

Split Estate

Form 3160-3
(March 2012)

OCD Hobbs

14-666

HOBBS OCD

JUN 06 2014

**NORTHODOX
LOCATION**

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

5. Lease Serial No.
NMNM 94186

6. If Indian, Allottee or Tribe Name

1a. Type of work: ☒ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.
THISTLE UNIT NM88526X

1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone

8. Lease Name and Well No.
THISTLE UNIT 52H **30884**

2. Name of Operator Devon Energy Production Company, L.P. **6137**

9. API Well No.
30-025-41897

3a. Address 333 W. Sheridan
Oklahoma City, OK 73102

3b. Phone No. (include area code)
405.552.7848

10. Field and Pool, or Exploratory
TRIPLE X ; BONE SPRINGS **59900**

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

At surface 180 FNL & 1795 FWL, Unit C

PP: 180 FNL & 1795 FWL

At proposed prod. zone 330 FSL & 1980 FWL, Unit N

11. Sec., T. R. M. or Blk. and Survey or Area
Sec 28, T23S, R33E

14. Distance in miles and direction from nearest town or post office*
Approximately 28 miles SW from Eunice, NM

12. County or Parish
LEA

13. State
NM

15. Distance from proposed*
location to nearest
property or lease line, ft.
(Also to nearest drig. unit line, if any)
See attached map

16. No. of acres in lease
960 ac

17. Spacing Unit dedicated to this well
160 ac

18. Distance from proposed location*
to nearest well, drilling, completed,
applied for, on this lease, ft.
See attached map

19. Proposed Depth
TVD: 11,239'; MD: 16,085'

20. BLM/BIA Bond No. on file
CO-1104; NBM-000801

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3,687.7' GL

22. Approximate date work will start*
09/15/2014

23. Estimated duration
45 Days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, must be attached to this form:

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

25. Signature

Name (Printed/Typed)
David H. Cook

Date
03/26/2014

Title

Regulatory Compliance Professional

Approved by (Signature)

Steve Caffey

Name (Printed/Typed)

Date
MAY 29 2014

Title

FIELD MANAGER

Office

CARLSBAD FIELD OFFICE

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

APPROVAL FOR TWO YEARS

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

(Continued on page 2)

*(Instructions on page 2)

Carlsbad Controlled Water Basin

6/6/14

**SEE ATTACHED FOR
CONDITIONS OF APPROVAL**

Approval Subject to General Requirements
& Special Stipulations Attached

JUN 09 2014

Certification

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access road proposed herein; that I am familiar with the conditions that presently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or Devon Energy Production Company, L.P. am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

I hereby also certify that I, or Devon Energy Production Company, L.P. have made a good faith effort to provide the surface owner with a copy of the Surface Use Plan of Operations and any Conditions of Approval that are attached to the APD.

Executed this 27th day of March, 2014.

Printed Name: David H. Cook

Signed Name: D. H. Cook

Position Title: Regulatory Specialist

Address: 333 W. Sheridan, OKC OK 73102

Telephone: (405)-552-6559

HOBBS OCD

JUN 09 2014

RECEIVED

DRILLING PROGRAM

Devon Energy Production Company, L.P.
Thistle Unit 52H

1. **Geologic Name of Surface Formation: Quaternary**

2. **Estimated Tops of Geological Markers & Depths of Anticipated FW, Oil, or Gas:**

a. Fresh Water	400'	
b. Rustler	1290'	Barren
c. Top of Salt	1770'	Barren
d. Base of Salt/ <i>Lower Castine</i>	5090'	Barren
e. Delaware	5190'	Oil / Gas
f. Cherry Canyon	6060'	Oil / Gas
g. Brushy Canyon	7640'	Oil / Gas
h. Bone Spring Lime	9070'	Oil / Gas
i. 1 st Bone Spring SS	10065'	Oil / Gas
j. 2 nd Bone Spring SS	10771'	Oil / Gas
Total Depth	11,239' TVD	16,085' MD

3. Pressure Control Equipment:

A 3M 13-5/8" BOP system (Double Ram and Annular preventer) will be installed and tested prior to drilling out the surface casing shoe. The BOP system used to drill the intermediate hole will be tested per BLM Onshore Oil and Gas Order 2.

A 3M 13-5/8" BOP system (Double Ram and Annular preventer) will be installed and tested prior to drilling out the intermediate casing shoe. The BOP system used to drill the production hole will be tested per BLM Onshore Oil and Gas Order 2.

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.

See
COA

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 and will be secured with anchors and/or safety clamps as per the manufacturer's requirements. (See attached spec sheets).

Auxiliary Well Control and Monitoring Equipment:

- a. A Kelly cock will be in the drill string at all times.
- b. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor at all times.

4. Casing Program:

See
COA

Hole Size	Hole Interval	Casing OD	Casing Interval	Weight (lb/ft)	Collar	Grade	Collapse Design Factor	Burst Design Factor	Tension Design Factor
17-1/2"	0 - 1,325'	13-3/8"	0 - 1,325'	48	STC	H-40	1.30	3.02	8.51
12-1/4"	1,325-5,200'	9-5/8"	0 - 5,200'	40	BTC	HCK-55	1.56	1.75	4.45
8-3/4"	5,200-16,085'	5-1/2"	0 - 16,085'	17	BTC	P-110	1.60	2.19	2.97

Casing Notes:

- All casing is new and API approved

Maximum Lateral TVD: 11,239'

5. Proposed mud Circulations System:

See
COA

Depth	Mud Weight	Viscosity (cp)	Fluid Loss	Type System
0-1,325'	8.4-8.6	1-3	N/C	FW
1,325-5,200'	9.9-10.0	1-3	<100	Brine
5,200-16,085'	8.8-9.2	1-3	<100	Cut Brine

The necessary mud products for weight addition and fluid loss control will be on location at all times. Visual mud monitoring equipment will be in place to detect volume changes indicating loss or gain of circulating fluid volume. If abnormal pressures are encountered, electronic/mechanical mud monitoring equipment will be installed.

6. Cementing Table:

String	Number of sx	Weight lbs/gal	Water Volume g/sx	Yield cf/sx	Stage; Lead/Tail	Slurry Description
13-3/8" Surface Casing	670	13.5	9.08	1.72	Lead	Class C Cement + 0.125 lbs/sack Poly-E-Flake + 4% bwoc Bentonite + 70.1% Fresh Water
	560	14.8	6.34	1.33	Tail	Class C Cement + 63.5% Fresh Water
9-5/8" Intermediate Casing	1130	12.9	9.82	1.85	Lead	(65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sack Poly-E-Flake + 70.9 % Fresh Water
	430	14.8	6.32	1.33	Tail	Class C Cement + 0.125 lbs/sack Poly-E-Flake + 63.5% Fresh Water
5-1/2" Production Casing	550	11.9	12.89	2.26	Lead #1	(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 + 76.4% Fresh Water
	330	12.5	10.81	1.96	Lead #2	(65:35) Class H Cement: Poz (Fly Ash) + 6% BWOC Bentonite + 0.25% BWOC HR-601 + 0.125 lbs/sack Poly-E-Flake + 74.1 % Fresh Water
	1290	14.5	5.32	1.21	Tail	(50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.25% bwoc CFR-3 + 0.2% bwoc HR-601 + 2% bwoc Bentonite + 58.8% Fresh Water

See COA

TOC for all Strings:

13-3/8" Surface Csg

@ 0'

9-5/8" Intermediate Csg

@ 0'

5-1/2" Production Csg

@ 4,700' See COA

Notes:

- Cement volumes Surface 100%, Intermediate 75%, Production based on at least 25% excess
- Actual cement volumes will be adjusted based on fluid caliper and caliper log data

7. Logging, Coring, and Testing Program:

- See COA*
- a. Drill stem tests will be based on geological sample shows.
 - b. If a drill stem test is anticipated, a procedure, equipment to be used, and safety measures will be provided via sundry notice to the BLM.
 - i. No logs are planned.
 - ii. No coring program is planned
 - iii. Additional Testing will be initiated subsequent to setting the 5-1/2" production casing. Specific intervals will be targeted based on log evaluation, geological sample shows, and drill stem tests.

