

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Carlsbad Field Office
OCD Hobbs

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

5. Lease Serial No.
NMNM114988

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

SUBMIT IN TRIPLICATE - Other instructions on page 2 **HOBBS OCD**

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

FEB 06 2018

8. Well Name and No.
SEAWOLF 1-12 FED 83H

2. Name of Operator

DEVON ENERGY PRODUCTION COMPANY

Contact: REBECCA DEAL

Rebecca.Deal@devn.com

9. API Well No.
30-025-43764

3a. Address

333 WEST SHERIDAN AVENUE
OKLAHOMA CITY, OK 73102

3b. Phone No. (include area code)

Ph: 405-228-8429

10. Field and Pool or Exploratory Area
WC-025 G-09 S253336D;U WC

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 1 T26S R33E NENW 160FNL 2467FWL

11. County or Parish, State

LEA COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Change to Original A
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	PD

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomple horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recomple in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

Devon Energy respectfully requests an annular variance and the following changes to the original APD:

Target TVD from 12,610' to 12,515'
Production Hole Size Change from 8 3/4" to 6 3/4"
Production Casing Connect Change

**SEE ATTACHED FOR
CONDITIONS OF APPROVAL**

Please see attached revised Drilling Plan, Directional Plan, BOPE schematic, Production Hole Document and Annular Preventer Document.

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #392138 verified by the BLM Well Information System
For DEVON ENERGY PRODUCTION COMPAN, sent to the Hobbs
Committed to AFMSS for processing by PRISCILLA PEREZ on 11/08/2017 ()

Name (Printed/Typed) REBECCA DEAL

Title REGULATORY COMPLIANCE PROFESSI

Signature (Electronic Submission)

Date 10/17/2017

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By

Mustafa Hague

Title

PETROLEUM ENGINEER

Date 2/1/2018

Conditions of approval, if any, are attached. Approval of this notice 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.

Office

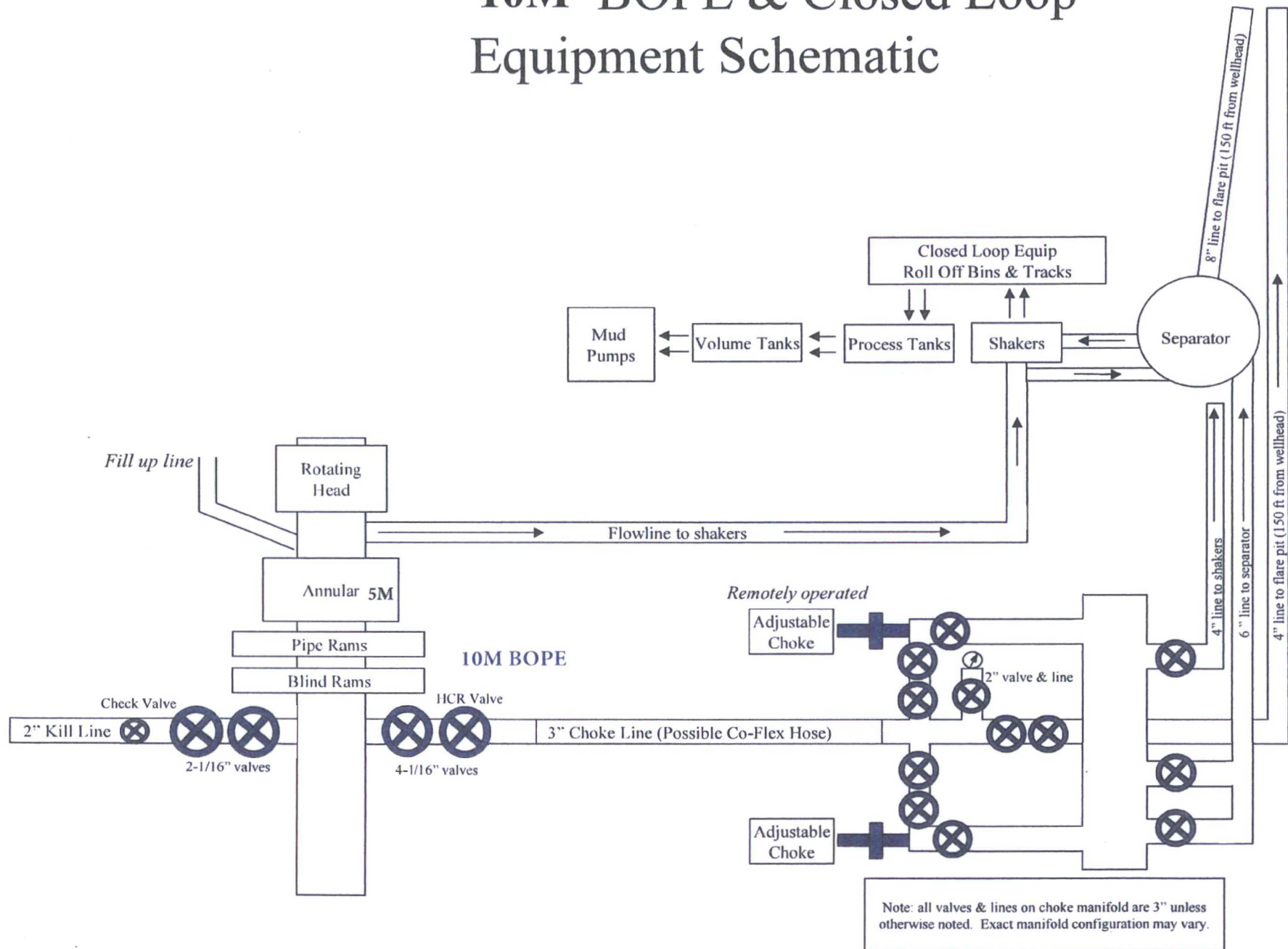
BUREAU OF LAND MANAGEMENT

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.

(Instructions on page 2)

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****

10M BOPE & Closed Loop Equipment Schematic



1. Geologic Formations

RECEIVED

TVD of target	12,515'	Pilot hole depth	N/A
MD at TD:	22,497'	Deepest expected fresh water:	746'

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Rustler	746		
Top of Salt	1094		
Base of Salt	4817		
Delaware	5059		
Lower Brushy Canyon	9112		
1st BSPG Lime	9292		
1st BSPG Sand	10230		
2nd BSPG Lime	10505		
2nd BSPG Sand	10778		
3rd BSPG Lime	11272		
3rd BSPG Sand	11856		
Wolfcamp	12342		
Wolfcamp X	12369		
Wolfcamp Y	12465		
Wolfcamp 100	12526		
Wolfcamp 110	12598		
Wolfcamp 120	12675		
Wolfcamp 130	12742		

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

Devon Energy, Seawolf 1-12 83H

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
6.75"	0	12,746'	5.5"	20	P110	Vam Top HT	1.125	1.25	1.6
6.75"	12,746'	22,497'	5.5"	20	P110	Vam SG	1.125	1.25	1.6

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

Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed.

A variance is requested to wave the centralizer requirement for 5-1/2" SF/Flush casing in the 6-3/4" hole.

	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, Seawolf 1-12 83H

3. Cementing Program

Casing	# Sk	Wt. lb/ gal	H ₂ O gal/sk	Yld ft ³ / sack	Slurry Description
5-1/2" Production	750	14.8	6.32	1.33	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake H

If a DV tool is used, depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. Lab reports with the 500 psi compressive strength time for the cement will be onsite for review.

Casing String	TOC	% Excess
5-1/2" Production Casing	12,746'	25%

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:
6-3/4"	13-5/8"	10M	Annular (5M)	X	70% of rated working pressure
			Blind Ram	X	10M
			Pipe Ram	X	
			Double Ram	X	
			Other *		
			Annular		
			Blind Ram		
			Pipe Ram		
			Double Ram		
			Other *		

*Specify if additional ram is utilized.

Devon Energy, Seawolf 1-12 83H

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.
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 may be 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. 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 5000 (5M) psi 10,000 (10M) psi - Wellhead will be installed by wellhead representatives. - If the welding is performed by a third party, the wellhead representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal. - Wellhead representative will install the test plug for the initial BOP test. - Wellhead company 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.

Devon Energy, Seawolf 1-12 83H

After running the 10-3/4" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 5M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 5,000 psi high pressure test. The 5,000 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.

13-5/8" BOP/BOPE system will have been tested to 10M rating prior to drilling out 7 5/8" casing.

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~~ ^{10,000} psi WP.

Devon's proposed wellhead manufactures will be FMC Technologies, Cactus Wellhead, or Cameron.

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

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
12,946'	22,497'	Oil Based Mud	9.5-12	45-65	N/C - 6

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
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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
	Density
X	CBL
X	Mud log
	PEX

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	7200 psi
Abnormal Temperature	No

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

Hydrogen Sulfide (H ₂ S) monitors will be installed prior to drilling out the surface shoe. If H ₂ S 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

Attachments

 x Directional Plan

Devon Energy, Seawolf 1-12 83H

___ Other, describe



HOBBS OCD

FEB 06 2018

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5D Anti-Collision Report

Devon Energy

Field Name: *Lea Co, NM Nad 83 NMEZ*

Site Name: *Seawolf 1-12 Fed Pad*

Well Name: *Seawolf 1-12 Fed 83H*

6 October 2017





Seawolf 1-12 Fed 83H

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: Seawolf 1-12 Fed Pad	Units: US ft	North Reference: Grid	Convergence Angle: 0.43	
	Position:	Northing: 393519.71 US ft	Latitude: 32° 4' 45.47"	
		Easting: 791194.43 US ft	Longitude: -103° 31' 35.86"	
	Elevation above MSL: 3316.70 US ft		Comment:	
Slot: Seawolf 1-12 Fed 83H	Position (Relative to Site Centre)			
	+N/-S: 0.00 US ft	Northing: 393519.71 US ft	Latitude: 32°4'45.47"	
	+E/-W: 0.00 US ft	Easting: 791194.43 US ft	Longitude: -103°31'35.86"	
	Slot TVD Reference: Ground Elevation			
	Elevation above MSL: 3316.70 US ft			
Comment:				
Well: Seawolf 1-12 Fed 83H	Type: Main well		UWI:	Plan: Working Plan
	File Number:	Comment:		
	Closure Distance: 10074.5US ft		Closure Azimuth: 180.53°	
	Vertical Section: Position of Origin (Relative to Slot centre)			
	+N/-S: 0.00 US ft		+E/-W: -0.00 US ft	Az: 179.58°
	Magnetic Parameters:			
	Model: bggm2017	Field Strength:	Declination: 6.97°	Dip: 59.91°
	47891.5nT		Date: 10/Oct/2017	

Drill floor: Plan: Working Plan

Rig Height (Drill Floor): 27.00us ft	Elevation above MSL: 3343.70us ft	Inclination: 0.00°	Azimuth: 0.00°
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Collision / Uncertainty Analysis

Primary Well	Start MD (USFt)	End MD (USFt)	Collision Risk Interval	No. of Std. Deviations in Error Computation
Seawolf 1-12 Fed 83H (p)	0.00	30000.00	100.00	2

Secondary Well Names:

Seawolf 1-12 Fed 93H (p)
Seawolf 1-12 Fed 84H (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.

AC Filter Info: Applied filter(s): Depth Range.**Default Survey Tool: MWD**

Separation factors calculated using Pedal Curve (Independent Uncertainty). Surface Uncertainty (S.U.) Not Applied. Wellpath created using minimum curvature.

Anti-Collision Summary (TVD relative to Drill Floor)

SF							
Pri MD (US ft)	TVD (US ft)	Secondary Well Name	Sec MD (US ft)	CC (US ft)	ES (US ft)	SF	Risk
3545.70	3545.70	Seawolf 1-12 Fed 93H (p)	3545.46	30.26	13.84	1.84	SF(Lo)
22497.78	12540.00	Seawolf 1-12 Fed 84H (p)	22630.53	702.70	338.56	1.93	SF(Lo)
CC							
Pri MD (US ft)	TVD (US ft)	Secondary Well Name	Sec MD (US ft)	CC (US ft)	ES (US ft)	SF	Risk
50.00	50.00	Seawolf 1-12 Fed 93H (p)	50.00	30.08	29.24	35.66	
0.00	0.00	Seawolf 1-12 Fed 84H (p)	0.00	60.10	59.37	81.96	

Primary Well: Seawolf 1-12 Fed 83H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)

MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	Nearest Well	ES (US ft)	CC (US ft)	SF	Survey Tool	Risk
0.00	0.00	89.71	0.00	0.00	0.00	Seawolf 1- 12 Fed 93H (p)	29.35	30.08	41.02	MWD	
100.00	100.00	89.71	0.11	0.11	4.60	Seawolf 1- 12 Fed 93H (p)	29.13	30.08	31.53	MWD	
200.00	200.00	89.71	0.34	0.34	4.62	Seawolf 1- 12 Fed 93H (p)	28.68	30.08	21.43	MWD	
300.00	300.00	89.71	0.56	0.56	4.65	Seawolf 1- 12 Fed 93H (p)	28.23	30.08	16.23	MWD	
400.00	400.00	89.71	0.79	0.79	4.69	Seawolf 1- 12 Fed 93H (p)	27.78	30.08	13.06	MWD	
500.00	500.00	89.71	1.01	1.01	4.75	Seawolf 1- 12 Fed 93H (p)	27.33	30.08	10.93	MWD	
600.00	600.00	89.71	1.24	1.24	4.81	Seawolf 1- 12 Fed 93H (p)	26.88	30.08	9.39	MWD	
700.00	700.00	89.71	1.46	1.46	4.89	Seawolf 1- 12 Fed 93H (p)	26.43	30.08	8.24	MWD	
800.00	800.00	89.71	1.69	1.69	4.97	Seawolf 1- 12 Fed 93H (p)	25.98	30.08	7.34	MWD	
900.00	900.00	89.71	1.91	1.91	5.06	Seawolf 1- 12 Fed 93H (p)	25.53	30.08	6.61	MWD	
1000.00	1000.00	89.71	2.14	2.14	5.16	Seawolf 1- 12 Fed 93H (p)	25.08	30.08	6.02	MWD	
1100.00	1100.00	89.71	2.36	2.36	5.27	Seawolf 1- 12 Fed 93H (p)	24.63	30.08	5.52	MWD	
1200.00	1200.00	89.71	2.59	2.59	5.38	Seawolf 1- 12 Fed 93H (p)	24.18	30.08	5.10	MWD	
1300.00	1300.00	89.71	2.81	2.81	5.50	Seawolf 1- 12 Fed 93H (p)	23.73	30.08	4.74	MWD	
1400.00	1400.00	89.71	3.03	3.03	5.62	Seawolf 1- 12 Fed 93H (p)	23.28	30.08	4.42	MWD	
1500.00	1500.00	89.71	3.26	3.26	5.75	Seawolf 1- 12 Fed 93H (p)	22.83	30.08	4.15	MWD	
1600.00	1600.00	89.71	3.48	3.48	5.89	Seawolf 1- 12 Fed 93H (p)	22.38	30.08	3.91	MWD	

5D Anti-Collision Report

Primary Well: Seawolf 1-12 Fed 83H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)											
MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	Nearest Well	ES (US ft)	CC (US ft)	SF	Survey Tool	Risk
1700.00	1700.00	89.71	3.71	3.71	6.03	Seawolf 1-12 Fed 93H (p)	21.93	30.08	3.69	MWD	
1800.00	1800.00	89.71	3.93	3.93	6.17	Seawolf 1-12 Fed 93H (p)	21.48	30.08	3.50	MWD	
1900.00	1900.00	89.71	4.16	4.16	6.32	Seawolf 1-12 Fed 93H (p)	21.03	30.08	3.33	MWD	
2000.00	2000.00	89.71	4.38	4.38	6.47	Seawolf 1-12 Fed 93H (p)	20.58	30.08	3.17	MWD	
2100.00	2100.00	89.71	4.61	4.61	6.62	Seawolf 1-12 Fed 93H (p)	20.14	30.08	3.02	MWD	
2200.00	2200.00	89.71	4.83	4.83	6.78	Seawolf 1-12 Fed 93H (p)	19.69	30.08	2.89	MWD	
2300.00	2300.00	89.71	5.06	5.06	6.94	Seawolf 1-12 Fed 93H (p)	19.24	30.08	2.77	MWD	
2400.00	2400.00	89.71	5.28	5.28	7.10	Seawolf 1-12 Fed 93H (p)	18.79	30.08	2.66	MWD	
2500.00	2500.00	89.71	5.51	5.51	7.27	Seawolf 1-12 Fed 93H (p)	18.34	30.08	2.56	MWD	
2600.00	2600.00	89.71	5.73	5.73	7.44	Seawolf 1-12 Fed 93H (p)	17.89	30.08	2.47	MWD	SF(Lo)
2700.00	2700.00	89.71	5.96	5.96	7.61	Seawolf 1-12 Fed 93H (p)	17.44	30.08	2.38	MWD	SF(Lo)
2800.00	2800.00	89.71	6.18	6.18	7.79	Seawolf 1-12 Fed 93H (p)	16.99	30.08	2.30	MWD	SF(Lo)
2900.00	2900.00	89.71	6.41	6.41	7.97	Seawolf 1-12 Fed 93H (p)	16.54	30.08	2.22	MWD	SF(Lo)
3000.00	3000.00	89.71	6.63	6.63	8.15	Seawolf 1-12 Fed 93H (p)	16.09	30.08	2.15	MWD	SF(Lo)
3100.00	3100.00	89.71	6.86	6.86	8.33	Seawolf 1-12 Fed 93H (p)	15.64	30.08	2.08	MWD	SF(Lo)
3200.00	3200.00	89.71	7.08	7.08	8.51	Seawolf 1-12 Fed 93H (p)	15.19	30.08	2.02	MWD	SF(Lo)
3300.00	3300.00	89.71	7.31	7.31	8.70	Seawolf 1-12 Fed 93H (p)	14.74	30.08	1.96	MWD	SF(Lo)
3400.00	3400.00	89.71	7.53	7.53	8.89	Seawolf 1-12 Fed 93H (p)	14.29	30.08	1.91	MWD	SF(Lo)
3500.00	3500.00	89.71	7.76	7.76	9.09	Seawolf 1-12 Fed 93H (p)	13.84	30.08	1.85	MWD	SF(Lo)
3600.00	3600.00	89.72	7.98	7.98	9.28	Seawolf 1-12 Fed 93H (p)	14.30	30.95	1.86	MWD	SF(Lo)
3700.00	3700.00	89.74	8.20	8.20	9.48	Seawolf 1-12 Fed 93H (p)	16.49	33.55	1.97	MWD	SF(Lo)
3800.00	3800.00	89.77	8.43	8.43	9.69	Seawolf 1-12 Fed 93H (p)	20.42	37.89	2.17	MWD	SF(Lo)
3900.00	3900.00	89.80	8.65	8.65	9.89	Seawolf 1-12 Fed 93H (p)	25.89	43.77	2.45	MWD	SF(Lo)
4000.00	4000.00	89.83	8.88	8.88	10.10	Seawolf 1-12 Fed 93H (p)	31.60	49.91	2.73	MWD	
4100.00	4100.00	89.85	9.10	9.10	10.31	Seawolf 1-12 Fed 93H (p)	37.31	56.04	2.99	MWD	
4200.00	4200.00	89.86	9.33	9.33	10.53		43.02	62.18	3.25	MWD	

