

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

HOBBS OCD

MAY 08 2017

RECEIVED

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

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMLC061869
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name
2. Name of Operator DEVON ENERGY PRODUCTION COMPANY LP (6137)		7. If Unit or CA Agreement, Name and No.
3a. Address 333 West Sheridan Avenue Oklahoma City OK		8. Lease Name and Well No. ARABIAN 30-19 FED COM 4H (316114)
3b. Phone No. (include area code) (405)552-6571		9. API Well No. 30-025-43788
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface SENE / 2450 FNL / 1295 FEL / LAT 32.1018471 / LONG -103.7100496 At proposed prod. zone NENE / 290 FSL / 660 FEL / LAT 32.1222801 / LONG -103.7080328		10. Field and Pool, or Exploratory WC-025 G-08 S253235G / LWR BONE S (97903)
11. Sec., T. R. M. or Blk. and Survey or Area SEC 30 / T25S / R32E / NMP		12. County or Parish LEA
13. State NM		14. Distance in miles and direction from nearest town or post office*
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 190 feet	16. No. of acres in lease 2398.96	17. Spacing Unit dedicated to this well 240
18. Distance from proposed location* to nearest well, drilling, completed, 50 feet applied for, on this lease, ft.	19. Proposed Depth 10451 feet / 17793 feet	20. BLM/BIA Bond No. on file FED: CO1104
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3362 feet	22. Approximate date work will start* 10/20/2017	23. Estimated duration 45 days
24. Attachments		

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

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

25. Signature (Electronic Submission)	Name (Printed/Typed) Linda Good / Ph: (405)552-6558	Date 10/19/2016
Title Regulatory Compliance Professional		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Ty Allen / Ph: (575)234-5978	Date 04/25/2017
Title Wildlife Biologist		

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

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

(Continued on page 2)

\*(Instructions on page 2)

APPROVED WITH CONDITIONS

KE  
09/08/17

FIRST + LAST TAKE PONG  
NOT INCLUDED C-02  
REQUIRES NYL  
KE



U.S. Department of the Interior  
BUREAU OF LAND MANAGEMENT

## Operator Certification Data Report

04/26/2017

### Operator Certification

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

**NAME:** Linda Good

**Signed on:** 10/19/2016

**Title:** Regulatory Compliance Professional

**Street Address:** 333 West Sheridan Avenue

**City:** Oklahoma City

**State:** OK

**Zip:** 73102

**Phone:** (405)552-6558

**Email address:** Linda.Good@dvn.com

### Field Representative

**Representative Name:** Ray Vaz

**Street Address:** 6488 Seven Rivers Hwy

**City:** Artesia

**State:** NM

**Zip:** 88210

**Phone:** (575)748-1871

**Email address:** ray.vaz@dvn.com



U.S. Department of the Interior  
BUREAU OF LAND MANAGEMENT

## Application Data Report

04/26/2017

APD ID: 10400006617

Submission Date: 10/19/2016

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: ARABIAN 30-19 FED COM

Well Number: 4H

Well Type: OIL WELL

Well Work Type: Drill

### Section 1 - General

APD ID: 10400006617

Tie to previous NOS?

Submission Date: 10/19/2016

BLM Office: HOBBS

User: Linda Good

Title: Regulatory Compliance  
Professional

Federal/Indian APD: FED

Is the first lease penetrated for production Federal or Indian? FED

Lease number: NMLC061869

Lease Acres: 2398.96

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? NO

Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? YES

Permitting Agent? NO

APD Operator: DEVON ENERGY PRODUCTION COMPANY LP

Operator letter of designation:

Keep application confidential? YES

### Operator Info

Operator Organization Name: DEVON ENERGY PRODUCTION COMPANY LP

Operator Address: 333 West Sheridan Avenue

Zip: 73102

Operator PO Box:

Operator City: Oklahoma City State: OK

Operator Phone: (405)552-6571

Operator Internet Address: aletha.dewbre@dvn.com

### Section 2 - Well Information

Well in Master Development Plan? NO

Master Development Plan name:

Well in Master SUPO? NO

Master SUPO name:

Well in Master Drilling Plan? NO

Master Drilling Plan name:

Well Name: ARABIAN 30-19 FED COM

Well Number: 4H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: WC-025 G-08  
S253235G