8. Potential Hazards:

- See COA*
- a. No abnormal pressures or temperatures are expected. There is no known presence of H₂S in this area, and none is anticipated to be encountered. If H₂S is encountered the operator will comply with the provisions of Onshore Oil and Gas Order No. 6. No lost circulation is expected to occur. All personnel will be familiar with all aspects of safe operation being used to drill this well. Estimated BHP: 5058 psi, and estimated BHT: 174 degrees.
 - b. Hydrogen Sulfide detection equipment will be in operation after drilling out the 13-3/8" casing shoe until the 5-1/2" casing is cemented. Breathing equipment will be on location upon drilling the 13-3/8" shoe until total depth is reached.

9. Anticipated Starting Date and Duration of Operations:

- a. Road and location construction will begin after the BLM has approved the APD. Anticipated spud date will be as soon after BLM approval and as soon as a rig will be available. Move in operations and drilling is expected to take 20 days. If production casing is run then an additional 30 days will be needed to complete well and construct surface facilities and/or lay flow lines in order to place well on production.

5D Plan Report**Devon Energy****Field Name:** *Lea Co, NM Nad 83 NM***Site Name:** *Thistle Unit 52H***Well Name:** *Thistle Unit 52H***Plan:** *P1:V1*

14 March 2014

**Weatherford®**

Thistle Unit 52H

Field Name Lea Co, NM Nad 83 NM	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 52H	Units : US ft	North Reference : Grid	Convergence Angle : 0.40	
	Position	Northing : 467308.65 US ft	Latitude : 32° 16' 56.85"	
		Easting : 774144.56 US ft	Longitude : -103° 34' 48.02"	
	Elevation above Mean Sea Level: 3688.00 US ft			
Comment :				
Slot Name Thistle Unit 52H	Position (Offsets relative to Site Centre)			
	+N / -S : 0.00 US ft	Northing : 467308.65 US ft	Latitude : 32°16'56.85"	
	+E / -W : 0.00 US ft	Easting : 774144.56 US ft	Longitude : -103°34'48.02"	
	Slot TVD Reference : Ground Elevation			
	Elevation above Mean Sea Level : 3688.00 US ft			
Comment :				
Well Name Thistle Unit 52H	Type : Main well		UWI :	Plan : P1:V1
	Rig Height Drill Floor : 25.00 US ft		Comment :	
	Relative to Mean Sea Level: 3713.00 US ft			
	Closure Distance : 4768.99 US ft		Closure Azimuth : 177.37°	
	Vertical Section (Position of Origin Relative to Slot)			
	+N / -S : 0.00 US ft		+E / -W : 0.00 US ft	Az : 177.37°
	Magnetic Parameters			
	Model : BGGM	Field Strength : 48361.8nT	Dec : 7.35°	Dip : 60.15° Date : 17/May/2014

Target Set

Name : Thistle Unit 52H **Number of Targets :** 2

Comment :

Target Name: LP Tgt 52H	Position (Relative to Slot centre)			
	+N / -S : -150.16US ft	Northing : 467158.49 US ft	Latitude : 32°16'55.36"	
	+E / -W : 6.90 US ft	Easting : 774151.46US ft	Longitude : -103°34'47.95"	
	TVD (Drill Floor) : 11189.00 US ft			
Shape: Cuboid	Orientation Azimuth : 0:00° Inclination : 0.00°			
	Dimensions Length : 0.00 US ft		Breadth : 0.00 US ft Height : 0.00 US ft	

SD Plan Report

Target Name: PBHL 52H Shape: Cuboid	Position (Relative to Slot centre)		
	+N / -S : -4763.97US ft	Northing : 462544.68 US.ft	Latitude : 32°16'9.70"
	+E / -W : 218.83 US ft	Easting : 774363.39US.ft	Longitude : -103°34'45.86"
	TVD (Drill Floor) : 11239.00 US.ft		
	Orientation Azimuth : 177.37°	Inclination : -0.62°	
	Dimensions Length : 9238.00 US ft	Breadth : 50.00 US ft	Height : 20.00 US ft

Well path created using minimum curvature

Salient Points (Relative to Slot centre, TVD relative to Drill Floor)											
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	DLS (°/100 US ft)	VS (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	
5300.00	0.00	0.00	5300.00	0.00	0.00	0.00	-0.00	0.00	0.00	0.00	Nudge
5473.49	3.47	357.37	5473.38	5.25	-0.24	2.00	-5.25	2.00	0.00	357.37	Hold
10692.34	3.47	357.37	10682.67	320.76	-14.73	0.00	-321.10	0.00	0.00	0.00	KOP
11466.08	89.38	177.37	11189.00	-150.16	6.90	12.00	150.32	11.10	23.26	180.00	LP Tgt 52H
16085.03	89.38	177.37	11239.00	-4763.97	218.83	0.00	4768.99	0.00	0.00	0.00	PBHL 52H

Interpolated Points (Relative to Slot centre, TVD relative to Drill Floor)											
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
5300.00	0.00	0.00	5300.00	0.00	0.00	-0.00	0.00	467308.65	774144.56		Nudge
5400.00	2.00	357.37	5399.98	1.74	-0.08	-1.75	2.00	467310.39	774144.48		
5473.49	3.47	357.37	5473.38	5.25	-0.24	-5.25	2.00	467313.90	774144.32		Hold
5500.00	3.47	357.37	5499.84	6.85	-0.31	-6.86	0.00	467315.50	774144.25		
5600.00	3.47	357.37	5599.66	12.89	-0.59	-12.91	0.00	467321.54	774143.97		
5700.00	3.47	357.37	5699.48	18.94	-0.87	-18.96	0.00	467327.59	774143.69		
5800.00	3.47	357.37	5799.29	24.99	-1.15	-25.01	0.00	467333.64	774143.41		
5900.00	3.47	357.37	5899.11	31.03	-1.43	-31.06	0.00	467339.68	774143.13		
6000.00	3.47	357.37	5998.93	37.08	-1.70	-37.12	0.00	467345.73	774142.86		
6100.00	3.47	357.37	6098.74	43.12	-1.98	-43.17	0.00	467351.77	774142.58		
6200.00	3.47	357.37	6198.56	49.17	-2.26	-49.22	0.00	467357.82	774142.30		
6300.00	3.47	357.37	6298.38	55.21	-2.54	-55.27	0.00	467363.86	774142.02		
6400.00	3.47	357.37	6398.19	61.26	-2.81	-61.32	0.00	467369.91	774141.75		
6500.00	3.47	357.37	6498.01	67.31	-3.09	-67.38	0.00	467375.96	774141.47		
6600.00	3.47	357.37	6597.83	73.35	-3.37	-73.43	0.00	467382.00	774141.19		
6700.00	3.47	357.37	6697.64	79.40	-3.65	-79.48	0.00	467388.05	774140.91		
6800.00	3.47	357.37	6797.46	85.44	-3.92	-85.53	0.00	467394.09	774140.64		
6900.00	3.47	357.37	6897.28	91.49	-4.20	-91.59	0.00	467400.14	774140.36		
7000.00	3.47	357.37	6997.09	97.53	-4.48	-97.64	0.00	467406.18	774140.08		
7100.00	3.47	357.37	7096.91	103.58	-4.76	-103.69	0.00	467412.23	774139.80		
7200.00	3.47	357.37	7196.73	109.63	-5.03	-109.74	0.00	467418.28	774139.53		
7300.00	3.47	357.37	7296.54	115.67	-5.31	-115.79	0.00	467424.32	774139.25		
7400.00	3.47	357.37	7396.36	121.72	-5.59	-121.85	0.00	467430.37	774138.97		
7500.00	3.47	357.37	7496.17	127.76	-5.87	-127.90	0.00	467436.41	774138.69		
7600.00	3.47	357.37	7595.99	133.81	-6.15	-133.95	0.00	467442.46	774138.41		
7700.00	3.47	357.37	7695.81	139.85	-6.42	-140.00	0.00	467448.50	774138.14		
7800.00	3.47	357.37	7795.62	145.90	-6.70	-146.05	0.00	467454.55	774137.86		
7899.99	3.47	357.37	7895.44	151.95	-6.98	-152.11	0.00	467460.60	774137.58		
7999.99	3.47	357.37	7995.26	157.99	-7.26	-158.16	0.00	467466.64	774137.30		
8099.99	3.47	357.37	8095.07	164.04	-7.53	-164.21	0.00	467472.69	774137.03		
8199.99	3.47	357.37	8194.89	170.08	-7.81	-170.26	0.00	467478.73	774136.75		
8299.99	3.47	357.37	8294.71	176.13	-8.09	-176.32	0.00	467484.78	774136.47		
8399.99	3.47	357.37	8394.52	182.18	-8.37	-182.37	0.00	467490.83	774136.19		
8499.99	3.47	357.37	8494.34	188.22	-8.64	-188.42	0.00	467496.87	774135.92		

