HOBBS OCD

OCD Hobbs OCT 0 1 2015

ATS-15-408

Form 3160-3
(March 2012)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No. NMNM115000	
6. If Indian, Allotee or Tribe Name	
7. If Unit or CA Agreement, Name and No.	
8. Lease Name and Well No. BIG JAY 4 FED 2H (315295)	
9. API Well No. 30-025-42873	
10. Field and Pool, or Exploratory TRABALINA; DELAWARE, SW (97597)	
11. Sec., T. R. M. or Blk. and Survey or Area 4-26S-35E	
12. County or Parish Lea County	13. State NM

1a. Type of work: ☑ DRILL ☐ REENTER

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

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

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 200 FSL & 2030 FWL Unit N

At proposed prod. zone 330 FNL & 1980 FWL Unit C

PP: 200 FSL & 2330 FWL

UNORTHODOX LOCATION

14. Distance in miles and direction from nearest town or post office*
Approximately 11 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) 200'	16. No. of acres in lease 600 acres	17. Spacing Unit dedicated to this well 160 acres
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. See attached map	19. Proposed Depth TVD: 8,744' MD: 13,259'	20. BLM/BIA Bond No. on file CO-1104 & NMB-000801
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3,198.7' GL	22. Approximate date work will start* 10/15/2015	23. Estimated duration 45 days

24. Attachments To Be Pad Drilled w/ Big Jay 4 Fed 1H

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 2/12/2015
Title Regulatory Specialist		
Approved by *(Signature)* **Steve Caffey**	Name *(Printed/Typed)*	Date SEP 28 2015
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

KA 10/06/15

Approval Subject to General Requirements & Special Stipulations Attached

SEE ATTACHED FOR CONDITIONS OF APPROVAL

Devon Energy, Big Jay 4 Fed 2H

1. Geologic Formations

TVD of target	8,744'	Pilot hole depth	N/A
MD at TD:	13,259'	Deepest expected fresh water:	300'

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Rustler	1,100	Barren	
Top of Salt	1,490	Barren	
Base of Salt/Lamar	5,300	Barren	
Bell Canyon	5,500	Oil	
Cherry Canyon	6,477	Oil	
Brushy Canyon	7,750	Oil	
Bone Spring	9,255	Oil	

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

2. Casing Program

See COA

Hole Size	Casing Interval From	To	Csg. Size	Weight (lbs)	Grade	Conn	SF Collapse	SF Burst	SF Tension
17.5"	0	~~1,050~~ 1120	13.375"	48	H-40	STC	1.60	3.60	6.39
12.25"	0	5,200'	9.625"	40	HCK-55	BTC	1.56	1.46	4.45
8.75"	0	8,175'	7"	29	P-110	BTC	2.18	2.87	3.33
8.75"	8,175'	13,259'	5.5"	17	P-110	BTC	1.78	2.54	6.57
				BLM Minimum Safety Factor			1.125	1.00	1.6 Dry 1.8 Wet

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

Must have table for contingency casing

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

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	H_2O gal/sk	Yld ft3/ sack	500# Comp. Strength (hours)	Slurry Description
13-3/8" Surface	450	13.5	9.07	1.72	12	Lead: Class C Cement + 4% Bentonite Gel + 0.125 lbs/sack Poly-E-Flake
	550	14.8	6.32	1.33	6	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
9-5/8" Inter.	1130	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 5-1/2" Prod	210	10.4	16.9	3.17	16	Lead: Tuned Light ® + 0.125 lb/sk Pol-E-Flake
	1350	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

See COA

Casing String	TOC	% Excess
13-3/8" Surface	0'	100%
9-5/8" Intermediate	0'	75%
7 x 5-1/2" Production Casing	4700'	25%

4. Pressure Control Equipment

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

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
12-1/4"	13-5/8"	3M	Annular	x	50% of working pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	x	
			Other*		
8-3/4"	13-5/8"	3M	Annular	x	50% testing pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	x	
			Other *		
			Annular	x	
			Blind Ram		
			Pipe Ram		
			Double Ram	x	
			Other *		

*Specify if additional ram is utilized.

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

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

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

See COA

Y	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.	
	Y	Are anchors required by manufacturer?
Y	A multibowl wellhead is being used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested. Devon proposes using a multi-bowl wellhead assembly (FMC Uni-head). This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 3000 (3M) psi. • Wellhead will be installed by FMC's representatives. • If the welding is performed by a third party, the FMC's representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal. • FMC representative will install the test plug for the initial BOP test. • FMC will install a solid steel body pack-off to completely isolate the lower head after cementing intermediate casing. After installation of the pack-off, the pack-off and the lower flange will be tested to 3M, as shown on the attached schematic. Everything above the pack-off will not have been altered whatsoever from the initial nipple up. Therefore the BOP components will not be retested at that time. • If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head will be cut and top out operations will be conducted. • Devon will pressure test all seals above and below the mandrel (but still above the casing) to full working pressure rating. • Devon will test the casing to 0.22 psi/ft or 1500 psi, whichever is greater, as per Onshore Order #2. After running the 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 3M will be installed on the FMC Uni-head wellhead system and will undergo a 250 psi low pressure test followed by a 3,000 psi high pressure test. The 3,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days, as per Onshore Order #2. If the well is not complete within 30 days of this BOP test, another full BOP test will be conducted, as per Onshore Order #2. After running the 9-5/8' intermediate casing with a mandrel hanger, the 13-5/8" BOP/BOPE system with a minimum rating of 3M will already be installed on the FMC Uni-head. The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 3,000 psi WP.	

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 See attached schematic.

5. Mud Program

See COA

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	~~1,050'~~ 1120'	FW Gel	8.6-8.8	28-34	N/C
~~1,050'~~	5,200'	Saturated Brine	10.0-10.2	28-34	N/C
5,200'	13,259'	Cut Brine	8.5-9.3	28-34	N/C

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

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring

6. Logging and Testing Procedures

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

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

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	2296 psi
Abnormal Temperature	No

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

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

8. Other facets of operation

Is this a walking operation? No.
Will be pre-setting casing? No.