Pool Name: LWR BONE  
SPRING



**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** ARABIAN 30-19 FED COM

**Well Number:** 4H

**Is the proposed well in an area containing other mineral resources?** NATURAL GAS,OIL

**Describe other minerals:**

**Is the proposed well in a Helium production area?** N

**Use Existing Well Pad?** NO

**New surface disturbance?**

**Type of Well Pad:** MULTIPLE WELL

**Multiple Well Pad Name:**

**Number:** 3H & 4H

ARABIAN 30-19 FED COM

**Well Class:** HORIZONTAL

**Number of Legs:**

**Well Work Type:** Drill

**Well Type:** OIL WELL

**Describe Well Type:**

**Well sub-Type:** INFILL

**Describe sub-type:**

**Distance to town:**

**Distance to nearest well:** 50 FT

**Distance to lease line:** 190 FT

**Reservoir well spacing assigned acres Measurement:** 240 Acres

**Well plat:** Arabian 30-19 Fed Com 4H\_C102\_signed\_10-19-2016.pdf

**Well work start Date:** 10/20/2017

**Duration:** 45 DAYS

### Section 3 - Well Location Table

**Survey Type:** RECTANGULAR

**Describe Survey Type:**

**Datum:** NAD83

**Vertical Datum:** NAVD88

**Survey number:** 3987A

**STATE:** NEW MEXICO

**Meridian:** NEW MEXICO PRINCIPAL **County:** LEA

**Latitude:** 32.1018471

**Longitude:** -103.7100496

**SHL**

**Elevation:** 3362

**MD:** 0

**TVD:** 0

**Leg #: 1**

**Lease Type:** FEDERAL

**Lease #:** NMLC062300

**NS-Foot:** 2450

**NS Indicator:** FNL

**EW-Foot:** 1295

**EW Indicator:** FEL

**Twsp:** 25S

**Range:** 32E

**Section:** 30

**Aliquot:** SENE

**Lot:**

**Tract:**



**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** ARABIAN 30-19 FED COM

**Well Number:** 4H

	<b>STATE:</b> NEW MEXICO	<b>Meridian:</b> NEW MEXICO PRINCIPAL	<b>County:</b> LEA
	<b>Latitude:</b> 32.1018471	<b>Longitude:</b> -103.7100496	
KOP	<b>Elevation:</b> -6637	<b>MD:</b> 10020	<b>TVD:</b> 9999
<b>Leg #: 1</b>	<b>Lease Type:</b> FEDERAL	<b>Lease #:</b> NMLC062300	
	<b>NS-Foot:</b> 2482	<b>NS Indicator:</b> FNL	
	<b>EW-Foot:</b> 925	<b>EW Indicator:</b> FEL	
	<b>Twsp:</b> 25S	<b>Range:</b> 32E	<b>Section:</b> 30
	<b>Aliquot:</b> SENE	<b>Lot:</b>	<b>Tract:</b>
	<b>STATE:</b> NEW MEXICO	<b>Meridian:</b> NEW MEXICO PRINCIPAL	<b>County:</b> LEA
	<b>Latitude:</b> 32.1018471	<b>Longitude:</b> -103.7100496	
PPP	<b>Elevation:</b> -7109	<b>MD:</b> 10609	<b>TVD:</b> 10471
<b>Leg #: 1</b>	<b>Lease Type:</b> FEDERAL	<b>Lease #:</b> NMLC062300	
	<b>NS-Foot:</b> 2188	<b>NS Indicator:</b> FNL	
	<b>EW-Foot:</b> 914	<b>EW Indicator:</b> FEL	
	<b>Twsp:</b> 25S	<b>Range:</b> 32E	<b>Section:</b> 30
	<b>Aliquot:</b> SENE	<b>Lot:</b>	<b>Tract:</b>
	<b>STATE:</b> NEW MEXICO	<b>Meridian:</b> NEW MEXICO PRINCIPAL	<b>County:</b> LEA
	<b>Latitude:</b> 32.1222801	<b>Longitude:</b> -103.7080328	
EXIT	<b>Elevation:</b> -7089	<b>MD:</b> 17793	<b>TVD:</b> 10451
<b>Leg #: 1</b>	<b>Lease Type:</b> FEDERAL	<b>Lease #:</b> NMLC061869	
	<b>NS-Foot:</b> 290	<b>NS Indicator:</b> FSL	
	<b>EW-Foot:</b> 660	<b>EW Indicator:</b> FEL	
	<b>Twsp:</b> 25S	<b>Range:</b> 32E	<b>Section:</b> 19
	<b>Aliquot:</b> NENE	<b>Lot:</b>	<b>Tract:</b>
	<b>STATE:</b> NEW MEXICO	<b>Meridian:</b> NEW MEXICO PRINCIPAL	<b>County:</b> LEA
	<b>Latitude:</b> 32.1222801	<b>Longitude:</b> -103.7080328	
BHL	<b>Elevation:</b> -7089	<b>MD:</b> 17793	<b>TVD:</b> 10451
<b>Leg #: 1</b>	<b>Lease Type:</b> FEDERAL	<b>Lease #:</b> NMLC061869	
	<b>NS-Foot:</b> 290	<b>NS Indicator:</b> FSL	
	<b>EW-Foot:</b> 660	<b>EW Indicator:</b> FEL	

**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** ARABIAN 30-19 FED COM

**Well Number:** 4H

**Twsp:** 25S

**Range:** 32E

**Section:** 19

**Aliquot:** NENE

**Lot:**

**Tract:**



U.S. Department of the Interior  
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## Drilling Plan Data Report

04/26/2017

APD ID: 10400006617

Submission Date: 10/19/2016

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: ARABIAN 30-19 FED COM

Well Number: 4H

Well Type: OIL WELL

Well Work Type: Drill

### Section 1 - Geologic Formations

ID: Surface formation

Name: UNKNOWN

Lithology(ies):

ALLUVIUM

Elevation: 3362

True Vertical Depth: 0

Measured Depth: 0

Mineral Resource(s):

NONE

Is this a producing formation? N

ID: Formation 1

Name: RUSTLER

Lithology(ies):

DOLOMITE

Elevation: 2390

True Vertical Depth: 972

Measured Depth: 972

Mineral Resource(s):

NONE

Is this a producing formation? N

ID: Formation 2

Name: SALADO

Lithology(ies):

SALT

Elevation: 2065

True Vertical Depth: 1297

Measured Depth: 1297

Mineral Resource(s):

NONE

Is this a producing formation? N



**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** ARABIAN 30-19 FED COM

**Well Number:** 4H

**ID:** Formation 3

**Name:** BASE OF SALT

**Lithology(ies):**

ANHYDRITE

**Elevation:** -865

**True Vertical Depth:** 4227

**Measured Depth:** 4227

**Mineral Resource(s):**

NONE

**Is this a producing formation?** N

**ID:** Formation 4

**Name:** DELAWARE

**Lithology(ies):**

SANDSTONE

**Elevation:** -1120

**True Vertical Depth:** 4482

**Measured Depth:** 4482

**Mineral Resource(s):**

NATURAL GAS

OIL

**Is this a producing formation?** N

**ID:** Formation 5

**Name:** BELL CANYON

**Lithology(ies):**

SANDSTONE

**Elevation:** -1150

**True Vertical Depth:** 4512

**Measured Depth:** 4512

**Mineral Resource(s):**

NATURAL GAS

OIL

**Is this a producing formation?** N

**ID:** Formation 6

**Name:** CHERRY CANYON

**Lithology(ies):**

SANDSTONE

**Elevation:** -2055

**True Vertical Depth:** 5417

**Measured Depth:** 5417

**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** ARABIAN 30-19 FED COM

**Well Number:** 4H

**Mineral Resource(s):**

NATURAL GAS

OIL

**Is this a producing formation?** N

**ID:** Formation 7

**Name:** BRUSHY CANYON

**Lithology(ies):**

SANDSTONE

**Elevation:** -3430

**True Vertical Depth:** 6792

**Measured Depth:** 6792

**Mineral Resource(s):**

NATURAL GAS

OIL

**Is this a producing formation?** N

**ID:** Formation 8

**Name:** BONE SPRING

**Lithology(ies):**

LIMESTONE

**Elevation:** -4993

**True Vertical Depth:** 8355

**Measured Depth:** 8355

**Mineral Resource(s):**

NATURAL GAS

OIL

**Is this a producing formation?** N

**ID:** Formation 9

**Name:** BONE SPRING 1ST

**Lithology(ies):**

SANDSTONE

**Elevation:** -6067

**True Vertical Depth:** 9429

**Measured Depth:** 9429

**Mineral Resource(s):**

NATURAL GAS

OIL

**Is this a producing formation?** N

**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** ARABIAN 30-19 FED COM

**Well Number:** 4H

**ID:** Formation 10

**Name:** BONE SPRING 2ND

**Lithology(ies):**

LIMESTONE

**Elevation:** -6315

**True Vertical Depth:** 9677

**Measured Depth:** 9677

**Mineral Resource(s):**

NATURAL GAS

OIL

**Is this a producing formation?** N

**ID:** Formation 11

**Name:** BONE SPRING 2ND

**Lithology(ies):**

SANDSTONE

**Elevation:** -6680

**True Vertical Depth:** 10042

**Measured Depth:** 10042

**Mineral Resource(s):**

NATURAL GAS

OIL

**Is this a producing formation?** Y

## Section 2 - Blowout Prevention

**Pressure Rating (PSI):** 3M

**Rating Depth:** 4250

**Equipment:** BOP/BOPE will be installed per Onshore Oil & Gas Order #2 requirements prior to drilling below 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 3M will be installed on the wellhead system. BOP/BOPE will be tested by an independent service company per Onshore Oil & Gas Order #2 requirements and MASP (Maximum Anticipated Surface Pressure) calculations. If the system is upgraded, all the components installed will be functional and tested.