5D Plan Report

Interpolated Points (Relative to Slot centre, TVD relative to Drill Floor)										
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
8599.99	3.47	357.37	8594.16	194.27	-8.92	-194.47	0.00	467502.92	774135.64	
8699.99	3.47	357.37	8693.97	200.31	-9.20	-200.52	0.00	467508.96	774135.36	
8799.99	3.47	357.37	8793.79	206.36	-9.48	-206.58	0.00	467515.01	774135.08	
8899.99	3.47	357.37	8893.61	212.40	-9.75	-212.63	0.00	467521.05	774134.81	
8999.99	3.47	357.37	8993.42	218.45	-10.03	-218.68	0.00	467527.10	774134.53	
9099.99	3.47	357.37	9093.24	224.50	-10.31	-224.73	0.00	467533.15	774134.25	
9199.99	3.47	357.37	9193.06	230.54	-10.59	-230.78	0.00	467539.19	774133.97	
9299.99	3.47	357.37	9292.87	236.59	-10.87	-236.84	0.00	467545.24	774133.69	
9399.99	3.47	357.37	9392.69	242.63	-11.14	-242.89	0.00	467551.28	774133.42	
9499.99	3.47	357.37	9492.50	248.68	-11.42	-248.94	0.00	467557.33	774133.14	
9599.99	3.47	357.37	9592.32	254.72	-11.70	-254.99	0.00	467563.37	774132.86	
9699.99	3.47	357.37	9692.14	260.77	-11.98	-261.04	0.00	467569.42	774132.58	
9799.99	3.47	357.37	9791.95	266.82	-12.25	-267.10	0.00	467575.47	774132.31	
9899.99	3.47	357.37	9891.77	272.86	-12.53	-273.15	0.00	467581.51	774132.03	
9999.99	3.47	357.37	9991.59	278.91	-12.81	-279.20	0.00	467587.56	774131.75	
10099.99	3.47	357.37	10091.40	284.95	-13.09	-285.25	0.00	467593.60	774131.47	
10199.99	3.47	357.37	10191.22	291.00	-13.36	-291.31	0.00	467599.65	774131.20	
10299.99	3.47	357.37	10291.04	297.04	-13.64	-297.36	0.00	467605.69	774130.92	
10399.99	3.47	357.37	10390.85	303.09	-13.92	-303.41	0.00	467611.74	774130.64	
10499.99	3.47	357.37	10490.67	309.14	-14.20	-309.46	0.00	467617.79	774130.36	
10599.99	3.47	357.37	10590.49	315.18	-14.48	-315.51	0.00	467623.83	774130.08	
10692.34	3.47	357.37	10682.67	320.76	-14.73	-321.10	0.00	467629.41	774129.83	KOP
10699.99	2.55	357.37	10690.31	321.17	-14.75	-321.50	12.00	467629.82	774129.81	
10799.99	9.45	177.37	10789.94	315.17	-14.47	-315.50	12.00	467623.82	774130.09	
10899.99	21.45	177.37	10886.15	288.61	-13.25	-288.91	12.00	467597.26	774131.31	
10999.99	33.45	177.37	10974.73	242.65	-11.14	-242.90	12.00	467551.30	774133.42	
11099.99	45.45	177.37	11051.81	179.29	-8.23	-179.48	12.00	467487.94	774136.33	
11199.99	57.45	177.37	11114.02	101.31	-4.65	-101.42	12.00	467409.96	774139.91	
11299.99	69.45	177.37	11158.64	12.12	-0.55	-12.13	12.00	467320.77	774144.01	
11399.99	81.45	177.37	11183.72	-84.40	3.88	84.49	12.00	467224.25	774148.44	
11466.08	89.38	177.37	11189.00	-150.16	6.90	150.32	12.00	467158.49	774151.46	LP Tgt 52H
11499.99	89.38	177.37	11189.37	-184.02	8.46	184.22	0.00	467124.63	774153.02	
11599.99	89.38	177.37	11190.45	-283.91	13.04	284.21	0.00	467024.74	774157.60	
11699.99	89.38	177.37	11191.53	-383.80	17.63	384.21	0.00	466924.85	774162.19	
11799.99	89.38	177.37	11192.61	-483.69	22.22	484.20	0.00	466824.96	774166.78	
11899.99	89.38	177.37	11193.70	-583.58	26.81	584.19	0.00	466725.07	774171.37	
11999.99	89.38	177.37	11194.78	-683.47	31.40	684.19	0.00	466625.18	774175.96	
12099.99	89.38	177.37	11195.86	-783.36	35.99	784.18	0.00	466525.29	774180.55	
12199.99	89.38	177.37	11196.94	-883.25	40.57	884.18	0.00	466425.40	774185.13	
12299.99	89.38	177.37	11198.03	-983.13	45.16	984.17	0.00	466325.52	774189.72	
12399.99	89.38	177.37	11199.11	-1083.02	49.75	1084.16	0.00	466225.63	774194.31	
12499.99	89.38	177.37	11200.19	-1182.91	54.34	1184.16	0.00	466125.74	774198.90	
12599.99	89.38	177.37	11201.27	-1282.80	58.93	1284.15	0.00	466025.85	774203.49	
12699.99	89.38	177.37	11202.36	-1382.69	63.51	1384.15	0.00	465925.96	774208.07	
12799.99	89.38	177.37	11203.44	-1482.58	68.10	1484.14	0.00	465826.07	774212.66	
12899.98	89.38	177.37	11204.52	-1582.47	72.69	1584.13	0.00	465726.18	774217.25	
12999.98	89.38	177.37	11205.60	-1682.35	77.28	1684.13	0.00	465626.30	774221.84	
13099.98	89.38	177.37	11206.69	-1782.24	81.87	1784.12	0.00	465526.41	774226.43	
13199.98	89.38	177.37	11207.77	-1882.13	86.46	1884.12	0.00	465426.52	774231.02	
13299.98	89.38	177.37	11208.85	-1982.02	91.04	1984.11	0.00	465326.63	774235.60	
13399.98	89.38	177.37	11209.93	-2081.91	95.63	2084.10	0.00	465226.74	774240.19	
13499.98	89.38	177.37	11211.02	-2181.80	100.22	2184.10	0.00	465126.85	774244.78	
13599.98	89.38	177.37	11212.10	-2281.69	104.81	2284.09	0.00	465026.96	774249.37	
13699.98	89.38	177.37	11213.18	-2381.57	109.40	2384.09	0.00	464927.08	774253.96	
13799.98	89.38	177.37	11214.26	-2481.46	113.99	2484.08	0.00	464827.19	774258.55	
13899.98	89.38	177.37	11215.35	-2581.35	118.57	2584.07	0.00	464727.30	774263.13	
13999.98	89.38	177.37	11216.43	-2681.24	123.16	2684.07	0.00	464627.41	774267.72	
14099.98	89.38	177.37	11217.51	-2781.13	127.75	2784.06	0.00	464527.52	774272.31	
14199.98	89.38	177.37	11218.59	-2881.02	132.34	2884.06	0.00	464427.63	774276.90	

