

OCD Hobbs

HOBBS OCD

JUL 10 2015

OCD Hobbs

ATS-15-111

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

(4)

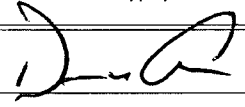
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER RECEIVED

1a. Type of work: ☒ DRILL ☐ REENTER		7. If Unit or CA Agreement, Name and No.	
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		8. Lease Name and Well No. 315023 BILLIKEN 7 FEDERAL 1H	
2. Name of Operator Devon Energy Production Company, L.P. (6137)		9. API Well No. 30-025-42687	
3a. Address 333 W. Sheridan Ave. Oklahoma City, OK 73102		3b. Phone No. (include area code) 405-552-7848	
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface 660 FSL & 50 FWL Unit M 4 At proposed prod. zone 660 FSL & 330 FEL Unit P		10. Field and Pool or Exploratory TABALIAN, DEL ANAQUE, SW	
11. Sec., T. R. M. or Blk. and Survey or Area 7-26S-35E		12. County or Parish Lea County	
13. State NM		14. Distance in miles and direction from nearest town or post office* Approximately 24 miles SW of Jal, NM	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 50'		16. No. of acres in lease 321.45 acres	
17. Spacing Unit dedicated to this well 160.72 acres		18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. See attached map	
19. Proposed Depth TVD: 8,930' MD: 13,612'		20. BLM/BIA Bond No. on file CO-1104 & NMB-000801	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3,266' GL		22. Approximate date work will start* 12/01/2014	
23. Estimated duration 25 days		24. Attachments To Be Pad Drilled w/ Billiken 7 Federal 2H	

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 10/15/2014
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Title

Regulatory Specialist

Approved by (Signature) Steve Caffey	Name (Printed/Typed)	Date JUL - 7 2015
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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

KZ
07/10/15

Approval Subject to General Requirements
& Special Stipulations Attached

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

JUL 13 2015

KZ

RECEIVED

1. Geologic Formations

TVD of target	8930	Pilot hole depth	N/A
MD at TD:	13612	Deepest expected fresh water:	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards
Rustler	1085		
Salado	1406		
Top of Salt	1481		
Castile	3531		
Base of Salt	5027		
Delaware	5350	Oil / Gas	
Bell Canyon	5397	Oil	
Cherry Canyon	6477	Oil	
Brushy Canyon	7750	Oil	

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

Devon Energy, Billiken 7 Fed 1H

2. Casing Program

See COP for depth changes

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	1120 1170	13.375"	54.5	J55	BTC	1.77	2.74	5.58
12.25"	0	5100 5360	9.625"	40	J55	LTC	1.24	1.20	2.28
8.75"	0	8300	7"	29	P110	BTC	1.28	2.79	2.93
8.75"	8300	13612	5.5"	17	P110	BTC	1.21	1.37	3.06
BLM Minimum Safety Factor							1.10	1.10	1.6 Dry 1.8 Wet

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

Must have table for contingency casing

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

Devon Energy, Billiken 7 Fed 1H

3. Cementing Program

Casing	# Sks	Wt. lb/gal	Yld ft ³ /sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surf.	510	13.5	1.72	9.07	12	Lead: Class C Cement + 0.125 lbs/sack Pol-E-Flake + 4% bwoc Bentonite
	560	14.8	6.32	1.33	7	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
Inter.	1110	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
7 x 5.5" Comb. Prod.	220	10.4	16.9	3.17	16	Lead: Tuned Light ® + 0.125 lb/sk Pol-E-Flake
	1410	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

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.

NO DV TOOL PROPOSED

Casing String	TOC	% Excess
Surface	0'	100%
Intermediate	0'	75%
7 x 5.5" Comb. Prod.	4600'	25%

4860

Devon Energy, Billiken 7 Fed 1H

4. Pressure Control Equipment

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
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BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
12-1/4"	13-5/8"	3M	Annular	x	50% of working pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	x	
			Other*		
8-3/4"	13-5/8"	3M	Annular	x	50% testing pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	x	
			Other*		
			Annular		
			Blind Ram		
			Pipe Ram		
			Double Ram		
			Other*		

*Specify if additional ram is utilized.

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

Y	Formation integrity test will be performed per Onshore Order #2.
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Devon Energy, Billiken 7 Fed 1H

	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. See attached for specs and hydrostatic test chart.
N	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 5M, 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 70% of burst or 1500 psi, whichever is greater, as per Onshore Order #2. After running the 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 3M will be installed on the FMC Uni-head wellhead system and will undergo a 250 psi low pressure test followed by a 3,000 psi high pressure test. The 3,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days, as per Onshore Order #2. If the well is not complete within 30 days of this BOP test, another full BOP test will be conducted, as per Onshore Order #2. After running the 9-5/8" intermediate casing with a mandrel hanger, the 13-5/8" BOP/BOPE system with a minimum rating of 3M will already be installed on the FMC Uni-head. The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line

See
COA

See
COA

Devon Energy, Billiken 7 Fed 1H

and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 3,000 psi WP.

Devon requests a variance to use a flexible line with flanged ends between the BOP and the choke manifold (choke line). The line will be kept as straight as possible with minimal turns

See attached schematic.

*See
COA*

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	1120' 1170	FW Gel	8.6-8.8	28-34	N/C
1120'	5100' 5360	Saturated Brine	10.0-10.2	28-34	N/C
5100'	13612'	Cut Brine	8.5-9.3	28-34	N/C

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?

PVT/Pason/Visual Monitoring

6. Logging and Testing Procedures

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

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

Devon Energy, Billiken 7 Fed 1H

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	3868 psi
Abnormal Temperature	No

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

Hydrogen Sulfide (H₂S) monitors will be installed prior to drilling out the surface shoe. If H₂S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.

N	H ₂ S is present
Y	H ₂ S Plan attached

See
COA

8. Other facets of operation

Is this a walking operation? No.

Will be pre-setting casing? No.

Attachments

☒ Directional Plan

☐ Other, describe

5D Plan Report**Devon Energy**

Field Name: *Lea Co, NM Nad 83 NMEZ*
Site Name: *Billiken 7 Federal 1,2H Pad*
Well Name: *Billiken 7 Federal 1H*
Plan: *P1:V1*

17 September 2014

**Weatherford®**

5D Plan Report

Billiken 7 Federal 1H

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 Billiken 7 Federal 1,2H Pad	Units : US ft	North Reference : Grid	Convergence Angle : 0.49
	Position	Northing : 384021.80 US ft	Latitude : 32° 3' 8.74"
		Easting : 825865.10 US ft	Longitude : -103° 24' 53.86"
	Elevation above Mean Sea Level: 3266.00 US ft		
	Comment :		

Slot Name Billiken 7 Federal 1H	Position (Offsets relative to Site Centre)		
	+N / -S : 0.00 US ft	Northing : 384021.80 US ft	Latitude : 32° 3' 8.74"
	+E / -W : 0.00 US ft	Easting : 825865.10 US ft	Longitude : -103° 24' 53.86"
	Slot TVD Reference : Ground Elevation		
	Elevation above Mean Sea Level : 3266.00 US ft		
	Comment :		

Well Name Billiken 7 Federal 1H	Type : Main well	UWI :	Plan : P1:V1
	Rig Height <i>Kelly Bushing</i> : 25.00 US ft	Comment :	
	Relative to Mean Sea Level: 3291.00 US ft		
	Closure Distance : 4928.18 US ft	Closure Azimuth : 89.6733°	
	Vertical Section (Position of Origin Relative to Slot)		
	+N / -S : 0.00 US ft	+E / -W : 0.00 US ft	Az : 89.67°
	Magnetic Parameters		
	Model : BGGM	Field Strength : 48120.6nT	Dec : 7.20°
			Dip : 59.95°
			Date : 15/Apr/2015

Target Set

Name : Billiken 7 Federal 1H Number of Targets : 1

Comment :

Target Name: PEHL 1H Shape: Cuboid	Position (Relative to Slot centre)		
	+N / -S : 28.10US ft	Northing : 384049.90 US ft	Latitude : 32° 3' 8.60"
	+E / -W : 4928.10 US ft	Easting : 830793.20US ft	Longitude : -103° 23' 56.60"
	TV D (Kelly Bushing) : 8930.00 US ft		
	Orientation Azimuth : 89.67°	Inclination : 0.00°	
	Dimensions Length : 8710.00 US ft	Breadth : 50.00 US ft	Height : 20.00 US ft

Well path created using minimum curvature

5D Plan Report

Salient Points (Relative to Slot centre, TVD relative to Kelly Bushing)											
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N. Offset (US ft)	E. Offset (US ft)	WS (US ft)	DLS (7/100 US ft)	D. Rate (7/100 US ft)	T. Rate (7/100 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	
8357.04	0.00	0.00	8357.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	KOP
9257.04	90.00	89.67	8930.00	3.27	572.95	572.96	10.00	10.00	0.00	89.67	LP
13612.26	90.00	89.67	8930.00	28.10	4928.10	4928.18	0.00	0.00	0.00	0.00	PBHL 1H