Attachments
_x_ Directional Plan
___ Other, describe

DEVON ENERGY

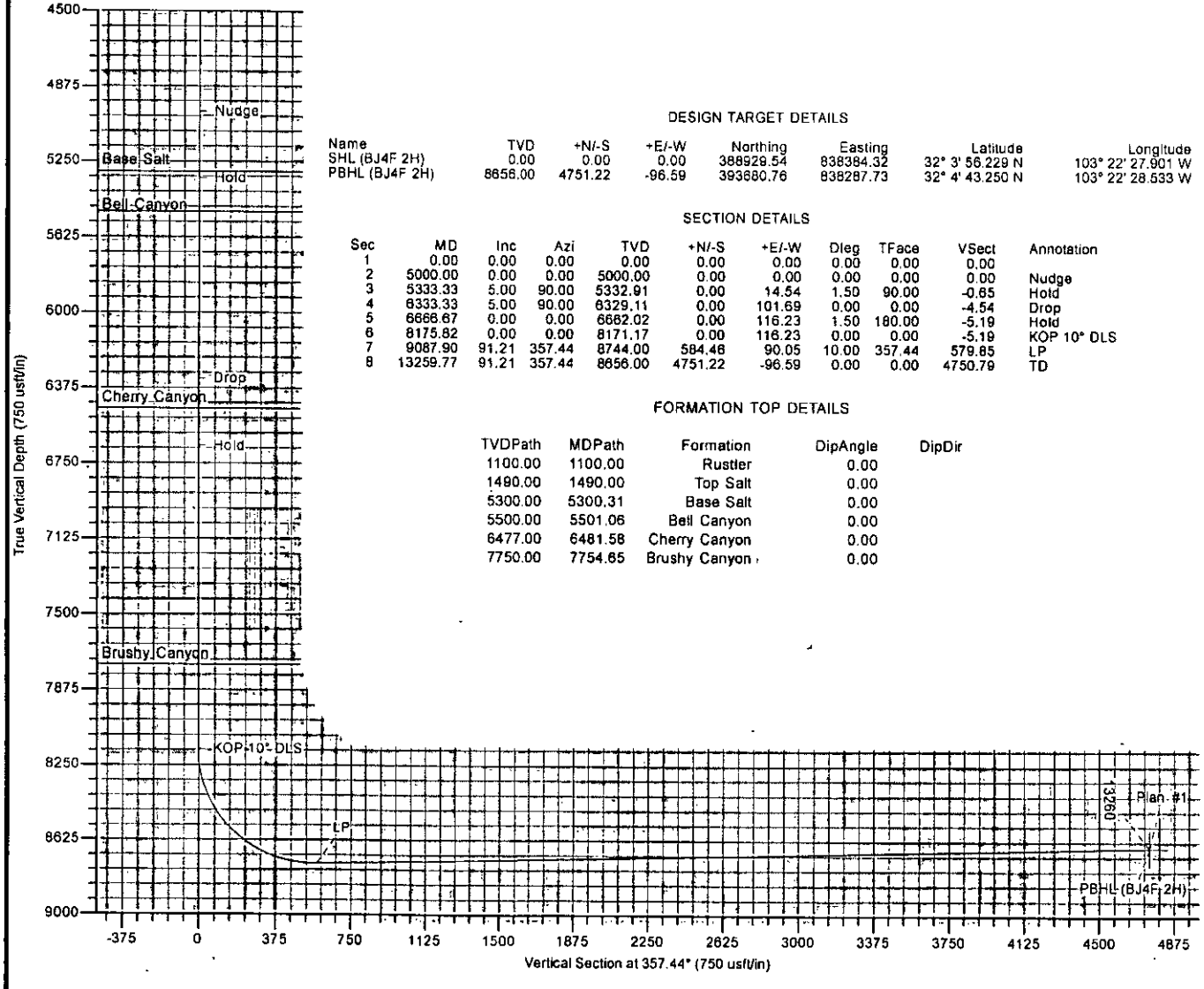
Project: Lea County, NM (NAD-83)
Site: Big Jay 4 Fed
Well: 2H
Wellbore: OH
Design: Plan #1

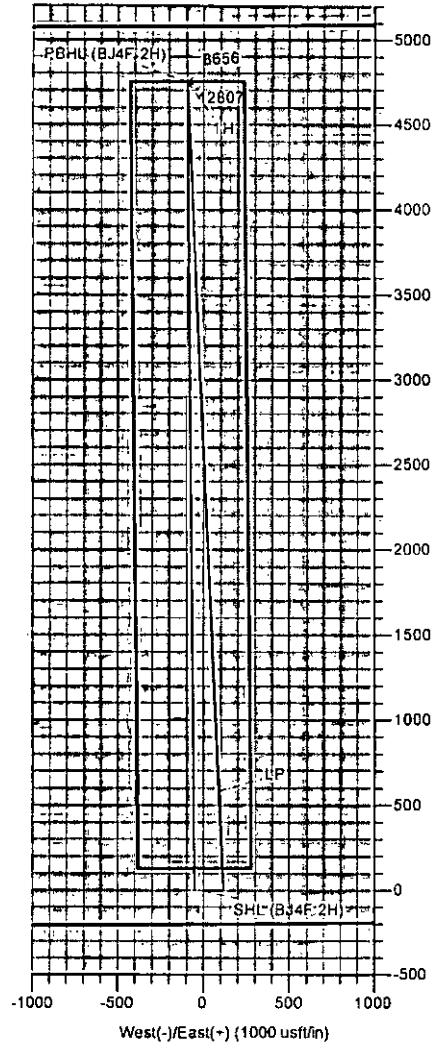
Azimuths to Grid North
True North: -0.51°
Magnetic North: 6.70°

Magnetic Field
Strength: 48140.2snT
Dip Angle: 59.98°
Date: 1/14/2015
Model: BGGM2014

PROJECT DETAILS: Lea County, NM (NAD-83)
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone

devon





DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
SHL (BJ4F 2H)	0.00	0.00	0.00	388928.54	838384.32	32° 3' 56.229 N	103° 22' 27.901 W
PBHL (BJ4F 2H)	8656.00	4751.22	-96.59	393680.76	838287.73	32° 4' 43.250 N	103° 22' 28.533 W