Weathered - 100% (100% of 100%)

SD-81128-101 - 100% (100% of 100%)

5D Anti-Collision Report

Primary Well: Seawolf 1-12 Fed 83H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)											
MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	Nearest Well	ES (US ft)	CC (US ft)	SF	Survey Tool	Risk
						Seawolf 1- 12 Fed 93H (p)					
4300.00	4300.00	89.87	9.55	9.55	10.74	Seawolf 1- 12 Fed 93H (p)	48.73	68.31	3.49	MWD	
4400.00	4400.00	89.88	9.78	9.78	10.97	Seawolf 1- 12 Fed 93H (p)	54.43	74.45	3.72	MWD	
4500.00	4500.00	89.89	10.00	10.00	11.19	Seawolf 1- 12 Fed 93H (p)	60.14	80.59	3.94	MWD	
4600.00	4600.00	89.90	10.23	10.23	11.42	Seawolf 1- 12 Fed 93H (p)	65.84	86.72	4.15	MWD	
4700.00	4700.00	89.91	10.45	10.45	11.65	Seawolf 1- 12 Fed 93H (p)	71.55	92.86	4.36	MWD	
4800.00	4800.00	89.91	10.68	10.68	11.88	Seawolf 1- 12 Fed 93H (p)	77.25	98.99	4.55	MWD	
4900.00	4900.00	89.92	10.90	10.90	12.12	Seawolf 1- 12 Fed 93H (p)	82.95	105.13	4.74	MWD	
5000.00	5000.00	89.92	11.13	11.13	12.37	Seawolf 1- 12 Fed 93H (p)	88.65	111.26	4.92	MWD	
5100.00	5100.00	89.93	11.35	11.35	12.61	Seawolf 1- 12 Fed 93H (p)	94.35	117.40	5.09	MWD	
5200.00	5200.00	89.93	11.58	11.58	12.86	Seawolf 1- 12 Fed 93H (p)	100.05	123.54	5.26	MWD	
5300.00	5300.00	89.93	11.80	11.80	13.12	Seawolf 1- 12 Fed 93H (p)	105.75	129.67	5.42	MWD	
5400.00	5400.00	89.94	12.03	12.03	13.37	Seawolf 1- 12 Fed 93H (p)	111.45	135.81	5.58	MWD	
5500.00	5500.00	89.94	12.25	12.25	13.64	Seawolf 1- 12 Fed 93H (p)	117.15	141.94	5.72	MWD	
5600.00	5600.00	89.94	12.48	12.48	13.90	Seawolf 1- 12 Fed 93H (p)	122.85	148.08	5.87	MWD	
5700.00	5700.00	89.94	12.70	12.70	14.17	Seawolf 1- 12 Fed 93H (p)	128.54	154.21	6.01	MWD	
5800.00	5800.00	89.95	12.93	12.93	14.45	Seawolf 1- 12 Fed 93H (p)	134.24	160.35	6.14	MWD	
5900.00	5900.00	89.95	13.15	13.15	14.73	Seawolf 1- 12 Fed 93H (p)	139.94	166.49	6.27	MWD	
6000.00	6000.00	89.95	13.37	13.37	15.01	Seawolf 1- 12 Fed 93H (p)	145.63	172.62	6.40	MWD	
6100.00	6099.99	138.16	13.59	13.59	15.30	Seawolf 1- 12 Fed 93H (p)	151.99	179.41	6.54	MWD	
6200.00	6199.96	138.64	13.81	13.80	15.59	Seawolf 1- 12 Fed 93H (p)	159.64	187.50	6.73	MWD	
6300.00	6299.88	139.35	14.03	14.02	15.89	Seawolf 1- 12 Fed 93H (p)	168.27	196.55	6.95	MWD	
6400.00	6399.81	140.02	14.24	14.23	16.19	Seawolf 1- 12 Fed 93H (p)	176.96	205.66	7.16	MWD	
6500.00	6499.73	140.64	14.46	14.45	16.50	Seawolf 1- 12 Fed 93H (p)	185.65	214.81	7.37	MWD	
6600.00	6599.65	141.20	14.68	14.67	16.81	Seawolf 1- 12 Fed 93H (p)	194.37	223.98	7.56	MWD	
6700.00	6699.58	141.72	14.90	14.88	17.12		203.12	233.16	7.76	MWD	

5D Anti-Collision Report

Primary Well: Seawolf 1-12 Fed 83H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)											
MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	Nearest Well	ES (US ft)	CC (US ft)	SF	Survey Tool	Risk
						Seawolf 1- 12 Fed 93H (p)					
6800.00	6799.50	142.20	15.12	15.10	17.45	Seawolf 1- 12 Fed 93H (p)	211.89	242.37	7.95	MWD	
6900.00	6899.42	142.65	15.34	15.32	17.77	Seawolf 1- 12 Fed 93H (p)	220.67	251.59	8.14	MWD	
7000.00	6999.35	143.06	15.56	15.53	18.10	Seawolf 1- 12 Fed 93H (p)	229.48	260.82	8.32	MWD	
7100.00	7099.27	143.45	15.78	15.75	18.44	Seawolf 1- 12 Fed 93H (p)	238.29	270.07	8.50	MWD	
7200.00	7199.19	143.81	16.00	15.97	18.78	Seawolf 1- 12 Fed 93H (p)	247.12	279.33	8.67	MWD	
7300.00	7299.11	144.14	16.22	16.19	19.13	Seawolf 1- 12 Fed 93H (p)	255.96	288.60	8.84	MWD	
7400.00	7399.04	144.46	16.44	16.40	19.48	Seawolf 1- 12 Fed 93H (p)	264.81	297.88	9.01	MWD	
7500.00	7498.96	144.76	16.67	16.62	19.84	Seawolf 1- 12 Fed 93H (p)	273.67	307.16	9.17	MWD	
7600.00	7598.88	145.04	16.89	16.84	20.20	Seawolf 1- 12 Fed 93H (p)	282.54	316.46	9.33	MWD	
7700.00	7698.81	145.30	17.11	17.06	20.57	Seawolf 1- 12 Fed 93H (p)	291.41	325.76	9.48	MWD	
7800.00	7798.73	145.55	17.34	17.28	20.94	Seawolf 1- 12 Fed 93H (p)	300.29	335.07	9.64	MWD	
7900.00	7898.65	145.78	17.56	17.50	21.32	Seawolf 1- 12 Fed 93H (p)	309.18	344.38	9.78	MWD	
8000.00	7998.58	146.01	17.78	17.72	21.70	Seawolf 1- 12 Fed 93H (p)	318.07	353.70	9.93	MWD	
8100.00	8098.50	146.22	18.01	17.94	22.09	Seawolf 1- 12 Fed 93H (p)	326.96	363.02	10.07	MWD	
8200.00	8198.42	146.42	18.23	18.16	22.48	Seawolf 1- 12 Fed 93H (p)	335.85	372.35	10.20	MWD	
8300.00	8298.34	146.61	18.45	18.38	22.88	Seawolf 1- 12 Fed 93H (p)	344.74	381.68	10.33	MWD	
8400.00	8398.27	146.79	18.68	18.60	23.29	Seawolf 1- 12 Fed 93H (p)	353.63	391.02	10.46	MWD	
8500.00	8498.19	146.96	18.90	18.82	23.70	Seawolf 1- 12 Fed 93H (p)	362.52	400.36	10.58	MWD	
8600.00	8598.11	147.13	19.13	19.04	24.12	Seawolf 1- 12 Fed 93H (p)	371.42	409.71	10.70	MWD	
8700.00	8698.04	147.29	19.35	19.26	24.54	Seawolf 1- 12 Fed 93H (p)	380.32	419.05	10.82	MWD	
8800.00	8797.96	147.44	19.58	19.48	24.97	Seawolf 1- 12 Fed 93H (p)	389.22	428.40	10.93	MWD	
8900.00	8897.88	147.58	19.81	19.70	25.40	Seawolf 1- 12 Fed 93H (p)	398.12	437.76	11.04	MWD	
9000.00	8997.81	147.72	20.03	19.92	25.84	Seawolf 1- 12 Fed 93H (p)	407.03	447.11	11.15	MWD	
9100.00	9097.73	147.86	20.26	20.14	26.29	Seawolf 1- 12 Fed 93H (p)	415.94	456.47	11.26	MWD	
9200.00	9197.65	147.98	20.48	20.37	26.74		424.85	465.83	11.37	MWD	

5D Anti-Collision Report

Primary Well: Seawolf 1-12 Fed 83H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)											
MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	Nearest Well	ES (US ft)	CC (US ft)	SF	Survey Tool	Risk
						Seawolf 1- 12 Fed 93H (p)					
9300.00	9297.57	148.11	20.71	20.59	27.20	Seawolf 1- 12 Fed 93H (p)	433.76	475.20	11.47	MWD	
9400.00	9397.50	148.22	20.94	20.81	27.66	Seawolf 1- 12 Fed 93H (p)	442.68	484.56	11.57	MWD	
9500.00	9497.42	135.43	21.17	21.03	28.13	Seawolf 1- 12 Fed 84H (p)	454.40	497.14	11.63	MWD	
9500.00	9497.42	148.34	21.17	21.03	28.13	Seawolf 1- 12 Fed 93H (p)	451.60	493.93	11.67	MWD	
9600.00	9597.34	135.59	21.39	21.25	28.60	Seawolf 1- 12 Fed 84H (p)	461.75	504.94	11.69	MWD	
9600.00	9597.34	148.45	21.39	21.25	28.60	Seawolf 1- 12 Fed 93H (p)	460.52	503.30	11.76	MWD	
9700.00	9697.27	135.74	21.62	21.47	29.08	Seawolf 1- 12 Fed 84H (p)	469.10	512.74	11.75	MWD	
9700.00	9697.27	148.55	21.62	21.47	29.08	Seawolf 1- 12 Fed 93H (p)	469.44	512.67	11.86	MWD	
9800.00	9797.19	135.88	21.85	21.70	29.57	Seawolf 1- 12 Fed 84H (p)	476.45	520.54	11.81	MWD	
9900.00	9897.11	136.02	22.07	21.92	30.06	Seawolf 1- 12 Fed 84H (p)	483.81	528.34	11.86	MWD	
10000.00	9997.04	136.16	22.30	22.14	30.56	Seawolf 1- 12 Fed 84H (p)	491.16	536.15	11.92	MWD	
10100.00	10096.96	136.29	22.53	22.36	31.06	Seawolf 1- 12 Fed 84H (p)	498.53	543.96	11.97	MWD	
10200.00	10196.88	136.42	22.76	22.58	31.57	Seawolf 1- 12 Fed 84H (p)	505.89	551.77	12.03	MWD	
10300.00	10296.80	136.55	22.99	22.81	32.09	Seawolf 1- 12 Fed 84H (p)	513.26	559.59	12.08	MWD	
10400.00	10396.73	136.67	23.21	23.03	32.61	Seawolf 1- 12 Fed 84H (p)	520.63	567.41	12.13	MWD	
10500.00	10496.65	136.79	23.44	23.25	33.14	Seawolf 1- 12 Fed 84H (p)	528.00	575.23	12.18	MWD	
10600.00	10596.57	136.90	23.67	23.47	33.67	Seawolf 1- 12 Fed 84H (p)	535.38	583.05	12.23	MWD	
10700.00	10696.50	137.02	23.90	23.70	34.21	Seawolf 1- 12 Fed 84H (p)	542.75	590.88	12.28	MWD	
10800.00	10796.42	137.13	24.13	23.92	34.75	Seawolf 1- 12 Fed 84H (p)	550.13	598.71	12.33	MWD	
10900.00	10896.34	137.23	24.36	24.14	35.30	Seawolf 1- 12 Fed 84H (p)	557.51	606.54	12.37	MWD	
11000.00	10996.27	137.34	24.59	24.37	35.86	Seawolf 1- 12 Fed 84H (p)	564.90	614.37	12.42	MWD	
11100.00	11096.19	137.44	24.82	24.59	36.42	Seawolf 1- 12 Fed 84H (p)	572.28	622.20	12.46	MWD	
11200.00	11196.11	137.54	25.04	24.81	36.99	Seawolf 1- 12 Fed 84H (p)	579.67	630.04	12.51	MWD	
11300.00	11296.03	137.63	25.27	25.04	37.57	Seawolf 1- 12 Fed 84H (p)	587.06	637.88	12.55	MWD	
11400.00	11395.96	137.73	25.50	25.26	38.15		594.45	645.72	12.60	MWD	

Primary Well: Seawolf 1-12 Fed 83H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)											
MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	Nearest Well	ES (US ft)	CC (US ft)	SF	Survey Tool	Risk
						Seawolf 1-12 Fed 84H (p)					
14000.00	12517.99	259.03	39.61	25.19	50.41	Seawolf 1-12 Fed 84H (p)	618.89	698.03	8.82	MWD	
14100.00	12518.25	259.01	40.95	25.55	51.11	Seawolf 1-12 Fed 84H (p)	616.34	698.08	8.54	MWD	
14200.00	12518.51	258.99	42.33	25.91	51.85	Seawolf 1-12 Fed 84H (p)	613.71	698.13	8.27	MWD	
14300.00	12518.77	258.97	43.74	26.30	52.62	Seawolf 1-12 Fed 84H (p)	610.98	698.18	8.01	MWD	
14400.00	12519.02	258.95	45.18	26.70	53.42	Seawolf 1-12 Fed 84H (p)	608.19	698.23	7.75	MWD	
14500.00	12519.28	258.93	46.65	27.11	54.24	Seawolf 1-12 Fed 84H (p)	605.37	698.29	7.52	MWD	
14600.00	12519.54	258.91	48.15	27.54	55.09	Seawolf 1-12 Fed 84H (p)	602.52	698.34	7.29	MWD	
14700.00	12519.80	258.89	49.66	27.97	55.97	Seawolf 1-12 Fed 84H (p)	599.65	698.39	7.07	MWD	
14800.00	12520.06	258.87	51.20	28.42	56.87	Seawolf 1-12 Fed 84H (p)	596.72	698.44	6.87	MWD	
14900.00	12520.32	258.85	52.75	28.89	57.80	Seawolf 1-12 Fed 84H (p)	593.73	698.49	6.67	MWD	
15000.00	12520.58	258.83	54.32	29.36	58.74	Seawolf 1-12 Fed 84H (p)	590.71	698.55	6.48	MWD	
15100.00	12520.84	258.81	55.91	29.84	59.71	Seawolf 1-12 Fed 84H (p)	587.67	698.60	6.30	MWD	
15200.00	12521.10	258.79	57.51	30.34	60.70	Seawolf 1-12 Fed 84H (p)	584.60	698.65	6.13	MWD	
15300.00	12521.36	258.77	59.13	30.84	61.71	Seawolf 1-12 Fed 84H (p)	581.51	698.70	5.96	MWD	
15400.00	12521.61	258.75	60.75	31.35	62.73	Seawolf 1-12 Fed 84H (p)	578.39	698.76	5.81	MWD	
15500.00	12521.87	258.73	62.39	31.87	63.77	Seawolf 1-12 Fed 84H (p)	575.25	698.81	5.66	MWD	
15600.00	12522.13	258.71	64.04	32.40	64.83	Seawolf 1-12 Fed 84H (p)	572.08	698.86	5.51	MWD	
15700.00	12522.39	258.69	65.70	32.94	65.91	Seawolf 1-12 Fed 84H (p)	568.91	698.91	5.38	MWD	
15800.00	12522.65	258.67	67.36	33.49	67.00	Seawolf 1-12 Fed 84H (p)	565.71	698.97	5.25	MWD	
15900.00	12522.91	258.65	69.04	34.04	68.10	Seawolf 1-12 Fed 84H (p)	562.50	699.02	5.12	MWD	
16000.00	12523.17	258.63	70.72	34.60	69.22	Seawolf 1-12 Fed 84H (p)	559.27	699.07	5.00	MWD	
16100.00	12523.43	258.61	72.41	35.16	70.35	Seawolf 1-12 Fed 84H (p)	556.03	699.13	4.89	MWD	
16200.00	12523.69	258.59	74.11	35.73	71.49	Seawolf 1-12 Fed 84H (p)	552.78	699.18	4.78	MWD	
16300.00	12523.95	258.57	75.81	36.31	72.64	Seawolf 1-12 Fed 84H (p)	549.51	699.23	4.67	MWD	
16400.00	12524.20	258.55	77.52	36.89	73.81		546.23	699.29	4.57	MWD	