Interpolated Points (Relative to Slot centre, TVD relative to Kelly Bushing)											
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N. Offset (US ft)	E. Offset (US ft)	WS (US ft)	DLS (7/100 US ft)	Northing (US ft)	Easting (US ft)		Comment
8300.00	0.00	0.00	8300.00	0.00	0.00	0.00	0.00	384021.80	825865.10		
8357.04	0.00	0.00	8357.04	0.00	0.00	0.00	0.00	384021.80	825865.10		KOP
8400.00	4.30	89.67	8399.96	0.01	1.61	1.61	10.00	384021.81	825866.71		
8500.00	14.30	89.67	8498.52	0.10	17.74	17.74	10.00	384021.90	825882.84		
8600.00	24.30	89.67	8592.78	0.29	50.74	50.75	10.00	384022.09	825915.84		
8700.00	34.30	89.67	8679.88	0.57	99.61	99.62	10.00	384022.37	825964.71		
8800.00	44.30	89.67	8757.17	0.93	162.87	162.87	10.00	384022.73	826027.97		
8900.00	54.30	89.67	8822.31	1.36	238.58	238.58	10.00	384023.16	826103.68		
9000.00	64.30	89.67	8873.30	1.85	324.45	324.45	10.00	384023.65	826189.55		
9100.00	74.30	89.67	8908.61	2.38	417.87	417.88	10.00	384024.18	826282.97		
9200.00	84.30	89.67	8927.16	2.94	516.00	516.01	10.00	384024.74	826381.10		
9257.04	90.00	89.67	8930.00	3.27	572.95	572.96	10.00	384025.07	826438.05		LP
9300.00	90.00	89.67	8930.00	3.51	615.91	615.92	0.00	384025.31	826481.01		
9400.00	90.00	89.67	8930.00	4.08	715.91	715.92	0.00	384025.88	826581.01		
9500.00	90.00	89.67	8930.00	4.65	815.90	815.92	0.00	384026.45	826681.00		
9600.00	90.00	89.67	8930.00	5.22	915.90	915.92	0.00	384027.02	826781.00		
9700.00	90.00	89.67	8930.00	5.79	1015.90	1015.92	0.00	384027.59	826881.00		
9800.00	90.00	89.67	8930.00	6.36	1115.90	1115.92	0.00	384028.16	826981.00		
9900.00	90.00	89.67	8930.00	6.93	1215.90	1215.92	0.00	384028.73	827081.00		
10000.00	90.00	89.67	8930.00	7.50	1315.90	1315.92	0.00	384029.30	827181.00		
10100.00	90.00	89.67	8930.00	8.07	1415.89	1415.92	0.00	384029.87	827280.99		
10200.00	90.00	89.67	8930.00	8.64	1515.89	1515.92	0.00	384030.44	827380.99		
10300.00	90.00	89.67	8930.00	9.21	1615.89	1615.92	0.00	384031.01	827480.99		
10400.00	90.00	89.67	8930.00	9.78	1715.89	1715.92	0.00	384031.58	827580.99		
10500.00	90.00	89.67	8930.00	10.35	1815.89	1815.92	0.00	384032.15	827680.99		
10600.00	90.00	89.67	8930.00	10.92	1915.89	1915.92	0.00	384032.72	827780.99		
10700.00	90.00	89.67	8930.00	11.49	2015.88	2015.92	0.00	384033.29	827880.98		
10800.00	90.00	89.67	8930.00	12.06	2115.88	2115.92	0.00	384033.86	827980.98		
10900.00	90.00	89.67	8930.00	12.63	2215.88	2215.92	0.00	384034.43	828080.98		
11000.00	90.00	89.67	8930.00	13.21	2315.88	2315.92	0.00	384035.01	828180.98		
11100.00	90.00	89.67	8930.00	13.78	2415.88	2415.92	0.00	384035.58	828280.98		
11200.00	90.00	89.67	8930.00	14.35	2515.88	2515.92	0.00	384036.15	828380.98		
11300.00	90.00	89.67	8930.00	14.92	2615.87	2615.92	0.00	384036.72	828480.97		
11400.00	90.00	89.67	8930.00	15.49	2715.87	2715.92	0.00	384037.29	828580.97		
11500.00	90.00	89.67	8930.00	16.06	2815.87	2815.92	0.00	384037.86	828680.97		
11600.00	90.00	89.67	8930.00	16.63	2915.87	2915.92	0.00	384038.43	828780.97		
11700.00	90.00	89.67	8930.00	17.20	3015.87	3015.92	0.00	384039.00	828880.97		
11800.00	90.00	89.67	8930.00	17.77	3115.87	3115.92	0.00	384039.57	828980.97		
11900.00	90.00	89.67	8930.00	18.34	3215.86	3215.92	0.00	384040.14	829080.96		
12000.00	90.00	89.67	8930.00	18.91	3315.86	3315.92	0.00	384040.71	829180.96		
12100.00	90.00	89.67	8930.00	19.48	3415.86	3415.92	0.00	384041.28	829280.96		
12200.00	90.00	89.67	8930.00	20.05	3515.86	3515.92	0.00	384041.85	829380.96		
12300.00	90.00	89.67	8930.00	20.62	3615.86	3615.92	0.00	384042.42	829480.96		
12400.00	90.00	89.67	8930.00	21.19	3715.86	3715.92	0.00	384042.99	829580.96		
12500.00	90.00	89.67	8930.00	21.76	3815.86	3815.92	0.00	384043.56	829680.96		
12600.00	90.00	89.67	8930.00	22.33	3915.85	3915.92	0.00	384044.13	829780.95		
12700.00	90.00	89.67	8930.00	22.90	4015.85	4015.92	0.00	384044.70	829880.95		
12800.00	90.00	89.67	8930.00	23.47	4115.85	4115.92	0.00	384045.27	829980.95		
12900.00	90.00	89.67	8930.00	24.04	4215.85	4215.92	0.00	384045.84	830080.95		
13000.00	90.00	89.67	8930.00	24.61	4315.85	4315.92	0.00	384046.41	830180.95		
13100.00	90.00	89.67	8930.00	25.18	4415.85	4415.92	0.00	384046.98	830280.95		

SD Plan Report

Interpolated Points (Relative to Slot centre, TVD relative to Kelly Bushing)										
ID (US ft)	Time (s)	Az (°)	TVD (US ft)	In Offset (US ft)	Ex Offset (US ft)	VS (US ft)	ADS (/100 US ft)	Northing (US ft)	Eastng (US ft)	Comment
13200.00	90.00	89.67	8930.00	25.75	4515.84	4515.92	0.00	384047.55	830380.94	
13300.00	90.00	89.67	8930.00	26.32	4615.84	4615.92	0.00	384048.12	830480.94	
13400.00	90.00	89.67	8930.00	26.89	4715.84	4715.92	0.00	384048.69	830580.94	
13500.00	90.00	89.67	8930.00	27.46	4815.84	4815.92	0.00	384049.26	830680.94	
13600.00	90.00	89.67	8930.00	28.03	4915.84	4915.92	0.00	384049.83	830780.94	
13612.26	90.00	89.67	8930.00	28.10	4928.10	4928.18	0.00	384049.90	830793.20	PBHL 1H

5D Anti-Collision Report**Devon Energy****Field Name:** *Lea Co, NM Nad 83 NMEZ***Site Name:** *Billiken 7 Federal 1,2H Pad***Well Name:** *Billiken 7 Federal 1H*

17 September 2014

**Weatherford®**



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Billiken 7 Federal 1H

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 Billiken 7 Federal 1, 2H Pad	Units : US ft	North Reference : Grid	Convergence Angle : 0.49	
	Position	Northing : 384021.80 US ft	Latitude : 32° 3' 8.74"	
		Easting : 825865.10 US ft	Longitude : -103° 24' 53.86"	
	Elevation above Mean Sea Level : 3266.00 US ft			
Comment :				
Slot Name Billiken 7 Federal 1H	Position (Offsets relative to Site Centre)			
	+N / -S : 0.00 US ft	Northing : 384021.80 US ft	Latitude : 32° 3' 8.74"	
	+E / -W : 0.00 US ft	Easting : 825865.10 US ft	Longitude : -103° 24' 53.86"	
	Slot TVD Reference : Ground Elevation			
Elevation above Mean Sea Level : 3266.00 US ft				
Comment :				
Well Name Billiken 7 Federal 1H	Type : Main well		UWI :	Plan : Working Plan
	Rig Height <i>Kelly Bushing</i> : 25.00 US ft		Comment :	
	Relative to Mean Sea Level : 3291.00 US ft			
	Closure Distance : 4928.18 US ft		Closure Azimuth : 89.6733°	
	Vertical Section (Position of Origin Relative to Slot)			
	+N / -S : 0.00 US ft		+E / -W : 0.00 US ft	Az : 89.67°
	Magnetic Parameters			
	Model : BGGM	Field Strength : 48120.6nT	Dec : 7.20°	Dip : 59.95° Date : 15/Apr/2015

Collision / Uncertainty Analysis

Primary Well	Start MD (US ft)	End MD (US ft)	Collision Risk Interval	No. of Std Deviations in Error Computation
Billiken 7 Federal 1H (p)	0.00	13612.26	100.00	2

Secondary Well Names

Billiken 7 Federal 2H (p)

Anti-Collision Report Terminology

S.Minor, S.Major : Radii of the ellipse of uncertainty at the current location as seen in the along hole direction.