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	5000.00	0.00	0.00	5000.00	0.00	0.00	0.00	0.00	0.00	Nudge
3	5333.33	5.00	90.00	5332.91	0.00	14.54	1.50	90.00	-0.65	Hold
4	6333.33	5.00	90.00	6329.11	0.00	101.69	0.00	0.00	-4.54	Drop
5	6666.67	0.00	0.00	6662.02	0.00	116.23	1.50	180.00	-5.19	Hold
6	8175.82	0.00	0.00	8171.17	0.00	116.23	0.00	0.00	-5.19	KOP 10° DLS
7	9087.90	91.21	357.44	8744.00	584.48	90.05	10.00	357.44	579.85	LP
8	13259.77	91.21	357.44	8656.00	4751.22	-96.59	0.00	0.00	4750.79	TD

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
1100.00	1100.00	Rustler	0.00	
1490.00	1490.00	Top Salt	0.00	
5300.00	5300.31	Base Salt	0.00	
5500.00	5501.06	Bell Canyon	0.00	
6477.00	6481.58	Cherry Canyon	0.00	
7750.00	7754.65	Brushy Canyon	0.00	

LEAM Drilling Systems, Inc.

LEAM DRILLING SYSTEMS LLC
2010 East Davis, Conroe, Texas 77301
Phone: 936/756-7577, Fax 936/756-7595

Plan: Plan #1 (2H/OH)
Big Jay 4 Fed
Created By: Brady Deaver Date: 13:49, January 14 2015
Date:
Approved: Date:

LEAM
Drilling Systems, Inc.

DEVON ENERGY

Lea County, NM (NAD-83)
Big Jay 4 Fed
2H

OH

Plan: Plan #1

Standard Planning Report

14 January, 2015

devon

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 2H
Company:	DEVON ENERGY	TVD Reference:	3198.7' GL + 25' RKB @ 3223.70usft
Project:	Lea County, NM (NAD-83)	MD Reference:	3198.7' GL + 25' RKB @ 3223.70usft
Site:	Big Jay 4 Fed	North Reference:	Grid
Well:	2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Project Lea County, NM (NAD-83)

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site Big Jay 4 Fed

Site Position:		**Northing:**	388,929.11 usft	**Latitude:**	32° 3' 56.229 N
From:	Map	**Easting:**	838,334.27 usft	**Longitude:**	103° 22' 28.483 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.51 °

Well 2H

Well Position	**+N/-S**	0.43 usft	**Northing:**	388,929.54 usft	**Latitude:**	32° 3' 56.229 N
	+E/-W	50.05 usft	**Easting:**	838,384.32 usft	**Longitude:**	103° 22' 27.901 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	3,223.70 usft	**Ground Level:**	3,198.70 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	1/14/2015	7.21	59.98	48,140

Design Plan #1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	357.44

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,333.33	5.00	90.00	5,332.91	0.00	14.54	1.50	1.50	0.00	90.00	
6,333.33	5.00	90.00	6,329.11	0.00	101.69	0.00	0.00	0.00	0.00	
6,666.67	0.00	0.00	6,662.02	0.00	116.23	1.50	-1.50	0.00	180.00	
8,175.82	0.00	0.00	8,171.17	0.00	116.23	0.00	0.00	0.00	0.00	
9,087.90	91.21	357.44	8,744.00	584.46	90.05	10.00	10.00	-0.28	357.44	
13,259.77	91.21	357.44	8,656.00	4,751.22	-96.59	0.00	0.00	0.00	0.00	PBHL (BJ4F 2H)