5D Anti-Collision Report

Primary Well: Seawolf 1-12 Fed 83H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)											
MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	Nearest Well	ES (US ft)	CC (US ft)	SF	Survey Tool	Risk
						Seawolf 1- 12 Fed 84H (p)					
16500.00	12524.46	258.53	79.23	37.48	74.98	Seawolf 1- 12 Fed 84H (p)	542.95	699.34	4.47	MWD	
16600.00	12524.72	258.51	80.95	38.07	76.17	Seawolf 1- 12 Fed 84H (p)	539.65	699.39	4.38	MWD	
16600.00	12524.72	281.74	80.95	38.07	76.17	Seawolf 1- 12 Fed 93H (p)	539.95	699.34	4.39	MWD	
16700.00	12524.98	258.49	82.67	38.67	77.36	Seawolf 1- 12 Fed 84H (p)	536.35	699.45	4.29	MWD	
16700.00	12524.98	281.72	82.67	38.67	77.36	Seawolf 1- 12 Fed 93H (p)	536.54	699.31	4.30	MWD	
16800.00	12525.24	258.47	84.40	39.27	78.57	Seawolf 1- 12 Fed 84H (p)	533.03	699.50	4.20	MWD	
16800.00	12525.24	281.70	84.40	39.27	78.57	Seawolf 1- 12 Fed 93H (p)	533.12	699.28	4.21	MWD	
16900.00	12525.50	258.45	86.13	39.88	79.78	Seawolf 1- 12 Fed 84H (p)	529.71	699.56	4.12	MWD	
16900.00	12525.50	281.68	86.13	39.88	79.78	Seawolf 1- 12 Fed 93H (p)	529.69	699.25	4.12	MWD	
17000.00	12525.76	258.43	87.86	40.49	81.00	Seawolf 1- 12 Fed 84H (p)	526.38	699.61	4.04	MWD	
17000.00	12525.76	281.67	87.86	40.49	81.00	Seawolf 1- 12 Fed 93H (p)	526.25	699.22	4.04	MWD	
17100.00	12526.02	258.41	89.60	41.10	82.23	Seawolf 1- 12 Fed 84H (p)	523.05	699.66	3.96	MWD	
17100.00	12526.02	281.65	89.60	41.10	82.23	Seawolf 1- 12 Fed 93H (p)	522.81	699.19	3.96	MWD	
17200.00	12526.28	258.39	91.34	41.72	83.47	Seawolf 1- 12 Fed 84H (p)	519.70	699.72	3.89	MWD	
17200.00	12526.28	281.63	91.34	41.72	83.47	Seawolf 1- 12 Fed 93H (p)	519.35	699.16	3.89	MWD	
17300.00	12526.54	258.37	93.09	42.34	84.71	Seawolf 1- 12 Fed 84H (p)	516.36	699.77	3.82	MWD	
17300.00	12526.54	281.61	93.09	42.34	84.71	Seawolf 1- 12 Fed 93H (p)	515.90	699.13	3.82	MWD	
17400.00	12526.80	281.59	94.84	42.97	85.97	Seawolf 1- 12 Fed 93H (p)	512.43	699.10	3.75	MWD	
17500.00	12527.05	281.57	96.59	43.60	87.22	Seawolf 1- 12 Fed 93H (p)	508.96	699.07	3.68	MWD	
17600.00	12527.31	281.56	98.34	44.23	88.49	Seawolf 1- 12 Fed 93H (p)	505.48	699.04	3.61	MWD	
17700.00	12527.57	281.54	100.10	44.87	89.76	Seawolf 1- 12 Fed 93H (p)	502.00	699.01	3.55	MWD	
17800.00	12527.83	281.52	101.86	45.51	91.04	Seawolf 1- 12 Fed 93H (p)	498.52	698.98	3.49	MWD	
17900.00	12528.09	281.50	103.62	46.15	92.32	Seawolf 1- 12 Fed 93H (p)	495.02	698.95	3.43	MWD	
18000.00	12528.35	281.48	105.39	46.79	93.61	Seawolf 1- 12 Fed 93H (p)	491.53	698.92	3.37	MWD	
18100.00	12528.61	281.46	107.15	47.44	94.90		488.03	698.89	3.31	MWD	

5D Anti-Collision Report

Primary Well: Seawolf 1-12 Fed 83H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)											
MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	Nearest Well	ES (US ft)	CC (US ft)	SF	Survey Tool	Risk
						Seawolf 1- 12 Fed 93H (p)					
18200.00	12528.87	281.45	108.92	48.09	96.20	Seawolf 1- 12 Fed 93H (p)	484.52	698.86	3.26	MWD	
18300.00	12529.13	281.43	110.69	48.74	97.50	Seawolf 1- 12 Fed 93H (p)	481.01	698.83	3.21	MWD	
18400.00	12529.39	281.41	112.46	49.39	98.81	Seawolf 1- 12 Fed 93H (p)	477.50	698.80	3.16	MWD	
18500.00	12529.64	281.39	114.24	50.05	100.12	Seawolf 1- 12 Fed 93H (p)	473.98	698.77	3.11	MWD	
18600.00	12529.90	281.37	116.01	50.71	101.44	Seawolf 1- 12 Fed 93H (p)	470.46	698.74	3.06	MWD	
18700.00	12530.16	281.35	117.79	51.37	102.76	Seawolf 1- 12 Fed 93H (p)	466.94	698.71	3.01	MWD	
18800.00	12530.42	281.34	119.57	52.03	104.08	Seawolf 1- 12 Fed 93H (p)	463.41	698.68	2.97	MWD	
18900.00	12530.68	281.32	121.35	52.69	105.41	Seawolf 1- 12 Fed 93H (p)	459.88	698.66	2.93	MWD	
19000.00	12530.94	281.30	123.13	53.36	106.74	Seawolf 1- 12 Fed 93H (p)	456.35	698.63	2.88	MWD	
19100.00	12531.20	281.28	124.91	54.03	108.08	Seawolf 1- 12 Fed 93H (p)	452.82	698.60	2.84	MWD	
19200.00	12531.46	281.26	126.70	54.69	109.41	Seawolf 1- 12 Fed 93H (p)	449.28	698.57	2.80	MWD	
19300.00	12531.72	281.24	128.48	55.37	110.76	Seawolf 1- 12 Fed 93H (p)	445.74	698.54	2.76	MWD	
19400.00	12531.98	281.23	130.27	56.04	112.10	Seawolf 1- 12 Fed 93H (p)	442.19	698.51	2.73	MWD	
19500.00	12532.23	281.21	132.05	56.71	113.45	Seawolf 1- 12 Fed 93H (p)	438.65	698.48	2.69	MWD	
19600.00	12532.49	281.19	133.84	57.39	114.80	Seawolf 1- 12 Fed 93H (p)	435.10	698.45	2.65	MWD	
19700.00	12532.75	281.17	135.63	58.06	116.15	Seawolf 1- 12 Fed 93H (p)	431.54	698.42	2.62	MWD	
19800.00	12533.01	281.15	137.42	58.74	117.51	Seawolf 1- 12 Fed 93H (p)	427.98	698.40	2.58	MWD	
19900.00	12533.27	281.13	139.21	59.42	118.87	Seawolf 1- 12 Fed 93H (p)	424.42	698.37	2.55	MWD	
20000.00	12533.53	281.12	141.01	60.10	120.23	Seawolf 1- 12 Fed 93H (p)	420.85	698.34	2.52	MWD	
20100.00	12533.79	281.10	142.80	60.78	121.59	Seawolf 1- 12 Fed 93H (p)	417.29	698.31	2.48	MWD	SF(Lo)
20200.00	12534.05	281.08	144.59	61.47	122.96	Seawolf 1- 12 Fed 93H (p)	413.72	698.28	2.45	MWD	SF(Lo)
20300.00	12534.31	281.06	146.39	62.15	124.33	Seawolf 1- 12 Fed 93H (p)	410.15	698.25	2.42	MWD	SF(Lo)
20400.00	12534.57	281.04	148.19	62.84	125.70	Seawolf 1- 12 Fed 93H (p)	406.57	698.23	2.39	MWD	SF(Lo)
20500.00	12534.83	281.02	149.98	63.52	127.07	Seawolf 1- 12 Fed 93H (p)	403.00	698.20	2.37	MWD	SF(Lo)
20600.00	12535.08	281.00	151.78	64.21	128.45		399.42	698.17	2.34	MWD	SF(Lo)

As of 11/11/2014 10:00 AM

5D Anti-Collision Report for Seawolf 1-12 Fed 83H (p)

5D Anti-Collision Report

Primary Well: Seawolf 1-12 Fed 83H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)											
MD (US ft)	TVD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	Nearest Well	ES (US ft)	CC (US ft)	SF	Survey Tool	Risk
						Seawolf 1- 12 Fed 93H (p)					
20700.00	12535.34	280.99	153.58	64.90	129.82	Seawolf 1- 12 Fed 93H (p)	395.84	698.14	2.31	MWD	SF(Lo)
20800.00	12535.60	280.97	155.38	65.59	131.20	Seawolf 1- 12 Fed 93H (p)	392.27	698.11	2.28	MWD	SF(Lo)
20900.00	12535.86	280.95	157.18	66.28	132.58	Seawolf 1- 12 Fed 93H (p)	388.68	698.09	2.26	MWD	SF(Lo)
21000.00	12536.12	280.93	158.98	66.97	133.97	Seawolf 1- 12 Fed 93H (p)	385.10	698.06	2.23	MWD	SF(Lo)
21100.00	12536.38	280.91	160.78	67.66	135.35	Seawolf 1- 12 Fed 93H (p)	381.52	698.03	2.21	MWD	SF(Lo)
21200.00	12536.64	280.89	162.58	68.36	136.74	Seawolf 1- 12 Fed 93H (p)	377.93	698.00	2.18	MWD	SF(Lo)
21300.00	12536.90	280.88	164.38	69.05	138.12	Seawolf 1- 12 Fed 93H (p)	374.34	697.98	2.16	MWD	SF(Lo)
21400.00	12537.16	280.86	166.18	69.74	139.51	Seawolf 1- 12 Fed 93H (p)	370.76	697.95	2.13	MWD	SF(Lo)
21500.00	12537.42	280.84	167.99	70.44	140.90	Seawolf 1- 12 Fed 93H (p)	367.17	697.92	2.11	MWD	SF(Lo)
21600.00	12537.67	280.82	169.79	71.14	142.30	Seawolf 1- 12 Fed 93H (p)	363.57	697.89	2.09	MWD	SF(Lo)
21700.00	12537.93	280.80	171.59	71.83	143.69	Seawolf 1- 12 Fed 93H (p)	359.98	697.87	2.07	MWD	SF(Lo)
21800.00	12538.19	280.78	173.40	72.53	145.09	Seawolf 1- 12 Fed 93H (p)	356.39	697.84	2.04	MWD	SF(Lo)
21900.00	12538.45	280.77	175.20	73.23	146.48	Seawolf 1- 12 Fed 93H (p)	352.79	697.81	2.02	MWD	SF(Lo)
22000.00	12538.71	280.75	177.01	73.93	147.88	Seawolf 1- 12 Fed 93H (p)	349.20	697.79	2.00	MWD	SF(Lo)
22100.00	12538.97	280.73	178.81	74.63	149.28	Seawolf 1- 12 Fed 93H (p)	345.60	697.76	1.98	MWD	SF(Lo)
22200.00	12539.23	280.71	180.62	75.33	150.68	Seawolf 1- 12 Fed 93H (p)	342.00	697.73	1.96	MWD	SF(Lo)
22300.00	12539.49	280.69	182.43	76.03	152.08	Seawolf 1- 12 Fed 93H (p)	338.40	697.71	1.94	MWD	SF(Lo)
22400.00	12539.75	280.67	184.23	76.73	153.49	Seawolf 1- 12 Fed 93H (p)	334.80	697.68	1.92	MWD	SF(Lo)
22497.78	12540.00	280.66	186.00	77.42	154.86	Seawolf 1- 12 Fed 93H (p)	331.28	697.65	1.90	MWD	SF(Lo)

Secondary Well: Seawolf 1-12 Fed 93H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)											
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Survey Tool	Risk
0.00	0.00	0.00	89.71	0.00	0.00	0.00	29.35	30.08	41.02	MWD	
100.00	100.00	100.00	89.71	0.11	0.11	4.60	29.13	30.08	31.53	MWD	
200.00	200.00	200.00	89.71	0.34	0.34	4.62	28.68	30.08	21.43	MWD	
300.00	300.00	300.00	89.71	0.56	0.56	4.65	28.23	30.08	16.23	MWD	
400.00	400.00	400.00	89.71	0.79	0.79	4.69	27.78	30.08	13.06	MWD	
500.00	500.00	500.00	89.71	1.01	1.01	4.75	27.33	30.08	10.93	MWD	
600.00	600.00	600.00	89.71	1.24	1.24	4.81	26.88	30.08	9.39	MWD	
700.00	700.00	700.00	89.71	1.46	1.46	4.89	26.43	30.08	8.24	MWD	

5D Anti-Collision Report

Secondary Well: Seawolf 1-12 Fed 93H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)											
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Survey Tool	Risk
800.00	800.00	800.00	89.71	1.69	1.69	4.97	25.98	30.08	7.34	MWD	
900.00	900.00	900.00	89.71	1.91	1.91	5.06	25.53	30.08	6.61	MWD	
1000.00	1000.00	1000.00	89.71	2.14	2.14	5.16	25.08	30.08	6.02	MWD	
1100.00	1100.00	1100.00	89.71	2.36	2.36	5.27	24.63	30.08	5.52	MWD	
1200.00	1200.00	1200.00	89.71	2.59	2.59	5.38	24.18	30.08	5.10	MWD	
1300.00	1300.00	1300.00	89.71	2.81	2.81	5.50	23.73	30.08	4.74	MWD	
1400.00	1400.00	1400.00	89.71	3.03	3.03	5.62	23.28	30.08	4.42	MWD	
1500.00	1500.00	1500.00	89.71	3.26	3.26	5.75	22.83	30.08	4.15	MWD	
1600.00	1600.00	1600.00	89.71	3.48	3.48	5.89	22.38	30.08	3.91	MWD	
1700.00	1700.00	1700.00	89.71	3.71	3.71	6.03	21.93	30.08	3.69	MWD	
1800.00	1800.00	1800.00	89.71	3.93	3.93	6.17	21.48	30.08	3.50	MWD	
1900.00	1900.00	1900.00	89.71	4.16	4.16	6.32	21.03	30.08	3.33	MWD	
2000.00	2000.00	2000.00	89.71	4.38	4.38	6.47	20.58	30.08	3.17	MWD	
2100.00	2100.00	2100.00	89.71	4.61	4.61	6.62	20.14	30.08	3.02	MWD	
2200.00	2200.00	2200.00	89.71	4.83	4.83	6.78	19.69	30.08	2.89	MWD	
2300.00	2300.00	2300.00	89.71	5.06	5.06	6.94	19.24	30.08	2.77	MWD	
2400.00	2400.00	2400.00	89.71	5.28	5.28	7.10	18.79	30.08	2.66	MWD	
2500.00	2500.00	2500.00	89.71	5.51	5.51	7.27	18.34	30.08	2.56	MWD	
2600.00	2600.00	2600.00	89.71	5.73	5.73	7.44	17.89	30.08	2.47	MWD	SF(Lo)
2700.00	2700.00	2700.00	89.71	5.96	5.96	7.61	17.44	30.08	2.38	MWD	SF(Lo)
2800.00	2800.00	2800.00	89.71	6.18	6.18	7.79	16.99	30.08	2.30	MWD	SF(Lo)
2900.00	2900.00	2900.00	89.71	6.41	6.41	7.97	16.54	30.08	2.22	MWD	SF(Lo)
3000.00	3000.00	3000.00	89.71	6.63	6.63	8.15	16.09	30.08	2.15	MWD	SF(Lo)
3100.00	3100.00	3100.00	89.71	6.86	6.86	8.33	15.64	30.08	2.08	MWD	SF(Lo)
3200.00	3200.00	3200.00	89.71	7.08	7.08	8.51	15.19	30.08	2.02	MWD	SF(Lo)
3300.00	3300.00	3300.00	89.71	7.31	7.31	8.70	14.74	30.08	1.96	MWD	SF(Lo)
3400.00	3400.00	3400.00	89.71	7.53	7.53	8.89	14.29	30.08	1.91	MWD	SF(Lo)
3500.00	3500.00	3500.00	89.71	7.76	7.76	9.09	13.84	30.08	1.85	MWD	SF(Lo)
3600.00	3599.46	3599.47	89.72	7.96	7.96	9.28	14.30	30.95	1.86	MWD	SF(Lo)
3700.00	3698.84	3698.88	89.74	8.16	8.16	9.48	16.49	33.55	1.97	MWD	SF(Lo)
3800.00	3798.03	3798.16	89.77	8.36	8.35	9.68	20.42	37.89	2.17	MWD	SF(Lo)
3900.00	3897.31	3897.62	89.80	8.56	8.54	9.88	25.89	43.77	2.45	MWD	SF(Lo)
4000.00	3996.94	3997.43	89.83	8.77	8.74	10.09	31.60	49.91	2.73	MWD	
4100.00	4096.56	4097.24	89.85	8.98	8.94	10.30	37.31	56.04	2.99	MWD	
4200.00	4196.18	4197.06	89.86	9.19	9.15	10.52	43.02	62.18	3.25	MWD	
4300.00	4295.81	4296.87	89.87	9.40	9.35	10.73	48.73	68.31	3.49	MWD	
4400.00	4395.43	4396.68	89.88	9.61	9.56	10.95	54.43	74.45	3.72	MWD	
4500.00	4495.06	4496.49	89.89	9.83	9.76	11.18	60.14	80.59	3.94	MWD	
4600.00	4594.68	4596.30	89.90	10.05	9.97	11.41	65.84	86.72	4.15	MWD	
4700.00	4694.30	4696.11	89.91	10.27	10.18	11.64	71.55	92.86	4.36	MWD	
4800.00	4793.93	4795.93	89.91	10.49	10.39	11.87	77.25	98.99	4.55	MWD	
4900.00	4893.55	4895.74	89.92	10.71	10.60	12.11	82.95	105.13	4.74	MWD	
5000.00	4993.17	4995.55	89.92	10.93	10.81	12.35	88.65	111.26	4.92	MWD	
5100.00	5092.80	5095.36	89.93	11.15	11.02	12.60	94.35	117.40	5.09	MWD	
5200.00	5192.42	5195.17	89.93	11.38	11.23	12.85	100.05	123.54	5.26	MWD	
5300.00	5292.04	5294.98	89.93	11.60	11.44	13.10	105.75	129.67	5.42	MWD	
5400.00	5391.67	5394.80	89.94	11.83	11.66	13.36	111.45	135.81	5.58	MWD	
5500.00	5491.29	5494.61	89.94	12.06	11.87	13.62	117.15	141.94	5.72	MWD	
5600.00	5590.91	5594.42	89.94	12.29	12.08	13.88	122.85	148.08	5.87	MWD	
5700.00	5690.54	5694.23	89.94	12.52	12.30	14.15	128.54	154.21	6.01	MWD	
5800.00	5790.16	5794.04	89.95	12.75	12.51	14.43	134.24	160.35	6.14	MWD	
5900.00	5889.78	5893.85	89.95	12.98	12.73	14.71	139.94	166.49	6.27	MWD	
6000.00	5989.41	5993.66	89.95	13.21	12.94	14.99	145.63	172.62	6.40	MWD	
6100.00	6088.99	6093.43	138.16	13.44	13.16	15.28	151.99	179.41	6.54	MWD	
6200.00	6188.46	6193.09	138.64	13.68	13.38	15.57	159.64	187.50	6.73	MWD	
6300.00	6287.83	6292.65	139.35	13.91	13.59	15.87	168.27	196.55	6.95	MWD	
6400.00	6387.20	6392.20	140.02	14.14	13.81	16.17	176.96	205.66	7.16	MWD	
6500.00	6486.56	6491.76	140.64	14.38	14.03	16.47	185.65	214.81	7.37	MWD	