**Requesting Variance?** YES

**Variance request:** A variance is requested for the use of a flexible choke line from the BOP stack to the choke manifold. See attached for specs for hydrostatic test chart.

**Testing Procedure:** 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.

**Choke Diagram Attachment:**

Arabian 30-19 Fed Com 4H\_3M BOPE\_Ck\_10-19-2016.pdf

**BOP Diagram Attachment:**

Arabian 30-19 Fed Com 4H\_3M BOPE\_Ck\_10-19-2016.pdf



**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** ARABIAN 30-19 FED COM

**Well Number:** 4H

**Pressure Rating (PSI):** 3M

**Rating Depth:** 10441

**Equipment:** BOP/BOPE will be installed per Onshore Oil & Gas Order #2 requirements prior to drilling below 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 3M will be installed on the wellhead system. BOP/BOPE will be tested by an independent service company per Onshore Oil & Gas Order #2 requirements and MASP (Maximum Anticipated Surface Pressure) calculations. If the system is upgraded, all the components installed will be functional and tested.

**Requesting Variance?** YES

**Variance request:** A variance is requested for the use of a flexible choke line from the BOP stack to the choke manifold. See attached for specs for hydrostatic test chart.

**Testing Procedure:** 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.

**Choke Diagram Attachment:**

Arabian 30-19 Fed Com 4H\_3M BOPE\_Ck\_10-19-2016.pdf

**BOP Diagram Attachment:**

Arabian 30-19 Fed Com 4H\_3M BOPE\_Ck\_10-19-2016.pdf

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### Section 3 - Casing

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**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** ARABIAN 30-19 FED COM