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well 2H
Company:	DEVON ENERGY	**TVD Reference:**	3198.7' GL + 25' RKB @ 3223.70usft
Project:	Lea County, NM (NAD-83)	**MD Reference:**	3198.7' GL + 25' RKB @ 3223.70usft
Site:	Big Jay 4 Fed	**North Reference:**	Grid
Well:	2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SHL (BJ4F 2H)									
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,490.00	0.00	0.00	1,490.00	0.00	0.00	0.00	0.00	0.00	0.00
Top Salt									
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well 2H
Company:	DEVON ENERGY	**TVD Reference:**	3198.7' GL + 25' RKB @ 3223.70usft
Project:	Lea County, NM (NAD-83)	**MD Reference:**	3198.7' GL + 25' RKB @ 3223.70usft
Site:	Big Jay 4 Fed	**North Reference:**	Grid
Well:	2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
Nudge									
5,100.00	1.50	90.00	5,099.99	0.00	1.31	-0.06	1.50	1.50	0.00
5,200.00	3.00	90.00	5,199.91	0.00	5.23	-0.23	1.50	1.50	0.00
5,300.00	4.50	90.00	5,299.69	0.00	11.77	-0.53	1.50	1.50	0.00
5,300.31	4.50	90.00	5,300.00	0.00	11.80	-0.53	1.50	1.50	0.00
Base Salt									
5,333.33	5.00	90.00	5,332.91	0.00	14.54	-0.65	1.50	1.50	0.00
Hold									
5,400.00	5.00	90.00	5,399.32	0.00	20.35	-0.91	0.00	0.00	0.00
5,500.00	5.00	90.00	5,498.94	0.00	29.06	-1.30	0.00	0.00	0.00
5,501.06	5.00	90.00	5,500.00	0.00	29.15	-1.30	0.00	0.00	0.00
Bell Canyon									
5,600.00	5.00	90.00	5,598.56	0.00	37.78	-1.69	0.00	0.00	0.00
5,700.00	5.00	90.00	5,698.18	0.00	46.49	-2.08	0.00	0.00	0.00
5,800.00	5.00	90.00	5,797.80	0.00	55.21	-2.47	0.00	0.00	0.00
5,900.00	5.00	90.00	5,897.42	0.00	63.92	-2.86	0.00	0.00	0.00
6,000.00	5.00	90.00	5,997.04	0.00	72.64	-3.24	0.00	0.00	0.00
6,100.00	5.00	90.00	6,096.66	0.00	81.35	-3.63	0.00	0.00	0.00
6,200.00	5.00	90.00	6,196.28	0.00	90.07	-4.02	0.00	0.00	0.00
6,300.00	5.00	90.00	6,295.90	0.00	98.79	-4.41	0.00	0.00	0.00
6,333.33	5.00	90.00	6,329.11	0.00	101.69	-4.54	0.00	0.00	0.00
Drop									
6,400.00	4.00	90.00	6,395.57	0.00	106.92	-4.78	1.50	-1.50	0.00
6,481.58	2.78	90.00	6,477.00	0.00	111.74	-4.99	1.50	-1.50	0.00
Cherry Canyon									
6,500.00	2.50	90.00	6,495.40	0.00	112.59	-5.03	1.50	-1.50	0.00
6,600.00	1.00	90.00	6,595.35	0.00	115.64	-5.17	1.50	-1.50	0.00
6,666.67	0.00	0.00	6,662.02	0.00	116.23	-5.19	1.50	-1.50	0.00
Hold									
6,700.00	0.00	0.00	6,695.35	0.00	116.23	-5.19	0.00	0.00	0.00
6,800.00	0.00	0.00	6,795.35	0.00	116.23	-5.19	0.00	0.00	0.00
6,900.00	0.00	0.00	6,895.35	0.00	116.23	-5.19	0.00	0.00	0.00
7,000.00	0.00	0.00	6,995.35	0.00	116.23	-5.19	0.00	0.00	0.00
7,100.00	0.00	0.00	7,095.35	0.00	116.23	-5.19	0.00	0.00	0.00
7,200.00	0.00	0.00	7,195.35	0.00	116.23	-5.19	0.00	0.00	0.00
7,300.00	0.00	0.00	7,295.35	0.00	116.23	-5.19	0.00	0.00	0.00
7,400.00	0.00	0.00	7,395.35	0.00	116.23	-5.19	0.00	0.00	0.00
7,500.00	0.00	0.00	7,495.35	0.00	116.23	-5.19	0.00	0.00	0.00
7,600.00	0.00	0.00	7,595.35	0.00	116.23	-5.19	0.00	0.00	0.00
7,700.00	0.00	0.00	7,695.35	0.00	116.23	-5.19	0.00	0.00	0.00
7,754.65	0.00	0.00	7,750.00	0.00	116.23	-5.19	0.00	0.00	0.00
Brushy Canyon									
7,800.00	0.00	0.00	7,795.35	0.00	116.23	-5.19	0.00	0.00	0.00
7,900.00	0.00	0.00	7,895.35	0.00	116.23	-5.19	0.00	0.00	0.00
8,000.00	0.00	0.00	7,995.35	0.00	116.23	-5.19	0.00	0.00	0.00
8,100.00	0.00	0.00	8,095.35	0.00	116.23	-5.19	0.00	0.00	0.00
8,175.82	0.00	0.00	8,171.17	0.00	116.23	-5.19	0.00	0.00	0.00
KOP 10° DLS									
8,200.00	2.42	357.44	8,195.34	0.51	116.20	-4.68	10.00	10.00	0.00
8,250.00	7.42	357.44	8,245.14	4.79	116.01	-0.40	10.00	10.00	0.00
8,300.00	12.42	357.44	8,294.38	13.39	115.63	8.21	10.00	10.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 2H
Company:	DEVON ENERGY	TVD Reference:	3198.7' GL + 25' RKB @ 3223.70usft
Project:	Lea County, NM (NAD-83)	MD Reference:	3198.7' GL + 25' RKB @ 3223.70usft
Site:	Big Jay 4 Fed	North Reference:	Grid
Well:	2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,350.00	17.42	357.44	8,342.68	26.25	115.05	21.08	10.00	10.00	0.00
8,400.00	22.42	357.44	8,389.67	43.26	114.29	38.11	10.00	10.00	0.00
8,450.00	27.42	357.44	8,435.00	64.30	113.35	59.17	10.00	10.00	0.00
8,500.00	32.42	357.44	8,478.33	89.20	112.23	84.10	10.00	10.00	0.00
8,550.00	37.42	357.44	8,519.31	117.79	110.95	112.71	10.00	10.00	0.00
8,600.00	42.42	357.44	8,557.65	149.83	109.52	144.79	10.00	10.00	0.00
8,650.00	47.42	357.44	8,593.04	185.09	107.94	180.08	10.00	10.00	0.00
8,700.00	52.42	357.44	8,625.23	223.29	106.22	218.32	10.00	10.00	0.00
8,750.00	57.42	357.44	8,653.95	264.15	104.39	259.23	10.00	10.00	0.00
8,800.00	62.42	357.44	8,679.01	307.36	102.46	302.48	10.00	10.00	0.00
8,850.00	67.42	357.44	8,700.20	352.59	100.43	347.75	10.00	10.00	0.00
8,900.00	72.42	357.44	8,717.36	399.49	98.33	394.70	10.00	10.00	0.00
8,950.00	77.42	357.44	8,730.36	447.70	96.17	442.96	10.00	10.00	0.00
9,000.00	82.42	357.44	8,739.11	496.86	93.97	492.17	10.00	10.00	0.00
9,050.00	87.42	357.44	8,743.54	546.60	91.74	541.96	10.00	10.00	0.00
9,087.90	91.21	357.44	8,744.00	584.46	90.05	579.85	10.00	10.00	0.00
LP									
9,100.00	91.21	357.44	8,743.74	596.54	89.51	591.95	0.00	0.00	0.00
9,200.00	91.21	357.44	8,741.63	696.42	85.03	691.92	0.00	0.00	0.00
9,300.00	91.21	357.44	8,739.52	796.29	80.56	791.90	0.00	0.00	0.00
9,400.00	91.21	357.44	8,737.41	896.17	76.08	891.88	0.00	0.00	0.00
9,500.00	91.21	357.44	8,735.30	996.05	71.61	991.86	0.00	0.00	0.00
9,600.00	91.21	357.44	8,733.19	1,095.93	67.14	1,091.84	0.00	0.00	0.00
9,700.00	91.21	357.44	8,731.09	1,195.81	62.66	1,191.81	0.00	0.00	0.00
9,800.00	91.21	357.44	8,728.98	1,295.68	58.19	1,291.79	0.00	0.00	0.00
9,900.00	91.21	357.44	8,726.87	1,395.56	53.72	1,391.77	0.00	0.00	0.00
10,000.00	91.21	357.44	8,724.76	1,495.44	49.24	1,491.75	0.00	0.00	0.00
10,100.00	91.21	357.44	8,722.65	1,595.32	44.77	1,591.72	0.00	0.00	0.00
10,200.00	91.21	357.44	8,720.54	1,695.19	40.30	1,691.70	0.00	0.00	0.00
10,300.00	91.21	357.44	8,718.43	1,795.07	35.82	1,791.68	0.00	0.00	0.00
10,400.00	91.21	357.44	8,716.32	1,894.95	31.35	1,891.66	0.00	0.00	0.00
10,500.00	91.21	357.44	8,714.21	1,994.83	26.87	1,991.63	0.00	0.00	0.00
10,600.00	91.21	357.44	8,712.10	2,094.70	22.40	2,091.61	0.00	0.00	0.00
10,700.00	91.21	357.44	8,709.99	2,194.58	17.93	2,191.59	0.00	0.00	0.00
10,800.00	91.21	357.44	8,707.88	2,294.46	13.45	2,291.57	0.00	0.00	0.00
10,900.00	91.21	357.44	8,705.77	2,394.34	8.98	2,391.55	0.00	0.00	0.00
11,000.00	91.21	357.44	8,703.66	2,494.21	4.51	2,491.52	0.00	0.00	0.00
11,100.00	91.21	357.44	8,701.56	2,594.09	0.03	2,591.50	0.00	0.00	0.00
11,200.00	91.21	357.44	8,699.45	2,693.97	-4.44	2,691.48	0.00	0.00	0.00
11,300.00	91.21	357.44	8,697.34	2,793.85	-8.92	2,791.46	0.00	0.00	0.00
11,400.00	91.21	357.44	8,695.23	2,893.72	-13.39	2,891.43	0.00	0.00	0.00
11,500.00	91.21	357.44	8,693.12	2,993.60	-17.86	2,991.41	0.00	0.00	0.00
11,600.00	91.21	357.44	8,691.01	3,093.48	-22.34	3,091.39	0.00	0.00	0.00
11,700.00	91.21	357.44	8,688.90	3,193.36	-26.81	3,191.37	0.00	0.00	0.00
11,800.00	91.21	357.44	8,686.79	3,293.23	-31.28	3,291.35	0.00	0.00	0.00
11,900.00	91.21	357.44	8,684.68	3,393.11	-35.76	3,391.32	0.00	0.00	0.00
12,000.00	91.21	357.44	8,682.57	3,492.99	-40.23	3,491.30	0.00	0.00	0.00
12,100.00	91.21	357.44	8,680.46	3,592.87	-44.71	3,591.28	0.00	0.00	0.00
12,200.00	91.21	357.44	8,678.35	3,692.75	-49.18	3,691.26	0.00	0.00	0.00
12,300.00	91.21	357.44	8,676.24	3,792.62	-53.65	3,791.23	0.00	0.00	0.00
12,400.00	91.21	357.44	8,674.14	3,892.50	-58.13	3,891.21	0.00	0.00	0.00
12,500.00	91.21	357.44	8,672.03	3,992.38	-62.60	3,991.19	0.00	0.00	0.00
12,600.00	91.21	357.44	8,669.92	4,092.26	-67.07	4,091.17	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well 2H
Company:	DEVON ENERGY	TVD Reference:	3198.7' GL + 25' RKB @ 3223.70usft
Project:	Lea County, NM (NAD-83)	MD Reference:	3198.7' GL + 25' RKB @ 3223.70usft
Site:	Big Jay 4 Fed	North Reference:	Grid
Well:	2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,700.00	91.21	357.44	8,667.81	4,192.13	-71.55	4,191.15	0.00	0.00	0.00
12,800.00	91.21	357.44	8,665.70	4,292.01	-76.02	4,291.12	0.00	0.00	0.00
12,900.00	91.21	357.44	8,663.59	4,391.89	-80.49	4,391.10	0.00	0.00	0.00
13,000.00	91.21	357.44	8,661.48	4,491.77	-84.97	4,491.08	0.00	0.00	0.00
13,100.00	91.21	357.44	8,659.37	4,591.64	-89.44	4,591.06	0.00	0.00	0.00
13,200.00	91.21	357.44	8,657.26	4,691.52	-93.92	4,691.03	0.00	0.00	0.00
13,259.77	91.21	357.44	8,656.00	4,751.22	-96.59	4,750.79	0.00	0.00	0.00
TD - PBHL (BJ4F 2H)									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
SHL (BJ4F 2H) - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	388,929.54	838,384.32	32° 3' 56.229 N	103° 22' 27.901 W
PBHL (BJ4F 2H) - plan hits target center - Point	0.00	0.00	8,656.00	4,751.22	-96.59	393,680.76	838,287.73	32° 4' 43.250 N	103° 22' 28.533 W