PHI : Angle between high-side vector and semi-minor axis

TVD Spread : Total TVD range of the ellipsoid of uncertainty at the current location

ES : Distance between the extremities of the primary and secondary uncertainty ellipsoids in the direction Cr-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 Kelly Bushing)

SP	Secondary Well Name	Pr MD (US ft)	Sec MD (US ft)	TVD (US ft)	CC (US ft)	ES (US ft)	SP	Risk
	Billiken 7 Federal 2H (p)	13612.26	13568.70	8930.00	1319.77	1051.00	4.91	

Primary Well: Billiken 7 Federal 1H (p) (TVD Relative to Kelly Bushing; All Azimuth Relative to GRID NORTH)								
Pr 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)	SP
0.00	0.00	359.66	0.00	0.00	Billiken 7 Federal 2H (p)	50.30	49.75	90.60
100.00	100.00	359.66	0.11	0.11	Billiken 7 Federal 2H (p)	50.30	49.53	65.25
200.00	200.00	359.66	0.34	0.34	Billiken 7 Federal 2H (p)	50.30	49.08	41.26
300.00	300.00	359.66	0.56	0.56	Billiken 7 Federal 2H (p)	50.30	48.63	30.15
400.00	400.00	359.66	0.79	0.79	Billiken 7 Federal 2H (p)	50.30	48.18	23.75
500.00	500.00	359.66	1.01	1.01	Billiken 7 Federal 2H (p)	50.30	47.73	19.59
600.00	600.00	359.66	1.24	1.24	Billiken 7 Federal 2H (p)	50.30	47.28	16.67
700.00	700.00	359.66	1.46	1.46	Billiken 7 Federal 2H (p)	50.30	46.83	14.51
800.00	800.00	359.66	1.69	1.69	Billiken 7 Federal 2H (p)	50.30	46.39	12.85
900.00	900.00	359.66	1.91	1.91	Billiken 7 Federal 2H (p)	50.30	45.94	11.52
1000.00	1000.00	359.66	2.14	2.14	Billiken 7 Federal 2H (p)	50.30	45.49	10.45
1100.00	1100.00	359.74	2.36	2.36	Billiken 7 Federal 2H (p)	50.86	45.60	9.67
1200.00	1200.00	0.03	2.59	2.59	Billiken 7 Federal 2H (p)	53.11	47.41	9.31
1300.00	1300.00	0.50	2.81	2.81	Billiken 7 Federal 2H (p)	57.08	50.94	9.30
1400.00	1400.00	1.06	3.03	3.03	Billiken 7 Federal 2H (p)	62.77	56.19	9.54
1500.00	1500.00	1.65	3.26	3.26	Billiken 7 Federal 2H (p)	70.17	63.14	9.98
1600.00	1600.00	2.23	3.48	3.48	Billiken 7 Federal 2H (p)	79.29	71.82	10.61
1700.00	1700.00	2.77	3.71	3.71	Billiken 7 Federal 2H (p)	90.11	82.21	11.40
1800.00	1800.00	3.24	3.93	3.93	Billiken 7 Federal 2H (p)	102.64	94.30	12.31
1900.00	1900.00	3.66	4.16	4.16	Billiken 7 Federal 2H (p)	116.84	108.07	13.31
2000.00	2000.00	4.02	4.38	4.38	Billiken 7 Federal 2H (p)	132.73	123.51	14.40
2100.00	2100.00	4.33	4.61	4.61	Billiken 7 Federal 2H (p)	149.96	140.29	15.52
2200.00	2200.00	4.58	4.83	4.83	Billiken 7 Federal 2H (p)	167.31	157.20	16.54
2300.00	2300.00	4.78	5.06	5.06	Billiken 7 Federal 2H (p)	184.67	174.10	17.48
2400.00	2400.00	4.95	5.28	5.28	Billiken 7 Federal 2H (p)	202.03	191.01	18.33
2500.00	2500.00	5.09	5.51	5.51	Billiken 7 Federal 2H (p)	219.38	207.91	19.11
2600.00	2600.00	5.21	5.73	5.73	Billiken 7 Federal 2H (p)	236.75	224.80	19.82
2700.00	2700.00	5.32	5.96	5.96	Billiken 7 Federal 2H (p)	254.11	241.70	20.48
2800.00	2800.00	5.41	6.18	6.18	Billiken 7 Federal 2H (p)	271.47	258.60	21.09
2900.00	2900.00	5.49	6.41	6.41	Billiken 7 Federal 2H (p)	288.83	275.49	21.65
3000.00	3000.00	5.56	6.63	6.63	Billiken 7 Federal 2H (p)	306.20	292.39	22.18
3100.00	3100.00	5.62	6.86	6.86	Billiken 7 Federal 2H (p)	323.56	309.29	22.67

5D Anti-Collision Report

Primary Well: Billiken 7 Federal 2H (p) (TVD Relative to Kelly Bushing, All Azimuth Relative to GRID NORTH)								
TVD (US ft)	TVD (US ft)	T-Face to Sec (°)	S-Major (US ft)	S-Minor (US ft)	Nearest Well	CC (US ft)	FES (US ft)	Risk
3200.00	3200.00	5.68	7.08	7.08	Billiken 7 Federal 2H (p)	340.92	326.18	23.13
3300.00	3300.00	5.73	7.31	7.31	Billiken 7 Federal 2H (p)	358.29	343.08	23.56
3400.00	3400.00	5.78	7.53	7.53	Billiken 7 Federal 2H (p)	375.65	359.98	23.97
3500.00	3500.00	5.82	7.76	7.76	Billiken 7 Federal 2H (p)	393.02	376.87	24.35
3600.00	3600.00	5.86	7.98	7.98	Billiken 7 Federal 2H (p)	410.38	393.77	24.71
3700.00	3700.00	5.90	8.20	8.20	Billiken 7 Federal 2H (p)	427.75	410.67	25.04
3800.00	3800.00	5.93	8.43	8.43	Billiken 7 Federal 2H (p)	445.11	427.56	25.36
3900.00	3900.00	5.96	8.65	8.65	Billiken 7 Federal 2H (p)	462.48	444.46	25.67
4000.00	4000.00	5.99	8.88	8.88	Billiken 7 Federal 2H (p)	479.84	461.36	25.95
4100.00	4100.00	6.01	9.10	9.10	Billiken 7 Federal 2H (p)	497.21	478.25	26.23
4200.00	4200.00	6.04	9.33	9.33	Billiken 7 Federal 2H (p)	514.57	495.15	26.49
4300.00	4300.00	6.06	9.55	9.55	Billiken 7 Federal 2H (p)	531.94	512.04	26.73
4400.00	4400.00	6.08	9.78	9.78	Billiken 7 Federal 2H (p)	549.31	528.94	26.97
4500.00	4500.00	6.10	10.00	10.00	Billiken 7 Federal 2H (p)	566.67	545.83	27.19
4600.00	4600.00	6.12	10.23	10.23	Billiken 7 Federal 2H (p)	584.04	562.73	27.41
4700.00	4700.00	6.14	10.45	10.45	Billiken 7 Federal 2H (p)	601.40	579.62	27.61
4800.00	4800.00	6.16	10.68	10.68	Billiken 7 Federal 2H (p)	618.77	596.52	27.81
4900.00	4900.00	6.17	10.90	10.90	Billiken 7 Federal 2H (p)	636.14	613.41	28.00
5000.00	5000.00	6.19	11.13	11.13	Billiken 7 Federal 2H (p)	653.50	630.31	28.18
5100.00	5100.00	6.20	11.35	11.35	Billiken 7 Federal 2H (p)	670.87	647.20	28.35
5200.00	5200.00	6.21	11.58	11.58	Billiken 7 Federal 2H (p)	688.24	664.10	28.51
5300.00	5300.00	6.23	11.80	11.80	Billiken 7 Federal 2H (p)	705.60	680.99	28.67
5400.00	5400.00	6.24	12.03	12.03	Billiken 7 Federal 2H (p)	722.97	697.89	28.82
5500.00	5500.00	6.25	12.25	12.25	Billiken 7 Federal 2H (p)	740.33	714.78	28.97
5600.00	5600.00	6.26	12.48	12.48	Billiken 7 Federal 2H (p)	757.70	731.68	29.11
5700.00	5700.00	6.27	12.70	12.70	Billiken 7 Federal 2H (p)	775.07	748.57	29.25
5800.00	5800.00	6.28	12.93	12.93	Billiken 7 Federal 2H (p)	792.43	765.46	29.38
5900.00	5900.00	6.29	13.15	13.15	Billiken 7 Federal 2H (p)	809.80	782.36	29.51
6000.00	6000.00	6.30	13.37	13.37	Billiken 7 Federal 2H (p)	827.17	799.25	29.63
6100.00	6100.00	6.31	13.60	13.60	Billiken 7 Federal 2H (p)	844.53	816.14	29.75
6200.00	6200.00	6.32	13.82	13.82	Billiken 7 Federal 2H (p)	861.90	833.04	29.86
6300.00	6300.00	6.33	14.05	14.05	Billiken 7 Federal 2H (p)	879.27	849.93	29.97
6400.00	6400.00	6.34	14.27	14.27	Billiken 7 Federal 2H (p)	896.63	866.82	30.08
6500.00	6500.00	6.34	14.50	14.50	Billiken 7 Federal 2H (p)	914.00	883.72	30.18
6600.00	6600.00	6.35	14.72	14.72	Billiken 7 Federal 2H (p)	931.37	900.61	30.28
6700.00	6700.00	6.36	14.95	14.95	Billiken 7 Federal 2H (p)	948.73	917.50	30.38

