US ft)	ES (US ft)	SF	Risk
Chiles 28 State 1H (s)	2034.96	2034.60	2034.96	29.46	20.35	3.23	

Primary Well: Chiles 28 State 1Y (p) (TVD Relative to Well TVD Reference : 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	90.00	0.00	0.00	Chiles 28 State 1H (s)	25.00	24.43	44.12	
100.00	100.00	89.94	0.11	0.11	Chiles 28 State 1H (s)	25.10	24.27	30.25	
200.00	200.00	89.77	0.34	0.34	Chiles 28 State 1H (s)	25.39	24.24	22.04	
300.00	300.00	89.28	0.56	0.56	Chiles 28 State 1H (s)	25.80	24.18	15.92	
400.00	400.00	88.35	0.79	0.79	Chiles 28 State 1H (s)	26.29	24.26	12.95	
500.00	500.00	87.20	1.01	1.01	Chiles 28 State 1H (s)	26.83	24.36	10.88	
600.00	600.00	86.67	1.24	1.24	Chiles 28 State 1H (s)	26.99	24.10	9.33	
700.00	700.00	86.21	1.46	1.46	Chiles 28 State 1H (s)	27.35	24.03	8.24	
800.00	800.00	86.27	1.69	1.69	Chiles 28 State 1H (s)	27.47	23.73	7.34	
900.00	900.00	87.03	1.91	1.91	Chiles 28 State 1H (s)	27.34	23.18	6.56	
1000.00	1000.00	87.11	2.14	2.14	Chiles 28 State 1H (s)	27.51	22.91	5.97	
1100.00	1100.00	86.90	2.36	2.36	Chiles 28 State 1H (s)	27.73	22.69	5.50	
1200.00	1200.00	86.81	2.59	2.59	Chiles 28 State 1H (s)	27.60	22.13	5.04	
1300.00	1300.00	86.59	2.81	2.81	Chiles 28 State 1H (s)	27.52	21.62	4.66	
1400.00	1400.00	86.21	3.03	3.03	Chiles 28 State 1H (s)	27.77	21.43	4.38	
1500.00	1500.00	85.50	3.26	3.26	Chiles 28 State 1H (s)	28.27	21.49	4.17	
1600.00	1600.00	84.21	3.48	3.48	Chiles 28 State 1H (s)	28.85	21.63	4.00	
1700.00	1700.00	82.66	3.71	3.71	Chiles 28 State 1H (s)	29.16	21.50	3.81	
1800.00	1800.00	81.38	3.93	3.93	Chiles 28 State 1H (s)	28.86	20.77	3.57	
1900.00	1900.00	80.88	4.16	4.16	Chiles 28 State 1H (s)	28.53	20.02	3.35	
2000.00	2000.00	80.98	4.38	4.38	Chiles 28 State 1H (s)	29.05	20.09	3.24	
2100.00	2100.00	81.36	4.61	4.61	Chiles 28 State 1H (s)	30.50	21.12	3.25	
2200.00	2200.00	81.74	4.83	4.83	Chiles 28 State 1H (s)	32.69	22.87	3.33	
2300.00	2300.00	81.32	5.06	5.06	Chiles 28 State 1H (s)	35.29	25.02	3.44	
2400.00	2400.00	80.41	5.28	5.28	Chiles 28 State 1H (s)	37.43	26.74	3.50	
2500.00	2500.00	79.82	5.51	5.51	Chiles 28 State 1H (s)	39.55	28.42	3.55	
2600.00	2600.00	79.54	5.73	5.73	Chiles 28 State 1H (s)	41.32	29.75	3.57	
2700.00	2700.00	79.48	5.96	5.96	Chiles 28 State 1H (s)	43.39	31.39	3.62	
2800.00	2800.00	79.28	6.18	6.18	Chiles 28 State 1H (s)	45.35	32.92	3.65	
2900.00	2900.00	79.47	6.41	6.41	Chiles 28 State 1H (s)	47.15	34.29	3.67	
3000.00	3000.00	79.70	6.63	6.63	Chiles 28 State 1H (s)	49.24	35.95	3.71	
3100.00	3100.00	80.24	6.86	6.86	Chiles 28 State 1H (s)	51.75	38.03	3.77	

5D Anti-Collision Report

Primary Well: Chiles 28 State 1Y (p) (TVD Relative to Well TVD Reference; All Azimuth Relative to GRID NORTH)

MD (US ft)	TVD (US ft)	T.Pace-to-Sec (°)	S.Major (US ft)	S.Minor (US ft)	Nearest Well	CC (US ft)	ES (US ft)	SF	Risk
3200.00	3200.00	80.27	7.08	7.08	Chiles 28 State 1H (s)	55.31	41.15	3.91	
3300.00	3300.00	80.28	7.31	7.31	Chiles 28 State 1H (s)	60.20	45.60	4.12	
3400.00	3400.00	80.37	7.53	7.53	Chiles 28 State 1H (s)	65.65	50.61	4.37	
3500.00	3500.00	79.87	7.76	7.76	Chiles 28 State 1H (s)	71.82	56.35	4.64	
3600.00	3600.00	79.37	7.98	7.98	Chiles 28 State 1H (s)	78.55	62.64	4.94	
3700.00	3700.00	78.95	8.20	8.20	Chiles 28 State 1H (s)	86.05	69.71	5.27	
3800.00	3800.00	78.71	8.43	8.43	Chiles 28 State 1H (s)	93.54	76.75	5.57	
3900.00	3900.00	78.72	8.65	8.65	Chiles 28 State 1H (s)	121.29	106.37	8.13	
4000.00	4000.00	78.72	8.88	8.88	Chiles 28 State 1H (s)	199.11	186.69	16.03	
4100.00	4100.00	78.72	9.10	9.10	Chiles 28 State 1H (s)	290.82	279.26	25.15	
4200.00	4200.00	78.72	9.33	9.33	Chiles 28 State 1H (s)	386.67	375.43	34.41	
4300.00	4300.00	78.72	9.55	9.55	Chiles 28 State 1H (s)	484.20	473.03	43.36	
4400.00	4400.00	78.72	9.78	9.78	Chiles 28 State 1H (s)	582.56	571.42	52.29	
4500.00	4500.00	78.72	10.00	10.00	Chiles 28 State 1H (s)	681.41	670.23	61.00	
4600.00	4600.00	78.72	10.23	10.23	Chiles 28 State 1H (s)	780.54	769.29	69.37	
4700.00	4700.00	78.72	10.45	10.45	Chiles 28 State 1H (s)	879.88	868.54	77.59	
4800.00	4800.00	78.72	10.68	10.68	Chiles 28 State 1H (s)	979.34	967.91	85.67	
4900.00	4900.00	78.72	10.90	10.90	Chiles 28 State 1H (s)	1078.91	1067.38	93.59	
5000.00	5000.00	78.72	11.13	11.13	Chiles 28 State 1H (s)	1178.55	1166.92	101.35	
5100.00	5100.00	78.72	11.35	11.35	Chiles 28 State 1H (s)	1278.25	1266.51	108.95	
5200.00	5200.00	78.72	11.58	11.58	Chiles 28 State 1H (s)	1377.99	1366.15	116.38	
5300.00	5300.00	78.72	11.80	11.80	Chiles 28 State 1H (s)	1477.76	1465.81	123.66	
5400.00	5400.00	78.72	12.03	12.03	Chiles 28 State 1H (s)	1577.57	1565.50	130.77	
5500.00	5500.00	78.72	12.25	12.25	Chiles 28 State 1H (s)	1677.39	1665.21	137.73	
5600.00	5600.00	78.72	12.48	12.48	Chiles 28 State 1H (s)	1777.24	1764.94	144.52	
5700.00	5700.00	78.72	12.70	12.70	Chiles 28 State 1H (s)	1877.10	1864.68	151.14	
5800.00	5800.00	78.72	12.93	12.93	Chiles 28 State 1H (s)	1976.98	1964.44	157.61	
5900.00	5900.00	78.72	13.15	13.15	Chiles 28 State 1H (s)	2076.87	2064.19	163.86	
6000.00	6000.00	78.72	13.37	13.37	Chiles 28 State 1H (s)	2176.77	2163.96	169.94	
6100.00	6100.00	78.72	13.60	13.60	Chiles 28 State 1H (s)	2276.68	2263.73	175.87	
6200.00	6200.00	78.72	13.82	13.82	Chiles 28 State 1H (s)	2376.59	2363.51	181.63	
6300.00	6300.00	78.72	14.05	14.05	Chiles 28 State 1H (s)	2476.51	2463.28	187.21	
6400.00	6400.00	78.72	14.27	14.27	Chiles 28 State 1H (s)	2576.44	2563.07	192.65	
6500.00	6500.00	78.72	14.50	14.50	Chiles 28 State 1H (s)	2676.38	2662.85	197.93	
6600.00	6600.00	78.72	14.72	14.72	Chiles 28 State 1H (s)	2776.31	2762.64	203.07	
6700.00	6700.00	78.72	14.95	14.95	Chiles 28 State 1H (s)	2876.26	2862.43	208.07	