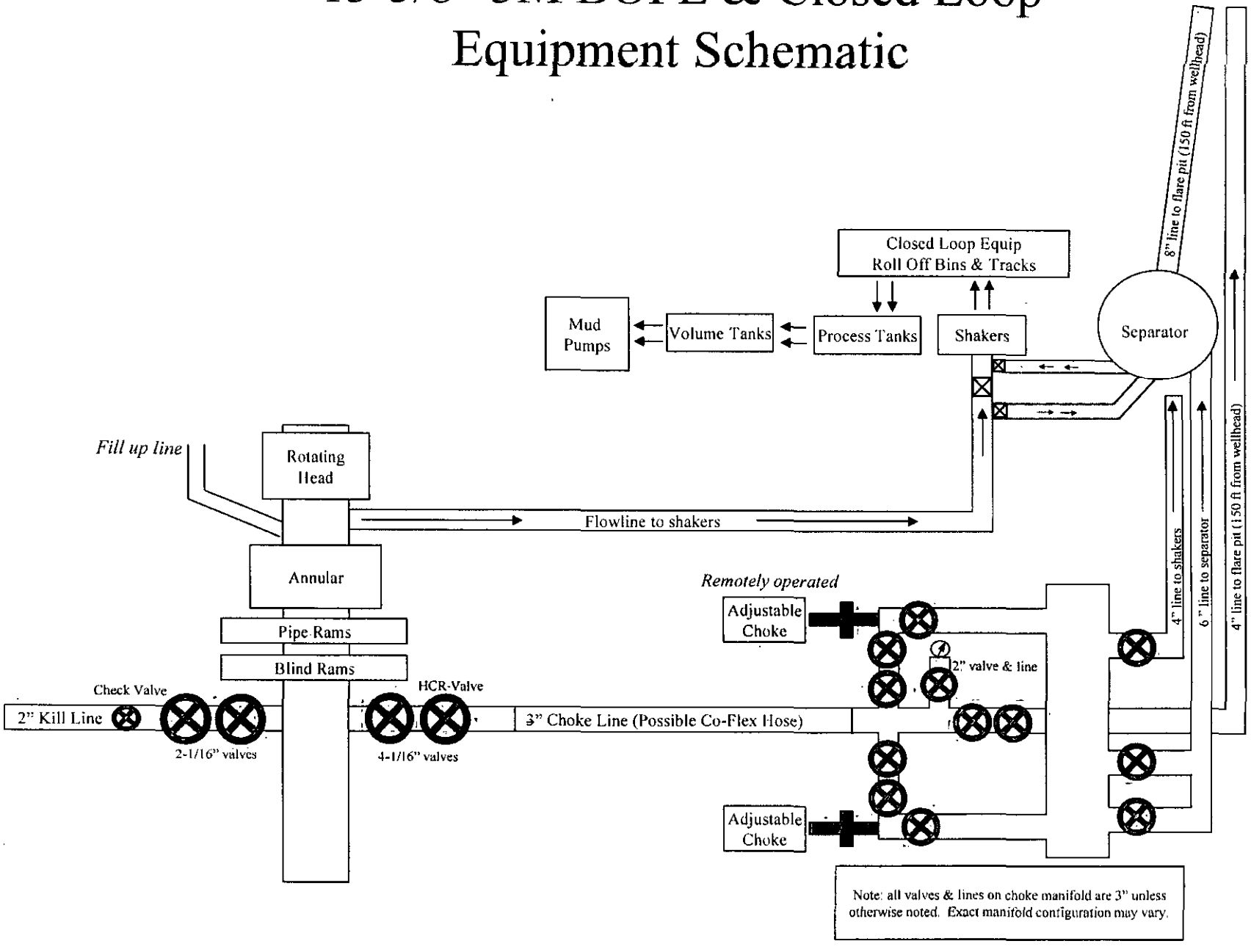
Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,100.00	1,100.00	Rustler		0.00	
1,490.00	1,490.00	Top Salt		0.00	
5,300.31	5,300.00	Base Salt		0.00	
5,501.06	5,500.00	Bell Canyon		0.00	
6,481.58	6,477.00	Cherry Canyon		0.00	
7,754.65	7,750.00	Brushy Canyon		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
5,000.00	5,000.00	0.00	0.00	Nudge
5,333.33	5,332.91	0.00	14.54	Hold
6,333.33	6,329.11	0.00	101.69	Drop
6,666.67	6,662.02	0.00	116.23	Hold
8,175.82	8,171.17	0.00	116.23	KOP 10° DLS
9,087.90	8,744.00	584.46	90.05	LP
13,259.77	8,656.00	4,751.22	-96.59	TD