5D Anti-Collision Report

Primary Well: Billiken 7 Federal 1H (p) (TVD Relative to Kelly Bushing, All Azimuth Relative to GRID NORTH)									
MD (US ft)	TVD (US ft)	Td Face to See (°)	S-Major (US ft)	S-Minor (US ft)	Nearest Well	CC (US ft)	ES (US ft)	IS ²	Risk ³
6800.00	6800.00	6.36	15.17	15.17	Billiken 7 Federal 2H (p)	966.10	934.40	30.47	
6900.00	6900.00	6.37	15.40	15.40	Billiken 7 Federal 2H (p)	983.47	951.29	30.56	
7000.00	7000.00	6.38	15.62	15.62	Billiken 7 Federal 2H (p)	1000.83	968.18	30.65	
7100.00	7100.00	6.38	15.85	15.85	Billiken 7 Federal 2H (p)	1018.20	985.08	30.74	
7200.00	7200.00	6.39	16.07	16.07	Billiken 7 Federal 2H (p)	1035.57	1001.97	30.82	
7300.00	7300.00	6.40	16.30	16.30	Billiken 7 Federal 2H (p)	1052.93	1018.86	30.90	
7400.00	7400.00	6.40	16.52	16.52	Billiken 7 Federal 2H (p)	1070.30	1035.75	30.98	
7500.00	7500.00	6.41	16.75	16.75	Billiken 7 Federal 2H (p)	1087.67	1052.64	31.06	
7600.00	7600.00	6.41	16.97	16.97	Billiken 7 Federal 2H (p)	1105.03	1069.54	31.13	
7700.00	7700.00	6.42	17.20	17.20	Billiken 7 Federal 2H (p)	1122.40	1086.43	31.20	
7800.00	7800.00	6.42	17.42	17.42	Billiken 7 Federal 2H (p)	1139.77	1103.32	31.27	
7900.00	7900.00	6.43	17.65	17.65	Billiken 7 Federal 2H (p)	1157.13	1120.21	31.34	
8000.00	8000.00	6.43	17.87	17.87	Billiken 7 Federal 2H (p)	1174.50	1137.10	31.41	
8100.00	8100.00	6.44	18.10	18.10	Billiken 7 Federal 2H (p)	1191.87	1154.00	31.47	
8200.00	8200.00	6.44	18.32	18.32	Billiken 7 Federal 2H (p)	1209.24	1170.89	31.53	
8300.00	8300.00	6.44	18.54	18.54	Billiken 7 Federal 2H (p)	1226.60	1187.78	31.59	
8400.00	8399.96	277.43	18.76	18.71	Billiken 7 Federal 2H (p)	1243.78	1204.46	31.63	
8500.00	8498.52	278.25	18.97	18.60	Billiken 7 Federal 2H (p)	1259.14	1219.39	31.68	
8600.00	8592.78	278.20	19.19	18.08	Billiken 7 Federal 2H (p)	1272.55	1232.35	31.66	
8700.00	8679.88	277.89	19.46	17.33	Billiken 7 Federal 2H (p)	1285.00	1244.25	31.54	
8800.00	8757.17	277.38	19.82	16.37	Billiken 7 Federal 2H (p)	1297.04	1255.59	31.29	
8900.00	8822.31	276.65	20.36	15.29	Billiken 7 Federal 2H (p)	1308.52	1266.19	30.92	
9000.00	8873.30	275.67	21.13	14.24	Billiken 7 Federal 2H (p)	1319.19	1275.46	30.16	
9100.00	8908.61	274.41	22.18	13.38	Billiken 7 Federal 2H (p)	1328.72	1283.24	29.22	
9200.00	8927.16	272.87	23.49	13.00	Billiken 7 Federal 2H (p)	1336.56	1288.71	27.93	
9300.00	8930.00	270.98	25.03	13.05	Billiken 7 Federal 2H (p)	1341.97	1291.25	26.46	
9400.00	8930.00	270.04	26.76	13.27	Billiken 7 Federal 2H (p)	1343.71	1289.45	24.76	
9500.00	8930.00	270.04	28.65	13.53	Billiken 7 Federal 2H (p)	1343.14	1285.25	23.20	
9600.00	8930.00	270.04	30.67	13.82	Billiken 7 Federal 2H (p)	1342.57	1280.86	21.76	
9700.00	8930.00	270.04	32.80	14.15	Billiken 7 Federal 2H (p)	1342.00	1276.20	20.40	
9800.00	8930.00	270.04	35.02	14.50	Billiken 7 Federal 2H (p)	1341.43	1271.43	19.16	
9900.00	8930.00	270.04	37.31	14.88	Billiken 7 Federal 2H (p)	1340.86	1266.34	17.99	
10000.00	8930.00	270.04	39.65	15.29	Billiken 7 Federal 2H (p)	1340.29	1261.22	16.95	
10100.00	8930.00	270.04	42.05	15.72	Billiken 7 Federal 2H (p)	1339.72	1256.06	16.01	
10200.00	8930.00	270.04	44.49	16.18	Billiken 7 Federal 2H (p)	1339.15	1250.67	15.13	
10300.00	8930.00	270.04	46.96	16.65	Billiken 7 Federal 2H (p)	1338.58	1245.18	14.33	

SD Anti-Collision Report

Primary Well: Billiken 7 Federal 1H (p) (TVD Relative to Kelly Bushing, All Azimuth Relative to GRID NORTH)								
MD (US ft)	TVD (US ft)	TH Face to See (°)	S. Major (US ft)	S. Minor (US ft)	Nearest Well	CG (US ft)	ES (US ft)	SF
10400.00	8930.00	270.04	49.46	17.14	Billiken 7 Federal 2H (p)	1338.01	1239.65	13.60
10500.00	8930.00	270.04	51.99	17.65	Billiken 7 Federal 2H (p)	1337.44	1234.09	12.94
10600.00	8930.00	270.04	54.54	18.17	Billiken 7 Federal 2H (p)	1336.87	1228.50	12.34
10700.00	8930.00	270.04	57.11	18.70	Billiken 7 Federal 2H (p)	1336.30	1222.88	11.78
10800.00	8930.00	270.04	59.70	19.23	Billiken 7 Federal 2H (p)	1335.73	1217.22	11.27
10900.00	8930.00	270.04	62.30	19.81	Billiken 7 Federal 2H (p)	1335.16	1211.55	10.80
11000.00	8930.00	270.04	64.91	20.36	Billiken 7 Federal 2H (p)	1334.59	1205.84	10.37
11100.00	8930.00	270.04	67.54	20.97	Billiken 7 Federal 2H (p)	1334.02	1200.12	9.96
11200.00	8930.00	270.04	70.17	21.57	Billiken 7 Federal 2H (p)	1333.45	1194.29	9.58
11300.00	8930.00	270.04	72.82	22.18	Billiken 7 Federal 2H (p)	1332.88	1188.44	9.23
11400.00	8930.00	270.04	75.47	22.78	Billiken 7 Federal 2H (p)	1332.31	1182.57	8.90
11500.00	8930.00	270.04	78.13	23.40	Billiken 7 Federal 2H (p)	1331.74	1176.69	8.59
11600.00	8930.00	270.04	80.79	24.02	Billiken 7 Federal 2H (p)	1331.17	1170.79	8.30
11700.00	8930.00	270.04	83.46	24.65	Billiken 7 Federal 2H (p)	1330.60	1164.89	8.03
11800.00	8930.00	270.04	86.14	25.29	Billiken 7 Federal 2H (p)	1330.03	1158.97	7.78
11900.00	8930.00	270.04	88.82	25.92	Billiken 7 Federal 2H (p)	1329.46	1153.05	7.54
12000.00	8930.00	270.04	91.50	26.57	Billiken 7 Federal 2H (p)	1328.89	1147.12	7.31
12100.00	8930.00	270.04	94.19	27.22	Billiken 7 Federal 2H (p)	1328.32	1141.18	7.10
12200.00	8930.00	270.04	96.89	27.87	Billiken 7 Federal 2H (p)	1327.75	1135.23	6.90
12300.00	8930.00	270.04	99.58	28.53	Billiken 7 Federal 2H (p)	1327.18	1129.27	6.71
12400.00	8930.00	270.04	102.28	29.19	Billiken 7 Federal 2H (p)	1326.61	1123.31	6.53
12500.00	8930.00	270.04	104.99	29.85	Billiken 7 Federal 2H (p)	1326.04	1117.34	6.35
12600.00	8930.00	270.04	107.69	30.52	Billiken 7 Federal 2H (p)	1325.47	1111.37	6.19
12700.00	8930.00	270.04	110.40	31.19	Billiken 7 Federal 2H (p)	1324.90	1105.39	6.04
12800.00	8930.00	270.04	113.11	31.86	Billiken 7 Federal 2H (p)	1324.33	1099.41	5.89
12900.00	8930.00	270.04	115.82	32.54	Billiken 7 Federal 2H (p)	1323.76	1093.42	5.75
13000.00	8930.00	270.04	118.53	33.21	Billiken 7 Federal 2H (p)	1323.19	1087.43	5.61
13100.00	8930.00	270.04	121.25	33.89	Billiken 7 Federal 2H (p)	1322.62	1081.44	5.48
13200.00	8930.00	270.04	123.97	34.58	Billiken 7 Federal 2H (p)	1322.05	1075.44	5.36
13300.00	8930.00	270.04	126.69	35.26	Billiken 7 Federal 2H (p)	1321.48	1069.44	5.24
13400.00	8930.00	270.04	129.41	35.95	Billiken 7 Federal 2H (p)	1320.91	1063.43	5.13
13500.00	8930.00	270.04	132.13	36.64	Billiken 7 Federal 2H (p)	1320.34	1057.42	5.02
13600.00	8930.00	270.04	134.85	37.33	Billiken 7 Federal 2H (p)	1319.77	1051.44	4.92
13612.26	8930.00	270.04	135.19	37.41	Billiken 7 Federal 2H (p)	1319.77	1051.00	4.91