**Well Number:** 4H

**String Type:** INTERMEDIATE

**Other String Type:**

**Hole Size:** 12.25

**Top setting depth MD:** 0

**Top setting depth TVD:** 0

**Top setting depth MSL:** -7109

**Bottom setting depth MD:** 4250

**Bottom setting depth TVD:** 4250

**Bottom setting depth MSL:** -11359

**Calculated casing length MD:** 4250

**Casing Size:** 9.625

**Other Size**

**Grade:** J-55

**Other Grade:**

**Weight:** 40

**Joint Type:** LTC

**Other Joint Type:**

**Condition:** NEW

**Inspection Document:**

**Standard:** API

**Spec Document:**

**Tapered String?:** N

**Tapered String Spec:**

### **Safety Factors**

**Collapse Design Safety Factor:** 1.19

**Burst Design Safety Factor:** 1.42

**Joint Tensile Design Safety Factor type:** BUOYANT

**Joint Tensile Design Safety Factor:** 3.98

**Body Tensile Design Safety Factor type:** BUOYANT

**Body Tensile Design Safety Factor:** 3.98

**Casing Design Assumptions and Worksheet(s):**

Arabian 30-19 Fed Com 4H\_Int Csg Ass\_10-19-2016.pdf

**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** ARABIAN 30-19 FED COM

**Well Number:** 4H

**String Type:** PRODUCTION

**Other String Type:**

**Hole Size:** 8.75

**Top setting depth MD:** 0

**Top setting depth TVD:** 0

**Top setting depth MSL:** -7109

**Bottom setting depth MD:** 17793

**Bottom setting depth TVD:** 10441

**Bottom setting depth MSL:** -17550

**Calculated casing length MD:** 17793

**Casing Size:** 5.5

**Other Size**

**Grade:** P-105

**Other Grade:**

**Weight:** 17

**Joint Type:** BUTT

**Other Joint Type:**

**Condition:** NEW

**Inspection Document:**

**Standard:** API

**Spec Document:**

**Tapered String?:** N

**Tapered String Spec:**

### **Safety Factors**

**Collapse Design Safety Factor:** 2.18

**Burst Design Safety Factor:** 2.7

**Joint Tensile Design Safety Factor type:** BUOYANT

**Joint Tensile Design Safety Factor:** 3.21

**Body Tensile Design Safety Factor type:** BUOYANT

**Body Tensile Design Safety Factor:** 3.21

**Casing Design Assumptions and Worksheet(s):**

Arabian 30-19 Fed Com 4H\_ProdCsg Ass\_10-19-2016.pdf



**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** ARABIAN 30-19 FED COM

**Well Number:** 4H

**String Type:** SURFACE

**Other String Type:**

**Hole Size:** 17.5

**Top setting depth MD:** 0

**Top setting depth TVD:** 0

**Top setting depth MSL:** -7109

**Bottom setting depth MD:** 1000

**Bottom setting depth TVD:** 1000

**Bottom setting depth MSL:** -8109

**Calculated casing length MD:** 1000

**Casing Size:** 13.375

**Other Size**

**Grade:** J-55

**Other Grade:**

**Weight:** 48

**Joint Type:** STC

**Other Joint Type:**

**Condition:** NEW

**Inspection Document:**

**Standard:** API

**Spec Document:**

**Tapered String?:** N

**Tapered String Spec:**

### **Safety Factors**

**Collapse Design Safety Factor:** 1.74

**Burst Design Safety Factor:** 2.45

**Joint Tensile Design Safety Factor type:** BUOYANT

**Joint Tensile Design Safety Factor:** 4.13

**Body Tensile Design Safety Factor type:** BUOYANT

**Body Tensile Design Safety Factor:** 4.13

**Casing Design Assumptions and Worksheet(s):**

Arabian 30-19 Fed Com 4H\_SurfCsg Ass\_10-19-2016.pdf

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### **Section 4 - Cement**

**Casing String Type:** SURFACE

**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** ARABIAN 30-19 FED COM

**Well Number:** 4H

**Stage Tool Depth:**

Lead

**Top MD of Segment:** 0

**Bottom MD Segment:** 1000

**Cement Type:** C

**Additives:** 1% Calcium Chloride

**Quantity (sks):** 778

**Yield (cu.ff./sk):** 1.34

**Density:** 14.8

**Volume (cu.ft.):** 1042

**Percent Excess:** 50

**Casing String Type:** INTERMEDIATE

**Stage Tool Depth:**

Lead

**Top MD of Segment:** 0

**Bottom MD Segment:** 3250

**Cement Type:** C

**Additives:** Poz (Fly Ash): 6% BWOC  
Bentonite + 5% BWOW Sodium  
Chloride + 0.125 lbs/sks Poly-E-Flake

**Quantity (sks):** 710

**Yield (cu.ff./sk):** 1.85

**Volume (cu.ft.):** 1325

**Percent Excess:** 30

Tail  
**Density:** 12.9

**Bottom MD Segment:** 4250

**Cement Type:** H

**Top MD of Segment:** 3250

**Quantity (sks):** 320

**Yield (cu.ff./sk):** 1.33

**Additives:** 0.125 lbs/sks Poly-R-Flake

**Volume (cu.ft.):** 426

**Percent Excess:** 30

**Density:** 14.8

**Casing String Type:** PRODUCTION

**Stage Tool Depth:**

Lead

**Top MD of Segment:** 4000

**Bottom MD Segment:** 10350

**Cement Type:** TUNED

**Additives:** N/A

**Quantity (sks):** 614

**Yield (cu.ff./sk):** 3.27

**Density:** 9

**Volume (cu.ft.):** 2005

**Percent Excess:** 25

Tail

**Top MD of Segment:** 10350

**Bottom MD Segment:** 17793

**Cement Type:** H

**Additives:** Poz (Fly Ash) + 0.5% bwoc  
HALAD-344 + 0.4% bwoc CFR-3 +  
0.2% BWOC HR-601 + 2% bwoc  
Bentonite

**Quantity (sks):** 1950

**Yield (cu.ff./sk):** 1.2

**Volume (cu.ft.):** 2350

**Percent Excess:** 25

**Density:** 14.5

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: ARABIAN 30-19 FED COM

Well Number: 4H

## Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

Describe the mud monitoring system utilized: PVT/Pason/Visual Monitoring

### Circulating Medium Table

Top Depth: 0	Bottom Depth: 4225
Mud Type: SALT SATURATED	
Min Weight (lbs./gal.): 10	Max Weight (lbs./gal.): 11
Density (lbs/cu.ft.):	Gel Strength (lbs/100 sq.ft.):
PH:	Viscosity (CP): 2
Filtration (cc):	Salinity (ppm):
Additional Characteristics:	
Top Depth: 4225	Bottom Depth: 17758
Mud Type: WATER-BASED MUD	
Min Weight (lbs./gal.): 8.5	Max Weight (lbs./gal.): 9.3
Density (lbs/cu.ft.):	Gel Strength (lbs/100 sq.ft.):
PH:	Viscosity (CP): 12
Filtration (cc):	Salinity (ppm):
Additional Characteristics:	



**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** ARABIAN 30-19 FED COM

**Well Number:** 4H

**Top Depth:** 0

**Bottom Depth:** 1000

**Mud Type:** WATER-BASED MUD

**Min Weight (lbs./gal.):** 8.5

**Max Weight (lbs./gal.):** 9

**Density (lbs/cu.ft.):**

**Gel Strength (lbs/100 sq.ft.):**

**PH:**

**Viscosity (CP):** 2

**Filtration (cc):**

**Salinity (ppm):**

**Additional Characteristics:**

## Section 6 - Test, Logging, Coring

**List of production tests including testing procedures, equipment and safety measures:**

Will run GR from TD to Delaware (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.

**List of open and cased hole logs run in the well:**

CALIPER,CBL,DS,GR,MWD,MUDLOG

**Coring operation description for the well:**

N/A

## Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 4275

**Anticipated Surface Pressure:** 1971.38

**Anticipated Bottom Hole Temperature(F):** 165

**Anticipated abnormal pressures, temperatures, or potential geologic hazards?** NO

**Describe:**

**Contingency Plans geohazards description:**

**Contingency Plans geohazards attachment:**

**Hydrogen Sulfide drilling operations plan required?** YES

**Hydrogen sulfide drilling operations plan:**

Arabian 30-19 Fed Com 4H\_H2S Plan\_10-19-2016.pdf

**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** ARABIAN 30-19 FED COM

**Well Number:** 4H

## **Section 8 - Other Information**

**Proposed horizontal/directional/multi-lateral plan submission:**

Arabian 30-19 Fed Com 4H\_Dir Plan\_10-19-2016.pdf

**Other proposed operations facets description:**

Multi-Bowl Verbiage

Multi-Bowl Wellhead

Closed Loop Design Plan

Production Cement Contingency

**Other proposed operations facets attachment:**

Arabian 30-19 Fed Com 4H\_MB Verb 3M\_10-19-2016.pdf

Arabian 30-19 Fed Com 4H\_MB Wellhd\_10-19-2016.pdf

Arabian 30-19 Fed Com 4H\_Clsd Loop\_10-19-2016.pdf

Arabian 30-19 Fed Com 4H\_ProdCmtContg\_11-17-2016.pdf

**Other Variance attachment:**

Arabian 30-19 Fed Com 4H\_Co-flex\_10-19-2016.pdf



APD ID: 10400006617

Submission Date: 10/19/2016

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: ARABIAN 30-19 FED COM

Well Number: 4H

Well Type: OIL WELL

Well Work Type: Drill

## Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Arabian 30-19 Fed Com 4H\_Ex AccessRd\_10-19-2016.pdf

Existing Road Purpose: ACCESS,FLUID TRANSPORT

Row(s) Exist? NO

### ROW ID(s)

ID:

Do the existing roads need to be improved? YES

Existing Road Improvement Description: Improve road to accommodate Drilling and Completion operations.

Existing Road Improvement Attachment:

## Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

Arabian 30-19 Fed Com 4H\_Access Rd\_10-19-2016.pdf

New road type: COLLECTOR,RESOURCE

Length: 41

Feet

Width (ft.): 16

Max slope (%): 6

Max grade (%): 4

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 14

New road access erosion control: Water drainage ditch.