5D Plan Report

Interpolated Points (Relative to Slot centre, TVD relative to Drill Floor)										
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
14299.98	89.38	177.37	11219.68	-2980.91	136.93	2984.05	0.00	464327.74	774281.49	
14399.98	89.38	177.37	11220.76	-3080.79	141.52	3084.04	0.00	464227.86	774286.08	
14499.98	89.38	177.37	11221.84	-3180.68	146.10	3184.04	0.00	464127.97	774290.66	
14599.98	89.38	177.37	11222.92	-3280.57	150.69	3284.03	0.00	464028.08	774295.25	
14699.98	89.38	177.37	11224.01	-3380.46	155.28	3384.03	0.00	463928.19	774299.84	
14799.98	89.38	177.37	11225.09	-3480.35	159.87	3484.02	0.00	463828.30	774304.43	
14899.98	89.38	177.37	11226.17	-3580.24	164.46	3584.01	0.00	463728.41	774309.02	
14999.98	89.38	177.37	11227.25	-3680.13	169.04	3684.01	0.00	463628.52	774313.60	
15099.98	89.38	177.37	11228.34	-3780.02	173.63	3784.00	0.00	463528.63	774318.19	
15199.98	89.38	177.37	11229.42	-3879.90	178.22	3883.99	0.00	463428.75	774322.78	
15299.98	89.38	177.37	11230.50	-3979.79	182.81	3983.99	0.00	463328.86	774327.37	
15399.98	89.38	177.37	11231.58	-4079.68	187.40	4083.98	0.00	463228.97	774331.96	
15499.98	89.38	177.37	11232.67	-4179.57	191.99	4183.98	0.00	463129.08	774336.55	
15599.98	89.38	177.37	11233.75	-4279.46	196.57	4283.97	0.00	463029.19	774341.13	
15699.98	89.38	177.37	11234.83	-4379.35	201.16	4383.96	0.00	462929.30	774345.72	
15799.98	89.38	177.37	11235.91	-4479.24	205.75	4483.96	0.00	462829.41	774350.31	
15899.98	89.38	177.37	11237.00	-4579.12	210.34	4583.95	0.00	462729.53	774354.90	
15999.98	89.38	177.37	11238.08	-4679.01	214.93	4683.95	0.00	462629.64	774359.49	
16085.03	89.38	177.37	11239.00	-4763.97	218.83	4768.99	0.00	462544.68	774363.39	PBHL 52H

SD Anti-Collision Report**Devon Energy****Field Name:** *Lea Co, NM Nad 83 NM***Site Name:** *Thistle Unit 52H***Well Name:** *Thistle Unit 52H*

14 March 2014




Weatherford

Thistle Unit 52H

Field Name Lea Co, NM Nad 83 NM	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 52H	Units : US ft	North Reference : Grid	Convergence Angle : 0.40
	Position	Northing : 467308.65 US ft	Latitude : 32° 16' 56.85"
		Easting : 774144.56 US ft	Longitude : -103° 34' 48.02"
	Elevation above Mean Sea Level : 3688.00 US ft		
Comment :			
Slot Name Thistle Unit 52H	Position (Offsets relative to Site Centre)		
	+N / -S : 0.00 US ft	Northing : 467308.65 US ft	Latitude : 32° 16' 56.85"
	+E / -W : 0.00 US ft	Easting : 774144.56 US ft	Longitude : -103° 34' 48.02"
	Slot TVD Reference : Ground Elevation		
	Elevation above Mean Sea Level : 3688.00 US ft		
Comment :			
Well Name Thistle Unit 52H	Type : Main well	UWI :	Plan : Working Plan
	Rig Height : 25.00 US ft	Comment :	
	Relative to Mean Sea Level : 3713.00 US ft		
	Closure Distance : 4768.99 US ft	Closure Azimuth : 177.37°	
	Vertical Section (Position of Origin Relative to Slot)		
	+N / -S : 0.00 US ft	+E / -W : 0.00 US ft	Az : 177.37°
	Magnetic Parameters		
	Model : BGGM	Field Strength : 48361.8nT	Dec : 7.35°
	Dip : 60.15°	Date : 17/May/2014	

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 52H (p)	0.00	16085.03	100.00	2

Secondary Well Names
Exist. Thistle Unit #18H (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.

SD Anti-Collision Report

Anti Collision Proximity Summary (TVD relative to)

SF	Secondary Well Name	Pri MD (US ft)	Sec MD (US ft)	TVD (US ft)	CC (US ft)	ES (US ft)	SF	Risk
	Exist. Thistle Unit #18H (s)	8125.00	8093.44	8120.03	252.01	216.12	7.02	

Secondary Well : Exist. Thistle Unit #18H (s) (TVD Relative to Drill Floor (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	31.00	0.00	275.21	0.00	0.00	327.07	326.33	446.03	
100.00	99.55	68.55	275.22	0.09	0.09	325.64	324.70	346.81	
200.00	199.22	168.22	275.24	0.26	0.26	325.84	324.51	245.74	
300.00	298.98	267.98	275.27	0.46	0.46	326.11	324.36	186.02	
400.00	398.48	367.48	275.26	0.67	0.67	326.53	324.35	149.41	
500.00	498.32	467.33	275.24	0.88	0.88	327.03	324.41	124.90	
600.00	598.56	567.57	275.17	1.09	1.09	327.50	324.45	107.40	
700.00	698.64	667.64	275.11	1.30	1.30	327.96	324.48	94.15	
800.00	798.36	767.37	275.06	1.51	1.51	328.43	324.51	83.85	
900.00	898.67	867.68	275.06	1.72	1.72	328.86	324.51	75.62	
1000.00	998.30	967.31	275.10	1.93	1.93	329.33	324.54	68.77	
1100.00	1096.87	1065.89	275.12	2.14	2.14	330.09	324.87	63.26	
1200.00	1196.52	1165.54	275.08	2.34	2.34	331.14	325.49	58.61	
1300.00	1296.47	1265.49	275.02	2.55	2.55	332.23	326.15	54.63	
1400.00	1395.61	1364.65	274.95	2.76	2.75	333.42	326.92	51.25	
1500.00	1495.01	1464.06	274.92	2.97	2.96	334.74	327.80	48.24	
1600.00	1594.45	1563.51	274.92	3.18	3.18	336.42	329.04	45.59	
1700.00	1694.31	1663.38	274.92	3.39	3.39	338.08	330.27	43.28	
1800.00	1794.33	1763.42	274.94	3.60	3.60	339.76	331.52	41.23	
1900.00	1894.34	1863.44	274.96	3.81	3.80	341.36	332.70	39.38	
2000.00	1995.06	1964.17	275.00	4.03	4.02	342.91	333.80	37.67	
2100.00	2096.14	2065.26	275.07	4.24	4.23	344.15	334.60	36.05	
2200.00	2196.43	2165.56	275.17	4.45	4.44	345.18	335.20	34.57	
2300.00	2296.50	2265.63	275.28	4.66	4.65	346.15	335.73	33.22	
2400.00	2396.31	2365.45	275.38	4.87	4.86	347.23	336.38	32.00	
2500.00	2495.40	2464.55	275.48	5.08	5.07	348.42	337.14	30.89	
2600.00	2595.99	2565.15	275.58	5.29	5.28	349.60	337.89	29.87	
2700.00	2695.74	2664.91	275.69	5.50	5.49	350.81	338.67	28.89	
2800.00	2795.79	2764.97	275.81	5.71	5.70	352.03	339.45	27.97	
2900.00	2896.22	2865.41	275.96	5.92	5.91	353.11	340.08	27.11	
3000.00	2996.60	2965.80	276.12	6.13	6.12	354.19	340.73	26.30	
3100.00	3096.59	3065.80	276.31	6.34	6.33	355.13	341.23	25.55	
3200.00	3197.04	3166.26	276.55	6.56	6.54	356.05	341.72	24.85	
3300.00	3297.77	3267.01	276.85	6.77	6.76	356.83	342.06	24.17	
3400.00	3398.38	3367.66	277.24	6.99	6.97	357.39	342.17	23.48	
3500.00	3501.26	3470.58	277.73	7.20	7.19	357.42	341.76	22.82	
3600.00	3602.70	3572.10	278.35	7.42	7.40	356.82	340.71	22.15	
3700.00	3704.15	3673.66	279.08	7.63	7.62	355.86	339.31	21.51	
3800.00	3804.05	3773.67	279.82	7.85	7.83	354.68	337.68	20.86	
3900.00	3903.16	3872.86	280.43	8.06	8.04	353.61	336.21	20.31	
4000.00	4002.51	3972.26	280.97	8.26	8.24	352.84	334.98	19.75	
4100.00	4102.62	4072.43	281.50	8.48	8.45	352.15	333.85	19.25	
4200.00	4203.15	4173.01	282.00	8.69	8.66	351.38	332.67	18.78	
4300.00	4308.41	4278.33	282.50	8.91	8.88	349.92	330.76	18.26	
4400.00	4416.84	4386.87	282.96	9.12	9.11	346.23	326.64	17.68	
4500.00	4520.68	4490.90	283.31	9.34	9.32	340.53	320.51	17.00	
4600.00	4621.11	4591.53	283.57	9.54	9.53	334.44	313.99	16.35	
4700.00	4724.09	4694.76	283.76	9.75	9.74	327.69	306.82	15.71	
4800.00	4826.36	4797.34	283.87	9.97	9.95	319.84	298.55	15.02	
4900.00	4927.01	4898.36	283.94	10.18	10.16	311.32	289.59	14.33	
5000.00	5022.03	4993.68	283.93	10.38	10.36	303.38	281.21	13.69	
5100.00	5119.90	5091.78	283.88	10.59	10.57	296.60	274.03	13.14	