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



Continental CONTITECH

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 Brittmoore Park Drive,
Houston, TX 77041
Phone: +1 (832) 327-0141
Fax: +1 (832) 327-0148
www.contitechbeattie.com

RIG 212

PHOENIX

QUALITY DOCUMENT

PHOENIX RUBBER INDUSTRIAL LTD.
6728 Szeged, Budapesti út 10. Hungary • H-6701 Szeged, P. O. Box 152
Phone: (3662) 566-737 • Fax: (3662) 566-738
SALES & MARKETING: H-1092 Budapest, Ráday u. 42-44. Hungary • H-1440 Budapest, P. O. Box 26
Phone: (361) 456-4200 · Fax: (361) 217-2972, 456-4273 · www.taurusemerge.hu

QUALITY CONTROL INSPECTION AND TEST CERTIFICATE				CERT. N°: 552
PURCHASER: Phoenix Beattie Co.				P.O. N°: 1519FA-871
PHOENIX RUBBER order N°: 170466		HOSE TYPE: 3" ID		Choke and Kill Hose
HOSE SERIAL N°: 34128		NOMINAL / ACTUAL LENGTH: 11,43 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	Heat N°
3" coupling with	720 719	AISI 4130	C7626
4 1/16" Flange end		AISI 4130	47357

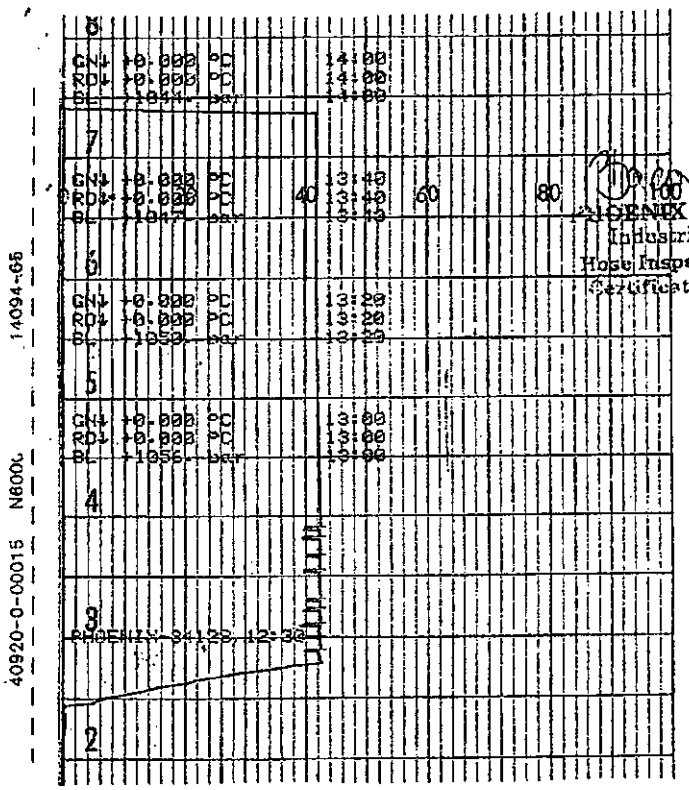
API Spec 16 C
Temperature rate:"B"

All metal parts are flawless

WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.