5D Anti-Collision Report

Secondary Well : Billiken 7 Federal 2H (p) (TVD Relative to Kelly Bushing (Primary) ; All Azimuth Relative to GRID NORTH)								
Pr MD (US ft)	TVD (US ft)	Sec MD (US ft)	T Face to Sec (°)	S-Major (US ft)	S-Minor (US ft)	CG (US ft)	ES (US ft)	SA (US ft)
0.00	0.00	1.00	359.66	0.01	0.01	50.30	49.75	90.60
100.00	100.00	101.00	359.66	0.12	0.12	50.30	49.53	65.25
200.00	200.00	201.00	359.66	0.34	0.34	50.30	49.08	41.26
300.00	300.00	301.00	359.66	0.56	0.56	50.30	48.63	30.15
400.00	400.00	401.00	359.66	0.79	0.79	50.30	48.18	23.75
500.00	500.00	501.00	359.66	1.01	1.01	50.30	47.73	19.59
600.00	600.00	601.00	359.66	1.24	1.24	50.30	47.28	16.67
700.00	700.00	701.00	359.66	1.46	1.46	50.30	46.83	14.51
800.00	800.00	801.00	359.66	1.69	1.69	50.30	46.39	12.85
900.00	900.00	901.00	359.66	1.91	1.91	50.30	45.94	11.52
1000.00	1000.00	1001.00	359.66	2.14	2.14	50.30	45.49	10.45
1100.00	1099.29	1100.30	359.74	2.36	2.36	50.86	45.60	9.67
1200.00	1198.35	1199.38	0.03	2.58	2.58	53.11	47.41	9.31
1300.00	1297.24	1298.35	0.50	2.80	2.79	57.08	50.94	9.30
1400.00	1395.89	1397.16	1.06	3.03	3.02	62.77	56.19	9.54
1500.00	1494.20	1495.75	1.65	3.26	3.25	70.17	63.14	9.98
1600.00	1592.09	1594.05	2.23	3.49	3.47	79.29	71.82	10.61
1700.00	1689.48	1692.02	2.77	3.74	3.69	90.11	82.21	11.40
1800.00	1786.28	1789.59	3.24	3.99	3.90	102.64	94.30	12.31
1900.00	1882.42	1886.72	3.66	4.26	4.12	116.84	108.07	13.31
2000.00	1977.81	1983.35	4.02	4.54	4.35	132.73	123.51	14.40
2100.00	2073.98	2080.97	4.33	4.84	4.57	149.96	140.29	15.52
2200.00	2170.96	2179.46	4.58	5.15	4.80	167.31	157.20	16.54
2300.00	2267.95	2277.94	4.78	5.47	5.04	184.67	174.10	17.48
2400.00	2364.93	2376.42	4.95	5.79	5.27	202.03	191.01	18.33
2500.00	2461.91	2474.90	5.09	6.13	5.51	219.38	207.91	19.11
2600.00	2558.90	2573.38	5.21	6.46	5.75	236.75	224.80	19.82
2700.00	2655.88	2671.86	5.32	6.80	6.00	254.11	241.70	20.48
2800.00	2752.87	2770.34	5.41	7.14	6.24	271.47	258.60	21.09
2900.00	2849.85	2868.82	5.49	7.49	6.49	288.83	275.49	21.65
3000.00	2946.83	2967.30	5.56	7.84	6.73	306.20	292.39	22.18
3100.00	3043.82	3065.78	5.62	8.19	6.98	323.56	309.29	22.67
3200.00	3140.80	3164.26	5.68	8.54	7.22	340.92	326.18	23.13
3300.00	3237.79	3262.74	5.73	8.90	7.47	358.29	343.08	23.56
3400.00	3334.77	3361.22	5.78	9.25	7.72	375.65	359.98	23.97
3500.00	3431.75	3459.70	5.82	9.61	7.97	393.02	376.87	24.35
3600.00	3528.74	3558.18	5.86	9.97	8.21	410.38	393.77	24.71
3700.00	3625.72	3656.66	5.90	10.33	8.46	427.75	410.67	25.04
3800.00	3722.70	3755.14	5.93	10.69	8.71	445.11	427.56	25.36
3900.00	3819.69	3853.62	5.96	11.05	8.96	462.48	444.46	25.67
4000.00	3916.67	3952.10	5.99	11.41	9.21	479.84	461.36	25.95
4100.00	4013.66	4050.58	6.01	11.77	9.45	497.21	478.25	26.23
4200.00	4110.64	4149.06	6.04	12.14	9.70	514.57	495.15	26.49
4300.00	4207.62	4247.54	6.06	12.50	9.95	531.94	512.04	26.73
4400.00	4304.61	4346.02	6.08	12.86	10.20	549.31	528.94	26.97
4500.00	4401.59	4444.50	6.10	13.23	10.45	566.67	545.83	27.19
4600.00	4498.58	4542.98	6.12	13.59	10.70	584.04	562.73	27.41
4700.00	4595.56	4641.46	6.14	13.96	10.95	601.40	579.62	27.61
4800.00	4692.54	4739.95	6.16	14.33	11.20	618.77	596.52	27.81
4900.00	4789.53	4838.43	6.17	14.69	11.45	636.14	613.41	28.00
5000.00	4886.51	4936.91	6.19	15.06	11.70	653.50	630.31	28.18
5100.00	4983.49	5035.39	6.20	15.43	11.95	670.87	647.20	28.35
5200.00	5080.48	5133.87	6.21	15.79	12.20	688.24	664.10	28.51
5300.00	5177.46	5232.35	6.23	16.16	12.45	705.60	680.99	28.67
5400.00	5274.45	5330.83	6.24	16.53	12.70	722.97	697.89	28.82
5500.00	5371.43	5429.31	6.25	16.90	12.95	740.33	714.78	28.97
5600.00	5468.41	5527.79	6.26	17.26	13.20	757.70	731.68	29.11
5700.00	5565.40	5626.27	6.27	17.63	13.45	775.07	748.57	29.25