5D Anti-Collision Report

Secondary Well : Exist, Thistle Unit #18H (s) (TVD Relative to Drill Floor (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
5200.00	5214.57	5186.61	283.80	10.80	10.77	290.77	267.72	12.62	
5300.00	5314.10	5286.26	283.69	11.01	10.98	285.91	262.45	12.19	
5400.00	5413.11	5385.39	285.72	11.22	11.18	280.58	256.65	11.73	
5500.00	5511.81	5484.20	284.46	11.43	11.39	274.65	250.29	11.27	
5600.00	5610.68	5583.15	283.01	11.64	11.60	269.03	244.31	10.88	
5700.00	5710.33	5682.89	281.49	11.85	11.80	263.69	238.46	10.45	
5800.00	5809.23	5781.88	279.92	12.06	12.01	258.61	232.99	10.09	
5900.00	5908.05	5880.78	278.30	12.27	12.22	253.96	227.89	9.74	
6000.00	6006.27	5979.06	276.67	12.48	12.42	249.94	223.43	9.43	
6100.00	6105.16	6078.00	274.95	12.69	12.63	246.55	219.61	9.15	
6200.00	6204.33	6177.21	273.21	12.90	12.84	243.63	216.29	8.91	
6300.00	6303.87	6276.79	271.43	13.11	13.05	241.06	213.23	8.66	
6400.00	6403.47	6376.42	269.74	13.32	13.26	238.76	210.50	8.45	
6500.00	6503.19	6476.17	268.13	13.54	13.47	236.64	207.98	8.26	
6600.00	6602.35	6575.35	266.40	13.75	13.68	234.90	205.79	8.07	
6700.00	6702.17	6675.20	264.49	13.95	13.88	233.43	203.90	7.90	
6800.00	6801.66	6774.73	262.58	14.17	14.09	232.22	202.21	7.74	
6900.00	6900.75	6873.84	260.71	14.38	14.30	231.43	201.01	7.61	
7000.00	6999.67	6972.79	258.85	14.59	14.51	231.20	200.35	7.49	
7100.00	7098.87	7072.01	256.97	14.79	14.72	231.51	200.19	7.39	
7200.00	7198.23	7171.39	255.06	15.00	14.93	232.23	200.46	7.31	
7300.00	7297.63	7270.80	253.18	15.21	15.13	233.33	201.14	7.25	
7400.00	7396.97	7370.17	251.26	15.42	15.34	234.82	202.18	7.19	
7500.00	7496.68	7469.91	249.35	15.63	15.55	236.66	203.59	7.16	
7600.00	7596.95	7570.20	247.45	15.84	15.76	238.60	205.10	7.12	
7700.00	7696.76	7670.04	245.55	16.05	15.97	240.58	206.58	7.08	
7800.00	7796.27	7769.58	243.70	16.26	16.18	242.85	208.41	7.05	
7900.00	7895.80	7869.14	241.83	16.47	16.39	245.42	210.61	7.05	
8000.00	7995.67	7969.05	240.02	16.68	16.60	248.23	212.95	7.04	
8100.00	8095.16	8068.56	238.28	16.89	16.81	251.21	215.44	7.02	
8200.00	8195.08	8168.51	236.62	17.10	17.02	254.45	218.22	7.02	
8300.00	8294.09	8267.54	235.09	17.31	17.23	257.90	221.28	7.04	
8400.00	8389.28	8362.76	233.59	17.49	17.43	262.15	225.12	7.08	
8500.00	8486.24	8460.49	230.11	17.68	17.47	267.79	230.32	7.15	
8600.00	8558.89	8535.71	225.53	17.84	17.27	279.50	241.92	7.44	
8700.00	8618.48	8600.79	220.23	18.01	16.82	302.28	264.74	8.05	
8800.00	8660.59	8649.86	215.89	18.13	16.40	338.97	302.28	9.24	
8900.00	8699.04	8696.74	212.23	18.24	16.20	388.44	352.55	10.82	
9000.00	8735.62	8743.54	209.05	18.38	15.92	446.88	411.79	12.74	
9100.00	8760.18	8776.94	206.94	18.48	15.52	512.51	478.25	14.96	
9200.00	8780.07	8805.90	205.26	18.61	15.14	584.36	550.91	17.47	
9300.00	8799.85	8836.55	203.62	18.74	14.93	660.78	627.93	20.11	
9400.00	8816.58	8863.94	202.26	18.85	14.70	740.54	708.01	22.76	
9500.00	8830.74	8888.45	201.11	18.96	14.47	823.02	790.83	25.57	
9600.00	8842.50	8909.85	200.16	19.09	14.27	907.72	875.89	28.52	
9700.00	8852.04	8928.14	199.40	19.20	14.14	994.30	962.66	31.43	
9800.00	8860.39	8944.95	198.73	19.30	14.02	1082.46	1050.92	34.32	
9900.00	8867.73	8960.37	198.15	19.38	13.91	1171.93	1140.48	37.26	
10000.00	8876.80	8980.22	197.45	19.50	13.84	1262.44	1231.00	40.14	
10100.00	8886.47	9002.05	196.69	19.63	13.78	1353.65	1322.16	42.99	
10200.00	8894.81	9021.45	196.04	19.73	13.73	1445.47	1413.93	45.83	
10300.00	8901.19	9036.77	195.53	19.85	13.64	1537.89	1506.25	48.61	
10400.00	8906.18	9049.13	195.14	19.95	13.58	1630.91	1599.19	51.42	
10500.00	8910.66	9060.60	194.79	20.04	13.55	1724.48	1692.67	54.21	
10600.00	8914.15	9069.79	194.51	20.11	13.51	1818.54	1786.61	56.95	
10700.00	8917.26	9078.29	193.63	20.18	13.47	1913.05	1880.98	59.66	
10800.00	8921.09	9089.07	8.51	20.26	13.42	2003.53	1971.40	62.35	
10900.00	8925.46	9102.06	6.25	20.39	13.33	2084.56	2052.46	64.94	