5D Anti-Collision Report

Primary Well : Chiles 28 State 1Y (p) (TVD Relative to Well TVD Reference, 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
6800.00	6800.00	78.72	15.17	15.17	Chiles 28 State 1H (s)	2976.20	2962.22	212.92	
6900.00	6900.00	78.72	15.40	15.40	Chiles 28 State 1H (s)	3076.15	3062.02	217.62	
7000.00	7000.00	78.72	15.62	15.62	Chiles 28 State 1H (s)	3176.11	3161.81	222.19	
7100.00	7100.00	78.72	15.85	15.85	Chiles 28 State 1H (s)	3276.06	3261.61	226.62	
7200.00	7200.00	78.72	16.07	16.07	Chiles 28 State 1H (s)	3376.02	3361.40	230.91	
7300.00	7300.00	78.72	16.30	16.30	Chiles 28 State 1H (s)	3475.98	3461.19	235.06	
7400.00	7400.00	78.72	16.52	16.52	Chiles 28 State 1H (s)	3575.95	3560.99	239.09	
7500.00	7500.00	78.72	16.75	16.75	Chiles 28 State 1H (s)	3675.91	3660.78	242.98	
7600.00	7600.00	78.72	16.97	16.97	Chiles 28 State 1H (s)	3775.88	3760.57	246.74	
7700.00	7700.00	78.72	17.20	17.20	Chiles 28 State 1H (s)	3875.85	3860.37	250.38	
7800.00	7800.00	78.72	17.42	17.42	Chiles 28 State 1H (s)	3975.82	3960.16	253.89	
7900.00	7900.00	78.72	17.65	17.65	Chiles 28 State 1H (s)	4075.79	4059.95	257.28	
8000.00	8000.00	78.72	17.87	17.87	Chiles 28 State 1H (s)	4175.76	4159.73	260.55	
8100.00	8100.00	78.72	18.10	18.10	Chiles 28 State 1H (s)	4275.74	4259.52	263.70	
8200.00	8200.00	78.72	18.32	18.32	Chiles 28 State 1H (s)	4375.71	4359.31	266.73	
8300.00	8300.00	78.72	18.54	18.54	Chiles 28 State 1H (s)	4475.69	4459.09	269.65	
8400.00	8400.00	78.72	18.77	18.77	Chiles 28 State 1H (s)	4575.67	4558.87	272.46	
8500.00	8500.00	78.72	18.99	18.99	Chiles 28 State 1H (s)	4675.64	4658.65	275.16	
8600.00	8600.00	78.72	19.22	19.22	Chiles 28 State 1H (s)	4775.62	4758.43	277.75	
8700.00	8700.00	78.72	19.44	19.44	Chiles 28 State 1H (s)	4875.60	4858.21	280.24	
8800.00	8800.00	78.72	19.67	19.67	Chiles 28 State 1H (s)	4975.59	4957.98	282.62	
8900.00	8900.00	78.72	19.89	19.89	Chiles 28 State 1H (s)	5075.57	5057.75	284.91	
9000.00	9000.00	78.72	20.12	20.12	Chiles 28 State 1H (s)	5175.55	5157.52	287.09	
9100.00	9100.00	78.72	20.34	20.34	Chiles 28 State 1H (s)	5275.53	5257.29	289.18	
9200.00	9200.00	78.72	20.57	20.57	Chiles 28 State 1H (s)	5375.52	5357.06	291.18	
9300.00	9300.00	78.72	20.79	20.79	Chiles 28 State 1H (s)	5475.50	5456.82	293.08	
9400.00	9400.00	78.72	21.02	21.02	Chiles 28 State 1H (s)	5575.49	5556.58	294.89	
9500.00	9500.00	78.72	21.24	21.24	Chiles 28 State 1H (s)	5675.47	5656.34	296.62	
9600.00	9600.00	78.72	21.47	21.47	Chiles 28 State 1H (s)	5775.46	5756.09	298.26	
9700.00	9700.00	78.72	21.69	21.69	Chiles 28 State 1H (s)	5875.45	5855.85	299.82	
9800.00	9800.00	78.72	21.92	21.92	Chiles 28 State 1H (s)	5975.43	5955.60	301.30	
9900.00	9900.00	78.72	22.14	22.14	Chiles 28 State 1H (s)	6075.42	6055.35	302.70	
10000.00	10000.00	78.72	22.37	22.37	Chiles 28 State 1H (s)	6175.41	6155.09	304.02	
10100.00	10100.00	78.72	22.59	22.59	Chiles 28 State 1H (s)	6275.40	6254.84	305.26	
10200.00	10200.00	78.72	22.82	22.82	Chiles 28 State 1H (s)	6375.38	6354.58	306.44	
10300.00	10300.00	78.72	23.04	23.04	Chiles 28 State 1H (s)	6475.37	6454.32	307.54	