SD Anti-Collision Report

Secondary Wall # Billiken 7 Federal 2H (p) (TVD Relative to Kelly Bushing (Primary)) All Azimuth Relative to GRID NORTH								
Prim MD (US ft)	TVD (US ft)	Sec MD (US ft)	T Face to Sec (°)	S Major (US ft)	S Minor (US ft)	GC (US ft)	ES (US ft)	SF
5800.00	5662.38	5724.75	6.28	18.00	13.70	792.43	765.46	29.38
5900.00	5759.37	5823.23	6.29	18.37	13.95	809.80	782.36	29.51
6000.00	5856.35	5921.71	6.30	18.74	14.21	827.17	799.25	29.63
6100.00	5953.33	6020.19	6.31	19.11	14.46	844.53	816.14	29.75
6200.00	6050.32	6118.67	6.32	19.48	14.71	861.90	833.04	29.86
6300.00	6147.30	6217.15	6.33	19.85	14.96	879.27	849.93	29.97
6400.00	6244.28	6315.63	6.34	20.22	15.21	896.63	866.82	30.08
6500.00	6341.27	6414.11	6.34	20.59	15.46	914.00	883.72	30.18
6600.00	6438.25	6512.59	6.35	20.96	15.71	931.37	900.61	30.28
6700.00	6535.24	6611.07	6.36	21.33	15.96	948.73	917.50	30.38
6800.00	6632.22	6709.55	6.36	21.70	16.21	966.10	934.40	30.47
6900.00	6729.20	6808.03	6.37	22.07	16.47	983.47	951.29	30.56
7000.00	6826.19	6906.51	6.38	22.44	16.72	1000.83	968.18	30.65
7100.00	6923.17	7004.99	6.38	22.81	16.97	1018.20	985.08	30.74
7200.00	7020.16	7103.47	6.39	23.18	17.22	1035.57	1001.97	30.82
7300.00	7117.14	7201.95	6.40	23.55	17.47	1052.93	1018.86	30.90
7400.00	7214.12	7300.44	6.40	23.92	17.72	1070.30	1035.75	30.98
7500.00	7311.11	7398.92	6.41	24.29	17.97	1087.67	1052.64	31.06
7600.00	7408.09	7497.40	6.41	24.66	18.23	1105.03	1069.54	31.13
7700.00	7505.07	7595.88	6.42	25.03	18.48	1122.40	1086.43	31.20
7800.00	7602.06	7694.36	6.42	25.40	18.73	1139.77	1103.32	31.27
7900.00	7699.04	7792.84	6.43	25.77	18.98	1157.13	1120.21	31.34
8000.00	7796.03	7891.32	6.43	26.15	19.23	1174.50	1137.10	31.41
8100.00	7893.01	7989.80	6.44	26.52	19.48	1191.87	1154.00	31.47
8200.00	7989.99	8088.28	6.44	26.89	19.74	1209.24	1170.89	31.53
8300.00	8086.98	8186.76	6.44	27.26	19.99	1226.60	1187.78	31.59
8400.00	8183.96	8285.23	277.43	27.63	20.24	1243.78	1204.46	31.63
8500.00	8279.88	8382.64	278.25	28.00	20.49	1259.14	1219.39	31.68
8600.00	8372.00	8476.18	278.20	28.35	20.73	1272.55	1232.35	31.66
8700.00	8450.97	8556.69	277.89	28.40	20.91	1285.00	1244.25	31.54
8800.00	8532.09	8641.30	277.38	28.01	21.09	1297.04	1255.59	31.29
8900.00	8615.05	8732.11	276.65	27.15	21.27	1308.52	1266.19	30.92
9000.00	8698.34	8831.18	275.67	25.71	21.35	1319.19	1275.46	30.16
9100.00	8779.06	8941.20	274.41	24.31	20.82	1328.72	1283.24	29.22
9200.00	8851.77	9065.43	272.87	24.22	18.69	1336.56	1288.71	27.93
9300.00	8906.96	9208.06	270.98	25.19	15.54	1341.97	1291.25	26.46
9400.00	8929.00	9370.20	270.04	27.23	13.39	1343.71	1289.45	24.76
9500.00	8929.00	9470.20	270.04	28.99	13.66	1343.14	1285.25	23.20
9600.00	8929.00	9570.20	270.04	30.74	13.97	1342.57	1280.86	21.76
9700.00	8929.00	9670.20	270.04	32.71	14.31	1342.00	1276.20	20.40
9800.00	8929.00	9770.20	270.04	34.65	14.68	1341.43	1271.43	19.16
9900.00	8929.00	9870.20	270.04	36.88	15.08	1340.86	1266.34	17.99
10000.00	8929.00	9970.19	270.04	39.09	15.51	1340.29	1261.22	16.95
10100.00	8929.00	10070.19	270.04	41.28	15.96	1339.72	1256.06	16.01
10200.00	8929.00	10170.19	270.04	43.60	16.42	1339.15	1250.67	15.13
10300.00	8929.00	10270.19	270.04	46.05	16.91	1338.58	1245.18	14.33
10400.00	8929.00	10370.19	270.04	48.50	17.41	1338.01	1239.65	13.60
10500.00	8929.00	10470.19	270.04	50.95	17.94	1337.44	1234.09	12.94
10600.00	8929.00	10570.18	270.04	53.42	18.49	1336.87	1228.50	12.34
10700.00	8929.00	10670.18	270.04	55.91	19.05	1336.30	1222.88	11.78
10800.00	8929.00	10770.18	270.04	58.40	19.63	1335.73	1217.22	11.27
10900.00	8929.00	10870.18	270.04	60.91	20.22	1335.16	1211.55	10.80
11000.00	8929.00	10970.18	270.04	63.43	20.82	1334.59	1205.84	10.37
11100.00	8929.00	11070.18	270.04	65.96	21.42	1334.02	1200.12	9.96
11200.00	8929.00	11170.17	270.04	68.51	22.00	1333.45	1194.29	9.58
11300.00	8929.00	11270.17	270.04	71.15	22.59	1332.88	1188.44	9.23
11400.00	8929.00	11370.17	270.04	73.79	23.16	1332.31	1182.57	8.90
11500.00	8929.00	11470.17	270.04	76.44	23.82	1331.74	1176.69	8.59

5D Anti-Collision Report

Secondary Well B: Billiken 7 Federal 2H (P) (TVD Relative to Kelly Bushing (Primary)) ; All Azimuth Relative to GRID NORTH									
P-ND (US ft)	TVD (US ft)	Sec ND (US ft)	In Face to Sec (°)	S-Major (US ft)	S-Minor (US ft)	CC (US ft)	ES (US ft)	SF	Risk
11600.00	8929.00	11570.17	270.04	79.10	24.48	1331.17	1170.79	8.30	
11700.00	8929.00	11670.17	270.04	81.76	25.04	1330.60	1164.89	8.03	
11800.00	8929.00	11770.16	270.04	84.43	25.75	1330.03	1158.97	7.78	
11900.00	8929.00	11870.16	270.04	87.10	26.31	1329.46	1153.05	7.54	
12000.00	8929.00	11970.16	270.04	89.77	27.04	1328.89	1147.12	7.31	
12100.00	8929.00	12070.16	270.04	92.45	27.67	1328.32	1141.18	7.10	
12200.00	8929.00	12170.16	270.04	95.14	28.33	1327.75	1135.23	6.90	
12300.00	8929.00	12270.16	270.04	97.82	28.98	1327.18	1129.27	6.71	
12400.00	8929.00	12370.15	270.04	100.51	29.68	1326.61	1123.31	6.53	
12500.00	8929.00	12470.15	270.04	103.21	30.30	1326.04	1117.34	6.35	
12600.00	8929.00	12570.15	270.04	105.90	30.93	1325.47	1111.37	6.19	
12700.00	8929.00	12670.15	270.04	108.60	31.66	1324.90	1105.39	6.04	
12800.00	8929.00	12770.15	270.04	111.30	32.36	1324.33	1099.41	5.89	
12900.00	8929.00	12870.15	270.04	114.01	33.04	1323.76	1093.42	5.75	
13000.00	8929.00	12970.15	270.04	116.71	33.72	1323.19	1087.43	5.61	
13100.00	8929.00	13070.14	270.04	119.42	34.38	1322.62	1081.44	5.48	
13200.00	8929.00	13170.14	270.04	122.13	35.04	1322.05	1075.44	5.36	
13300.00	8929.00	13270.14	270.04	124.84	35.71	1321.48	1069.44	5.24	
13400.00	8929.00	13370.14	270.04	127.56	36.37	1320.91	1063.43	5.13	
13500.00	8929.00	13470.14	270.04	130.27	37.03	1320.34	1057.42	5.02	
13600.00	8929.00	13568.70	270.04	132.95	37.70	1319.77	1051.44	4.92	
13612.26	8929.00	13568.70	270.04	132.95	37.70	1319.77	1051.00	4.91	

**Weatherford**

Weatherford Drilling Services

GeoDec4 v2.0.0.3

Report Date: September 17, 2014

Job Number: _____

Customer: Devon Energy

Well Name: Billiken 7 Federal 1H

API Number: _____

Rig Name: _____

Location: Lea Co, NM Nad83 NME

Block: _____

Engineer: RWJ

NAD83 / New Mexico East (ftUS)

Projected Coordinate System

Datum: North American Datum 1983 (1986)

Ellipsoid: GRS 1980

EPSG: 2257

North: 384021.80 US Survey Foot

East: 825865.10 US Survey Foot

Convergence: 0.49°

Declination: 7.20°

Total Correction: 6.71°

Datum Transformation: none

NAD83 (1986)

Geodetic Coordinate System

Datum: North American Datum 1983 (1986)

Ellipsoid: GRS 1980

EPSG: 4269

Latitude: 32.052429 Degree

Longitude: -103.414961 Degree

Geodetic Location WGS84

MSL Elevation = 0 m

Latitude = 32° 03' 08.74" N

Longitude = 103° 24' 53.86" W

Magnetic Declination = 7.20 deg

[True North Offset]