New road access plan or profile prepared? YES

New road access plan attachment:

Arabian 30-19 Fed Com 4H\_Access Rd\_10-19-2016.pdf

Access road engineering design? NO

**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** ARABIAN 30-19 FED COM

**Well Number:** 4H

**Access road engineering design attachment:**

**Access surfacing type:** GRAVEL

**Access topsoil source:** ONSITE

**Access surfacing type description:**

**Access onsite topsoil source depth:** 6

**Offsite topsoil source description:**

**Onsite topsoil removal process:** See attached Interim reclamation diagram.

**Access other construction information:**

**Access miscellaneous information:**

**Number of access turnouts:**

**Access turnout map:**

### **Drainage Control**

**New road drainage crossing:** OTHER

**Drainage Control comments:** N/A

**Road Drainage Control Structures (DCS) description:** N/A

**Road Drainage Control Structures (DCS) attachment:**

### **Access Additional Attachments**

**Additional Attachment(s):**

### **Section 3 - Location of Existing Wells**

**Existing Wells Map?** YES

**Attach Well map:**

Arabian 30-19 Fed Com 4H\_1 Mile Map\_10-19-2016.pdf

**Existing Wells description:**

### **Section 4 - Location of Existing and/or Proposed Production Facilities**

**Submit or defer a Proposed Production Facilities plan?** DEFER

**Estimated Production Facilities description:** All flowlines will be buried going to the CDU 29-30 CTB.

**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** ARABIAN 30-19 FED COM

**Well Number:** 4H

## Section 5 - Location and Types of Water Supply

### Water Source Table

**Water source use type:** STIMULATION

**Water source type:** RECYCLED

**Describe type:**

**Source latitude:**

**Source longitude:**

**Source datum:**

**Water source permit type:** OTHER

**Source land ownership:** FEDERAL

**Water source transport method:** PIPELINE,TRUCKING

**Source transportation land ownership:** FEDERAL

**Water source volume (barrels):** 202500

**Source volume (acre-feet):** 26.100851

**Source volume (gal):** 8505000

**Water source and transportation map:**

Arabian 30-19 Fed Com 4H\_WtrXfrMaprev\_11-17-2016.pdf

**Water source comments:** The attached Water Transfer Map is a proposal only and the final route and documentation will be provided by a Devon contractor prior to installation. When available Devon will always follow existing disturbance.

**New water well?** NO

### New Water Well Info

**Well latitude:**

**Well Longitude:**

**Well datum:**

**Well target aquifer:**

**Est. depth to top of aquifer(ft):**

**Est thickness of aquifer:**

**Aquifer comments:**

**Aquifer documentation:**

**Well depth (ft):**

**Well casing type:**

**Well casing outside diameter (in.):**

**Well casing inside diameter (in.):**

**New water well casing?**

**Used casing source:**

**Drilling method:**

**Drill material:**

**Grout material:**

**Grout depth:**

**Casing length (ft.):**

**Casing top depth (ft.):**

**Well Production type:**

**Completion Method:**

**Water well additional information:**

**State appropriation permit:**



**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** ARABIAN 30-19 FED COM

**Well Number:** 4H

**Additional information attachment:**

## **Section 6 - Construction Materials**

**Construction Materials description:** Dirt fill and caliche will be used to construct well pad.

**Construction Materials source location attachment:**

Arabian 30-19 Fed Com 4H\_Caliche Pit\_12-20-2016.pdf

## **Section 7 - Methods for Handling Waste**

**Waste type:** PRODUCED WATER

**Waste content description:** Produced water during production operations. This amount is a daily average during the first year of production (BWPD).

**Amount of waste:** 1000 barrels

**Waste disposal frequency :** Daily

**Safe containment description:** N/A

**Safe containmant attachment:**

**Waste disposal type:** ON-LEASE INJECTION      **Disposal location ownership:** PRIVATE

**Disposal type description:**

**Disposal location description:** One of three company owned SWD facilities in the area: CDU 181, CDU 89, CDU 84.

**Waste type:** FLOWBACK

**Waste content description:** Produced water during flowback operations. This amount is a daily average during flowback (BWPD).

**Amount of waste:** 1500 barrels

**Waste disposal frequency :** Daily

**Safe containment description:** N/A

**Safe containmant attachment:**

**Waste disposal type:** ON-LEASE INJECTION      **Disposal location ownership:** PRIVATE

**Disposal type description:**

**Disposal location description:** One of three company owned SWD facilities in the area: CDU 181, CDU 89, CDU 84.

**Waste type:** DRILLING

**Waste content description:** Water Based Cuttings

**Amount of waste:** 1810 barrels

**Waste disposal frequency :** Daily

**Safe containment description:** N/A

**Safe containmant attachment:**

**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** ARABIAN 30-19 FED COM

**Well Number:** 4H

**Waste disposal type:** HAUL TO COMMERCIAL FACILITY      **Disposal location ownership:** COMMERCIAL

**Disposal type description:**

**Disposal location description:** All cuttings will disposed of at R360, Sundance, or equivalent.

**Waste type:** COMPLETIONS/STIMULATION

**Waste content description:** Flow back water during completion operations.

**Amount of waste:** 3000                  barrels

**Waste disposal frequency :** One Time Only

**Safe containment description:** N/A

**Safe containmant attachment:**

**Waste disposal type:** HAUL TO COMMERCIAL FACILITY      **Disposal location ownership:** COMMERCIAL

**Disposal type description:**

**Disposal location description:** Various disposal locations in Lea and Eddy counties.

### Reserve Pit

**Reserve Pit being used?** NO

**Temporary disposal of produced water into reserve pit?**

**Reserve pit length (ft.)**                  **Reserve pit width (ft.)**

**Reserve pit depth (ft.)**                                  **Reserve pit volume (cu. yd.)**

**Is at least 50% of the reserve pit in cut?**

**Reserve pit liner**

**Reserve pit liner specifications and installation description**

### Cuttings Area

**Cuttings Area being used?** NO

**Are you storing cuttings on location?** NO

**Description of cuttings location**

**Cuttings area length (ft.)**                                  **Cuttings area width (ft.)**

**Cuttings area depth (ft.)**                                  **Cuttings area volume (cu. yd.)**

**Is at least 50% of the cuttings area in cut?**

**WCuttings area liner**

**Cuttings area liner specifications and installation description**

**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** ARABIAN 30-19 FED COM

**Well Number:** 4H

## Section 8 - Ancillary Facilities

**Are you requesting any Ancillary Facilities?:** NO

**Ancillary Facilities attachment:**

**Comments:**

## Section 9 - Well Site Layout

**Well Site Layout Diagram:**

Arabian 30-19 Fed Com 4H\_Rig Layout\_10-19-2016.pdf

**Comments:**

## Section 10 - Plans for Surface Reclamation

**Type of disturbance:** NEW

**Recontouring attachment:**

Arabian 30-19 Fed Com 4H\_Reclamation\_10-19-2016.pdf

**Drainage/Erosion control construction:** All areas disturbed shall be reclaimed as early and as nearly as practicable to their original condition or their final land use and shall be maintained to control dust and minimize erosion to the extent practicable.

**Drainage/Erosion control reclamation:** Topsoils and subsoils shall be replaced to their original relative positions and contoured so as to achieve erosion control, long-term stability and preservation of surface water flow patterns. The disturbed area then shall be reseeded in the first favorable growing season.

**Wellpad long term disturbance (acres):** 1.888

**Wellpad short term disturbance (acres):** 4.157

**Access road long term disturbance (acres):** 0.015

**Access road short term disturbance (acres):** 0.015

**Pipeline long term disturbance (acres):** 1.9493871

**Pipeline short term disturbance (acres):** 3.2489784

**Other long term disturbance (acres):** 0

**Other short term disturbance (acres):** 0

**Total long term disturbance:** 3.852387

**Total short term disturbance:** 7.4209785

**Reconstruction method:** Operator will use Best Management Practices"BMP" to mechanically recontour to obtain the desired outcome.