5D Anti-Collision Report

Primary Well : Chiles 28 State 1Y (p) (TVD Relative to Well TVD Reference, 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
10400.00	10400.00	78.72	23.27	23.27	Chiles 28 State 1H (s)	6575.36	6554.05	308.57	
10500.00	10499.56	355.35	23.46	23.24	Chiles 28 State 1H (s)	6674.91	6653.35	309.59	
10600.00	10595.45	357.84	23.62	22.66	Chiles 28 State 1H (s)	6770.85	6749.06	310.70	
10700.00	10683.49	358.56	23.76	21.67	Chiles 28 State 1H (s)	6859.24	6837.25	311.95	
10800.00	10759.82	358.89	23.96	20.40	Chiles 28 State 1H (s)	6936.55	6914.41	313.23	
10900.00	10821.11	359.06	24.24	19.07	Chiles 28 State 1H (s)	6999.84	6977.58	314.35	
11000.00	10864.67	359.16	24.64	17.87	Chiles 28 State 1H (s)	7046.75	7024.39	315.15	
11100.00	10890.68	359.60	25.13	17.30	Chiles 28 State 1H (s)	7077.67	7055.16	314.51	
11200.00	10899.98	0.06	25.66	17.21	Chiles 28 State 1H (s)	7093.49	7070.80	312.74	
11300.00	10900.00	0.09	26.34	17.35	Chiles 28 State 1H (s)	7101.48	7078.60	310.38	
11400.00	10900.00	0.09	27.10	17.52	Chiles 28 State 1H (s)	7110.86	7087.76	307.78	
11500.00	10900.00	0.09	27.94	17.72	Chiles 28 State 1H (s)	7121.63	7098.29	305.02	
11600.00	10900.00	0.09	28.86	17.94	Chiles 28 State 1H (s)	7133.79	7110.18	302.16	
11700.00	10900.86	0.09	29.82	18.20	Chiles 28 State 1H (s)	7148.18	7124.29	299.22	
11800.00	10903.46	0.09	30.84	18.48	Chiles 28 State 1H (s)	7165.65	7141.46	296.28	
11900.00	10907.81	0.09	31.92	18.79	Chiles 28 State 1H (s)	7186.18	7161.61	292.44	
12000.00	10913.70	0.09	33.09	19.13	Chiles 28 State 1H (s)	7209.53	7184.55	288.56	
12100.00	10919.80	0.09	34.34	19.48	Chiles 28 State 1H (s)	7234.41	7209.00	284.75	
12200.00	10925.91	0.09	35.64	19.85	Chiles 28 State 1H (s)	7260.58	7234.74	281.04	
12300.00	10932.01	0.09	36.99	20.25	Chiles 28 State 1H (s)	7288.02	7261.75	277.43	
12400.00	10938.12	0.09	38.37	20.65	Chiles 28 State 1H (s)	7316.73	7290.02	273.94	
12500.00	10944.22	0.09	39.79	21.07	Chiles 28 State 1H (s)	7346.69	7319.54	270.64	
12600.00	10950.33	0.09	41.24	21.49	Chiles 28 State 1H (s)	7377.88	7350.31	267.57	
12700.00	10956.43	0.09	42.72	21.93	Chiles 28 State 1H (s)	7410.29	7382.21	263.89	
12800.00	10962.54	0.09	44.23	22.45	Chiles 28 State 1H (s)	7443.91	7415.29	260.13	
12900.00	10968.64	0.09	45.75	22.97	Chiles 28 State 1H (s)	7478.71	7449.60	256.92	
13000.00	10974.75	0.09	47.30	23.38	Chiles 28 State 1H (s)	7514.67	7485.07	253.87	
13100.00	10980.85	0.09	48.87	23.93	Chiles 28 State 1H (s)	7551.80	7521.70	250.96	
13200.00	10986.96	0.09	50.46	24.51	Chiles 28 State 1H (s)	7590.05	7559.44	247.96	
13300.00	10993.06	0.09	52.06	25.04	Chiles 28 State 1H (s)	7629.43	7598.28	244.92	
13400.00	10999.17	0.09	53.68	25.59	Chiles 28 State 1H (s)	7669.91	7638.26	242.36	
13500.00	11005.27	0.09	55.31	26.06	Chiles 28 State 1H (s)	7711.47	7679.31	239.77	
13600.00	11011.38	0.09	56.95	26.69	Chiles 28 State 1H (s)	7754.10	7721.43	237.32	
13700.00	11017.48	0.09	58.60	27.28	Chiles 28 State 1H (s)	7797.78	7764.65	235.38	
13800.00	11023.59	0.09	60.26	27.85	Chiles 28 State 1H (s)	7842.49	7808.88	233.32	
13900.00	11029.69	0.09	61.94	28.42	Chiles 28 State 1H (s)	7888.22	7854.05	230.88	

5D Anti-Collision Report

Primary Well : Chiles 28 State 1Y (p) (TVD Relative to Well TVD Reference, 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
14000.00	11035.80	0.09	63.62	28.99	Chiles 28 State 1H (s)	7934.94	7900.24	228.68	
14100.00	11041.90	0.09	65.30	29.57	Chiles 28 State 1H (s)	7982.64	7947.43	226.67	
14200.00	11048.01	0.09	67.00	30.15	Chiles 28 State 1H (s)	8031.31	7995.58	224.81	
14300.00	11054.11	0.09	68.70	30.74	Chiles 28 State 1H (s)	8080.92	8044.69	223.09	
14400.00	11060.22	0.09	70.41	31.36	Chiles 28 State 1H (s)	8131.45	8094.74	221.48	
14500.00	11066.32	0.09	72.13	32.00	Chiles 28 State 1H (s)	8182.90	8145.70	219.99	
14600.00	11072.43	0.09	73.85	32.63	Chiles 28 State 1H (s)	8235.23	8197.56	218.60	
14700.00	11078.53	0.09	75.57	33.27	Chiles 28 State 1H (s)	8288.45	8250.31	217.30	
14800.00	11084.64	0.09	77.30	33.91	Chiles 28 State 1H (s)	8342.52	8303.92	216.10	
14900.00	11090.74	0.09	79.04	34.55	Chiles 28 State 1H (s)	8397.44	8358.38	214.99	
15000.00	11096.85	0.09	80.77	35.20	Chiles 28 State 1H (s)	8453.18	8413.67	213.95	
15100.00	11102.95	0.09	82.52	35.85	Chiles 28 State 1H (s)	8509.73	8469.78	212.99	
15200.00	11109.06	0.09	84.26	36.50	Chiles 28 State 1H (s)	8567.08	8526.68	212.06	
15300.00	11115.16	0.09	86.01	37.15	Chiles 28 State 1H (s)	8625.21	8584.37	211.20	
15305.49	11115.50	0.09	86.11	37.19	Chiles 28 State 1H (s)	8628.42	8587.56	211.15	