Local Gravity = .9988 g

Checksum = 6755

Local Field Strength = 48121 nT

Magnetic Vector X = 23907 nT

Magnetic Dip = 59.95 deg

Magnetic Vector Y = 3021 nT

Magnetic Model = bggm2014.dat

Magnetic Vector Z = 41652 nT

Run Date = April 15, 2015

Magnetic Vector H = 24097 nT

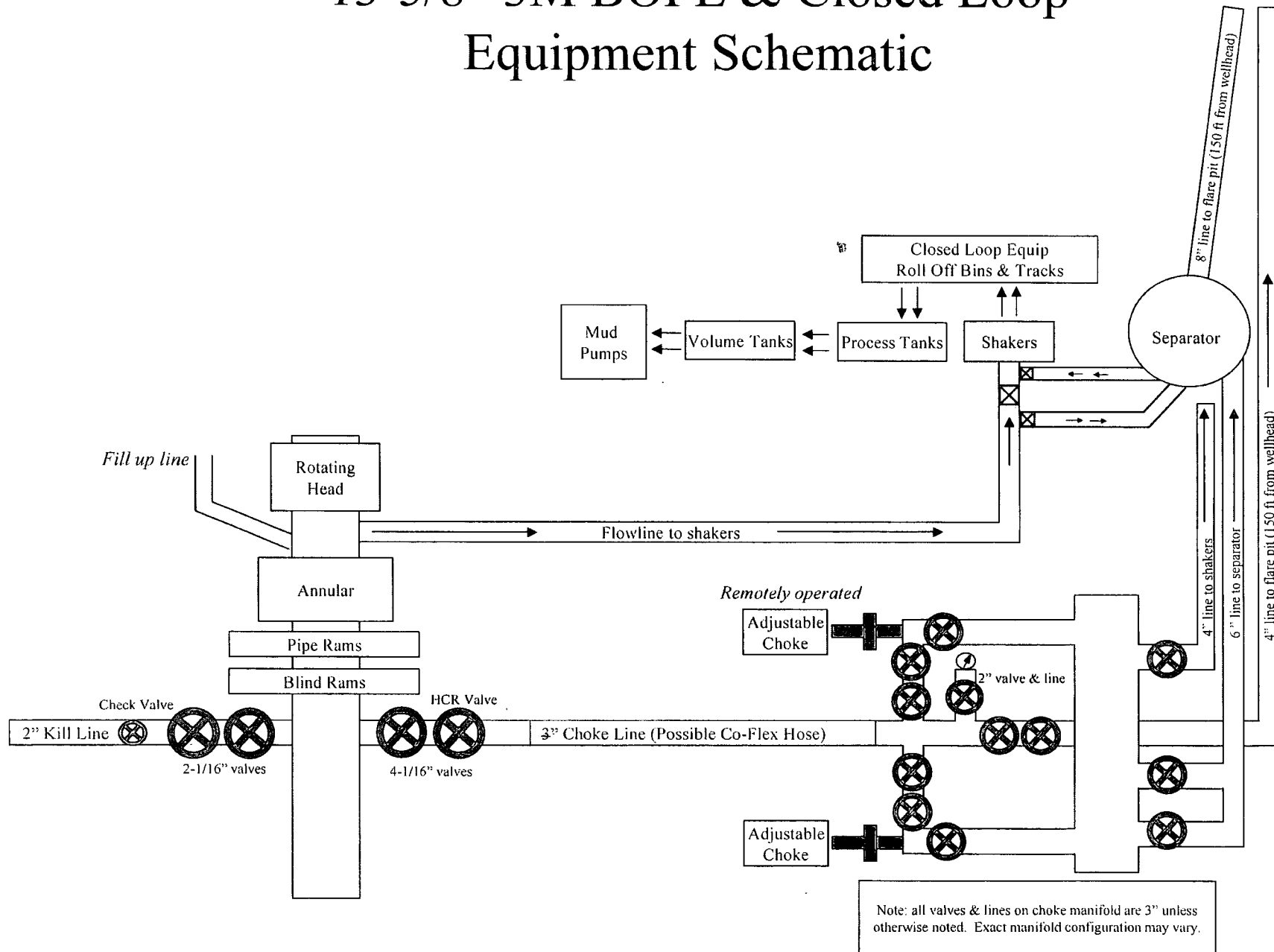
Signed: _____

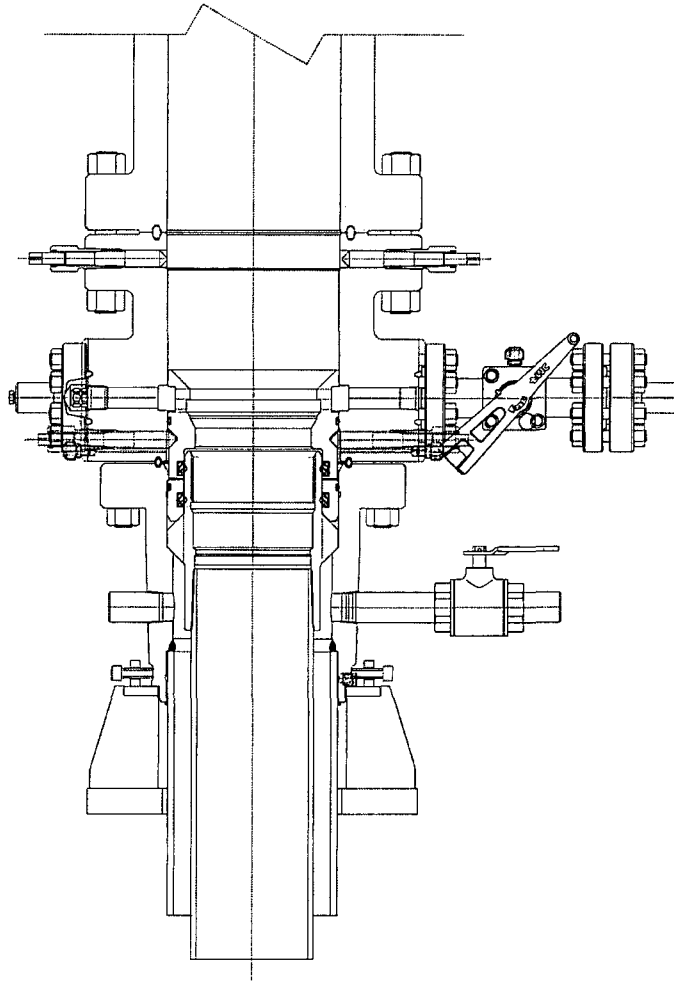
Date: _____

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





PRIMARY MODE

DEVON ENERGY

ARTESIA

S.E.N.M

13 3/8 X 9 5/8

QUOTE LAYOUT
F18648
REF: DMI00161737
DMI00151315

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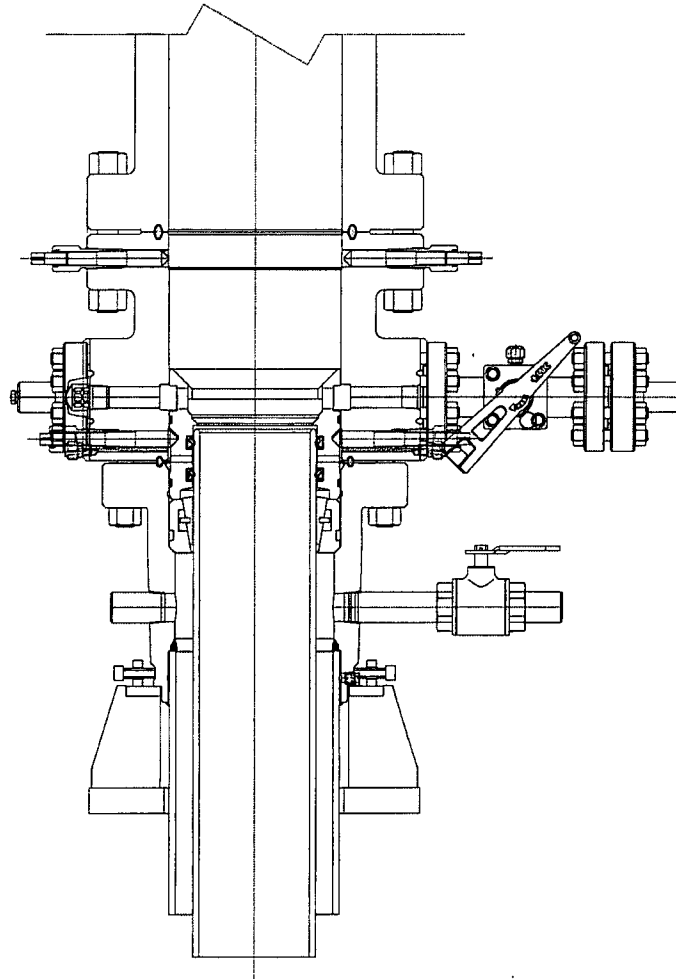
REVISIONS	DESCRIPTION
A 05-08-13	
B 1-22-14	
C 5-13-14	

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
DMI00161771-2A



CONTINGENCY MODE

DEVON ENERGY

ARTESIA

S.E.N.M

13 3/8 X 9 5/8

QUOTE LAYOUT
F18648
REF: DM100161737
DM100151315

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	A 05-08-13	SURFACE WELLHEAD LAYOUT UNIHEAD, UH-1, SOW, DEVON ENERGY, ODESSA	K. VU	05-08-13	
	B 1-22-14		Z. MARQUEZ	05-08-13	
	C 5-13-14		K. TAHA	05-08-13	
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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.