**Topsoil redistribution:** Topsoils shall be replaced to their original relative positions and contoured so as to achieve erosion control, long-term stability and preservation of surface water flow patterns.

**Soil treatment:** Topsoils shall be replaced to their original relative positions and contoured so as to achieve erosion control, long-term stability and preservation of surface water flow patterns.

**Existing Vegetation at the well pad:** Shinnery, yucca, grasses and mesquite.

**Existing Vegetation at the well pad attachment:**

**Existing Vegetation Community at the road:** Shinnery, yucca, grasses and mesquite.

**Existing Vegetation Community at the road attachment:**

**Existing Vegetation Community at the pipeline:** Shinnery, yucca, grasses and mesquite.

**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** ARABIAN 30-19 FED COM

**Well Number:** 4H

**Existing Vegetation Community at the pipeline attachment:**

**Existing Vegetation Community at other disturbances:** Shinnery, yucca, grasses and mesquite.

**Existing Vegetation Community at other disturbances attachment:**

**Non native seed used?** NO

**Non native seed description:**

**Seedling transplant description:**

**Will seedlings be transplanted for this project?** NO

**Seedling transplant description attachment:**

**Will seed be harvested for use in site reclamation?** NO

**Seed harvest description:**

**Seed harvest description attachment:**

## Seed Management

### Seed Table

**Seed type:**

**Seed source:**

**Seed name:**

**Source name:**

**Source address:**

**Source phone:**

**Seed cultivar:**

**Seed use location:**

**PLS pounds per acre:**

**Proposed seeding season:**

### Seed Summary

**Total pounds/Acre:**

**Seed Type**

**Pounds/Acre**

**Seed reclamation attachment:**

### Operator Contact/Responsible Official Contact Info

**First Name:** Mark

**Last Name:** Smith

**Phone:** (575)746-5559

**Email:** mark.smith@dvn.com

**Seedbed prep:**

**Seed BMP:**

**Seed method:**

**Existing invasive species?** NO



**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** ARABIAN 30-19 FED COM

**Well Number:** 4H

**Existing invasive species treatment description:**

**Existing invasive species treatment attachment:**

**Weed treatment plan description:** Maintain weeds on an as need basis.

**Weed treatment plan attachment:**

**Monitoring plan description:** Monitor as needed.

**Monitoring plan attachment:**

**Success standards:** N/A

**Pit closure description:** N/A

**Pit closure attachment:**

## **Section 11 - Surface Ownership**

**Disturbance type:** NEW ACCESS ROAD

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:**

**USFS Ranger District:**

**Disturbance type:** EXISTING ACCESS ROAD

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**Other surface owner description:**

**BIA Local Office:**



**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** ARABIAN 30-19 FED COM

**Well Number:** 4H

**BOR Local Office:**

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:**

**USFS Ranger District:**

**Disturbance type:** WELL PAD

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:**

**USFS Ranger District:**

**Operator Name:** DEVON ENERGY PRODUCTION COMPANY LP

**Well Name:** ARABIAN 30-19 FED COM

**Well Number:** 4H

**Disturbance type:** PIPELINE

**Describe:**

**Surface Owner:** BUREAU OF LAND MANAGEMENT

**Other surface owner description:**

**BIA Local Office:**

**BOR Local Office:**

**COE Local Office:**

**DOD Local Office:**

**NPS Local Office:**

**State Local Office:**

**Military Local Office:**

**USFWS Local Office:**

**Other Local Office:**

**USFS Region:**

**USFS Forest/Grassland:**

**USFS Ranger District:**

## Section 12 - Other Information

**Right of Way needed?** NO

**Use APD as ROW?**

**ROW Type(s):**

### ROW Applications

**SUPO Additional Information:** CTB Survey Electric Survey Flowline Survey

**Use a previously conducted onsite?** NO

**Previous Onsite information:**

### Other SUPO Attachment

Arabian 30-19 Fed Com 4H\_CTB\_10-19-2016.pdf

Arabian 30-19 Fed Com 4H\_Electric\_10-19-2016.PDF

Arabian 30-19 Fed Com 4H\_Flowline\_10-19-2016.pdf

## Section 1 - General

Would you like to address long-term produced water disposal? NO

## Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

### Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

### Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number:

Injection well name:

Assigned injection well API number?

Injection well API number:

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

## Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

## Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:





U.S. Department of the Interior  
BUREAU OF LAND MANAGEMENT

## Bond Info Data Report

04/26/2017

### Bond Information

Federal/Indian APD: FED

BLM Bond number: CO1104

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment:

## Casing Assumptions and Load Cases

### Intermediate

All casing design assumptions were ran in Stress Check to determine safety factor which meet or exceed both Devon Energy and BLM minimum requirements. All casing strings will be filled while running in hole in order to not exceed collapse rating of the pipe.

Intermediate Casing Burst Design		
Load Case	External Pressure	Internal Pressure
Pressure Test	Formation Pore Pressure	Max mud weight of next hole-section plus Test psi
Drill Ahead	Formation Pore Pressure	Max mud weight of next hole section
Fracture @ Shoe	Formation Pore Pressure	Dry gas

Intermediate Casing Collapse Design		
Load Case	External Pressure	Internal Pressure
Full Evacuation	Water gradient in cement, mud above TOC	None
Cementing	Wet cement weight	Water (8.33ppg)

Intermediate Casing Tension Design	
Load Case	Assumptions
Overpull	100kips
Runing in hole	2 ft/s
Service Loads	N/A

## Casing Assumptions and Load Cases

### Production

All casing design assumptions were ran in Stress Check to determine safety factor which meet or exceed both Devon Energy and BLM minimum requirements. All casing strings will be filled while running in hole in order to not exceed collapse rating of the pipe.

Production Casing Burst Design		
Load Case	External Pressure	Internal Pressure
Pressure Test	Formation Pore Pressure	Fluid in hole (water or produced water) + test psi
Tubing Leak	Formation Pore Pressure	Packer @ KOP, leak below surface 8.6 ppg packer fluid
Stimulation	Formation Pore Pressure	Max frac pressure with heaviest frac fluid

Production Casing Collapse Design		
Load Case	External Pressure	Internal Pressure
Full Evacuation	Water gradient in cement, mud above TOC.	None
Cementing	Wet cement weight	Water (8.33ppg)

Production Casing Tension Design	
Load Case	Assumptions
Overpull	100kips
Runing in hole	2 ft/s
Service Loads	N/A

## Casing Assumptions and Load Cases

### Production

All casing design assumptions were ran in Stress Check to determine safety factor which meet or exceed both Devon Energy and BLM minimum requirements. All casing strings will be filled while running in hole in order to not exceed collapse rating of the pipe.