5D Anti-Collision Report

Secondary Well: Seawolf 1-12 Fed 93H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)											
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Survey Tool	Risk
6600.00	6585.93	6591.32	141.20	14.61	14.25	16.78	194.37	223.98	7.56	MWD	
6700.00	6685.30	6690.87	141.72	14.84	14.46	17.10	203.12	233.16	7.76	MWD	
6800.00	6784.67	6790.43	142.20	15.08	14.68	17.42	211.89	242.37	7.95	MWD	
6900.00	6884.04	6889.98	142.65	15.32	14.90	17.74	220.67	251.59	8.14	MWD	
7000.00	6983.40	6989.54	143.06	15.55	15.12	18.07	229.48	260.82	8.32	MWD	
7100.00	7082.77	7089.09	143.45	15.79	15.34	18.40	238.29	270.07	8.50	MWD	
7200.00	7182.14	7188.65	143.81	16.03	15.56	18.74	247.12	279.33	8.67	MWD	
7300.00	7281.51	7288.20	144.14	16.26	15.78	19.09	255.96	288.60	8.84	MWD	
7400.00	7380.88	7387.76	144.46	16.50	16.00	19.44	264.81	297.88	9.01	MWD	
7500.00	7480.25	7487.32	144.76	16.74	16.22	19.79	273.67	307.16	9.17	MWD	
7600.00	7579.61	7586.87	145.04	16.98	16.44	20.15	282.54	316.46	9.33	MWD	
7700.00	7678.98	7686.43	145.30	17.22	16.66	20.52	291.41	325.76	9.48	MWD	
7800.00	7778.35	7785.98	145.55	17.46	16.88	20.89	300.29	335.07	9.64	MWD	
7900.00	7877.72	7885.54	145.78	17.69	17.10	21.26	309.18	344.38	9.78	MWD	
8000.00	7977.09	7985.09	146.01	17.93	17.32	21.64	318.07	353.70	9.93	MWD	
8100.00	8076.45	8084.65	146.22	18.17	17.54	22.03	326.96	363.02	10.07	MWD	
8200.00	8175.82	8184.21	146.42	18.41	17.77	22.42	335.85	372.35	10.20	MWD	
8300.00	8275.19	8283.76	146.61	18.65	17.99	22.82	344.74	381.68	10.33	MWD	
8400.00	8374.56	8383.32	146.79	18.89	18.21	23.22	353.63	391.02	10.46	MWD	
8500.00	8473.93	8482.87	146.96	19.14	18.43	23.63	362.52	400.36	10.58	MWD	
8600.00	8573.29	8582.43	147.13	19.38	18.65	24.05	371.42	409.71	10.70	MWD	
8700.00	8672.66	8681.98	147.29	19.62	18.87	24.47	380.32	419.05	10.82	MWD	
8800.00	8772.03	8781.54	147.44	19.86	19.10	24.89	389.22	428.40	10.93	MWD	
8900.00	8871.40	8881.10	147.58	20.10	19.32	25.32	398.12	437.76	11.04	MWD	
9000.00	8970.77	8980.65	147.72	20.34	19.54	25.76	407.03	447.11	11.15	MWD	
9100.00	9070.13	9080.21	147.86	20.58	19.76	26.20	415.94	456.47	11.26	MWD	
9200.00	9169.50	9179.76	147.98	20.83	19.99	26.65	424.85	465.83	11.37	MWD	
9300.00	9268.87	9279.32	148.11	21.07	20.21	27.10	433.76	475.20	11.47	MWD	
9400.00	9368.24	9378.87	148.22	21.31	20.43	27.56	442.68	484.56	11.57	MWD	
9500.00	9467.61	9478.43	148.34	21.55	20.66	28.02	451.60	493.93	11.67	MWD	
9600.00	9566.97	9577.98	148.45	21.80	20.88	28.49	460.52	503.30	11.76	MWD	
9700.00	9666.34	9677.54	148.55	22.04	21.10	28.97	469.44	512.67	11.86	MWD	
9800.00	9765.71	9777.10	148.65	22.28	21.33	29.45	478.36	522.04	11.95	MWD	
9900.00	9865.08	9876.65	148.75	22.52	21.55	29.94	487.29	531.41	12.04	MWD	
10000.00	9964.45	9976.21	148.85	22.77	21.77	30.43	496.21	540.79	12.13	MWD	
10100.00	10063.82	10075.76	148.94	23.01	22.00	30.93	505.14	550.17	12.22	MWD	
10200.00	10163.18	10175.32	149.03	23.25	22.22	31.44	514.07	559.54	12.30	MWD	
10300.00	10262.55	10274.87	149.11	23.50	22.45	31.95	523.00	568.92	12.39	MWD	
10400.00	10361.92	10374.43	149.19	23.74	22.67	32.47	531.93	578.30	12.47	MWD	
10500.00	10461.29	10473.99	149.27	23.99	22.89	32.99	540.86	587.69	12.55	MWD	
10600.00	10560.66	10573.54	149.35	24.23	23.12	33.52	549.80	597.07	12.63	MWD	
10700.00	10660.02	10673.10	149.43	24.47	23.34	34.05	558.73	606.45	12.71	MWD	
10800.00	10759.39	10772.65	149.50	24.72	23.57	34.59	567.67	615.84	12.78	MWD	
10900.00	10858.76	10872.21	149.57	24.96	23.79	35.14	576.60	625.22	12.86	MWD	
11000.00	10958.13	10971.76	149.64	25.21	24.01	35.69	585.54	634.61	12.93	MWD	
11100.00	11057.50	11071.32	149.70	25.45	24.24	36.25	594.48	644.00	13.00	MWD	
11200.00	11156.86	11170.88	149.77	25.70	24.46	36.81	603.42	653.39	13.08	MWD	
11300.00	11256.23	11270.43	149.83	25.94	24.69	37.38	612.35	662.78	13.14	MWD	
11400.00	11355.60	11369.99	149.89	26.18	24.91	37.96	621.29	672.17	13.21	MWD	
11500.00	11455.88	11471.45	149.95	26.43	25.14	38.55	630.21	681.54	13.28	MWD	
11600.00	11556.62	11584.33	150.04	26.65	25.36	39.22	637.88	689.69	13.31	MWD	
11700.00	11682.75	11697.51	150.17	26.86	25.56	39.90	643.66	695.92	13.32	MWD	
11800.00	11794.90	11809.67	150.32	27.06	25.76	40.57	647.09	699.76	13.29	MWD	
11900.00	11872.80	11887.84	150.85	27.07	25.91	41.04	649.91	702.88	13.27	MWD	
12000.00	11946.83	11963.54	284.54	26.89	26.04	41.48	654.30	707.46	13.31	MWD	
12100.00	12016.85	12037.83	285.85	26.55	26.15	41.89	658.38	711.63	13.37	MWD	
12200.00	12082.39	12111.28	286.79	26.41	25.94	42.27	661.40	714.79	13.39	MWD	
12300.00	12142.74	12184.21	287.34	26.55	25.35	42.60	663.09	716.72	13.37	MWD	

5D Anti-Collision Report

Secondary Well: Seawolf 1-12 Fed 93H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)											
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Survey Tool	Risk
12400.00	12197.25	12256.89	287.49	26.73	24.67	42.89	663.43	717.26	13.32	MWD	
12500.00	12245.26	12329.61	287.24	26.94	23.97	43.16	662.23	716.37	13.23	MWD	
12600.00	12286.15	12402.65	286.59	27.19	23.31	43.39	659.66	714.13	13.11	MWD	
12700.00	12319.25	12476.28	285.55	27.50	22.73	43.60	655.56	710.69	12.89	MWD	
12800.00	12343.91	12550.84	284.15	27.86	22.30	43.79	650.28	706.33	12.60	MWD	
12900.00	12359.46	12627.04	282.82	28.29	22.06	43.97	644.96	701.98	12.31	MWD	
13000.00	12365.01	12706.20	282.40	28.79	22.05	44.16	642.44	700.50	12.06	MWD	
13100.00	12365.50	12806.20	282.38	29.49	22.18	44.42	640.88	700.47	11.76	MWD	
13200.00	12365.98	12906.20	282.36	30.29	22.33	44.72	639.33	700.43	11.46	MWD	
13300.00	12366.46	13006.20	282.34	31.18	22.50	45.08	637.56	700.40	11.15	MWD	
13400.00	12366.95	13106.20	282.32	32.14	22.69	45.47	635.62	700.37	10.82	MWD	
13500.00	12367.43	13206.20	282.31	33.18	22.91	45.91	633.60	700.33	10.49	MWD	
13600.00	12367.92	13306.20	282.29	34.28	23.15	46.39	631.50	700.30	10.18	MWD	
13700.00	12368.40	13406.20	282.27	35.44	23.41	46.91	629.23	700.27	9.86	MWD	
13800.00	12368.89	13506.20	282.25	36.66	23.69	47.48	626.80	700.23	9.53	MWD	
13900.00	12369.37	13606.20	282.23	37.93	23.99	48.08	624.29	700.20	9.22	MWD	
14000.00	12369.85	13706.20	282.21	39.24	24.30	48.71	621.71	700.17	8.92	MWD	
14100.00	12370.34	13806.20	282.20	40.59	24.64	49.39	619.07	700.14	8.64	MWD	
14200.00	12370.82	13906.20	282.18	41.97	24.99	50.09	616.38	700.10	8.36	MWD	
14300.00	12371.31	14006.20	282.16	43.39	25.36	50.83	613.64	700.07	8.10	MWD	
14400.00	12371.79	14106.20	282.14	44.84	25.75	51.60	610.86	700.04	7.85	MWD	
14500.00	12372.27	14206.20	282.12	46.31	26.15	52.40	607.90	700.01	7.60	MWD	
14600.00	12372.76	14306.20	282.10	47.81	26.56	53.23	604.83	699.97	7.36	MWD	
14700.00	12373.24	14406.20	282.09	49.34	26.99	54.08	601.75	699.94	7.13	MWD	
14800.00	12373.73	14506.20	282.07	50.88	27.43	54.96	598.68	699.91	6.91	MWD	
14900.00	12374.21	14606.20	282.05	52.44	27.88	55.87	595.62	699.88	6.71	MWD	
15000.00	12374.70	14706.20	282.03	54.01	28.35	56.80	592.55	699.85	6.52	MWD	
15100.00	12375.18	14806.20	282.01	55.61	28.82	57.75	589.45	699.81	6.34	MWD	
15200.00	12375.66	14906.20	282.00	57.21	29.31	58.72	586.33	699.78	6.17	MWD	
15300.00	12376.15	15006.20	281.98	58.83	29.81	59.72	583.18	699.75	6.00	MWD	
15400.00	12376.63	15106.20	281.96	60.46	30.31	60.73	580.00	699.72	5.84	MWD	
15500.00	12377.12	15206.20	281.94	62.10	30.83	61.76	576.75	699.69	5.69	MWD	
15600.00	12377.60	15306.20	281.92	63.76	31.35	62.81	573.47	699.66	5.54	MWD	
15700.00	12378.08	15406.20	281.90	65.42	31.88	63.87	570.18	699.62	5.40	MWD	
15800.00	12378.57	15506.20	281.89	67.09	32.43	64.95	566.88	699.59	5.27	MWD	
15900.00	12379.05	15606.20	281.87	68.77	32.97	66.04	563.56	699.56	5.14	MWD	
16000.00	12379.54	15706.20	281.85	70.45	33.53	67.15	560.22	699.53	5.02	MWD	
16100.00	12380.02	15806.20	281.83	72.14	34.09	68.28	556.87	699.50	4.90	MWD	
16200.00	12380.51	15906.20	281.81	73.84	34.66	69.41	553.51	699.47	4.79	MWD	
16300.00	12380.99	16006.20	281.79	75.55	35.23	70.56	550.14	699.44	4.68	MWD	
16400.00	12381.47	16106.20	281.78	77.26	35.81	71.72	546.75	699.41	4.58	MWD	
16500.00	12381.96	16206.20	281.76	78.97	36.40	72.89	543.36	699.38	4.48	MWD	
16600.00	12382.44	16306.20	281.74	80.70	36.99	74.07	539.95	699.34	4.39	MWD	
16700.00	12382.93	16406.20	281.72	82.42	37.58	75.26	536.54	699.31	4.30	MWD	
16800.00	12383.41	16506.20	281.70	84.15	38.18	76.46	533.12	699.28	4.21	MWD	
16900.00	12383.90	16606.19	281.68	85.88	38.79	77.67	529.69	699.25	4.12	MWD	
17000.00	12384.38	16706.19	281.67	87.62	39.40	78.89	526.25	699.22	4.04	MWD	
17100.00	12384.86	16806.19	281.65	89.36	40.01	80.11	522.81	699.19	3.96	MWD	
17200.00	12385.35	16906.19	281.63	91.11	40.63	81.35	519.35	699.16	3.89	MWD	
17300.00	12385.83	17006.19	281.61	92.85	41.25	82.59	515.90	699.13	3.82	MWD	
17400.00	12386.32	17106.19	281.59	94.61	41.88	83.84	512.43	699.10	3.75	MWD	
17500.00	12386.80	17206.19	281.57	96.36	42.51	85.10	508.96	699.07	3.68	MWD	
17600.00	12387.28	17306.19	281.56	98.12	43.14	86.36	505.48	699.04	3.61	MWD	
17700.00	12387.77	17406.19	281.54	99.87	43.77	87.63	502.00	699.01	3.55	MWD	
17800.00	12388.25	17506.19	281.52	101.64	44.41	88.90	498.52	698.98	3.49	MWD	
17900.00	12388.74	17606.19	281.50	103.40	45.05	90.19	495.02	698.95	3.43	MWD	
18000.00	12389.22	17706.19	281.48	105.16	45.70	91.47	491.53	698.92	3.37	MWD	
18100.00	12389.71	17806.19	281.46	106.93	46.34	92.77	488.03	698.89	3.31	MWD	

5D Anti-Collision Report

Secondary Well: Seawolf 1-12 Fed 93H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)											
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Survey Tool	Risk
18200.00	12390.19	17906.19	281.45	108.70	46.99	94.06	484.52	698.86	3.26	MWD	
18300.00	12390.67	18006.19	281.43	110.47	47.64	95.36	481.01	698.83	3.21	MWD	
18400.00	12391.16	18106.19	281.41	112.25	48.30	96.67	477.50	698.80	3.16	MWD	
18500.00	12391.64	18206.19	281.39	114.02	48.95	97.98	473.98	698.77	3.11	MWD	
18600.00	12392.13	18306.19	281.37	115.80	49.61	99.30	470.46	698.74	3.06	MWD	
18700.00	12392.61	18406.19	281.35	117.58	50.27	100.62	466.94	698.71	3.01	MWD	
18800.00	12393.09	18506.19	281.34	119.36	50.93	101.94	463.41	698.68	2.97	MWD	
18900.00	12393.58	18606.19	281.32	121.14	51.60	103.27	459.88	698.66	2.93	MWD	
19000.00	12394.06	18706.19	281.30	122.92	52.26	104.60	456.35	698.63	2.88	MWD	
19100.00	12394.55	18806.19	281.28	124.71	52.93	105.94	452.82	698.60	2.84	MWD	
19200.00	12395.03	18906.19	281.26	126.49	53.60	107.28	449.28	698.57	2.80	MWD	
19300.00	12395.52	19006.19	281.24	128.28	54.27	108.62	445.74	698.54	2.76	MWD	
19400.00	12396.00	19106.19	281.23	130.07	54.94	109.96	442.19	698.51	2.73	MWD	
19500.00	12396.48	19206.19	281.21	131.85	55.62	111.31	438.65	698.48	2.69	MWD	
19600.00	12396.97	19306.19	281.19	133.64	56.29	112.66	435.10	698.45	2.65	MWD	
19700.00	12397.45	19406.19	281.17	135.43	56.97	114.02	431.54	698.42	2.62	MWD	
19800.00	12397.94	19506.19	281.15	137.23	57.65	115.37	427.98	698.40	2.58	MWD	
19900.00	12398.42	19606.19	281.13	139.02	58.33	116.73	424.42	698.37	2.55	MWD	
20000.00	12398.91	19706.19	281.12	140.81	59.01	118.09	420.85	698.34	2.52	MWD	
20100.00	12399.39	19806.19	281.10	142.61	59.69	119.46	417.29	698.31	2.48	MWD	SF(Lo)
20200.00	12399.87	19906.19	281.08	144.40	60.38	120.83	413.72	698.28	2.45	MWD	SF(Lo)
20300.00	12400.36	20006.19	281.06	146.20	61.06	122.20	410.15	698.25	2.42	MWD	SF(Lo)
20400.00	12400.84	20106.19	281.04	147.99	61.75	123.57	406.57	698.23	2.39	MWD	SF(Lo)
20500.00	12401.33	20206.19	281.02	149.79	62.44	124.94	403.00	698.20	2.37	MWD	SF(Lo)
20600.00	12401.81	20306.19	281.00	151.59	63.12	126.32	399.42	698.17	2.34	MWD	SF(Lo)
20700.00	12402.29	20406.19	280.99	153.39	63.81	127.69	395.84	698.14	2.31	MWD	SF(Lo)
20800.00	12402.78	20506.19	280.97	155.19	64.50	129.07	392.27	698.11	2.28	MWD	SF(Lo)
20900.00	12403.26	20606.18	280.95	156.99	65.19	130.46	388.68	698.09	2.26	MWD	SF(Lo)
21000.00	12403.75	20706.18	280.93	158.79	65.89	131.84	385.10	698.06	2.23	MWD	SF(Lo)
21100.00	12404.23	20806.18	280.91	160.59	66.58	133.22	381.52	698.03	2.21	MWD	SF(Lo)
21200.00	12404.72	20906.18	280.89	162.39	67.27	134.61	377.93	698.00	2.18	MWD	SF(Lo)
21300.00	12405.20	21006.18	280.88	164.20	67.97	136.00	374.34	697.98	2.16	MWD	SF(Lo)
21400.00	12405.68	21106.18	280.86	166.00	68.66	137.39	370.76	697.95	2.13	MWD	SF(Lo)
21500.00	12406.17	21206.18	280.84	167.80	69.36	138.78	367.17	697.92	2.11	MWD	SF(Lo)
21600.00	12406.65	21306.18	280.82	169.61	70.05	140.17	363.57	697.89	2.09	MWD	SF(Lo)
21700.00	12407.14	21406.18	280.80	171.41	70.75	141.57	359.98	697.87	2.07	MWD	SF(Lo)
21800.00	12407.62	21506.18	280.78	173.22	71.45	142.97	356.39	697.84	2.04	MWD	SF(Lo)
21900.00	12408.10	21606.18	280.77	175.02	72.15	144.36	352.79	697.81	2.02	MWD	SF(Lo)
22000.00	12408.59	21706.18	280.75	176.83	72.85	145.76	349.20	697.79	2.00	MWD	SF(Lo)
22100.00	12409.07	21806.18	280.73	178.64	73.55	147.16	345.60	697.76	1.98	MWD	SF(Lo)
22200.00	12409.56	21906.18	280.71	180.44	74.25	148.56	342.00	697.73	1.96	MWD	SF(Lo)
22300.00	12410.04	22006.18	280.69	182.25	74.95	149.97	338.40	697.71	1.94	MWD	SF(Lo)
22400.00	12410.53	22106.18	280.67	184.06	75.65	151.37	334.80	697.68	1.92	MWD	SF(Lo)
22497.78	12411.00	22203.97	280.66	185.83	76.34	152.75	331.28	697.65	1.90	MWD	SF(Lo)