Date:	Inspector	Quality Control
29. April. 2002.		PHOENIX RUBBER Industrial Ltd. Hose Inspection and Testing Dept.

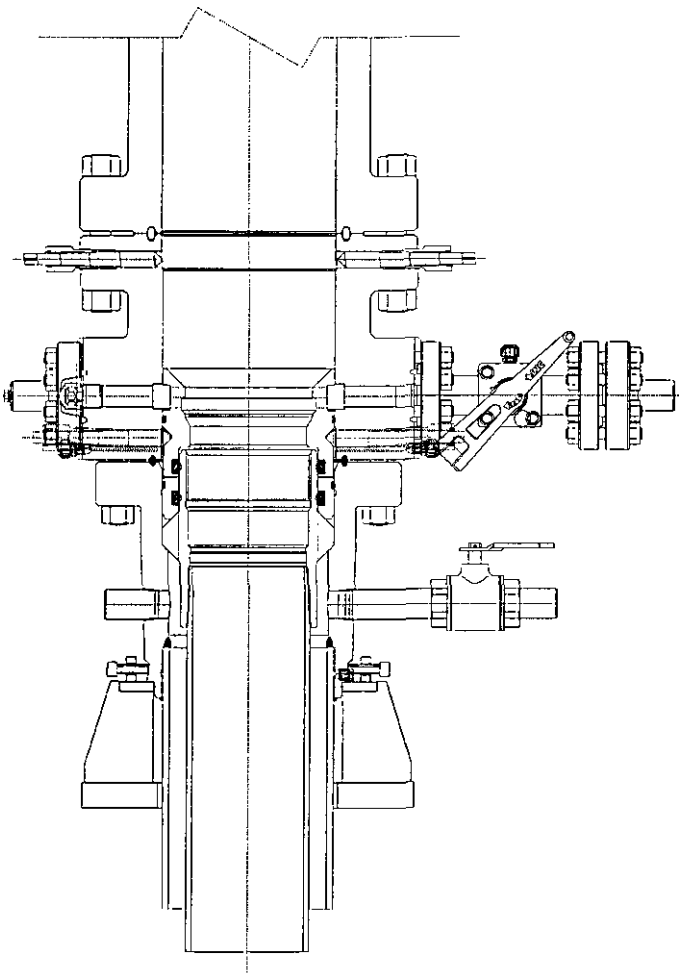
VERIFIED TRUE COPY
PHOENIX RUBBER Q.C.



PHOENIX RUBBER
Industrial Ltd.
Hose Inspection and
Certification Dept.

VERIFIED TRUE COPY
PHOENIX RUBBER C.C.