SD Anti-Collision Report

Secondary Well : Exist. Thistle Unit #18H (s) (TVD Relative to Drill Floor (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
11000.00	8930.11	9116.94	5.03	20.53	13.21	2153.59	2121.50	67.12	
11100.00	8935.03	9134.32	4.30	20.69	13.07	2208.61	2176.62	69.05	
11200.00	8939.88	9153.61	3.84	20.85	13.01	2248.06	2216.21	70.57	
11300.00	8943.18	9168.82	3.59	20.98	12.92	2270.99	2239.26	71.56	
11400.00	8945.92	9183.97	3.48	21.11	12.82	2276.94	2245.26	71.87	
11500.00	8948.53	9202.14	3.45	21.26	12.75	2266.90	2235.29	71.72	
11600.00	8950.61	9221.40	3.35	21.49	12.73	2255.84	2224.22	71.33	
11700.00	8952.06	9241.51	3.25	21.71	12.71	2248.32	2216.56	70.80	
11800.00	8953.14	9271.42	3.09	22.03	12.71	2244.26	2212.27	70.17	
11900.00	8953.64	9315.03	2.86	22.45	12.78	2242.99	2210.69	69.45	
12000.00	8953.48	9395.80	2.45	23.36	12.98	2243.36	2210.61	68.50	
12100.00	8955.16	9553.04	1.63	25.20	13.43	2242.37	2208.93	67.06	
12200.00	8955.52	9598.28	1.40	25.76	13.56	2242.09	2208.21	66.17	
12300.00	8954.33	9680.18	0.98	26.87	13.83	2244.09	2209.63	65.13	
12400.00	8971.73	10043.24	358.40	32.11	15.41	2240.18	2203.95	61.83	
12500.00	8974.94	10077.47	358.17	32.66	15.55	2232.41	2195.64	60.71	
12600.00	8977.72	10118.85	357.93	33.28	15.72	2227.44	2190.10	59.65	
12700.00	8979.01	10152.88	357.76	33.76	15.85	2225.36	2187.33	58.51	
12800.00	8979.49	10207.82	357.53	34.59	16.09	2226.04	2187.31	57.47	
12900.00	8979.35	10263.28	357.30	35.45	16.34	2228.30	2188.74	56.34	
13000.00	8977.68	10324.58	357.08	36.42	16.63	2232.76	2192.38	55.29	
13100.00	8976.46	10504.00	356.51	39.14	17.53	2234.42	2192.70	53.55	
13200.00	8976.03	10575.92	356.30	40.24	17.95	2236.81	2194.11	52.38	
13300.00	8974.68	10668.67	356.06	41.76	18.44	2240.07	2196.32	51.20	
13400.00	8973.11	10747.09	355.85	43.08	18.85	2243.90	2199.17	50.17	
13500.00	8970.69	10877.87	355.48	45.34	19.59	2247.74	2201.66	48.78	
13600.00	8969.68	10969.26	355.19	46.87	20.09	2250.96	2203.82	47.75	
13700.00	8968.32	11063.56	354.90	48.45	20.69	2254.56	2206.11	46.53	
13800.00	8966.89	11160.40	354.61	50.08	21.27	2258.23	2208.63	45.53	
13900.00	8965.18	11241.84	354.36	51.46	21.74	2262.60	2211.82	44.55	
14000.00	8962.64	11378.82	353.97	53.70	22.53	2266.78	2214.51	43.37	
14100.00	8962.09	11478.42	353.72	55.34	23.15	2269.55	2215.93	42.33	
14200.00	8961.56	11616.10	353.39	57.62	24.07	2272.16	2217.00	41.19	
14300.00	8961.54	11685.06	353.23	58.82	24.49	2274.37	2218.09	40.41	
14400.00	8961.78	11815.20	352.93	61.02	25.35	2276.32	2218.47	39.35	
14500.00	8961.84	11898.16	352.73	62.48	25.88	2278.52	2219.27	38.46	
14600.00	8963.41	12035.13	352.40	64.78	26.79	2279.56	2218.61	37.40	
14700.00	8965.14	12139.07	352.14	66.59	27.47	2280.29	2217.81	36.50	
14800.00	8967.95	12260.04	351.84	68.64	28.28	2280.46	2216.34	35.56	
14900.00	8970.47	12354.04	351.60	70.28	28.90	2280.31	2214.68	34.75	
15000.00	8972.49	12446.03	351.38	71.84	29.51	2280.59	2213.47	33.98	
15100.00	8975.57	12559.73	351.11	73.86	30.28	2280.33	2211.59	33.17	
15200.00	8977.80	12648.12	350.87	75.47	30.87	2280.60	2210.35	32.46	
15300.00	8980.70	12742.98	350.57	77.17	31.51	2280.65	2208.81	31.75	
15400.00	8981.70	12801.18	350.38	78.21	31.90	2282.17	2209.00	31.19	
15500.00	8981.95	12875.47	350.13	79.57	32.39	2285.21	2210.60	30.63	
15600.00	8981.99	12981.40	349.75	81.49	33.12	2288.90	2212.54	29.98	
15700.00	8982.87	13084.64	349.32	83.34	33.83	2292.19	2213.97	29.30	
15800.00	8982.79	13136.53	349.11	84.29	34.16	2296.56	2216.83	28.80	
15900.00	8981.89	13177.00	348.97	85.01	34.41	2303.08	2221.99	28.40	
16000.00	8981.89	13177.00	348.97	85.01	34.41	2313.24	2231.25	28.21	
16085.03	8981.89	13177.00	348.97	85.01	34.41	2325.23	2242.60	28.14	



Weatherford

Weatherford Drilling Services

GeoDec4 v2.0.0.3

Report Date: March 14, 2014

Job Number: _____

Customer: Devon Energy

Well Name: Thistle Unit 51H

API Number: _____

Rig Name: _____

Location: Lea Co, NM

Block: _____

Engineer: RWJ

NAD83 / New Mexico East (ftUS)

Projected Coordinate System

Datum: North American Datum 1983 (1986)

Ellipsoid: GRS 1980

EPSG: 2257

North: 467308.65 US Survey Foot

East: 774144.56 US Survey Foot

Convergence: 0.40°

Declination: 7.35°

Total Correction: 6.95°

Datum Transformation: none

NAD83 (1986)

Geodetic Coordinate System

Datum: North American Datum 1983 (1986)

Ellipsoid: GRS 1980

EPSG: 4269

Latitude: 32.282458 Degree

Longitude: -103.580005 Degree

Geodetic Location WGS84

MSL Elevation = 3337 usft

Latitude = 32° 16' 56.85" N

Longitude = 103° 34' 48.02" W

Magnetic Declination = 7.35 deg

[True North Offset]