Secondary Well: Seawolf 1-12 Fed 84H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)											
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Survey Tool	Risk
0.00	0.00	0.00	89.60	0.00	0.00	0.00	59.37	60.10	81.96	MWD	
100.00	100.00	100.00	89.60	0.11	0.11	4.60	59.15	60.10	63.00	MWD	
200.00	200.00	200.00	89.60	0.34	0.34	4.62	58.70	60.10	42.82	MWD	
300.00	300.00	300.00	89.60	0.56	0.56	4.65	58.25	60.10	32.43	MWD	
400.00	400.00	400.00	89.60	0.79	0.79	4.69	57.80	60.10	26.10	MWD	
500.00	500.00	500.00	89.60	1.01	1.01	4.75	57.35	60.10	21.84	MWD	
600.00	600.00	600.00	89.60	1.24	1.24	4.81	56.90	60.10	18.77	MWD	
700.00	700.00	700.00	89.60	1.46	1.46	4.89	56.45	60.10	16.46	MWD	
800.00	800.00	800.00	89.60	1.69	1.69	4.97	56.00	60.10	14.66	MWD	
900.00	900.00	900.00	89.60	1.91	1.91	5.06	55.55	60.10	13.21	MWD	

5D Anti-Collision Report

Secondary Well: Seawolf 1-12 Fed 84H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)											
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Survey Tool	Risk
6800.00	6784.65	6790.17	128.13	15.32	14.89	17.42	258.42	289.08	9.43	MWD	
6900.00	6884.20	6889.85	128.58	15.56	15.11	17.75	265.57	296.65	9.55	MWD	
7000.00	6983.76	6989.54	129.01	15.80	15.33	18.08	272.72	304.23	9.66	MWD	
7100.00	7083.31	7089.23	129.42	16.04	15.56	18.41	279.88	311.83	9.76	MWD	
7200.00	7182.86	7188.91	129.81	16.27	15.78	18.75	287.05	319.45	9.86	MWD	
7300.00	7282.41	7288.60	130.18	16.51	16.01	19.10	294.24	327.07	9.96	MWD	
7400.00	7381.97	7388.29	130.53	16.75	16.23	19.45	301.44	334.72	10.06	MWD	
7500.00	7481.52	7487.97	130.87	16.99	16.45	19.80	308.64	342.37	10.15	MWD	
7600.00	7581.07	7587.66	131.19	17.22	16.68	20.16	315.85	350.04	10.24	MWD	
7700.00	7680.62	7687.35	131.50	17.46	16.90	20.53	323.08	357.71	10.33	MWD	
7800.00	7780.17	7787.03	131.80	17.70	17.13	20.90	330.31	365.40	10.41	MWD	
7900.00	7879.73	7886.72	132.09	17.94	17.35	21.28	337.55	373.10	10.50	MWD	
8000.00	7979.28	7986.41	132.36	18.18	17.58	21.66	344.80	380.80	10.58	MWD	
8100.00	8078.83	8086.09	132.62	18.42	17.80	22.05	352.07	388.51	10.66	MWD	
8200.00	8178.38	8185.78	132.87	18.65	18.03	22.44	359.34	396.23	10.74	MWD	
8300.00	8277.94	8285.47	133.11	18.89	18.25	22.84	366.61	403.96	10.82	MWD	
8400.00	8377.49	8385.15	133.35	19.13	18.48	23.24	373.90	411.70	10.89	MWD	
8500.00	8477.04	8484.84	133.57	19.37	18.70	23.65	381.19	419.44	10.97	MWD	
8600.00	8576.59	8584.53	133.79	19.61	18.93	24.06	388.49	427.19	11.04	MWD	
8700.00	8676.15	8684.21	134.00	19.85	19.15	24.48	395.79	434.94	11.11	MWD	
8800.00	8775.70	8783.90	134.20	20.09	19.38	24.91	403.10	442.70	11.18	MWD	
8900.00	8875.25	8883.59	134.39	20.33	19.60	25.34	410.41	450.46	11.25	MWD	
9000.00	8974.80	8983.27	134.58	20.57	19.83	25.78	417.73	458.23	11.32	MWD	
9100.00	9074.35	9082.96	134.76	20.81	20.05	26.22	425.06	466.00	11.38	MWD	
9200.00	9173.91	9182.65	134.94	21.04	20.28	26.67	432.39	473.78	11.45	MWD	
9300.00	9273.46	9282.33	135.11	21.28	20.50	27.12	439.72	481.57	11.51	MWD	
9400.00	9373.01	9382.02	135.27	21.52	20.73	27.58	447.06	489.35	11.57	MWD	
9500.00	9472.56	9481.71	135.43	21.76	20.95	28.05	454.40	497.14	11.63	MWD	
9600.00	9572.12	9581.39	135.59	22.00	21.18	28.52	461.75	504.94	11.69	MWD	
9700.00	9671.67	9681.08	135.74	22.24	21.40	29.00	469.10	512.74	11.75	MWD	
9800.00	9771.22	9780.77	135.88	22.48	21.63	29.48	476.45	520.54	11.81	MWD	
9900.00	9870.77	9880.45	136.02	22.72	21.85	29.97	483.81	528.34	11.86	MWD	
10000.00	9970.33	9980.14	136.16	22.96	22.08	30.46	491.16	536.15	11.92	MWD	
10100.00	10069.88	10079.83	136.29	23.20	22.30	30.96	498.53	543.96	11.97	MWD	
10200.00	10169.43	10179.51	136.42	23.44	22.53	31.47	505.89	551.77	12.03	MWD	
10300.00	10268.98	10279.20	136.55	23.68	22.76	31.98	513.26	559.59	12.08	MWD	
10400.00	10368.53	10378.89	136.67	23.92	22.98	32.50	520.63	567.41	12.13	MWD	
10500.00	10468.09	10478.57	136.79	24.16	23.21	33.03	528.00	575.23	12.18	MWD	
10600.00	10567.64	10578.26	136.90	24.40	23.43	33.56	535.38	583.05	12.23	MWD	
10700.00	10667.19	10677.95	137.02	24.64	23.66	34.09	542.75	590.88	12.28	MWD	
10800.00	10766.74	10777.63	137.13	24.88	23.88	34.63	550.13	598.71	12.33	MWD	
10900.00	10866.30	10877.32	137.23	25.12	24.11	35.18	557.51	606.54	12.37	MWD	
11000.00	10965.85	10977.01	137.34	25.36	24.34	35.73	564.90	614.37	12.42	MWD	
11100.00	11065.40	11076.69	137.44	25.60	24.56	36.29	572.28	622.20	12.46	MWD	
11200.00	11164.95	11176.38	137.54	25.84	24.79	36.86	579.67	630.04	12.51	MWD	
11300.00	11264.51	11276.07	137.63	26.08	25.01	37.43	587.06	637.88	12.55	MWD	
11400.00	11364.06	11375.75	137.73	26.32	25.24	38.01	594.45	645.72	12.60	MWD	
11500.00	11463.61	11475.44	137.82	26.56	25.46	38.59	601.84	653.56	12.64	MWD	
11600.00	11563.16	11575.13	137.91	26.80	25.69	39.18	609.24	661.40	12.68	MWD	
11700.00	11662.71	11674.81	138.00	27.04	25.92	39.78	616.63	669.25	12.72	MWD	
11800.00	11762.30	11774.53	138.09	27.28	26.14	40.38	623.65	676.69	12.76	MWD	
11900.00	11873.15	11885.50	138.10	27.50	26.35	41.05	628.72	682.16	12.76	MWD	
12000.00	11985.76	11998.14	270.27	27.70	26.55	41.75	630.82	684.65	12.72	MWD	
12100.00	12094.42	12106.81	268.74	27.87	26.73	42.42	631.20	685.37	12.65	MWD	
12200.00	12195.65	12209.02	266.90	27.77	26.88	43.05	631.83	686.25	12.61	MWD	
12300.00	12297.13	12315.75	265.12	27.36	26.95	43.66	633.27	687.81	12.61	MWD	
12400.00	12394.86	12427.35	263.45	27.26	26.36	44.22	635.15	689.87	12.61	MWD	
12500.00	12483.84	12543.91	261.97	27.41	25.30	44.71	637.20	692.17	12.59	MWD	

Secondary Well: Seawolf 1-12 Fed 84H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)											
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Survey Tool	Risk
12600.00	12558.34	12665.19	260.75	27.65	24.18	45.13	638.91	694.39	12.52	MWD	
12700.00	12612.49	12790.47	259.85	28.00	23.28	45.48	640.16	696.18	12.43	MWD	
12800.00	12641.22	12918.55	259.35	28.51	22.88	45.78	640.41	697.25	12.27	MWD	
12900.00	12645.26	13032.78	259.25	29.09	22.99	46.05	639.62	697.47	12.06	MWD	
13000.00	12645.77	13132.78	259.23	29.70	23.12	46.32	638.51	697.52	11.82	MWD	
13100.00	12646.28	13232.78	259.21	30.40	23.27	46.63	637.12	697.57	11.54	MWD	
13200.00	12646.78	13332.78	259.19	31.19	23.45	46.99	635.72	697.62	11.27	MWD	
13300.00	12647.29	13432.78	259.17	32.07	23.65	47.39	634.05	697.67	10.97	MWD	
13400.00	12647.80	13532.77	259.15	33.03	23.86	47.83	632.24	697.72	10.66	MWD	
13500.00	12648.31	13632.77	259.13	34.05	24.10	48.31	630.35	697.77	10.35	MWD	
13600.00	12648.81	13732.77	259.11	35.14	24.36	48.84	628.28	697.82	10.03	MWD	
13700.00	12649.32	13832.77	259.09	36.29	24.64	49.39	626.12	697.87	9.73	MWD	
13800.00	12649.83	13932.77	259.07	37.50	24.94	49.99	623.82	697.92	9.42	MWD	
13900.00	12650.34	14032.77	259.05	38.75	25.25	50.62	621.39	697.98	9.11	MWD	
14000.00	12650.85	14132.77	259.03	40.05	25.59	51.29	618.89	698.03	8.82	MWD	
14100.00	12651.35	14232.77	259.01	41.38	25.94	51.99	616.34	698.08	8.54	MWD	
14200.00	12651.86	14332.77	258.99	42.76	26.30	52.72	613.71	698.13	8.27	MWD	
14300.00	12652.37	14432.77	258.97	44.16	26.68	53.48	610.98	698.18	8.01	MWD	
14400.00	12652.88	14532.77	258.95	45.60	27.08	54.27	608.19	698.23	7.75	MWD	
14500.00	12653.38	14632.77	258.93	47.06	27.48	55.08	605.37	698.29	7.52	MWD	
14600.00	12653.89	14732.77	258.91	48.55	27.91	55.93	602.52	698.34	7.29	MWD	
14700.00	12654.40	14832.77	258.89	50.06	28.34	56.80	599.65	698.39	7.07	MWD	
14800.00	12654.91	14932.77	258.87	51.59	28.79	57.69	596.72	698.44	6.87	MWD	
14900.00	12655.42	15032.77	258.85	53.14	29.25	58.61	593.73	698.49	6.67	MWD	
15000.00	12655.92	15132.77	258.83	54.71	29.72	59.55	590.71	698.55	6.48	MWD	
15100.00	12656.43	15232.77	258.81	56.29	30.20	60.51	587.67	698.60	6.30	MWD	
15200.00	12656.94	15332.77	258.79	57.89	30.69	61.49	584.60	698.65	6.13	MWD	
15300.00	12657.45	15432.77	258.77	59.50	31.19	62.48	581.51	698.70	5.96	MWD	
15400.00	12657.95	15532.77	258.75	61.12	31.70	63.50	578.39	698.76	5.81	MWD	
15500.00	12658.46	15632.77	258.73	62.76	32.21	64.54	575.25	698.81	5.66	MWD	
15600.00	12658.97	15732.77	258.71	64.40	32.74	65.59	572.08	698.86	5.51	MWD	
15700.00	12659.48	15832.77	258.69	66.05	33.27	66.65	568.91	698.91	5.38	MWD	
15800.00	12659.99	15932.77	258.67	67.72	33.81	67.73	565.71	698.97	5.25	MWD	
15900.00	12660.49	16032.77	258.65	69.39	34.36	68.83	562.50	699.02	5.12	MWD	
16000.00	12661.00	16132.77	258.63	71.07	34.92	69.94	559.27	699.07	5.00	MWD	
16100.00	12661.51	16232.77	258.61	72.75	35.48	71.06	556.03	699.13	4.89	MWD	
16200.00	12662.02	16332.77	258.59	74.45	36.05	72.20	552.78	699.18	4.78	MWD	
16300.00	12662.52	16432.77	258.57	76.14	36.62	73.34	549.51	699.23	4.67	MWD	
16400.00	12663.03	16532.77	258.55	77.85	37.20	74.50	546.23	699.29	4.57	MWD	
16500.00	12663.54	16632.77	258.53	79.56	37.78	75.67	542.95	699.34	4.47	MWD	
16600.00	12664.05	16732.76	258.51	81.28	38.37	76.85	539.65	699.39	4.38	MWD	
16700.00	12664.55	16832.76	258.49	83.00	38.97	78.03	536.35	699.45	4.29	MWD	
16800.00	12665.06	16932.76	258.47	84.72	39.57	79.23	533.03	699.50	4.20	MWD	
16900.00	12665.57	17032.76	258.45	86.45	40.17	80.44	529.71	699.56	4.12	MWD	
17000.00	12666.08	17132.76	258.43	88.18	40.78	81.65	526.38	699.61	4.04	MWD	
17100.00	12666.59	17232.76	258.41	89.92	41.39	82.88	523.05	699.66	3.96	MWD	
17200.00	12667.09	17332.76	258.39	91.66	42.01	84.11	519.70	699.72	3.89	MWD	
17300.00	12667.60	17432.76	258.37	93.40	42.63	85.35	516.36	699.77	3.82	MWD	
17400.00	12668.11	17532.76	258.35	95.15	43.25	86.59	513.00	699.83	3.75	MWD	
17500.00	12668.62	17632.76	258.33	96.90	43.87	87.84	509.64	699.88	3.68	MWD	
17600.00	12669.12	17732.76	258.31	98.65	44.50	89.10	506.28	699.93	3.61	MWD	
17700.00	12669.63	17832.76	258.29	100.41	45.14	90.37	502.91	699.99	3.55	MWD	
17800.00	12670.14	17932.76	258.27	102.16	45.77	91.64	499.54	700.04	3.49	MWD	
17900.00	12670.65	18032.76	258.25	103.92	46.41	92.92	496.16	700.10	3.43	MWD	
18000.00	12671.16	18132.76	258.23	105.69	47.05	94.20	492.77	700.15	3.38	MWD	
18100.00	12671.66	18232.76	258.21	107.45	47.70	95.49	489.39	700.21	3.32	MWD	
18200.00	12672.17	18332.76	258.19	109.22	48.34	96.78	486.00	700.26	3.27	MWD	
18300.00	12672.68	18432.76	258.17	110.99	48.99	98.08	482.61	700.32	3.22	MWD	