Production Casing Burst Design		
Load Case	External Pressure	Internal Pressure
Pressure Test	Formation Pore Pressure	Fluid in hole (water or produced water) + test psi
Tubing Leak	Formation Pore Pressure	Packer @ KOP, leak below surface 8.6 ppg packer fluid
Stimulation	Formation Pore Pressure	Max frac pressure with heaviest frac fluid

Production Casing Collapse Design		
Load Case	External Pressure	Internal Pressure
Full Evacuation	Water gradient in cement, mud above TOC.	None
Cementing	Wet cement weight	Water (8.33ppg)

Production Casing Tension Design	
Load Case	Assumptions
Overpull	100kips
Runing in hole	2 ft/s
Service Loads	N/A



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 3000 (3M) 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.

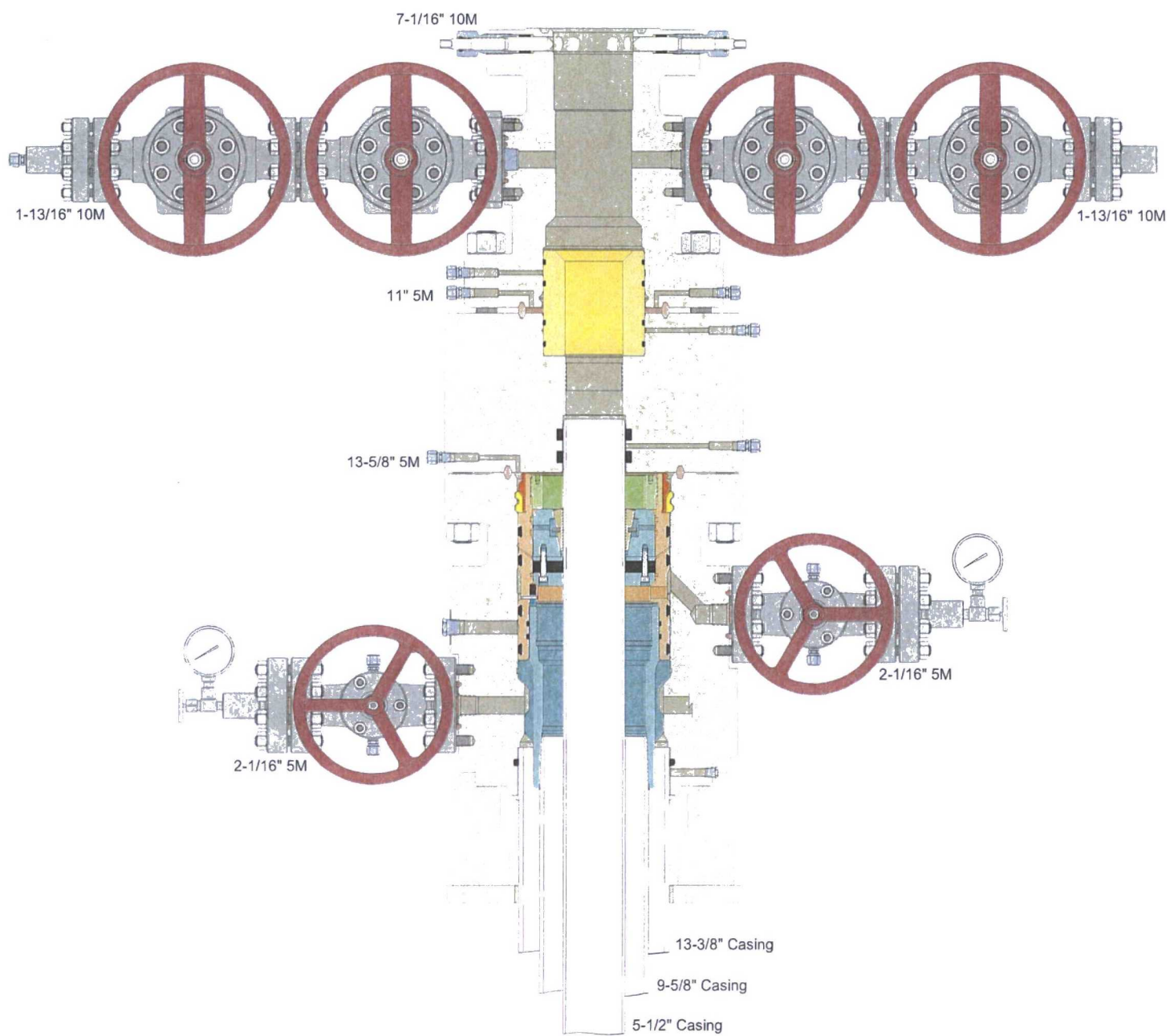
After running the 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 3M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 3,000 psi high pressure test. The 3,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days, as per Onshore Order #2. If the well is not complete within 30 days of this BOP test, another full BOP test will be conducted, as per Onshore Order #2.

After running the 9-5/8" intermediate casing with a mandrel hanger, the 13-5/8" BOP/BOPE system with a minimum rating of 3M will already be installed on the wellhead.