FMC Technologies



PRIMARY MODE

DEVON ENERGY

ARTESIA

S.E.N.M

13 3/8 X 9 5/8

QUOTE LAYOUT
F18648
REF: DM100161737
DM100151315

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

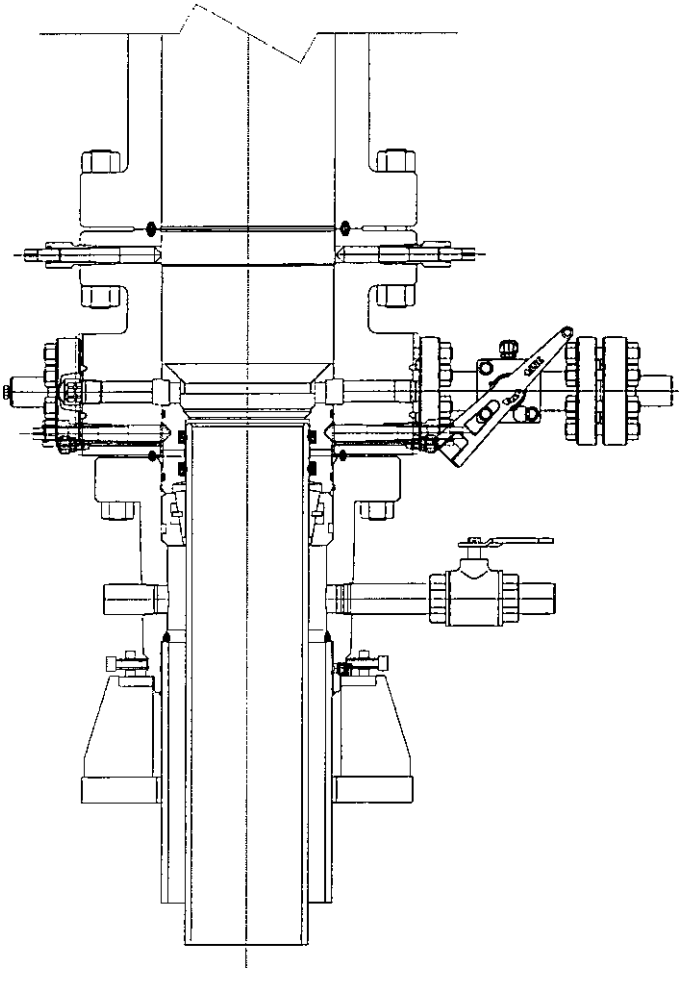
SURFACE WELLHEAD LAYOUT
UNIHEAD, UH-1, SOW,
DEVON ENERGY, ODESSA

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

FMC Technologies

DRAWING NUMBER
DM100161771-2A

FMC Technologies



CONTINGENCY MODE

DEVON ENERGY

ARTESIA

S.E.N.M

13 3/8 X 9 5/8

QUOTE LAYOUT
F18648
REF: DM100161737
DM100151315

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

DESCRIPTION

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

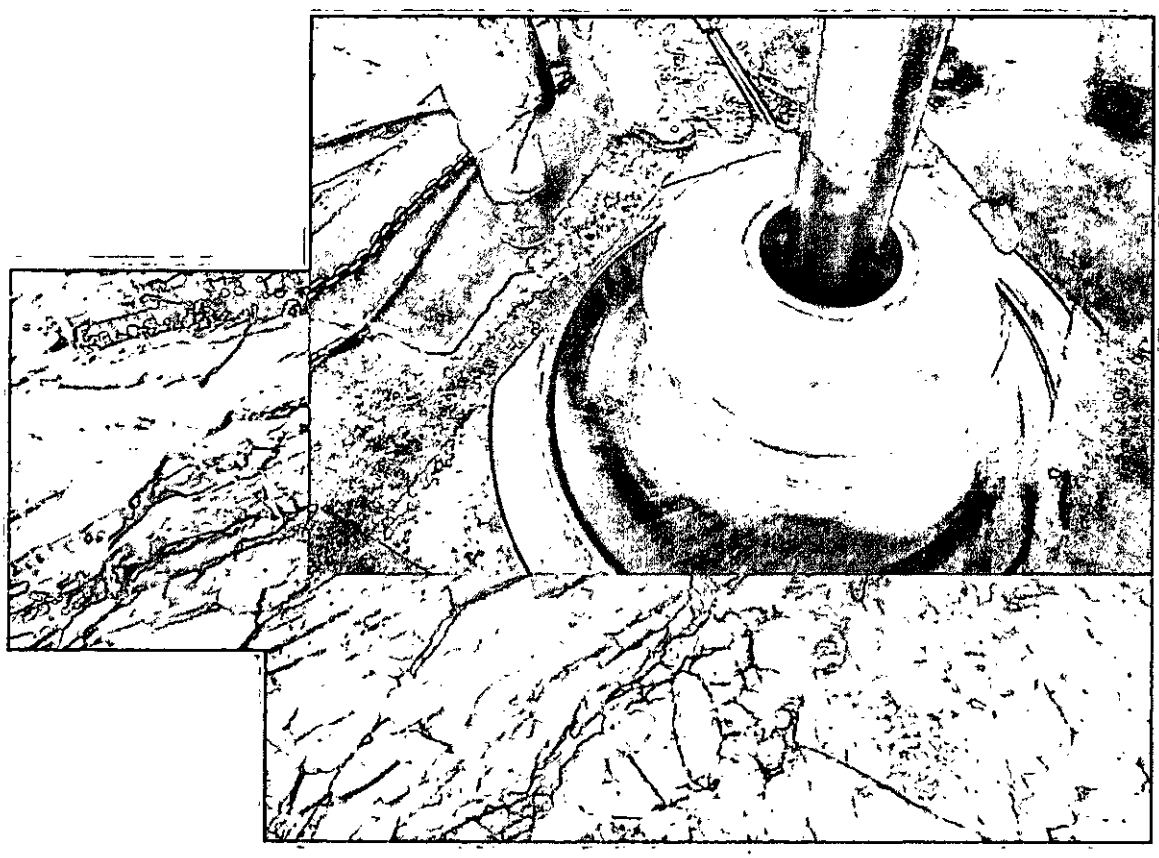
DRAWN BY	K. VU	05-08-13
DRAFTING REVIEW	Z. MARQUEZ	05-08-13
DESIGN REVIEW	K. TAHA	05-08-13
APPROVED BY	R. HAMILTON	05-08-13

FMC Technologies

DRAWING NUMBER
DM100161771-2B

devon

Commitment Runs Deep



Design Plan
Operation and Maintenance Plan
Closure Plan

SENM - Closed Loop Systems
June 2010

I. Design Plan

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

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

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

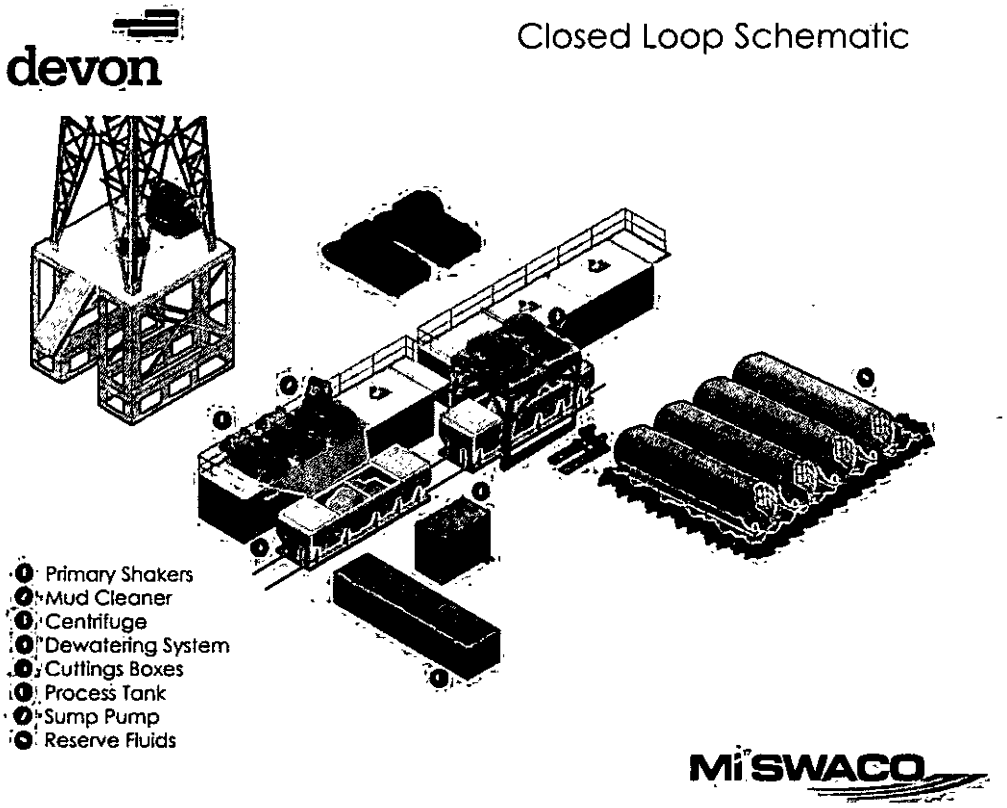
Prior to installing a closed-loop system on site, the topsoil, if present, will be stripped and stockpiled for use as the final cover or fill at the time of closure.

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

II. Operations and Maintenance Plan

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

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



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

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

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

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

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

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

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

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

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

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

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

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

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

III. Closure Plan

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

H&P Flex Rig Location Layout
2 Well Pad