5D Anti-Collision Report

Secondary Well: Seawolf 1-12 Fed 84H (p)(TVD relative to Drill Floor)(All Azimuth Relative to GRID NORTH)											
Pri MD (US ft)	TVD (US ft)	Sec MD (US ft)	T.Face to Sec (°)	S.Major (US ft)	S.Minor (US ft)	TVD Spread (US ft)	ES (US ft)	CC (US ft)	SF	Survey Tool	Risk
18400.00	12673.19	18532.76	258.15	112.76	49.65	99.38	479.21	700.37	3.17	MWD	
18500.00	12673.69	18632.76	258.13	114.53	50.30	100.69	475.81	700.43	3.12	MWD	
18600.00	12674.20	18732.76	258.11	116.30	50.96	102.00	472.41	700.48	3.07	MWD	
18700.00	12674.71	18832.76	258.09	118.08	51.61	103.32	469.00	700.54	3.03	MWD	
18800.00	12675.22	18932.76	258.07	119.86	52.27	104.63	465.60	700.59	2.98	MWD	
18900.00	12675.72	19032.76	258.05	121.63	52.94	105.96	462.19	700.65	2.94	MWD	
19000.00	12676.23	19132.76	258.03	123.41	53.60	107.29	458.77	700.71	2.90	MWD	
19100.00	12676.74	19232.76	258.01	125.20	54.26	108.62	455.36	700.76	2.86	MWD	
19200.00	12677.25	19332.76	257.99	126.98	54.93	109.95	451.94	700.82	2.82	MWD	
19300.00	12677.76	19432.76	257.97	128.76	55.60	111.29	448.52	700.87	2.78	MWD	
19400.00	12678.26	19532.76	257.95	130.55	56.27	112.63	445.10	700.93	2.74	MWD	
19500.00	12678.77	19632.76	257.93	132.33	56.94	113.97	441.68	700.99	2.70	MWD	
19600.00	12679.28	19732.76	257.91	134.12	57.62	115.32	438.26	701.04	2.67	MWD	
19700.00	12679.79	19832.76	257.89	135.91	58.29	116.67	434.83	701.10	2.63	MWD	
19800.00	12680.29	19932.76	257.87	137.70	58.97	118.02	431.40	701.15	2.60	MWD	
19900.00	12680.80	20032.75	257.85	139.49	59.65	119.38	427.97	701.21	2.57	MWD	
20000.00	12681.31	20132.75	257.83	141.28	60.33	120.74	424.54	701.27	2.53	MWD	
20100.00	12681.82	20232.75	257.81	143.08	61.01	122.10	421.11	701.32	2.50	MWD	
20200.00	12682.33	20332.75	257.79	144.87	61.69	123.46	417.68	701.38	2.47	MWD	SF(Lo)
20300.00	12682.83	20432.75	257.78	146.66	62.37	124.82	414.24	701.44	2.44	MWD	SF(Lo)
20400.00	12683.34	20532.75	257.76	148.46	63.06	126.19	410.81	701.49	2.41	MWD	SF(Lo)
20500.00	12683.85	20632.75	257.74	150.25	63.74	127.56	407.37	701.55	2.38	MWD	SF(Lo)
20600.00	12684.36	20732.75	257.72	152.05	64.43	128.93	403.94	701.61	2.36	MWD	SF(Lo)
20700.00	12684.86	20832.75	257.70	153.85	65.11	130.31	400.50	701.66	2.33	MWD	SF(Lo)
20800.00	12685.37	20932.75	257.68	155.65	65.80	131.68	397.06	701.72	2.30	MWD	SF(Lo)
20900.00	12685.88	21032.75	257.66	157.44	66.49	133.06	393.62	701.78	2.28	MWD	SF(Lo)
21000.00	12686.39	21132.75	257.64	159.24	67.18	134.44	390.18	701.84	2.25	MWD	SF(Lo)
21100.00	12686.90	21232.75	257.62	161.04	67.87	135.82	386.73	701.89	2.23	MWD	SF(Lo)
21200.00	12687.40	21332.75	257.60	162.84	68.56	137.21	383.29	701.95	2.20	MWD	SF(Lo)
21300.00	12687.91	21432.75	257.58	164.65	69.26	138.59	379.85	702.01	2.18	MWD	SF(Lo)
21400.00	12688.42	21532.75	257.56	166.45	69.95	139.98	376.40	702.07	2.16	MWD	SF(Lo)
21500.00	12688.93	21632.75	257.54	168.25	70.64	141.37	372.96	702.12	2.13	MWD	SF(Lo)
21600.00	12689.43	21732.75	257.52	170.05	71.34	142.76	369.51	702.18	2.11	MWD	SF(Lo)
21700.00	12689.94	21832.75	257.50	171.86	72.04	144.15	366.07	702.24	2.09	MWD	SF(Lo)
21800.00	12690.45	21932.75	257.48	173.66	72.73	145.54	362.62	702.30	2.07	MWD	SF(Lo)
21900.00	12690.96	22032.75	257.46	175.46	73.43	146.93	359.18	702.36	2.05	MWD	SF(Lo)
22000.00	12691.46	22132.75	257.44	177.27	74.13	148.33	355.73	702.41	2.03	MWD	SF(Lo)
22100.00	12691.97	22232.75	257.42	179.07	74.83	149.73	352.28	702.47	2.01	MWD	SF(Lo)
22200.00	12692.48	22332.75	257.40	180.88	75.53	151.13	348.83	702.53	1.99	MWD	SF(Lo)
22300.00	12692.99	22432.75	257.38	182.69	76.23	152.53	345.38	702.59	1.97	MWD	SF(Lo)
22400.00	12693.50	22532.75	257.36	184.49	76.93	153.93	341.94	702.65	1.95	MWD	SF(Lo)
22497.78	12693.99	22630.53	257.34	186.26	77.61	155.30	338.56	702.70	1.93	MWD	SF(Lo)



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5D Plan Report

Devon Energy**Field Name:** *Lea Co, NM Nad 83 NMEZ***Site Name:** *Seawolf 1-12 Fed Pad***Well Name:** *Seawolf 1-12 Fed 83H***Plan:** *P1:V1*

6 October 2017





Seawolf 1-12 Fed 83H

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: Seawolf 1-12 Fed Pad	Units: US ft	North Reference: Grid	Convergence Angle: 0.43	
	Position:	Northing: 393519.71 US ft	Latitude: 32° 4' 45.47"	
		Easting: 791194.43 US ft	Longitude: -103° 31' 35.86"	
	Elevation above MSL:3316.70 US ft		Comment:	
Slot: Seawolf 1-12 Fed 83H	Position (Relative to Site Centre)			
	+N/-S: 0.00 US ft	Northing: 393519.71 US ft	Latitude: 32°4'45.47"	
	+E/-W: 0.00 US ft	Easting: 791194.43 US ft	Longitude: -103°31'35.86"	
	Slot TVD Reference: Ground Elevation		Comment:	
Elevation above MSL: 3316.70 US ft				
Comment:				
Well: Seawolf 1-12 Fed 83H	Type:Main well	UWI:	Plan:P1:V1	
	File Number:	Comment:		
	Closure Distance:10074.5US ft	Closure Azimuth:180.53°		
	Vertical Section: Position of Origin (Relative to Slot centre)			
	+N/-S: 0.00 US ft	+E/-W: -0.00 US ft	Az: 179.58°	
	Magnetic Parameters:			
	Model: bggm2017	Field Strength:	Declination: 6.97°	Dip: 59.91°
	47891.5nT		Date:	10/Oct/2017

Drill floor: Plan: P1:V1	Rig Height (Drill Floor): 27.00 US ft	Elevation above MSL: 3343.70 US ft	Inclination: 0.00°	Azimuth: 0.00°
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Target set: Seawolf 1-12 Fed 83H Tgts Comment:							
Target Name:	Shape:	TVD (US ft)	N. Offset (US ft)	E. Offset (US ft)	Northings (US ft)	Easting (US ft)	Comment
PBHL 83H	Point	12540.00	-10074.05	-92.36	383445.66	791102.07	
NP	Point	11942.04	150.00	-167.00	393669.71	791027.43	

Wellpath created using minimum curvature.

Tie Point:	MD: 0.00 US ft	Inclination: 0.00°	Azimuth: 0.00°	TVD: 0.00 US ft	North Offset: 0.00 US ft	East Offset: -0.00 US ft
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5D Plan Report

Salient Points: (Relative to Slot centre)(TVD relative to Drill Floor)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100US ft)	Comment
0.00	0.00	0.00	0.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
6000.00	0.00	0.00	6000.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	Nudge @ 1° DLS
6224.85	2.25	311.93	6224.79	-2.97	2.95	-3.28	393522.66	791191.15	1.00	Hold
11721.54	2.25	311.93	11717.25	-148.24	147.05	-163.72	393666.76	791030.71	0.00	Drop @ 1° DLS
11946.39	0.00	0.00	11942.04	-151.21	150.00	-167.00	393669.71	791027.43	1.00	KOP-Build @ 10° DLS
12844.90	89.85	179.58	12515.00	420.26	-421.46	-162.83	393098.25	791031.60	10.00	Landing Pt
22497.78	89.85	179.58	12540.00	10073.11	-10074.05	-92.36	383445.66	791102.07	0.00	PBHL 83H

Interpolated Points: (Relative to Slot centre)(TVD relative to Drill Floor)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100US ft)	Comment
0.00	0.00	0.00	0.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
100.00	0.00	0.00	100.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
200.00	0.00	0.00	200.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
300.00	0.00	0.00	300.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
400.00	0.00	0.00	400.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
500.00	0.00	0.00	500.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
600.00	0.00	0.00	600.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
700.00	0.00	0.00	700.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
800.00	0.00	0.00	800.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
900.00	0.00	0.00	900.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
1000.00	0.00	0.00	1000.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
1100.00	0.00	0.00	1100.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
1200.00	0.00	0.00	1200.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
1300.00	0.00	0.00	1300.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
1400.00	0.00	0.00	1400.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
1500.00	0.00	0.00	1500.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
1600.00	0.00	0.00	1600.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
1700.00	0.00	0.00	1700.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
1800.00	0.00	0.00	1800.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
1900.00	0.00	0.00	1900.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
2000.00	0.00	0.00	2000.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
2100.00	0.00	0.00	2100.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
2200.00	0.00	0.00	2200.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
2300.00	0.00	0.00	2300.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
2400.00	0.00	0.00	2400.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
2500.00	0.00	0.00	2500.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
2600.00	0.00	0.00	2600.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
2700.00	0.00	0.00	2700.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
2800.00	0.00	0.00	2800.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
2900.00	0.00	0.00	2900.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
3000.00	0.00	0.00	3000.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
3100.00	0.00	0.00	3100.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
3200.00	0.00	0.00	3200.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
3300.00	0.00	0.00	3300.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
3400.00	0.00	0.00	3400.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
3500.00	0.00	0.00	3500.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
3600.00	0.00	0.00	3600.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
3700.00	0.00	0.00	3700.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
3800.00	0.00	0.00	3800.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
3900.00	0.00	0.00	3900.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
4000.00	0.00	0.00	4000.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
4100.00	0.00	0.00	4100.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
4200.00	0.00	0.00	4200.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
4300.00	0.00	0.00	4300.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
4400.00	0.00	0.00	4400.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
4500.00	0.00	0.00	4500.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	

SD Plan Report

Interpolated Points: (Relative to Slot centre)(TVD relative to Drill Floor)										Comment
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100US ft)	
4600.00	0.00	0.00	4600.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
4700.00	0.00	0.00	4700.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
4800.00	0.00	0.00	4800.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
4900.00	0.00	0.00	4900.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
5000.00	0.00	0.00	5000.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
5100.00	0.00	0.00	5100.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
5200.00	0.00	0.00	5200.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
5300.00	0.00	0.00	5300.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
5400.00	0.00	0.00	5400.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
5500.00	0.00	0.00	5500.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
5600.00	0.00	0.00	5600.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
5700.00	0.00	0.00	5700.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
5800.00	0.00	0.00	5800.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
5900.00	0.00	0.00	5900.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	
6000.00	0.00	0.00	6000.00	-0.00	0.00	-0.00	393519.71	791194.43	0.00	Nudge @ 1° DLS
6100.00	1.00	311.93	6099.99	-0.59	0.58	-0.65	393520.29	791193.78	1.00	
6200.00	2.00	311.93	6199.96	-2.35	2.33	-2.60	393522.04	791191.83	1.00	
6224.85	2.25	311.93	6224.79	-2.97	2.95	-3.28	393522.66	791191.15	1.00	Hold
6300.00	2.25	311.93	6299.88	-4.96	4.92	-5.48	393524.63	791188.95	0.00	
6400.00	2.25	311.93	6399.81	-7.60	7.54	-8.39	393527.25	791186.04	0.00	
6500.00	2.25	311.93	6499.73	-10.24	10.16	-11.31	393529.87	791183.12	0.00	
6600.00	2.25	311.93	6599.65	-12.89	12.78	-14.23	393532.49	791180.20	0.00	
6700.00	2.25	311.93	6699.58	-15.53	15.40	-17.15	393535.11	791177.28	0.00	
6800.00	2.25	311.93	6799.50	-18.17	18.03	-20.07	393537.74	791174.36	0.00	
6900.00	2.25	311.93	6899.42	-20.82	20.65	-22.99	393540.36	791171.44	0.00	
7000.00	2.25	311.93	6999.35	-23.46	23.27	-25.91	393542.98	791168.52	0.00	
7100.00	2.25	311.93	7099.27	-26.10	25.89	-28.83	393545.60	791165.60	0.00	
7200.00	2.25	311.93	7199.19	-28.74	28.51	-31.74	393548.22	791162.69	0.00	
7300.00	2.25	311.93	7299.11	-31.39	31.13	-34.66	393550.84	791159.77	0.00	
7400.00	2.25	311.93	7399.04	-34.03	33.76	-37.58	393553.47	791156.85	0.00	
7500.00	2.25	311.93	7498.96	-36.67	36.38	-40.50	393556.09	791153.93	0.00	
7600.00	2.25	311.93	7598.88	-39.32	39.00	-43.42	393558.71	791151.01	0.00	
7700.00	2.25	311.93	7698.81	-41.96	41.62	-46.34	393561.33	791148.09	0.00	
7800.00	2.25	311.93	7798.73	-44.60	44.24	-49.26	393563.95	791145.17	0.00	
7900.00	2.25	311.93	7898.65	-47.24	46.86	-52.18	393566.57	791142.25	0.00	
8000.00	2.25	311.93	7998.58	-49.89	49.49	-55.09	393569.20	791139.34	0.00	
8100.00	2.25	311.93	8098.50	-52.53	52.11	-58.01	393571.82	791136.42	0.00	
8200.00	2.25	311.93	8198.42	-55.17	54.73	-60.93	393574.44	791133.50	0.00	
8300.00	2.25	311.93	8298.34	-57.82	57.35	-63.85	393577.06	791130.58	0.00	
8400.00	2.25	311.93	8398.27	-60.46	59.97	-66.77	393579.68	791127.66	0.00	
8500.00	2.25	311.93	8498.19	-63.10	62.59	-69.69	393582.30	791124.74	0.00	
8600.00	2.25	311.93	8598.11	-65.74	65.22	-72.61	393584.93	791121.82	0.00	
8700.00	2.25	311.93	8698.04	-68.39	67.84	-75.53	393587.55	791118.90	0.00	
8800.00	2.25	311.93	8797.96	-71.03	70.46	-78.44	393590.17	791115.99	0.00	
8900.00	2.25	311.93	8897.88	-73.67	73.08	-81.36	393592.79	791113.07	0.00	
9000.00	2.25	311.93	8997.81	-76.32	75.70	-84.28	393595.41	791110.15	0.00	
9100.00	2.25	311.93	9097.73	-78.96	78.32	-87.20	393598.03	791107.23	0.00	
9200.00	2.25	311.93	9197.65	-81.60	80.95	-90.12	393600.66	791104.31	0.00	
9300.00	2.25	311.93	9297.57	-84.24	83.57	-93.04	393603.28	791101.39	0.00	
9400.00	2.25	311.93	9397.50	-86.89	86.19	-95.96	393605.90	791098.47	0.00	
9500.00	2.25	311.93	9497.42	-89.53	88.81	-98.88	393608.52	791095.55	0.00	
9600.00	2.25	311.93	9597.34	-92.17	91.43	-101.80	393611.14	791092.63	0.00	
9700.00	2.25	311.93	9697.27	-94.82	94.05	-104.71	393613.76	791089.72	0.00	
9800.00	2.25	311.93	9797.19	-97.46	96.68	-107.63	393616.39	791086.80	0.00	
9900.00	2.25	311.93	9897.11	-100.10	99.30	-110.55	393619.01	791083.88	0.00	
10000.00	2.25	311.93	9997.04	-102.74	101.92	-113.47	393621.63	791080.96	0.00	
10100.00	2.25	311.93	10096.96	-105.39	104.54	-116.39	393624.25	791078.04	0.00	
10200.00	2.25	311.93	10196.88	-108.03	107.16	-119.31	393626.87	791075.12	0.00	

Relative to Interpolated Slot

DLS @ 1° 0.000000 0.000000 0.000000 0.000000 0.000000

5D Plan Report

Interpolated Points: (Relative to Slot centre)(TVD relative to Drill Floor)										Comment
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100US ft)	
10300.00	2.25	311.93	10296.80	-110.67	109.78	-122.23	393629.49	791072.20	0.00	
10400.00	2.25	311.93	10396.73	-113.32	112.41	-125.15	393632.12	791069.28	0.00	
10500.00	2.25	311.93	10496.65	-115.96	115.03	-128.06	393634.74	791066.37	0.00	
10600.00	2.25	311.93	10596.57	-118.60	117.65	-130.98	393637.36	791063.45	0.00	
10700.00	2.25	311.93	10696.50	-121.24	120.27	-133.90	393639.98	791060.53	0.00	
10800.00	2.25	311.93	10796.42	-123.89	122.89	-136.82	393642.60	791057.61	0.00	
10900.00	2.25	311.93	10896.34	-126.53	125.51	-139.74	393645.22	791054.69	0.00	
11000.00	2.25	311.93	10996.27	-129.17	128.14	-142.66	393647.85	791051.77	0.00	
11100.00	2.25	311.93	11096.19	-131.82	130.76	-145.58	393650.47	791048.85	0.00	
11200.00	2.25	311.93	11196.11	-134.46	133.38	-148.50	393653.09	791045.93	0.00	
11300.00	2.25	311.93	11296.03	-137.10	136.00	-151.41	393655.71	791043.02	0.00	
11400.00	2.25	311.93	11395.96	-139.74	138.62	-154.33	393658.33	791040.10	0.00	
11500.00	2.25	311.93	11495.88	-142.39	141.24	-157.25	393660.95	791037.18	0.00	
11600.00	2.25	311.93	11595.80	-145.03	143.87	-160.17	393663.58	791034.26	0.00	
11700.00	2.25	311.93	11695.73	-147.67	146.49	-163.09	393666.20	791031.34	0.00	
11721.54	2.25	311.93	11717.25	-148.24	147.05	-163.72	393666.76	791030.71	0.00	Drop @ 1° DLS
11800.00	1.46	311.93	11795.67	-149.95	148.75	-165.61	393668.46	791028.82	1.00	
11900.00	0.46	311.93	11895.65	-151.09	149.87	-166.86	393669.58	791027.57	1.00	
11946.39	0.00	0.00	11942.04	-151.21	150.00	-167.00	393669.71	791027.43	1.00	KOP-Build @ 10° DLS
12000.00	5.36	179.58	11995.57	-148.71	147.49	-166.98	393667.20	791027.45	10.00	
12100.00	15.36	179.58	12093.82	-130.75	129.53	-166.85	393649.24	791027.58	10.00	
12200.00	25.36	179.58	12187.45	-96.00	94.78	-166.60	393614.49	791027.83	10.00	
12300.00	35.36	179.58	12273.63	-45.51	44.30	-166.23	393564.01	791028.20	10.00	
12400.00	45.36	179.58	12349.73	19.16	-20.37	-165.76	393499.34	791028.67	10.00	
12500.00	55.36	179.58	12413.44	96.07	-97.28	-165.19	393422.43	791029.24	10.00	
12600.00	65.36	179.58	12462.83	182.88	-184.09	-164.56	393335.62	791029.87	10.00	
12700.00	75.36	179.58	12496.40	276.94	-278.15	-163.87	393241.56	791030.56	10.00	
12800.00	85.36	179.58	12513.12	375.41	-376.61	-163.16	393143.10	791031.27	10.00	
12844.90	89.85	179.58	12515.00	420.26	-421.46	-162.83	393098.25	791031.60	10.00	Landing Pt
12900.00	89.85	179.58	12515.14	475.36	-476.55	-162.43	393043.16	791032.00	0.00	
13000.00	89.85	179.58	12515.40	575.36	-576.55	-161.70	392943.16	791032.73	0.00	
13100.00	89.85	179.58	12515.66	675.36	-676.55	-160.97	392843.16	791033.46	0.00	
13200.00	89.85	179.58	12515.92	775.35	-776.54	-160.24	392743.17	791034.19	0.00	
13300.00	89.85	179.58	12516.17	875.35	-876.54	-159.51	392643.17	791034.92	0.00	
13400.00	89.85	179.58	12516.43	975.35	-976.54	-158.78	392543.17	791035.65	0.00	
13500.00	89.85	179.58	12516.69	1075.35	-1076.54	-158.05	392443.17	791036.38	0.00	
13600.00	89.85	179.58	12516.95	1175.35	-1176.53	-157.32	392343.18	791037.11	0.00	
13700.00	89.85	179.58	12517.21	1275.35	-1276.53	-156.59	392243.18	791037.84	0.00	
13800.00	89.85	179.58	12517.47	1375.35	-1376.53	-155.86	392143.18	791038.57	0.00	
13900.00	89.85	179.58	12517.73	1475.35	-1476.52	-155.13	392043.19	791039.30	0.00	
14000.00	89.85	179.58	12517.99	1575.35	-1576.52	-154.40	391943.19	791040.03	0.00	
14100.00	89.85	179.58	12518.25	1675.35	-1676.52	-153.67	391843.19	791040.76	0.00	
14200.00	89.85	179.58	12518.51	1775.35	-1776.51	-152.94	391743.20	791041.49	0.00	
14300.00	89.85	179.58	12518.77	1875.35	-1876.51	-152.21	391643.20	791042.22	0.00	
14400.00	89.85	179.58	12519.02	1975.35	-1976.51	-151.48	391543.20	791042.95	0.00	
14500.00	89.85	179.58	12519.28	2075.35	-2076.51	-150.75	391443.20	791043.68	0.00	
14600.00	89.85	179.58	12519.54	2175.35	-2176.50	-150.02	391343.21	791044.41	0.00	
14700.00	89.85	179.58	12519.80	2275.35	-2276.50	-149.29	391243.21	791045.14	0.00	
14800.00	89.85	179.58	12520.06	2375.35	-2376.50	-148.56	391143.21	791045.87	0.00	
14900.00	89.85	179.58	12520.32	2475.35	-2476.49	-147.83	391043.22	791046.60	0.00	
15000.00	89.85	179.58	12520.58	2575.35	-2576.49	-147.10	390943.22	791047.33	0.00	
15100.00	89.85	179.58	12520.84	2675.35	-2676.49	-146.37	390843.22	791048.06	0.00	
15200.00	89.85	179.58	12521.10	2775.35	-2776.48	-145.64	390743.23	791048.79	0.00	
15300.00	89.85	179.58	12521.36	2875.35	-2876.48	-144.91	390643.23	791049.52	0.00	
15400.00	89.85	179.58	12521.61	2975.35	-2976.48	-144.18	390543.23	791050.25	0.00	
15500.00	89.85	179.58	12521.87	3075.35	-3076.48	-143.45	390443.23	791050.98	0.00	
15600.00	89.85	179.58	12522.13	3175.35	-3176.47	-142.72	390343.24	791051.71	0.00	