Secondary Well : Chiles 28 State 1H (s) (TVD Relative to Well TVD Reference (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	0.00	0.00	90.00	0.00	0.00	25.00	24.43	44.12	
100.00	99.95	99.95	89.94	0.15	0.15	25.10	24.27	30.25	
200.00	199.90	199.90	89.77	0.25	0.25	25.39	24.24	22.04	
300.00	299.88	299.89	89.28	0.50	0.50	25.80	24.18	15.92	
400.00	399.86	399.86	88.35	0.68	0.68	26.29	24.26	12.95	
500.00	499.90	499.90	87.20	0.89	0.89	26.83	24.36	10.88	
600.00	599.94	599.95	86.67	1.10	1.09	26.99	24.10	9.33	
700.00	699.92	699.93	86.21	1.30	1.30	27.35	24.03	8.24	
800.00	800.02	800.03	86.27	1.50	1.50	27.47	23.73	7.34	
900.00	900.00	900.01	87.03	1.70	1.70	27.34	23.18	6.56	
1000.00	999.92	999.93	87.11	1.91	1.91	27.51	22.91	5.97	
1100.00	1100.01	1100.01	86.90	2.12	2.12	27.73	22.69	5.50	
1200.00	1200.03	1200.04	86.81	2.33	2.33	27.60	22.13	5.04	
1300.00	1299.98	1299.99	86.59	2.54	2.54	27.52	21.62	4.66	
1400.00	1399.89	1399.90	86.21	2.76	2.76	27.77	21.43	4.38	
1500.00	1499.83	1499.85	85.50	2.97	2.97	28.27	21.49	4.17	
1600.00	1599.84	1599.85	84.21	3.19	3.19	28.85	21.63	4.00	
1700.00	1699.99	1700.01	82.66	3.39	3.39	29.16	21.50	3.81	
1800.00	1800.20	1800.22	81.38	3.59	3.59	28.86	20.77	3.57	
1900.00	1899.98	1900.00	80.88	3.80	3.80	28.53	20.02	3.35	
2000.00	1999.71	1999.74	80.98	4.02	4.02	29.05	20.09	3.24	
2100.00	2099.42	2099.46	81.36	4.23	4.22	30.50	21.12	3.25	
2200.00	2199.19	2199.25	81.74	4.44	4.44	32.69	22.87	3.33	
2300.00	2299.08	2299.18	81.32	4.66	4.65	35.29	25.02	3.44	
2400.00	2399.29	2399.41	80.41	4.87	4.86	37.43	26.74	3.50	
2500.00	2499.17	2499.31	79.82	5.08	5.07	39.55	28.42	3.55	
2600.00	2599.28	2599.44	79.54	5.28	5.28	41.32	29.75	3.57	
2700.00	2699.07	2699.26	79.48	5.49	5.49	43.39	31.39	3.62	
2800.00	2799.17	2799.37	79.28	5.70	5.69	45.35	32.92	3.65	
2900.00	2899.10	2899.32	79.47	5.91	5.90	47.15	34.29	3.67	

5D Anti-Collision Report

Secondary Well: Chiles 28 State 1H (s) (TVD Relative to Well TVD Reference (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
3000.00	2998.90	2999.13	79.70	6.12	6.11	49.24	35.95	3.71	
3100.00	3098.48	3098.75	80.24	6.34	6.32	51.75	38.03	3.77	
3200.00	3197.59	3197.92	80.27	6.56	6.53	55.31	41.15	3.91	
3300.00	3296.92	3297.37	80.28	6.78	6.75	60.20	45.60	4.12	
3400.00	3396.13	3396.73	80.37	7.00	6.96	65.65	50.61	4.37	
3500.00	3495.45	3496.24	79.87	7.22	7.17	71.82	56.35	4.64	
3600.00	3594.33	3595.35	79.37	7.45	7.38	78.55	62.64	4.94	
3700.00	3693.35	3694.65	78.95	7.68	7.60	86.05	69.71	5.27	
3800.00	3793.31	3794.90	78.71	7.90	7.81	93.54	76.75	5.57	
3900.00	3825.33	3827.00	78.72	7.97	7.88	121.29	106.37	8.13	
4000.00	3825.33	3827.00	78.72	7.97	7.88	199.11	186.69	16.03	
4100.00	3825.33	3827.00	78.72	7.97	7.88	290.82	279.26	25.15	
4200.00	3825.33	3827.00	78.72	7.97	7.88	386.67	375.43	34.41	
4300.00	3825.33	3827.00	78.72	7.97	7.88	484.20	473.03	43.36	
4400.00	3825.33	3827.00	78.72	7.97	7.88	582.56	571.42	52.29	
4500.00	3825.33	3827.00	78.72	7.97	7.88	681.41	670.23	61.00	
4600.00	3825.33	3827.00	78.72	7.97	7.88	780.54	769.29	69.37	
4700.00	3825.33	3827.00	78.72	7.97	7.88	879.88	868.54	77.59	
4800.00	3825.33	3827.00	78.72	7.97	7.88	979.34	967.91	85.67	
4900.00	3825.33	3827.00	78.72	7.97	7.88	1078.91	1067.38	93.59	
5000.00	3825.33	3827.00	78.72	7.97	7.88	1178.55	1166.92	101.35	
5100.00	3825.33	3827.00	78.72	7.97	7.88	1278.25	1266.51	108.95	
5200.00	3825.33	3827.00	78.72	7.97	7.88	1377.99	1366.15	116.38	
5300.00	3825.33	3827.00	78.72	7.97	7.88	1477.76	1465.81	123.66	
5400.00	3825.33	3827.00	78.72	7.97	7.88	1577.57	1565.50	130.77	
5500.00	3825.33	3827.00	78.72	7.97	7.88	1677.39	1665.21	137.73	
5600.00	3825.33	3827.00	78.72	7.97	7.88	1777.24	1764.94	144.52	
5700.00	3825.33	3827.00	78.72	7.97	7.88	1877.10	1864.68	151.14	
5800.00	3825.33	3827.00	78.72	7.97	7.88	1976.98	1964.44	157.61	
5900.00	3825.33	3827.00	78.72	7.97	7.88	2076.87	2064.19	163.86	
6000.00	3825.33	3827.00	78.72	7.97	7.88	2176.77	2163.96	169.94	
6100.00	3825.33	3827.00	78.72	7.97	7.88	2276.68	2263.73	175.87	
6200.00	3825.33	3827.00	78.72	7.97	7.88	2376.59	2363.51	181.63	
6300.00	3825.33	3827.00	78.72	7.97	7.88	2476.51	2463.28	187.21	
6400.00	3825.33	3827.00	78.72	7.97	7.88	2576.44	2563.07	192.65	
6500.00	3825.33	3827.00	78.72	7.97	7.88	2676.38	2662.85	197.93	
6600.00	3825.33	3827.00	78.72	7.97	7.88	2776.31	2762.64	203.07	
6700.00	3825.33	3827.00	78.72	7.97	7.88	2876.26	2862.43	208.07	
6800.00	3825.33	3827.00	78.72	7.97	7.88	2976.20	2962.22	212.92	
6900.00	3825.33	3827.00	78.72	7.97	7.88	3076.15	3062.02	217.62	
7000.00	3825.33	3827.00	78.72	7.97	7.88	3176.11	3161.81	222.19	
7100.00	3825.33	3827.00	78.72	7.97	7.88	3276.06	3261.61	226.62	
7200.00	3825.33	3827.00	78.72	7.97	7.88	3376.02	3361.40	230.91	
7300.00	3825.33	3827.00	78.72	7.97	7.88	3475.98	3461.19	235.06	
7400.00	3825.33	3827.00	78.72	7.97	7.88	3575.95	3560.99	239.09	
7500.00	3825.33	3827.00	78.72	7.97	7.88	3675.91	3660.78	242.98	
7600.00	3825.33	3827.00	78.72	7.97	7.88	3775.88	3760.57	246.74	
7700.00	3825.33	3827.00	78.72	7.97	7.88	3875.85	3860.37	250.38	
7800.00	3825.33	3827.00	78.72	7.97	7.88	3975.82	3960.16	253.89	
7900.00	3825.33	3827.00	78.72	7.97	7.88	4075.79	4059.95	257.28	
8000.00	3825.33	3827.00	78.72	7.97	7.88	4175.76	4159.73	260.55	
8100.00	3825.33	3827.00	78.72	7.97	7.88	4275.74	4259.52	263.70	
8200.00	3825.33	3827.00	78.72	7.97	7.88	4375.71	4359.31	266.73	
8300.00	3825.33	3827.00	78.72	7.97	7.88	4475.69	4459.09	269.65	
8400.00	3825.33	3827.00	78.72	7.97	7.88	4575.67	4558.87	272.46	
8500.00	3825.33	3827.00	78.72	7.97	7.88	4675.64	4658.65	275.16	
8600.00	3825.33	3827.00	78.72	7.97	7.88	4775.62	4758.43	277.75	
8700.00	3825.33	3827.00	78.72	7.97	7.88	4875.60	4858.21	280.24	