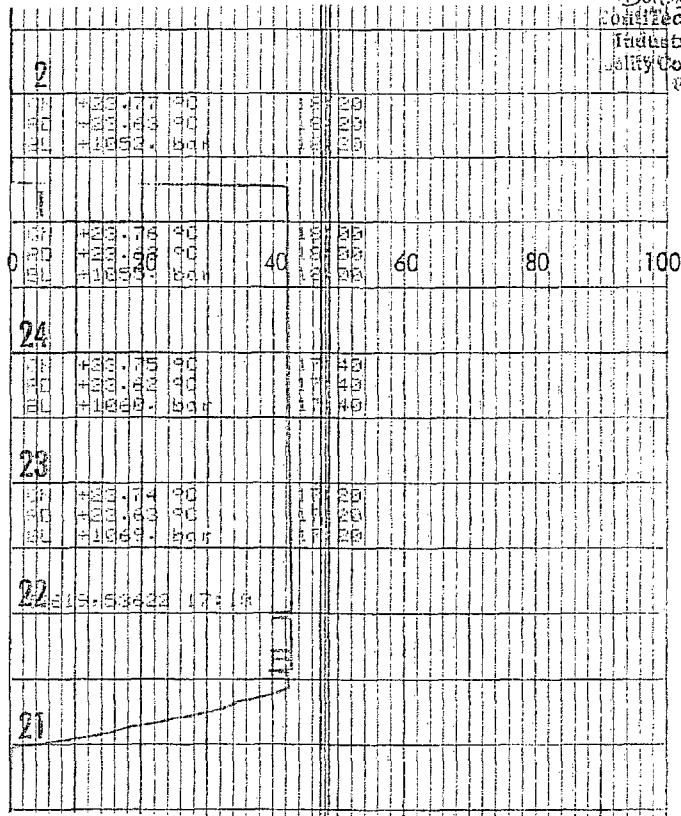
Best regards,

Robin Hodgson
Sales Manager
ContiTech Beattie Corp

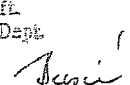
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11535 Brittmoore Park Drive,
Houston, TX 77041
Phone: +1 (832) 327-0141
Fax: +1 (832) 327-0148
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HARTMANN &

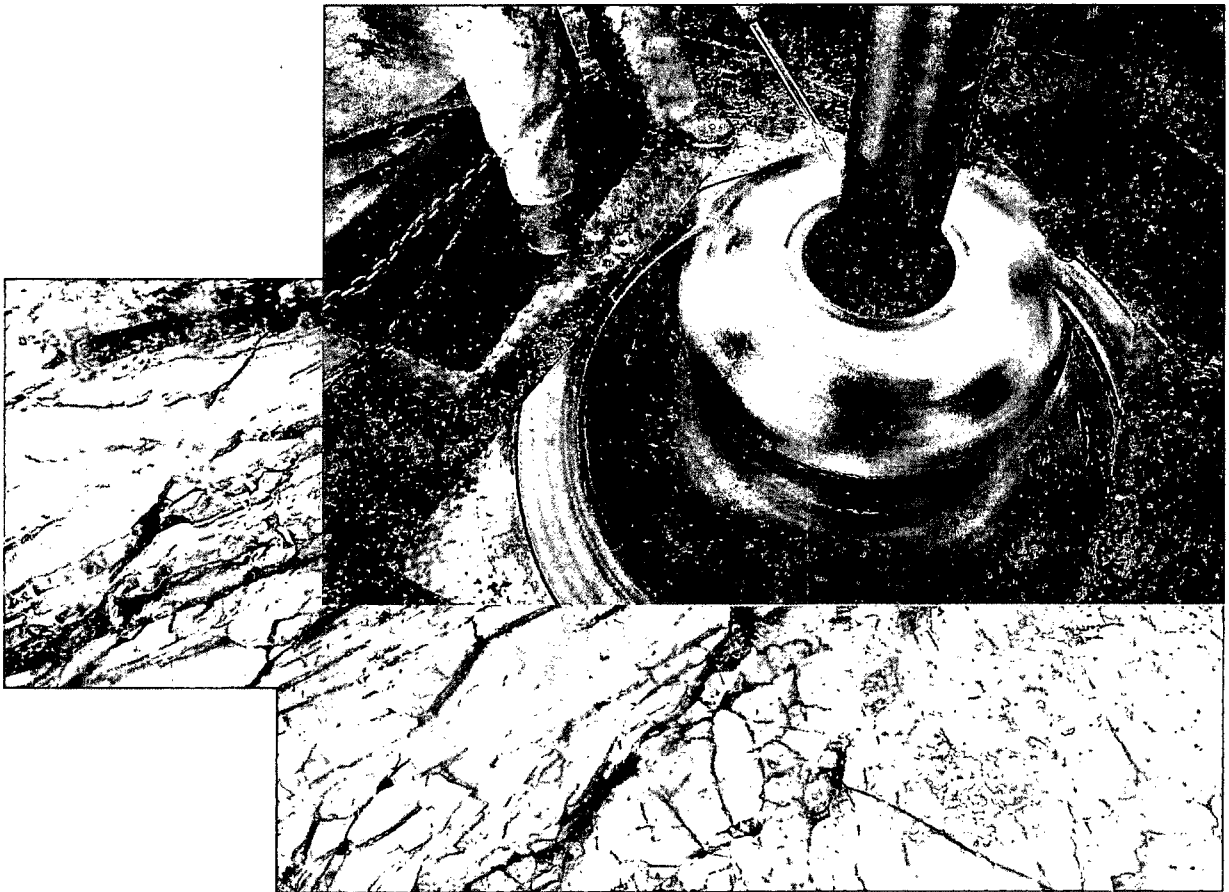


SAC 33
ContiTech Rubber
Industrial Kft.
Quality Control Dept.
(2)

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.  	



Commitment Runs Deep



Design Plan
Operation and Maintenance Plan
Closure Plan

SENM - Closed Loop Systems
September 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.

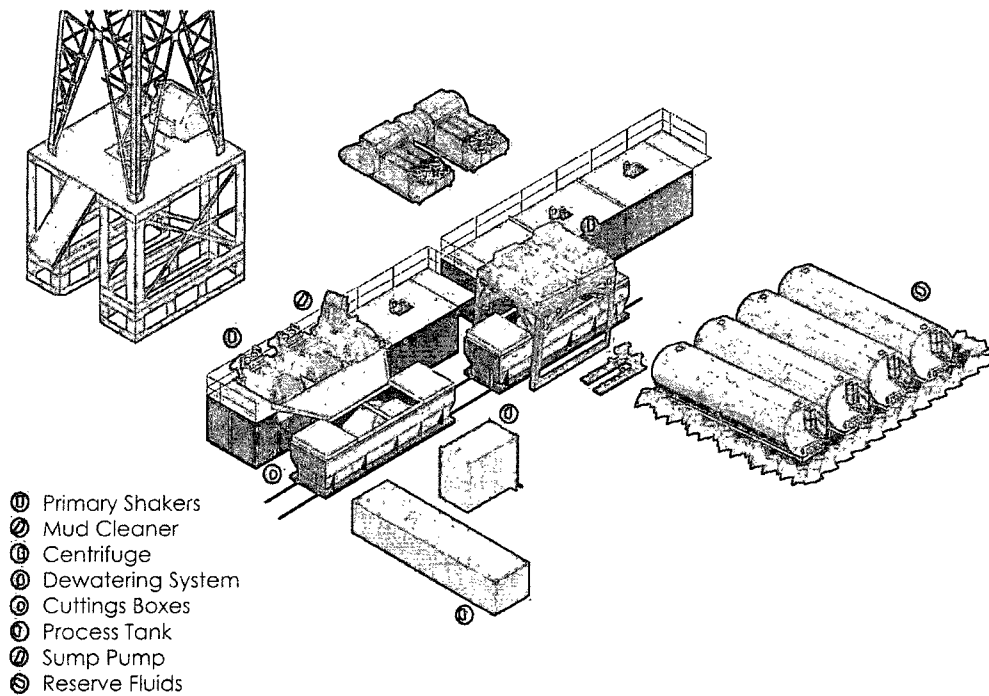
II. Operations and Maintenance Plan

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.



Closed Loop Schematic



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

2 Well Pad