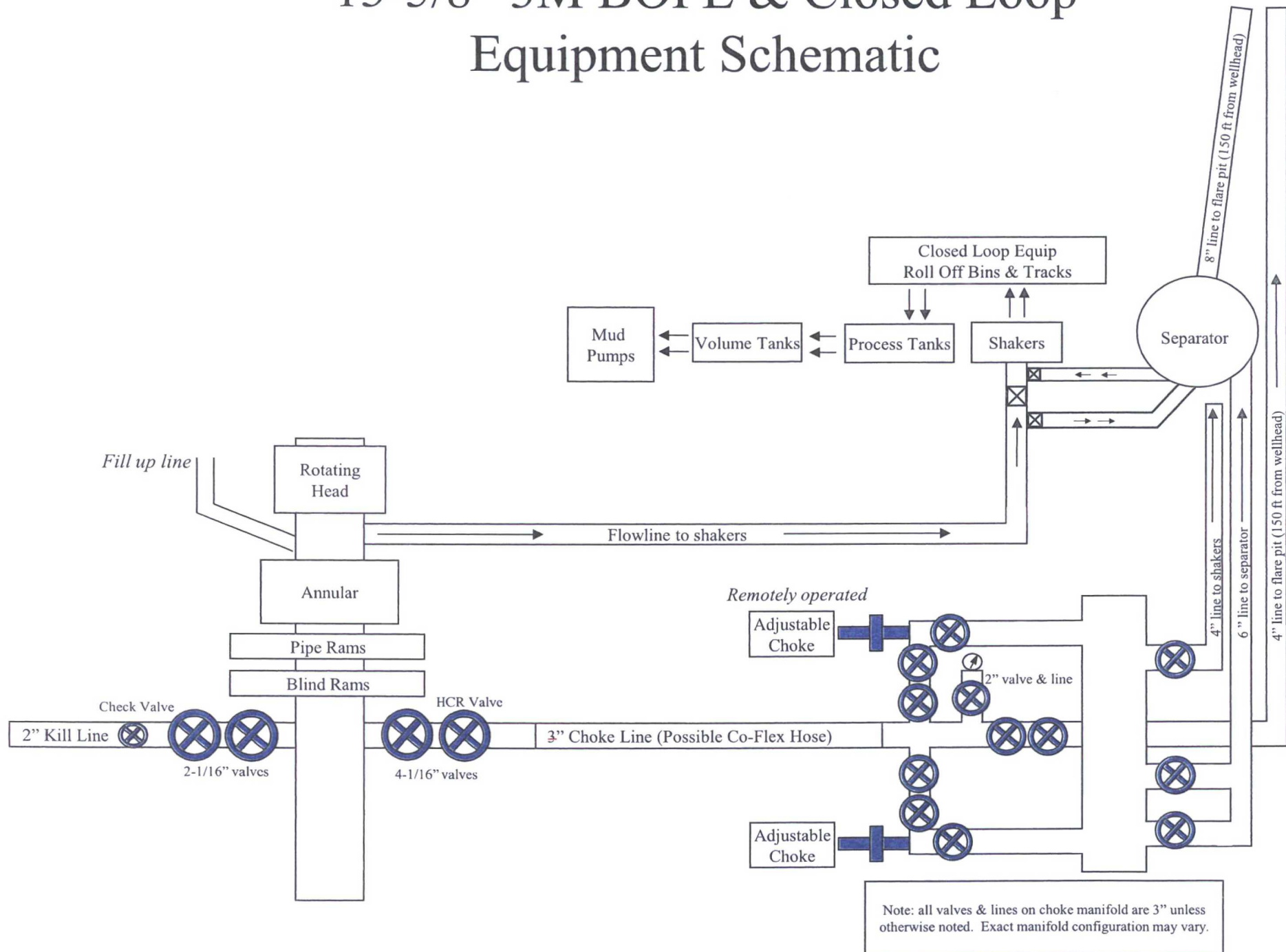
The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 3,000 psi WP.

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





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



40920-0-00015

**GENIX RUBBER**  
Industrial Ltd.  
Hose Inspection and  
Certification Dept.

VERIFIED TRUE CO.  
PHOENIX RUBBER CO.



Fluid Technology

ContiTech Beattie Corp.  
Website: [www.contitechbeattie.com](http://www.contitechbeattie.com)

Monday, June 14, 2010

RE: Drilling & Production Hoses  
Lifting & Safety Equipment

To Helmerich & Payne,

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

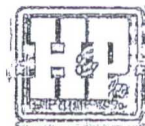
Should you have any questions or require any additional information/clarifications then please do not hesitate to contact us.

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

Best regards,

Robin Hodgson  
Sales Manager  
ContiTech Beattie Corp

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





RIG 212



## QUALITY DOCUMENT

**PHOENIX RUBBER  
INDUSTRIAL LTD.**

 6728 Szeged, Budapesti út 10, Hungary • H-6701 Szeged, P. O. Box 152  
 Phone: (3662) 556-737 • Fax: (3662) 556-738

 SALES & MARKETING: H-1092 Budapest, Ráday u. 42-44, Hungary • H-1440 Budapest, P. O. Box 26  
 Phone: (361) 456-4200 • Fax: (361) 217-2972, 456-4273 • www.taunsemerge.hu

QUALITY CONTROL INSPECTION AND TEST CERTIFICATE				CERT. N°: 552	
PURCHASER: Phoenix Beattie Co.			P.O. N°: 1519FA-871		
PHOENIX RUBBER order N°: 170466		HOSE TYPE: 3" ID Choke and Kill Hose			
HOSE SERIAL N°: 34128		NOMINAL / ACTUAL LENGTH: 11,43 m			
W.P. 68,96 MPa	10000	psi	T.P. 103,4 MPa	15000	psi
		Duration: 60		min.	
Pressure test with water at ambient temperature  <div style="text-align: center;">See attachment. (1 page)</div>					
↑ 10 mm = 10 Min. → 10 mm = 25 MPa					
COUPLINGS					
Type	Serial N°		Quality	Heat N°	
3" coupling with 4 1/16" Flange end	720 719		AISI 4130	C7626	
			AISI 4130	47357	
API Spec 16 C Temperature rate: "B"					
All metal parts are flawless					
WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.					
Date:	Inspector		Quality Control		
29. April. 2002.			PHOENIX RUBBER Industrial Ltd. <i>Handwritten signature</i> PHOENIX RUBBER Q.C.		



Production Cement Contingency		Additional String Description		Stage Tool Depth		Additional Info for String	
				4300		3	
Lead							
Top MD of Segment	4300	Btm MD of Segment	10350	Cement Type	C	Yield (cu.ft./sk)	3.31
Quantity (sks)	Enhancer 923 + 10% BWOC Bentonite + 0.05% BWOC SA-1015 + 0.3% BWOC HR-800 + 0.2% BWOC FE-2 + 0.125 lb/sk Pol-E-Flake + 0.5 lb/sk D-Air 5000						
Density (lbs/gal)	10.9						
Volume (cu.ft.)	1765						
Percent Excess	25						
Tail							
Top MD of Segment	10350	Top MD of Segment	17792	Cement Type	H	Yield (cu.ft./sk)	1.2
Quantity (sks)	0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% Poz (Fly Ash) + 0.5% bwoc HALAD-344 + bwoc Bentonite						
Density (lbs/gal)	14.5						
Volume (cu.ft.)	2350						
Percent Excess	25						

Production Cement Contingency		Additional String Description		Stage Tool Depth		Additional Info for String	
				4300		3	
Lead							
Top MD of Segment	4100	Btm MD of Segment	4200	Cement Type	C	Yield (cu.ft./sk)	3.31
Quantity (sks)	Enhancer 923 + 10% BWOC Bentonite + 0.05% BWOC SA-1015 + 0.3% BWOC HR-800 + 0.2% BWOC FE-2 + 0.125 lb/sk Pol-E-Flake + 0.5 lb/sk D-Air 5000						
Density (lbs/gal)	10.9						
Volume (cu.ft.)	66						
Percent Excess	25						
Tail							
Top MD of Segment	4200	Top MD of Segment	4300	Cement Type	H	Yield (cu.ft./sk)	1.33
Quantity (sks)	0.125 lbs/sack Poly-E-Flake						
Density (lbs/gal)	14.8						
Volume (cu.ft.)	39						
Percent Excess	25						