5D Anti-Collision Report

Secondary Well Chiles 28 State 1H (S) (TVD Relative to Well TVD Reference (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
8800.00	3825.33	3827.00	78.72	7.97	7.88	4975.59	4957.98	282.62	
8900.00	3825.33	3827.00	78.72	7.97	7.88	5075.57	5057.75	284.91	
9000.00	3825.33	3827.00	78.72	7.97	7.88	5175.55	5157.52	287.09	
9100.00	3825.33	3827.00	78.72	7.97	7.88	5275.53	5257.29	289.18	
9200.00	3825.33	3827.00	78.72	7.97	7.88	5375.52	5357.06	291.18	
9300.00	3825.33	3827.00	78.72	7.97	7.88	5475.50	5456.82	293.08	
9400.00	3825.33	3827.00	78.72	7.97	7.88	5575.49	5556.58	294.89	
9500.00	3825.33	3827.00	78.72	7.97	7.88	5675.47	5656.34	296.62	
9600.00	3825.33	3827.00	78.72	7.97	7.88	5775.46	5756.09	298.26	
9700.00	3825.33	3827.00	78.72	7.97	7.88	5875.45	5855.85	299.82	
9800.00	3825.33	3827.00	78.72	7.97	7.88	5975.43	5955.60	301.30	
9900.00	3825.33	3827.00	78.72	7.97	7.88	6075.42	6055.35	302.70	
10000.00	3825.33	3827.00	78.72	7.97	7.88	6175.41	6155.09	304.02	
10100.00	3825.33	3827.00	78.72	7.97	7.88	6275.40	6254.84	305.26	
10200.00	3825.33	3827.00	78.72	7.97	7.88	6375.38	6354.58	306.44	
10300.00	3825.33	3827.00	78.72	7.97	7.88	6475.37	6454.32	307.54	
10400.00	3825.33	3827.00	78.72	7.97	7.88	6575.36	6554.05	308.57	
10500.00	3825.33	3827.00	355.35	7.97	7.88	6674.91	6653.35	309.59	
10600.00	3825.33	3827.00	357.84	7.97	7.88	6770.85	6749.06	310.70	
10700.00	3825.33	3827.00	358.56	7.97	7.88	6859.24	6837.25	311.95	
10800.00	3825.33	3827.00	358.89	7.97	7.88	6936.55	6914.41	313.23	
10900.00	3825.33	3827.00	359.06	7.97	7.88	6999.84	6977.58	314.35	
11000.00	3825.33	3827.00	359.16	7.97	7.88	7046.75	7024.39	315.15	
11100.00	3825.33	3827.00	359.60	7.97	7.88	7077.67	7055.16	314.51	
11200.00	3825.33	3827.00	0.06	7.97	7.88	7093.49	7070.80	312.74	
11300.00	3825.33	3827.00	0.09	7.97	7.88	7101.48	7078.60	310.38	
11400.00	3825.33	3827.00	0.09	7.97	7.88	7110.86	7087.76	307.78	
11500.00	3825.33	3827.00	0.09	7.97	7.88	7121.63	7098.29	305.02	
11600.00	3825.33	3827.00	0.09	7.97	7.88	7133.79	7110.18	302.16	
11700.00	3825.33	3827.00	0.09	7.97	7.88	7148.18	7124.29	299.22	
11800.00	3825.33	3827.00	0.09	7.97	7.88	7165.65	7141.46	296.28	
11900.00	3825.33	3827.00	0.09	7.97	7.88	7186.18	7161.61	292.44	
12000.00	3825.33	3827.00	0.09	7.97	7.88	7209.53	7184.55	288.56	
12100.00	3825.33	3827.00	0.09	7.97	7.88	7234.41	7209.00	284.75	
12200.00	3825.33	3827.00	0.09	7.97	7.88	7260.58	7234.74	281.04	
12300.00	3825.33	3827.00	0.09	7.97	7.88	7288.02	7261.75	277.43	
12400.00	3825.33	3827.00	0.09	7.97	7.88	7316.73	7290.02	273.94	
12500.00	3825.33	3827.00	0.09	7.97	7.88	7346.69	7319.54	270.64	
12600.00	3825.33	3827.00	0.09	7.97	7.88	7377.88	7350.31	267.57	
12700.00	3825.33	3827.00	0.09	7.97	7.88	7410.29	7382.21	263.89	
12800.00	3825.33	3827.00	0.09	7.97	7.88	7443.91	7415.29	260.13	
12900.00	3825.33	3827.00	0.09	7.97	7.88	7478.71	7449.60	256.92	
13000.00	3825.33	3827.00	0.09	7.97	7.88	7514.67	7485.07	253.87	
13100.00	3825.33	3827.00	0.09	7.97	7.88	7551.80	7521.70	250.96	
13200.00	3825.33	3827.00	0.09	7.97	7.88	7590.05	7559.44	247.96	
13300.00	3825.33	3827.00	0.09	7.97	7.88	7629.43	7598.28	244.92	
13400.00	3825.33	3827.00	0.09	7.97	7.88	7669.91	7638.26	242.36	
13500.00	3825.33	3827.00	0.09	7.97	7.88	7711.47	7679.31	239.77	
13600.00	3825.33	3827.00	0.09	7.97	7.88	7754.10	7721.43	237.32	
13700.00	3825.33	3827.00	0.09	7.97	7.88	7797.78	7764.65	235.38	
13800.00	3825.33	3827.00	0.09	7.97	7.88	7842.49	7808.88	233.32	
13900.00	3825.33	3827.00	0.09	7.97	7.88	7888.22	7854.05	230.88	
14000.00	3825.33	3827.00	0.09	7.97	7.88	7934.94	7900.24	228.68	
14100.00	3825.33	3827.00	0.09	7.97	7.88	7982.64	7947.43	226.67	
14200.00	3825.33	3827.00	0.09	7.97	7.88	8031.31	7995.58	224.81	
14300.00	3825.33	3827.00	0.09	7.97	7.88	8080.92	8044.69	223.09	
14400.00	3825.33	3827.00	0.09	7.97	7.88	8131.45	8094.74	221.48	
14500.00	3825.33	3827.00	0.09	7.97	7.88	8182.90	8145.70	219.99	