SD Plan Report

Interpolated Points: (Relative to Slot centre)(TVD relative to Drill Floor)										Comment
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	DLS (%/100US ft)	
15700.00	89.85	179.58	12522.39	3275.35	-3276.47	-141.99	390243.24	791052.44	0.00	
15800.00	89.85	179.58	12522.65	3375.35	-3376.47	-141.26	390143.24	791053.17	0.00	
15900.00	89.85	179.58	12522.91	3475.35	-3476.46	-140.53	390043.25	791053.90	0.00	
16000.00	89.85	179.58	12523.17	3575.35	-3576.46	-139.80	389943.25	791054.63	0.00	
16100.00	89.85	179.58	12523.43	3675.35	-3676.46	-139.07	389843.25	791055.36	0.00	
16200.00	89.85	179.58	12523.69	3775.34	-3776.45	-138.34	389743.26	791056.09	0.00	
16300.00	89.85	179.58	12523.95	3875.34	-3876.45	-137.61	389643.26	791056.82	0.00	
16400.00	89.85	179.58	12524.20	3975.34	-3976.45	-136.88	389543.26	791057.55	0.00	
16500.00	89.85	179.58	12524.46	4075.34	-4076.45	-136.15	389443.26	791058.28	0.00	
16600.00	89.85	179.58	12524.72	4175.34	-4176.44	-135.42	389343.27	791059.01	0.00	
16700.00	89.85	179.58	12524.98	4275.34	-4276.44	-134.69	389243.27	791059.74	0.00	
16800.00	89.85	179.58	12525.24	4375.34	-4376.44	-133.96	389143.27	791060.47	0.00	
16900.00	89.85	179.58	12525.50	4475.34	-4476.43	-133.23	389043.28	791061.20	0.00	
17000.00	89.85	179.58	12525.76	4575.34	-4576.43	-132.50	388943.28	791061.93	0.00	
17100.00	89.85	179.58	12526.02	4675.34	-4676.43	-131.76	388843.28	791062.67	0.00	
17200.00	89.85	179.58	12526.28	4775.34	-4776.42	-131.03	388743.29	791063.40	0.00	
17300.00	89.85	179.58	12526.54	4875.34	-4876.42	-130.30	388643.29	791064.13	0.00	
17400.00	89.85	179.58	12526.80	4975.34	-4976.42	-129.57	388543.29	791064.86	0.00	
17500.00	89.85	179.58	12527.05	5075.34	-5076.42	-128.84	388443.29	791065.59	0.00	
17600.00	89.85	179.58	12527.31	5175.34	-5176.41	-128.11	388343.30	791066.32	0.00	
17700.00	89.85	179.58	12527.57	5275.34	-5276.41	-127.38	388243.30	791067.05	0.00	
17800.00	89.85	179.58	12527.83	5375.34	-5376.41	-126.65	388143.30	791067.78	0.00	
17900.00	89.85	179.58	12528.09	5475.34	-5476.40	-125.92	388043.31	791068.51	0.00	
18000.00	89.85	179.58	12528.35	5575.34	-5576.40	-125.19	387943.31	791069.24	0.00	
18100.00	89.85	179.58	12528.61	5675.34	-5676.40	-124.46	387843.31	791069.97	0.00	
18200.00	89.85	179.58	12528.87	5775.34	-5776.39	-123.73	387743.32	791070.70	0.00	
18300.00	89.85	179.58	12529.13	5875.34	-5876.39	-123.00	387643.32	791071.43	0.00	
18400.00	89.85	179.58	12529.39	5975.34	-5976.39	-122.27	387543.32	791072.16	0.00	
18500.00	89.85	179.58	12529.64	6075.34	-6076.39	-121.54	387443.32	791072.89	0.00	
18600.00	89.85	179.58	12529.90	6175.34	-6176.38	-120.81	387343.33	791073.62	0.00	
18700.00	89.85	179.58	12530.16	6275.34	-6276.38	-120.08	387243.33	791074.35	0.00	
18800.00	89.85	179.58	12530.42	6375.34	-6376.38	-119.35	387143.33	791075.08	0.00	
18900.00	89.85	179.58	12530.68	6475.34	-6476.37	-118.62	387043.34	791075.81	0.00	
19000.00	89.85	179.58	12530.94	6575.34	-6576.37	-117.89	386943.34	791076.54	0.00	
19100.00	89.85	179.58	12531.20	6675.34	-6676.37	-117.16	386843.34	791077.27	0.00	
19200.00	89.85	179.58	12531.46	6775.33	-6776.36	-116.43	386743.35	791078.00	0.00	
19300.00	89.85	179.58	12531.72	6875.33	-6876.36	-115.70	386643.35	791078.73	0.00	
19400.00	89.85	179.58	12531.98	6975.33	-6976.36	-114.97	386543.35	791079.46	0.00	
19500.00	89.85	179.58	12532.23	7075.33	-7076.36	-114.24	386443.35	791080.19	0.00	
19600.00	89.85	179.58	12532.49	7175.33	-7176.35	-113.51	386343.36	791080.92	0.00	
19700.00	89.85	179.58	12532.75	7275.33	-7276.35	-112.78	386243.36	791081.65	0.00	
19800.00	89.85	179.58	12533.01	7375.33	-7376.35	-112.05	386143.36	791082.38	0.00	
19900.00	89.85	179.58	12533.27	7475.33	-7476.34	-111.32	386043.37	791083.11	0.00	
20000.00	89.85	179.58	12533.53	7575.33	-7576.34	-110.59	385943.37	791083.84	0.00	
20100.00	89.85	179.58	12533.79	7675.33	-7676.34	-109.86	385843.37	791084.57	0.00	
20200.00	89.85	179.58	12534.05	7775.33	-7776.33	-109.13	385743.38	791085.30	0.00	
20300.00	89.85	179.58	12534.31	7875.33	-7876.33	-108.40	385643.38	791086.03	0.00	
20400.00	89.85	179.58	12534.57	7975.33	-7976.33	-107.67	385543.38	791086.76	0.00	
20500.00	89.85	179.58	12534.83	8075.33	-8076.33	-106.94	385443.38	791087.49	0.00	
20600.00	89.85	179.58	12535.08	8175.33	-8176.32	-106.21	385343.39	791088.22	0.00	
20700.00	89.85	179.58	12535.34	8275.33	-8276.32	-105.48	385243.39	791088.95	0.00	
20800.00	89.85	179.58	12535.60	8375.33	-8376.32	-104.75	385143.39	791089.68	0.00	
20900.00	89.85	179.58	12535.86	8475.33	-8476.31	-104.02	385043.40	791090.41	0.00	
21000.00	89.85	179.58	12536.12	8575.33	-8576.31	-103.29	384943.40	791091.14	0.00	
21100.00	89.85	179.58	12536.38	8675.33	-8676.31	-102.56	384843.40	791091.87	0.00	
21200.00	89.85	179.58	12536.64	8775.33	-8776.30	-101.83	384743.41	791092.60	0.00	
21300.00	89.85	179.58	12536.90	8875.33	-8876.30	-101.10	384643.41	791093.33	0.00	
21400.00	89.85	179.58	12537.16	8975.33	-8976.30	-100.37	384543.41	791094.06	0.00	
21500.00	89.85	179.58	12537.42	9075.33	-9076.30	-99.64	384443.41	791094.79	0.00	

5D Plan Report

Interpolated Points: (Relative to Slot centre)(TVD relative to Drill Floor)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100US ft)	Comment
21600.00	89.85	179.58	12537.67	9175.33	-9176.29	-98.91	384343.42	791095.52	0.00	
21700.00	89.85	179.58	12537.93	9275.33	-9276.29	-98.18	384243.42	791096.25	0.00	
21800.00	89.85	179.58	12538.19	9375.33	-9376.29	-97.45	384143.42	791096.98	0.00	
21900.00	89.85	179.58	12538.45	9475.33	-9476.28	-96.72	384043.43	791097.71	0.00	
22000.00	89.85	179.58	12538.71	9575.33	-9576.28	-95.99	383943.43	791098.44	0.00	
22100.00	89.85	179.58	12538.97	9675.33	-9676.28	-95.26	383843.43	791099.17	0.00	
22200.00	89.85	179.58	12539.23	9775.32	-9776.27	-94.53	383743.44	791099.90	0.00	
22300.00	89.85	179.58	12539.49	9875.32	-9876.27	-93.80	383643.44	791100.63	0.00	
22400.00	89.85	179.58	12539.75	9975.32	-9976.27	-93.07	383543.44	791101.36	0.00	
22497.78	89.85	179.58	12540.00	10073.11	-10074.05	-92.36	383445.66	791102.07	0.00	PBHL 83H

Formation Points: (Relative to Slot centre)(TVD relative to Drill Floor)									
Name	MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	
Wolfcamp 100	N/A	0.00	0.00	12559.00	0.00	-0.00	393519.71	791194.43	
Wolfcamp 110	N/A	0.00	0.00	12631.00	0.00	-0.00	393519.71	791194.43	
Wolfcamp 120	N/A	0.00	0.00	12708.00	0.00	-0.00	393519.71	791194.43	
Wolfcamp 130	N/A	0.00	0.00	12775.00	0.00	-0.00	393519.71	791194.43	
Rustler	779.00	0.00	0.00	779.00	0.00	-0.00	393519.71	791194.43	
Top of Salt	1127.00	0.00	0.00	1127.00	0.00	-0.00	393519.71	791194.43	
Base of Salt	4850.00	0.00	0.00	4850.00	0.00	-0.00	393519.71	791194.43	
Delaware	5092.00	0.00	0.00	5092.00	0.00	-0.00	393519.71	791194.43	
Lower Brushy Canyon	9147.31	2.25	311.93	9145.00	79.56	-88.58	393599.27	791105.85	
1st BSPG Lime	9327.44	2.25	311.93	9325.00	84.29	-93.84	393604.00	791100.59	
1st BSPG Sand	10266.17	2.25	311.93	10263.00	108.90	-121.24	393628.61	791073.19	
2nd BSPG Lime	10541.38	2.25	311.93	10538.00	116.11	-129.27	393635.82	791065.16	
2nd BSPG Sand	10814.59	2.25	311.93	10811.00	123.28	-137.25	393642.99	791057.18	
3rd BSPG Lime	11308.97	2.25	311.93	11305.00	136.24	-151.68	393655.95	791042.75	
3rd BSPG Sand	11893.35	0.53	311.93	11889.00	149.84	-166.82	393669.55	791027.61	
Wolfcamp	12437.21	49.08	179.58	12375.00	-47.68	-165.56	393472.03	791028.87	
Wolfcamp X	12480.35	53.40	179.58	12402.00	-81.31	-165.31	393438.40	791029.12	
Wolfcamp Y TZ	12657.05	71.07	179.58	12484.00	-237.04	-164.17	393282.67	791030.26	

FEB 06 2018

1. Component and Preventer Compatibility Table

The table below, which covers the drilling and casing of the 10M MASP portion of the well, outlines the tubulars and the compatible preventers in use. This table, combined with the mud program, documents that two barriers to flow can be maintained at all times, independent of the rating of the annular preventer.

6-3/4" Production hole section, 10M requirement

Component	OD	Preventer	RWP
Drillpipe	4.5"	Fixed lower 4.5" Upper 3.5-5.5" VBR	10M
HWDP	4.5"	Fixed lower 4.5" Upper 3.5-5.5" VBR	10M
Drill collars and MWD tools	4.75"	Upper 3.5-5.5" VBR	10M
Mud Motor	4.75"	Upper 3.5-5.5" VBR	10M
Production casing	5.5"	Upper 3.5-5.5" VBR	10M
ALL	0-13-5/8"	Annular	5M
Open-hole	-	Blind Rams	10M

VBR = Variable Bore Ram. Compatible range listed in chart.

2. Well Control Procedures

Well control procedures are specific to the rig equipment and the operation at the time the kick occurs. Below are the minimal high-level tasks prescribed to assure a proper shut-in while drilling, tripping, running casing, pipe out of the hole (open hole), and moving the BHA through the BOPs. The pressure at which control is swapped from the annular to another compatible ram is variable, but the operator will document in the submission their operating pressure limit. The operator may chose an operating pressure less than or equal to RWP, but in no case will it exceed the RWP of the annular preventer.

General Procedure While Drilling

1. Sound alarm (alert crew)
2. Space out drill string
3. Shut down pumps (stop pumps and rotary)
4. Shut-in Well (uppermost applicable BOP, typically annular preventer first. HCR and choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
 - a. SIDPP and SICP
 - b. Pit gain
 - c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach the RWP of the annular preventer, confirm spacing and swap to the upper pipe ram.

Devon Energy, Seawolf 1-12 Wells

General Procedure While Tripping

1. Sound alarm (alert crew)
2. Stab full opening safety valve and close
3. Space out drill string
4. Shut-in (uppermost applicable BOP, typically annular preventer first. HCR and choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
 - a. SIDPP and SICP
 - b. Pit gain
 - c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach the RWP of the annular preventer, confirm spacing and swap to the upper pipe ram.

General Procedure While Running Casing

1. Sound alarm (alert crew)
2. Stab crossover and full opening safety valve and close
3. Space out string
4. Shut-in (uppermost applicable BOP, typically annular preventer first. HCR and choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
 - a. SIDPP and SICP
 - b. Pit gain
 - c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach the RWP of the annular preventer, confirm spacing and swap to compatible pipe ram.