Local Gravity = .9988 g

Checksum = 6628

Local Field Strength = 48337 nT

Magnetic Vector X = 23860 nT

Magnetic Dip = 60.15 deg

Magnetic Vector Y = 3077 nT

Magnetic Model = bggm2013.bgs

Magnetic Vector Z = 41925 nT

Run Date = May 17, 2014

Magnetic Vector H = 24057 nT

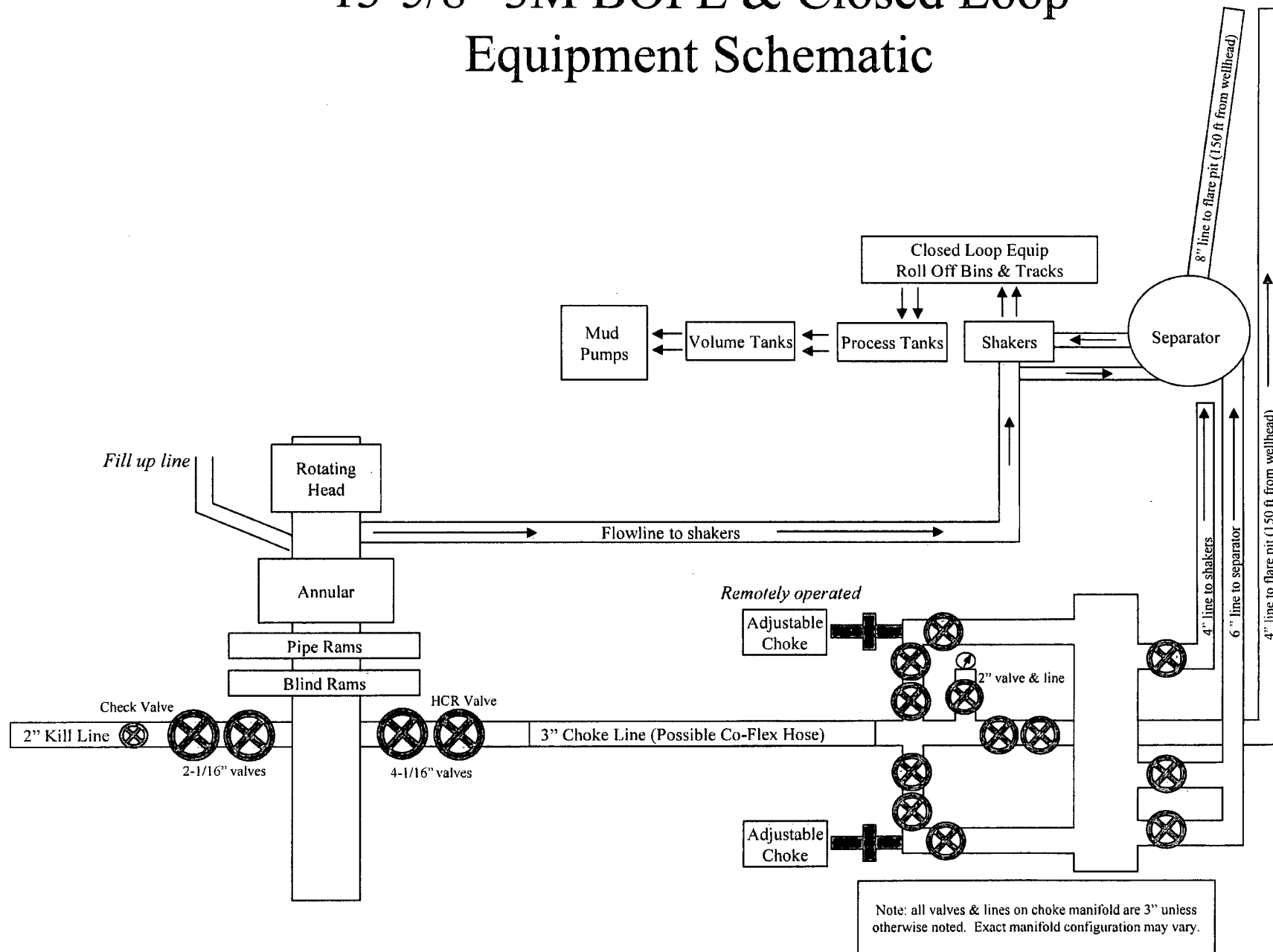
Signed: _____

Date: _____

© 2013 Weatherford

Warning: This information is controlled, and any printed version is deemed as uncontrolled unless suitably endorsed by a controlling authority or accompanied by a controlled table of contents in order to ensure adequate revision control.

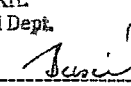
13-5/8" 3M BOPE & Closed Loop Equipment Schematic



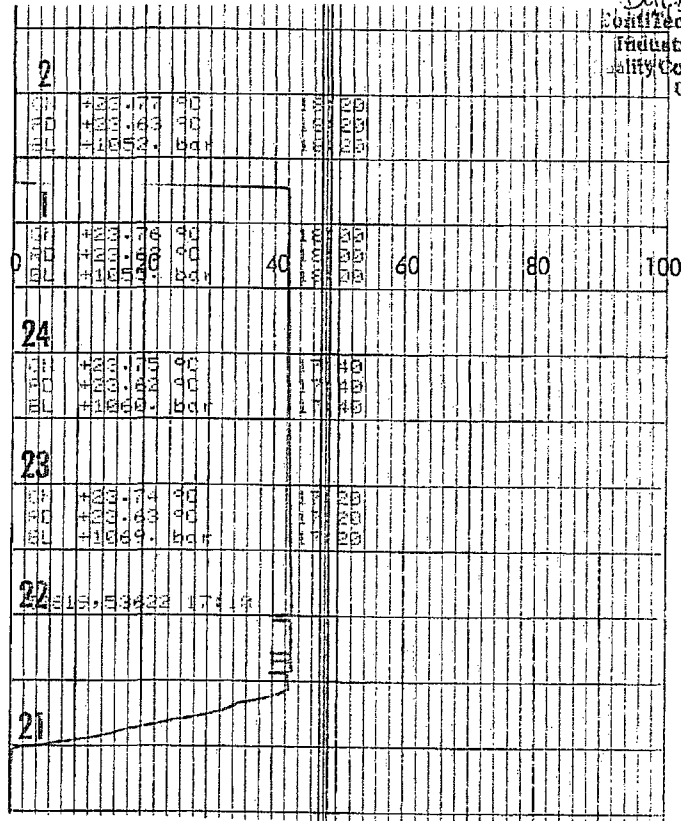
NOTES REGARDING BLOWOUT PREVENTERS

Devon Energy Production Company, L.P.
Thistle Unit 52H

1. Drilling Nipple will be constructed so it can be removed mechanically without the aid of a welder. The minimum internal diameter will equal BOP bore.
2. Wear ring will be properly installed in head.
3. Blowout preventer and all associated filings will be in operable condition to withstand a minimum of 3000psi working pressure.
4. All fittings will be flanged.
5. A fill bore safety valve tested to a minimum of 3000psi WP with proper thread connections will be available on the rotary rig floor at all times.
6. All choke lines will be anchored to prevent movement.
7. All BOP equipment will be equal to or larger in bore than the internal diameter of the last casing string.
8. Will maintain a kelly cock attached to the kelly.
9. Hand wheels and wrenches will be properly installed and tested for safe operation.
10. Hydraulic floor control for blowout preventer will be located as near in proximity to driller's controls as possible.
11. All BOP equipment will meet API standards and include a minimum 40 gallon accumulator having two independent means of power to initiate closing operation.

QUALITY CONTROL INSPECTION AND TEST CERTIFICATE				CERT. N°: 1713	
PURCHASER: ContiTech Beattie Co.				P.O. N°: 002808	
CONTITECH ORDER N°: 426127		HOSE TYPE: 3" ID Choke and Kill Hose			
HOSE SERIAL N°: 53622		NOMINAL / ACTUAL LENGTH: 10,67 m			
W.P. 68,96 MPa 10000 psi		T.P. 103,4 MPa 15000 psi		Duration: 60 min.	
Pressure test with water at ambient temperature See attachment. (1 page) ↑ 10 mm = 10 Min. → 10 mm = 25 MPa					
COUPLINGS Type		Serial N°		Quality	
3" coupling with 4 1/16" Flange end		5503 2029		AISI 4130 AISI 4130	
				Heat N° N1590P 27566	
INFOCHIP INSTALLED				API Spec 16 C Temperature rate:"B"	
All metal parts are flawless				Hose conform to NACE MR 01-75	
WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER INSPECTED AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.					
STATEMENT OF CONFORMITY: We hereby certify that the above items/equipment supplied by us are in conformity with the terms, conditions and specifications of the above Purchaser Order and that these items/equipment were fabricated inspected and tested in accordance with the referenced standards, codes and specifications and meet the relevant acceptance criteria and design requirements.					
COUNTRY OF ORIGIN HUNGARY/EU					
Date: 25. August. 2008		Inspector		Quality Control ContiTech Rubber Industrial Kft. Quality Control Dept.  	