5D Anti-Collision Report

Secondary Well : Chiles 28 State 1H (S) (TVD Relative to Well TVD Reference (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
14600.00	3825.33	3827.00	0.09	7.97	7.88	8235.23	8197.56	218.60	
14700.00	3825.33	3827.00	0.09	7.97	7.88	8288.45	8250.31	217.30	
14800.00	3825.33	3827.00	0.09	7.97	7.88	8342.52	8303.92	216.10	
14900.00	3825.33	3827.00	0.09	7.97	7.88	8397.44	8358.38	214.99	
15000.00	3825.33	3827.00	0.09	7.97	7.88	8453.18	8413.67	213.95	
15100.00	3825.33	3827.00	0.09	7.97	7.88	8509.73	8469.78	212.99	
15200.00	3825.33	3827.00	0.09	7.97	7.88	8567.08	8526.68	212.06	
15300.00	3825.33	3827.00	0.09	7.97	7.88	8625.21	8584.37	211.20	
15305.49	3825.33	3827.00	0.09	7.97	7.88	8628.42	8587.56	211.15	

Weatherford

Weatherford Drilling Services

GeoDec4 v2.1.0.0

Report Date:	June 01, 2015
Job Number:	
Customer:	Devon Energy
Well Name:	Chiles 28 State 1Y
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: 530722.90 US Survey Foot	Latitude: 32.456146 Degree
East: 803812.30 US Survey Foot	Longitude: -103.482381 Degree