General Procedure With No Pipe In Hole (Open Hole)

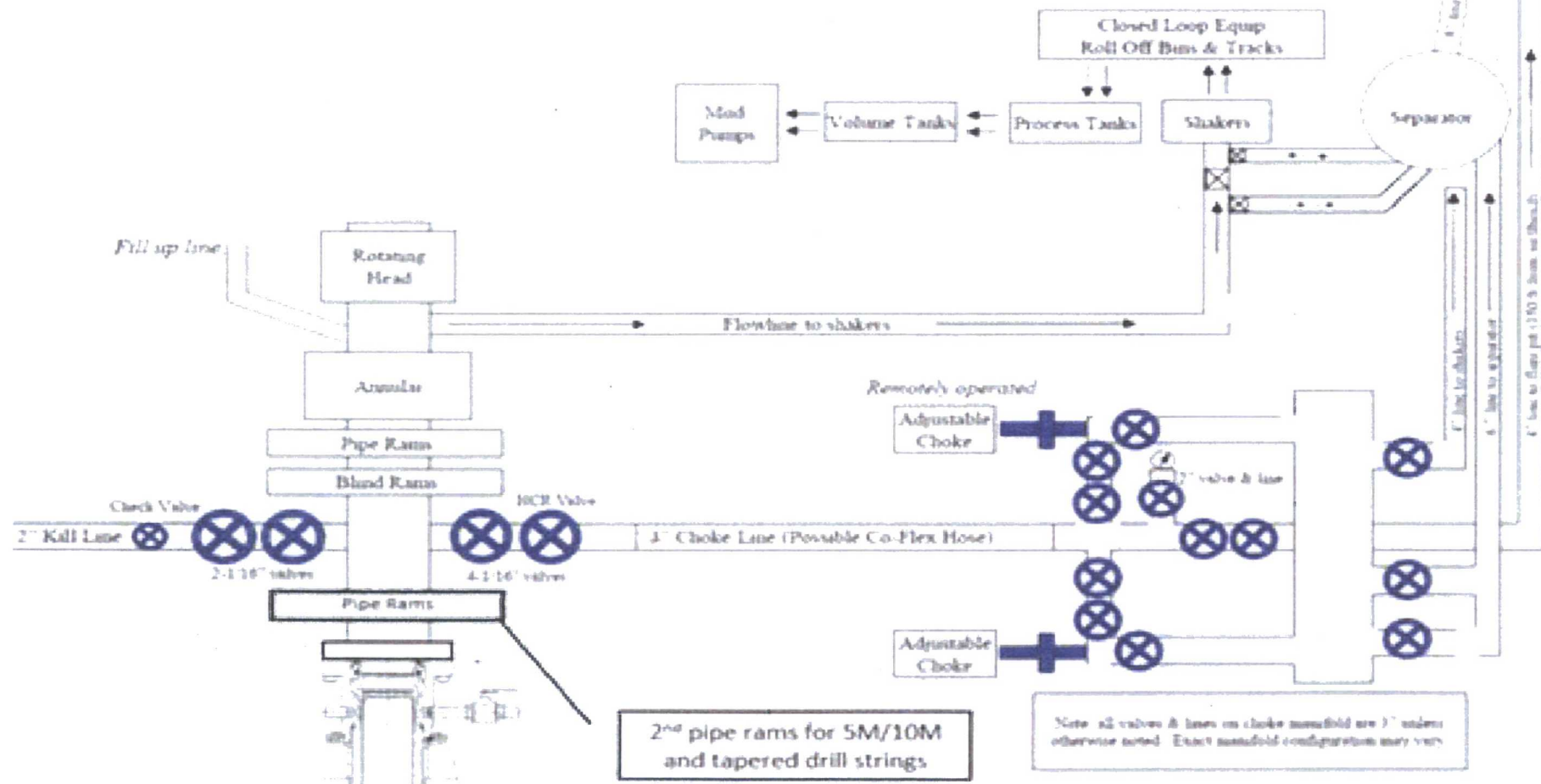
1. Sound alarm (alert crew)
2. Shut-in with blind rams or BSR. (HCR and choke will already be in the closed position.)
3. Confirm shut-in
4. Notify toolpusher/company representative
5. Read and record the following:
 - a. SICP
 - b. Pit gain
 - c. Time
6. Regroup and identify forward plan

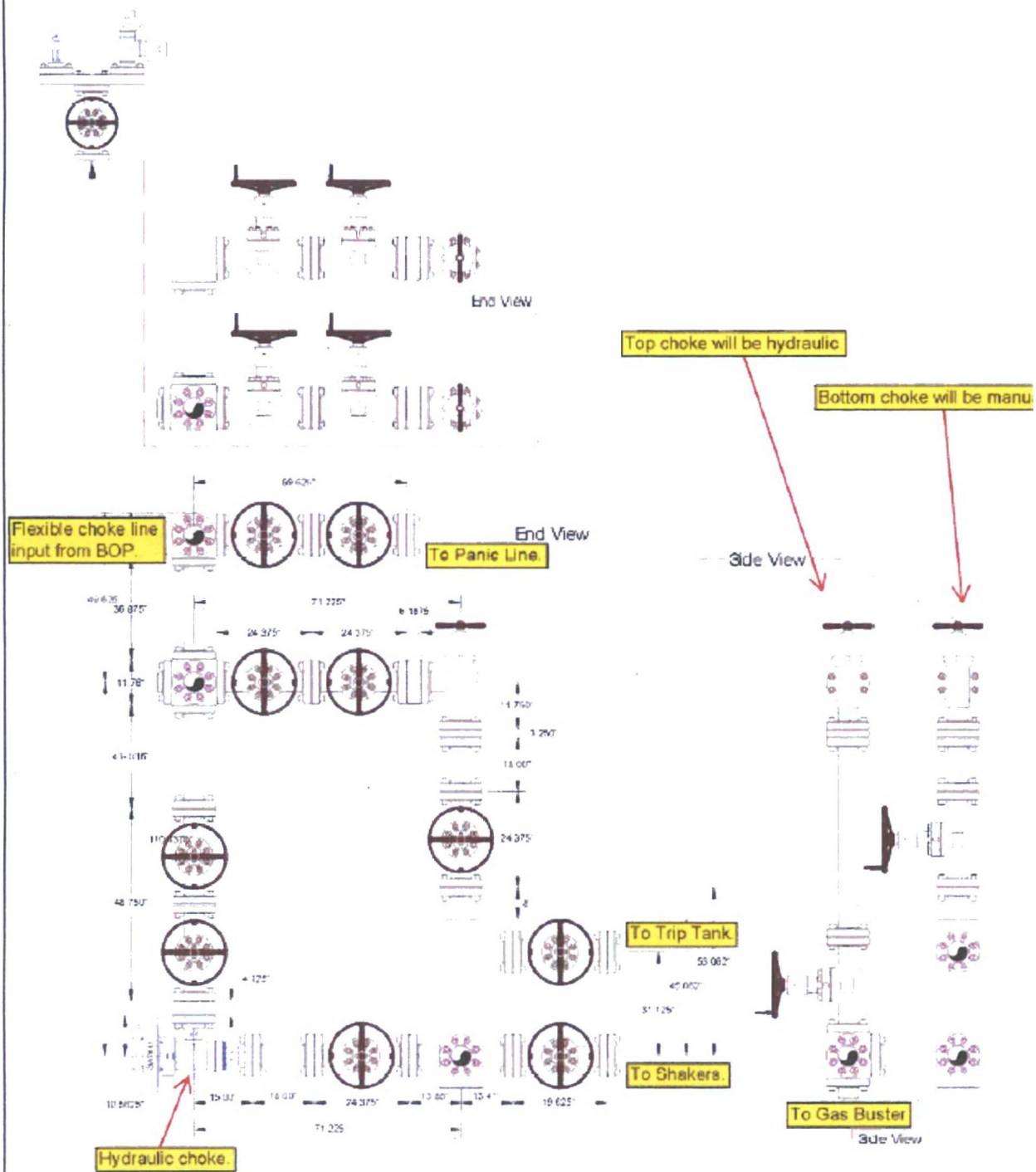
Devon Energy, Seawolf 1-12 Wells

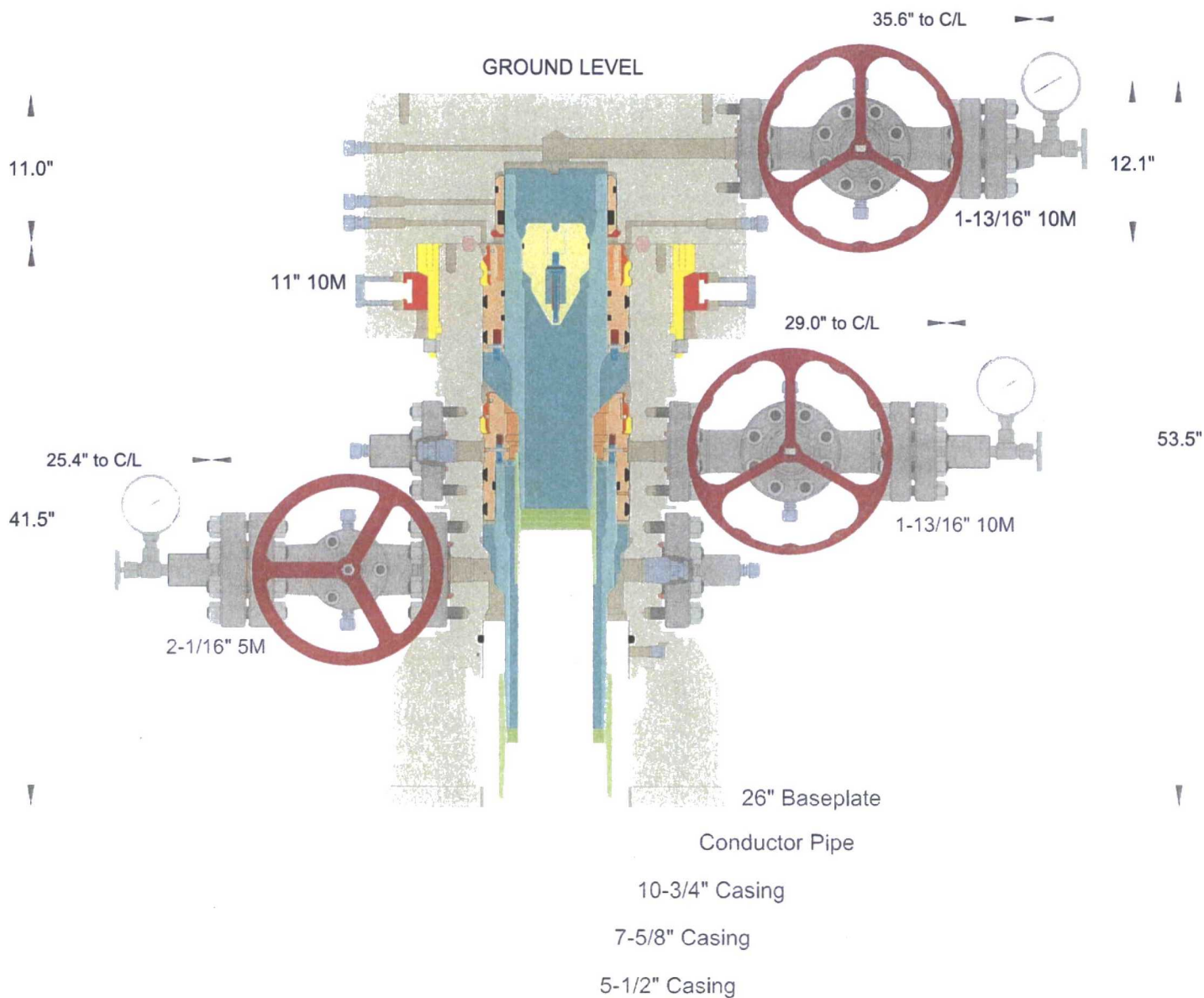
General Procedures While Pulling BHA thru Stack

1. PRIOR to pulling last joint of drillpipe thru the stack.
 - a. Perform flowcheck, if flowing:
 - b. Sound alarm (alert crew)
 - c. Stab full opening safety valve and close
 - d. Space out drill string with tool joint just beneath the upper pipe ram.
 - e. Shut-in using upper pipe ram. (HCR and choke will already be in the closed position.)
 - f. Confirm shut-in
 - g. Notify toolpusher/company representative
 - h. Read and record the following:
 - i. SIDPP and SICP
 - ii. Pit gain
 - iii. Time
 - i. Regroup and identify forward plan
2. With BHA in the stack and compatible ram preventer and pipe combo immediately available.
 - a. Sound alarm (alert crew)
 - b. Stab crossover and full opening safety valve and close
 - c. Space out drill string with upset just beneath the compatible pipe ram.
 - d. Shut-in using compatible pipe ram. (HCR and choke will already be in the closed position.)
 - e. Confirm shut-in
 - f. Notify toolpusher/company representative
 - g. Read and record the following:
 - i. SIDPP and SICP
 - ii. Pit gain
 - iii. Time
 - h. Regroup and identify forward plan
3. With BHA in the stack and NO compatible ram preventer and pipe combo immediately available.
 - a. Sound alarm (alert crew)
 - b. If possible to pick up high enough, pull string clear of the stack and follow "Open Hole" scenario.
 - c. If impossible to pick up high enough to pull the string clear of the stack:
 - d. Stab crossover, make up one joint/stand of drillpipe, and full opening safety valve and close
 - e. Space out drill string with tooljoint just beneath the upper pipe ram.
 - f. Shut-in using upper pipe ram. (HCR and choke will already be in the closed position.)
 - g. Confirm shut-in
 - h. Notify toolpusher/company representative
 - i. Read and record the following:
 - i. SIDPP and SICP
 - ii. Pit gain
 - iii. Time
 - j. Regroup and identify forward plan

10M BOPE & Closed Loop Equipment Schematic







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CACTUS WELLHEAD LLC

DEVON ENERGY CORPORATION

16" x 11-7/8" x 7-5/8" MBU-T Wellhead Assembly
With 7-5/8" & 5-1/2" Pin Bottom Mandrel Casing Hangers
And 11" 10M MBU-T-HPS-F TA Cap

DRAWN	DLE	29NOV17
APPRV		
DRAWING NO.		OKE0001764

Connection Data Sheet

OD	Weight	Wall Th.	Grade	API Drift	Connection
5 1/2 in.	20.00 lb/ft	0.361 in.	P110-EC	4.653 in.	VAM® TOP HT

PIPE PROPERTIES

Nominal OD	5.500 in.
Nominal ID	4.778 in.
Nominal Cross Section Area	5.828 sqin
Grade Type	High Yield
Min. Yield Strength	125 ksi
Max. Yield Strength	140 ksi
Min. Ultimate Tensile Strength	135 ksi

CONNECTION PROPERTIES

Connection Type	Premium T&C
Connection OD (nom)	6.071 in.
Connection ID (nom)	4.715 in.
Make-up Loss	4.382 in.
Coupling Length	10.748 in.
Critical Cross Section	5.828 sqin
Tension Efficiency	100 % of pipe
Compression Efficiency	80 % of pipe
Internal Pressure Efficiency	100 % of pipe
External Pressure Efficiency	100 % of pipe

CONNECTION PERFORMANCES

Tensile Yield Strength	729 klb
Compression Resistance	583 klb
Internal Yield Pressure	14360 psi
External Pressure Resistance	12090 psi
Max. Bending with Sealability (CAL IV)	20 °/100 ft
Max. Load on Coupling Face	388 klb

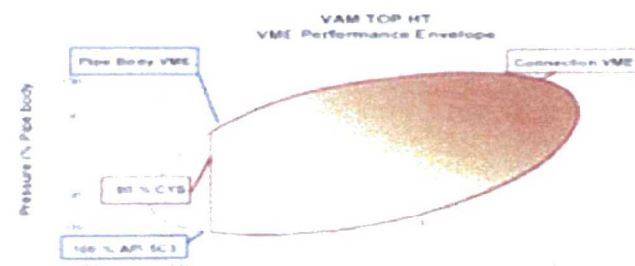
FIELD TORQUE VALUES

Min. Make-up torque	10850 ft.lb
Opti. Make-up torque	11950 ft.lb
Max. Make-up torque	13050 ft.lb
Field Liner Max	15900 ft.lb

VAM® TOP HT (High Torque) is a T&C connection based on the main features of the VAM® TOP connection.

This connection provides reinforced torque capability for liners and where High Torque is anticipated due to string rotation during running operations (torque rotating liner while running, rotating casing when cementing). It has been tested as per ISO 13679 CAL IV requirements.

VAM® TOP HT is interchangeable with VAM® TOP product line with the exception of 4.10" size.



VAM[®] SG

Connection Data Sheet

O.D (in)	WEIGHT (lb/ft)	WALL (in)	GRADE	DRIFT	CONNECTION
5.500	20.00	0.361	VST P110EC	4.653	VAM [®] SG

PIPE PROPERTIES	
Material Grade	VST P110EC
Min. Yield Strength	125 ksi
Min. Tensile Strength	135 ksi
Nominal OD	5.500 in
Nominal ID	4.778 in
Nominal Area	5.828 sq. in
Yield Strength	729 kips
Ultimate Strength	787 kips
Min Internal Yield	14,360 psi
External Pressure	12,090 psi

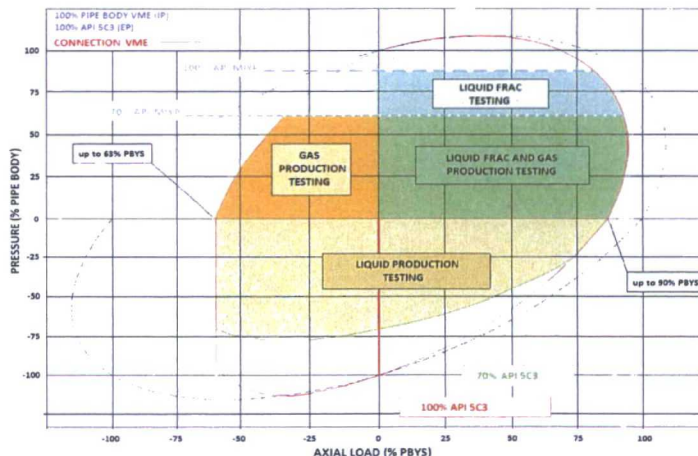
CONNECTION PROPERTIES	
Connection OD	5.697 in
Connection ID	4.711 in
Make up Loss	6.335 in
Connection Critical Area	5.071 sq. in
%PB Section Area	87.0%
Yield Strength	634 kips
Parting Load	685 kips
Min Internal Yield	14,360 psi
External Pressure	8,460 psi
Structural Collapse	12,090 psi
Working Compression	444 kips
Max. Bending w/ Sealability	40 °/100 ft

DOCUMENTATION	
Ref. Drawing	SI-PD 100954 Rev.A
Date	21-Jul-17
Time	3:19 PM
Email	tech.support@vam-usa.com

TORQUE VALUES	
Min Make Up Torque	8,100 ft-lb
Opt Make Up Torque	9,800 ft-lb
Max Make Up Torque	11,500 ft-lb
Max Torque w/ Sealability	12,500 ft-lb

The single solution for Shale Play needs

VAM[®] SG brings VAM[®] premium sealing performance to a semi-flush connection with extremely high Tension performance and increased Torque capacity, validated to the specific Shale drilling requirements, while remaining highly competitive in North American Shale play economics.



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**PECOS DISTRICT
DRILLING OPERATIONS
CONDITIONS OF APPROVAL**

HOBBS OCD

FEB 06 2018

RECEIVED

OPERATOR'S NAME:	Devon Energy Production Co, LP
LEASE NO.:	NMNM114988
WELL NAME & NO.:	83H-Seawolf 1 12 Fed
SURFACE HOLE FOOTAGE:	160'/N & 2467'/W
BOTTOM HOLE FOOTAGE:	330'/S & 2188'/W
LOCATION:	Section 1, T.26 S., R.33 E., NMPM
COUNTY:	Lea County, New Mexico

Potash	☒ None	☒ Secretary	☒ R-111-P
Cave/Karst Potential	☒ Low	☒ Medium	☒ High
Variance	☒ None	☒ Flex Hose	☒ Other
Wellhead	☒ Conventional	☒ Multibowl	
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP

All previous COAs still apply except for the following:

A. CASING

1. The minimum required fill of cement behind the 5 1/2 inch production casing is:

Option 1 (Single Stage):

- Cement should tie-back at least **200** feet into previous casing string. Operator shall provide method of verification. **Excess calculates to 21% - additional cement might be required**

Option 2:

Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
- b. Second stage above DV tool:
 - Cement should tie-back at least **200** feet into previous casing string. Operator shall provide method of verification.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. Operator has proposed a multi-bowl wellhead assembly. 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 **10,000 (10M) psi. Variance approved to use a 5M annular. The annular must be tested to full working pressure (5000 psi.)**
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
 - e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

MHH 01182018

GENERAL REQUIREMENTS

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. 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. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.
3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
 - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin

after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

- b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.
- c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
- e. The results of the test shall be reported to the appropriate BLM office.
- f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
- g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.
- h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.