HARTMANN &



Confitech Rubber
Industrial Kft.
Quality Control Dept.
(2)



Fluid Technology

ContiTech Beattie Corp.
Website: www.contitechbeattie.com

Monday, June 14, 2010

RE: Drilling & Production Hoses
Lifting & Safety Equipment

To Helmerich & Payne,

A Continental Contitech hose assembly can perform as intended and suitable for the application regardless of whether the hose is secured or unsecured in its configuration. As a manufacturer of High Pressure Hose Assemblies for use in Drilling & Production, we do offer the corresponding lifting and safety equipment, this has the added benefit of easing the lifting and handling of each hose assembly whilst affording hose longevity by ensuring correct handling methods and procedures as well as securing the hose in the unlikely event of a failure; but in no way does the lifting and safety equipment affect the performance of the hoses providing the hoses have been handled and installed correctly. It is good practice to use lifting & safety equipment but not mandatory.

Should you have any questions or require any additional information/clarifications then please do not hesitate to contact us.

ContiTech Beattie is part of the Continental AG Corporation and can offer the full support resources associated with a global organization.

Best regards,

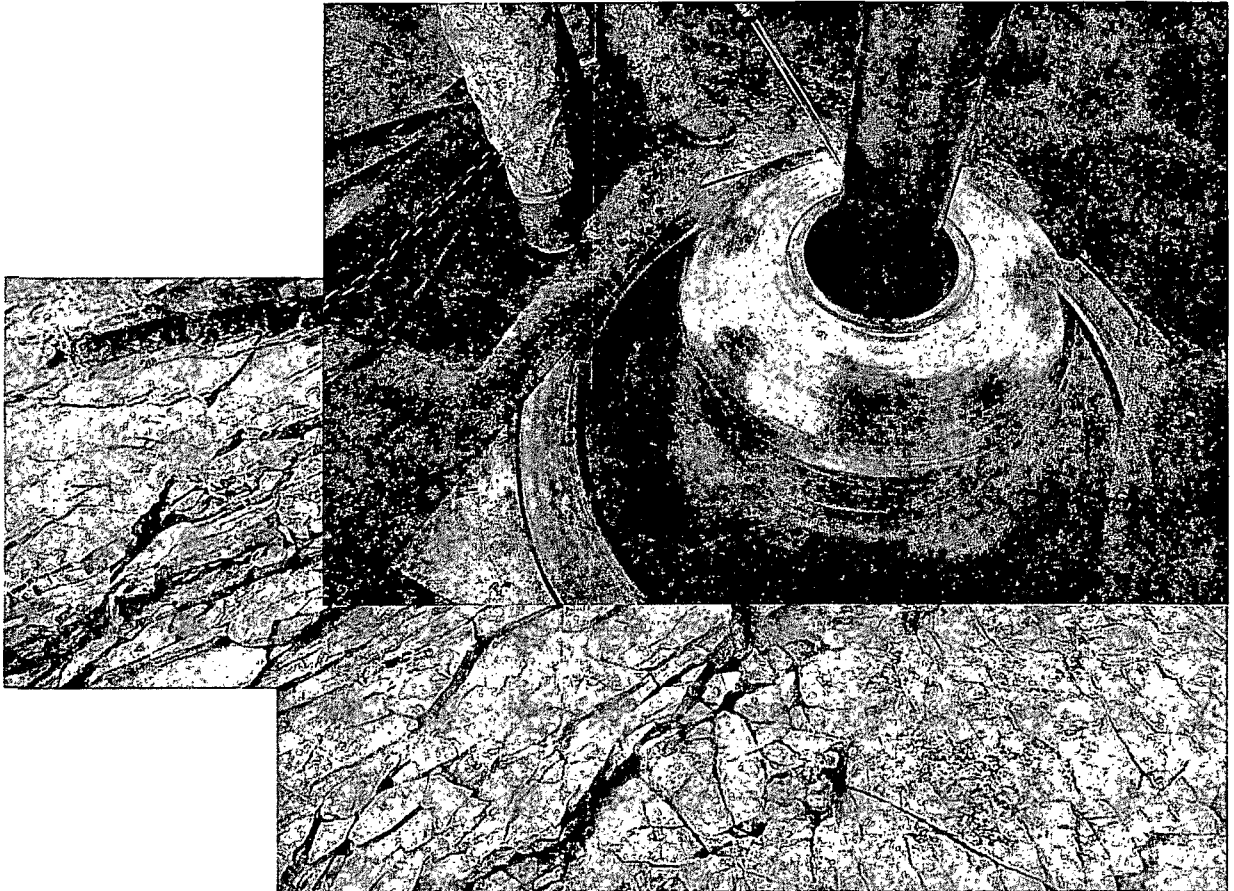
Robin Hodgson
Sales Manager
ContiTech Beattie Corp

ContiTech Beattie Corp,
11535 Brittonmoore Park Drive,
Houston, TX 77041
Phone: +1 (832) 327-0141
Fax: +1 (832) 327-0148
www.contitechbeattie.com





Commitment Runs Deep



Design Plan
Operation and Maintenance Plan
Closure Plan

SENM - Closed Loop Systems
February 2014

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.

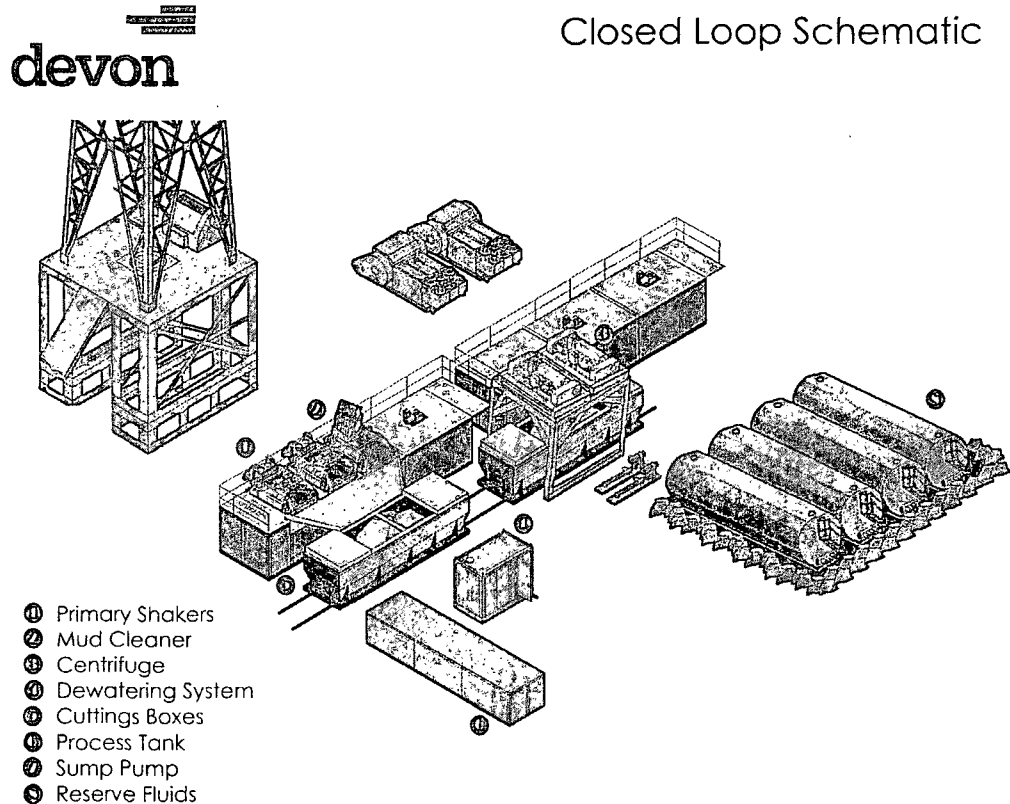
Prior to installing a closed-loop system on site, the topsoil, if present, will be stripped and stockpiled for use as the final cover or fill at the time of closure.

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.



Mi SWACO

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.

H&P Flex Rig Location Layout