Convergence: 0.46°

Declination: 7.22°

Total Correction: 6.76°

Datum Transformation: none

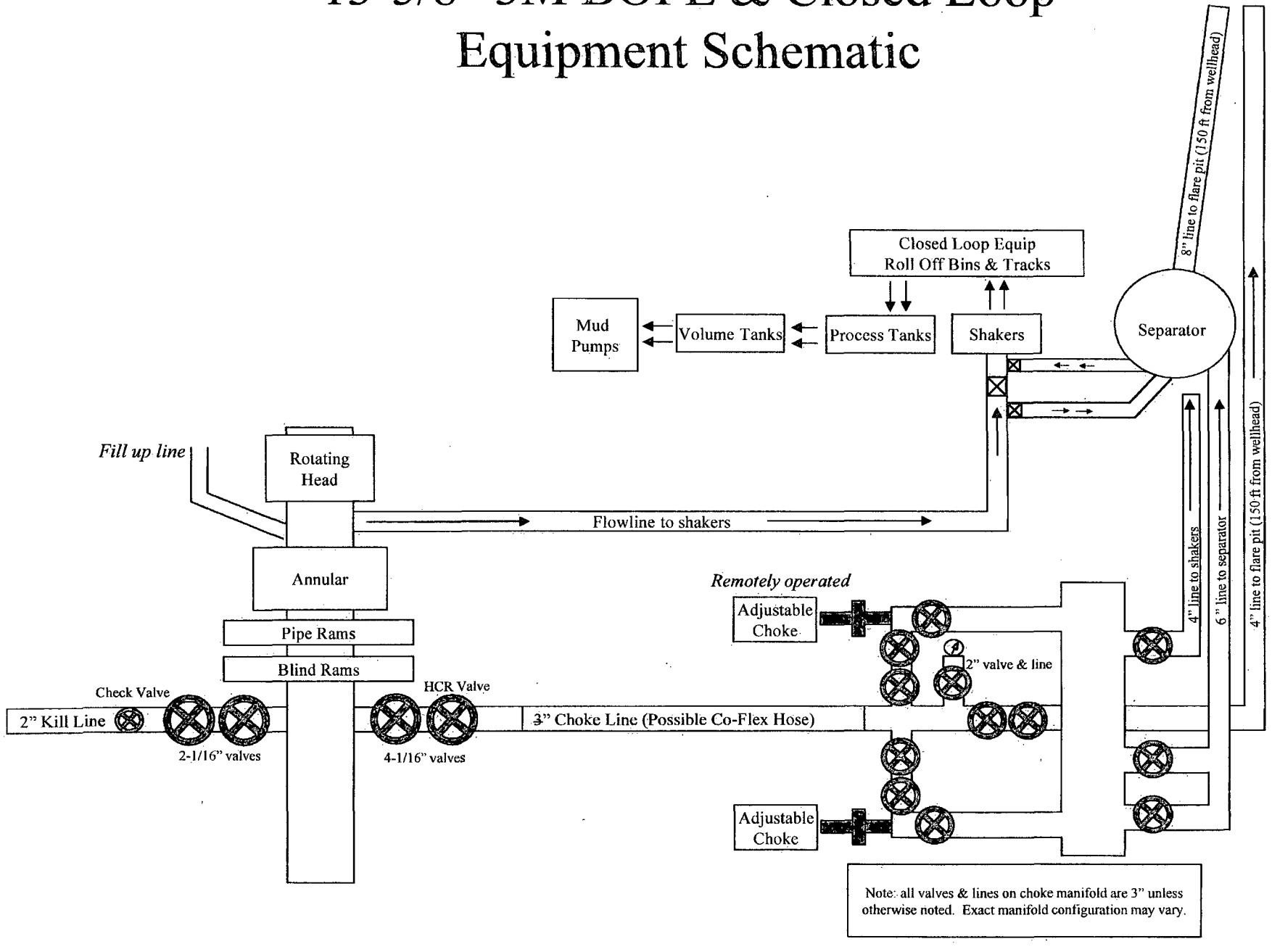
Geodetic Location WGS84

MSL Elevation	=	0 m
Latitude	=	32° 27' 22.13" N
Longitude	=	103° 28' 56.57" W

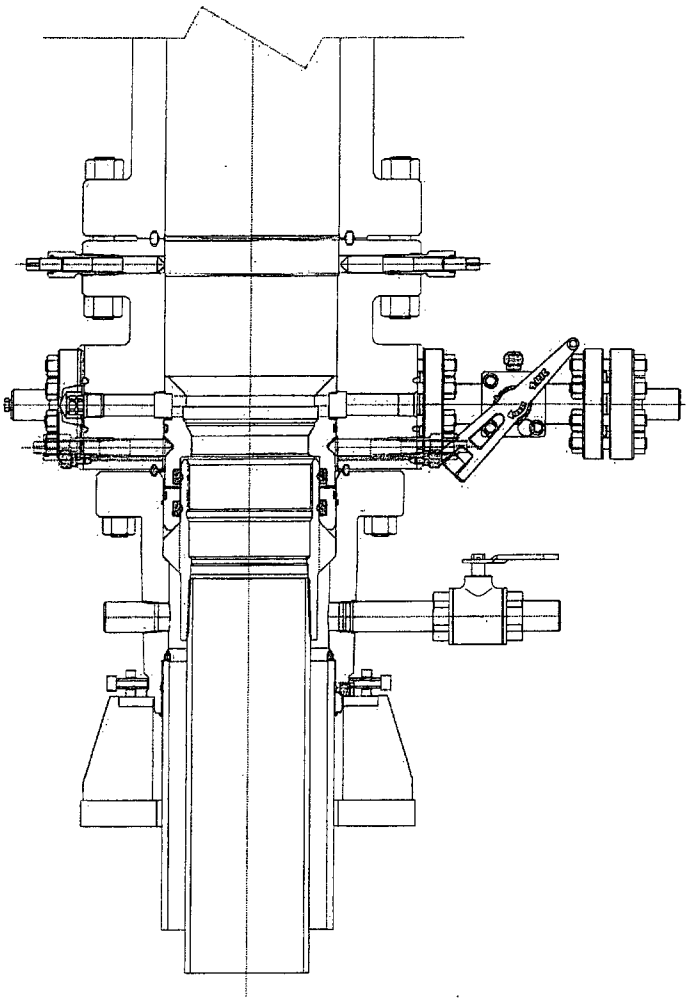
Magnetic Declination	=	7.22 deg	[True North Offset]		
Local Gravity	=	.9988 g	CheckSum	=	6722
Local Field Strength	=	48397 nT	Magnetic Vector X	=	23731 nT
Magnetic Dip	=	60.38 deg	Magnetic Vector Y	=	3005 nT
Magnetic Model	=	bggm2015.dat	Magnetic Vector Z	=	42072 nT
Run Date	=	June 10, 2015	Magnetic Vector H	=	23921 nT

Signed:_____ Date:_____

13-5/8" 3M BOPE & Closed Loop Equipment Schematic



FMC Technologies



PRIMARY MODE

DEVON ENERGY

ARTESIA

S.E.N.M

13 3/8 X 9 5/8

QUOTE LAYOUT
F18648
REF: DM100161737
DM100151315

REVISIONS	
A	05-08-13
B	1-22-14
C	5-13-14

DESCRIPTION

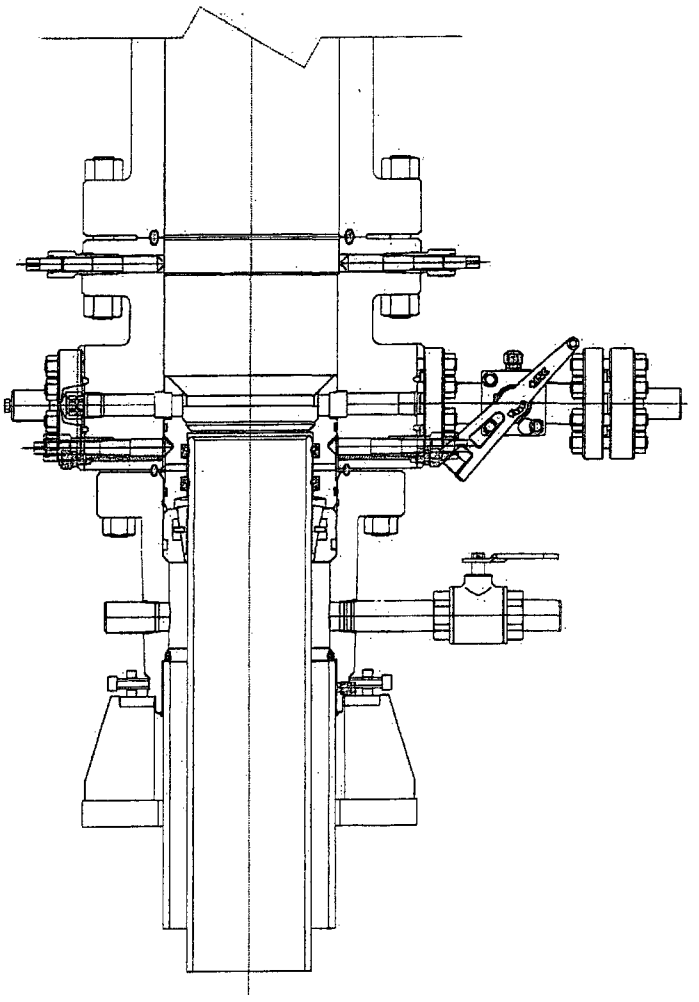
SURFACE WELLHEAD LAYOUT
UNIHEAD, UH-1, SOW,
DEVON ENERGY, ODESSA

DRAWN BY	K. VU	05-08-13
DRAFTING REVIEW	Z. MARQUEZ	05-08-13
DESIGN REVIEW	K. TAHA	05-08-13
APPROVED BY	R. HAMILTON	05-08-13

FMC Technologies

DRAWING NUMBER
DM100161771-2A

FMC Technologies



CONTINGENCY MODE

DEVON ENERGY

ARTESIA

S.E.N.M

13 3/8 X 9 5/8

QUOTE LAYOUT
F18648
REF: DM100161737
DM100151315

REVISIONS		DESCRIPTION
A	05-08-13	
B	1-22-14	
C	5-13-14	

SURFACE WELLHEAD LAYOUT
UNIHEAD, UH-1, SOW,
DEVON ENERGY, ODESSA

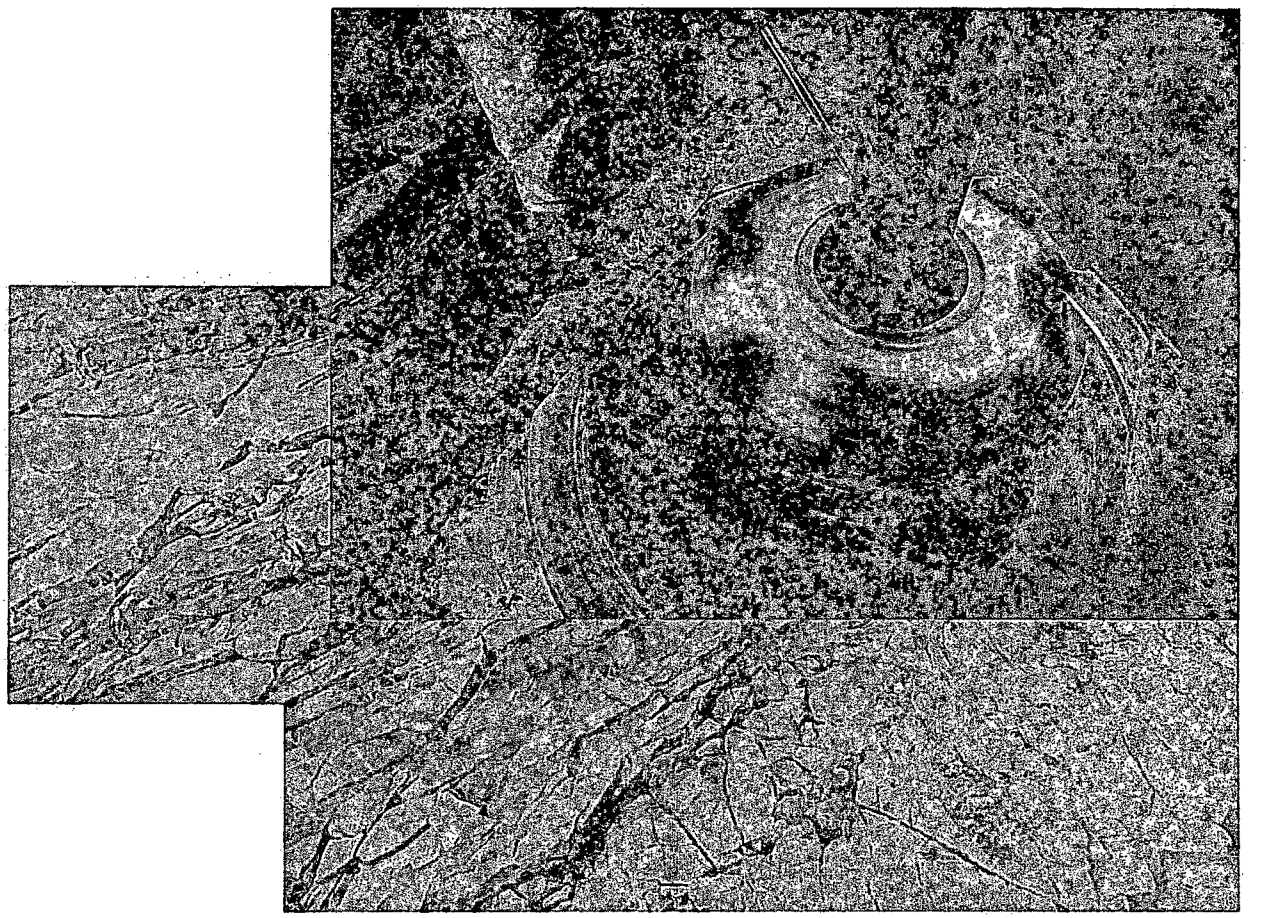
DRAWN BY	K. VU	05-08-13
DRAFTING REVIEW	Z. MARQUEZ	05-08-13
DESIGN REVIEW	K. TAHA	05-08-13
APPROVED BY	R. HAMILTON	05-08-13

FMC Technologies

DRAWING NUMBER
DM100161771-2B

devon

Commitment Runs Deep



Design Plan
Operation and Maintenance Plan
Closure Plan

SENM - Closed Loop Systems
February 2015

I. Design Plan

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

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

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

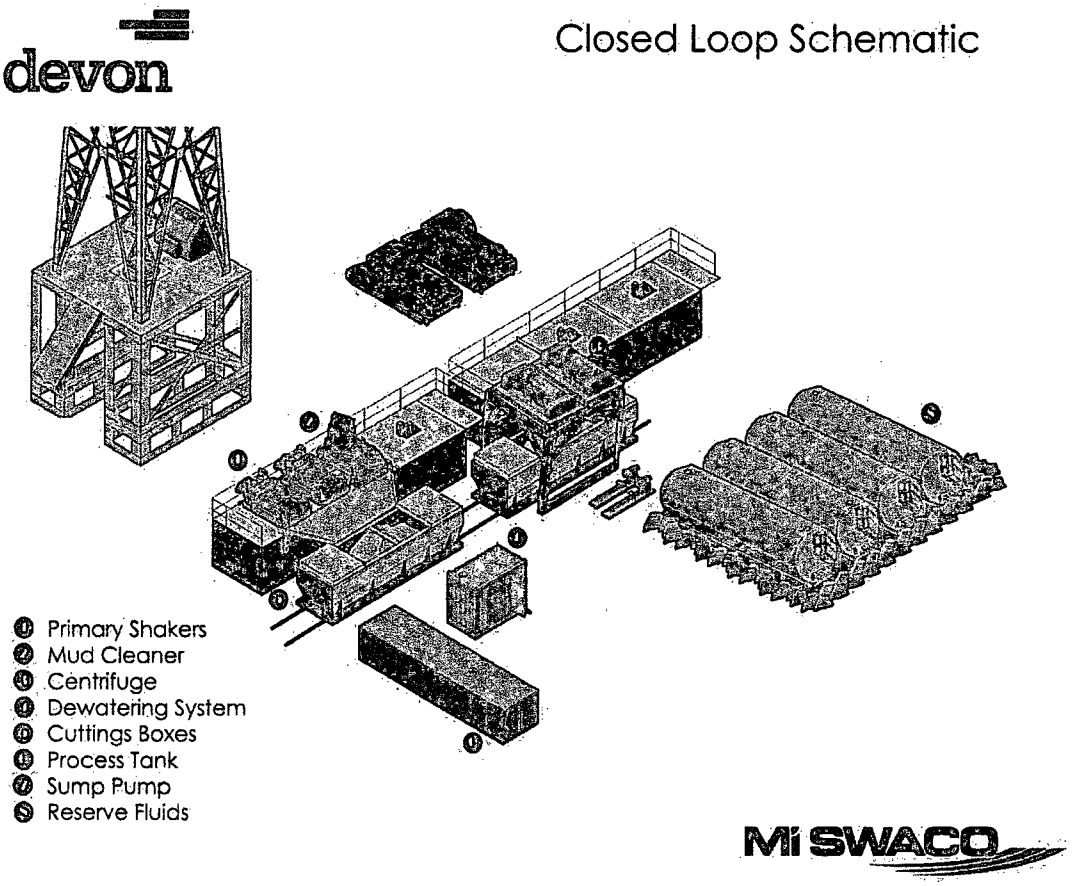
Prior to installing a closed-loop system on site, the topsoil, if present, will be stripped and stockpiled for use as the final cover or fill at the time of closure.

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

II. Operations and Maintenance Plan

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

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



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

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

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

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

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

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

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

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

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

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

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

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

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

III. Closure Plan

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