Form 3160-3
(March 2012)

HOBBS OCD
APR 04 2017
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FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: NMNM 94186

6. If Indian, Allotee or Tribe Name:

1a. Type of work: ☑ DRILL ☐ REENTER

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

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

8. Lease Name and Well No.: THISTLE UNIT 158H (30884)

2. Name of Operator: DEVON ENERGY PRODUCTION COMPANY LP (6137)

9. API Well No.: 30-025-43733

3a. Address: 333 West Sheridan Avenue Oklahoma City Ok

3b. Phone No. *(include area code)*: (405)552-6571

10. Field and Pool, or Exploratory: TRIPLE X / BONE SPRING (59900)

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

At surface: NENW / 275 FNL / 2340 FWL / LAT 32.2821973 / LONG -103.5782415

At proposed prod. zone: SESW / 330 FSL / 2160 FWL / LAT 32.2548161 / LONG -103.5788169

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 28 / T23S / R33E / NMP

14. Distance in miles and direction from nearest town or post office*

12. County or Parish: LEA

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 275 feet

16. No. of acres in lease: 960

17. Spacing Unit dedicated to this well: 320

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 300 feet

19. Proposed Depth: 10079 feet / 19993 feet

20. BLM/BIA Bond No. on file: FED: CO1104

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 3690 feet

22. Approximate date work will start*: 09/25/2018

23. Estimated duration: 45 days

24. Attachments

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

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

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Rebecca Deal / Ph: (405)228-8429	09/14/2016

Title: Regulatory Compliance Professional

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	03/06/2017

Title	Office
Supervisor Multiple Resources	HOBBS

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

KZ 04/05/17

Will require NSL administrative Order

APD ID: 10400005766 **Submission Date:** 09/14/2016 Highlight All Changes

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP **Federal/Indian APD:** FED

Well Name: THISTLE UNIT **Well Number:** 158H

Well Type: OIL WELL **Well Work Type:** Drill

Application

Section 1 - General

APD ID: 10400005766 **Tie to previous NOS?** **Submission Date:** 09/14/2016

BLM Office: HOBBS **User:** Rebecca Deal **Title:** Regulatory Compliance Professional

Federal/Indian APD: FED **Is the first lease penetrated for production Federal or Indian?** FED

Lease number: NMNM 94186 **Lease Acres:** 960

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 **Mater Development Plan name:**

Well in Master SUPO? NO **Master SUPO name:**

Well in Master Drilling Plan? NO **Master Drilling Plan name:**

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 158H

Well Name: THISTLE UNIT **Well Number:** 158H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** TRIPLE X **Pool Name:** BONE SPRING

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:** THISTLE UNIT **Number:** 154H & 158H

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:** 300 FT **Distance to lease line:** 275 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: THISTLE UNIT 158H_C102 Signed_09-14-2016.pdf

Well work start Date: 09/25/2018 **Duration:** 45 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: 4728

	STATE: NEW MEXICO	**Meridian:** NEW MEXICO PRINCIPAL	**County:** LEA
	Latitude: 32.2821973	**Longitude:** -103.5782415	
SHL	**Elevation:** 3690	**MD:** 0	**TVD:** 0
Leg #: 1	**Lease Type:** FEDERAL	**Lease #:** NMNM94186	
	NS-Foot: 275	**NS Indicator:** FNL	
	EW-Foot: 2340	**EW Indicator:** FWL	
	Twsp: 23S	**Range:** 33E	**Section:** 28
	Aliquot: NENW	**Lot:**	**Tract:**

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 158H

	STATE: NEW MEXICO	**Meridian:** NEW MEXICO PRINCIPAL	**County:** LEA
	Latitude: 32.2821973	**Longitude:** -103.5782415	
KOP	**Elevation:** -5909	**MD:** 9605	**TVD:** 9599
Leg #: 1	**Lease Type:** FEDERAL	**Lease #:** NMNM94186	
	NS-Foot: 123	**NS Indicator:** FNL	
	EW-Foot: 2340	**EW Indicator:** FWL	
	Twsp: 23S	**Range:** 33E	**Section:** 28
	Aliquot: NENW	**Lot:**	**Tract:**
	STATE: NEW MEXICO	**Meridian:** NEW MEXICO PRINCIPAL	**County:** LEA
	Latitude: 32.2821973	**Longitude:** -103.5782415	
PPP	**Elevation:** -6387	**MD:** 10355	**TVD:** 10077
Leg #: 1	**Lease Type:** FEDERAL	**Lease #:** NMNM94186	
	NS-Foot: 600	**NS Indicator:** FNL	
	EW-Foot: 2160	**EW Indicator:** FWL	
	Twsp: 23S	**Range:** 33E	**Section:** 28
	Aliquot: NENW	**Lot:**	**Tract:**
	STATE: NEW MEXICO	**Meridian:** NEW MEXICO PRINCIPAL	**County:** LEA
	Latitude: 32.2548161	**Longitude:** -103.5788169	
EXIT	**Elevation:** -6389	**MD:** 19993	**TVD:** 10079
Leg #: 1	**Lease Type:** STATE	**Lease #:** STATE	
	NS-Foot: 330	**NS Indicator:** FSL	
	EW-Foot: 2160	**EW Indicator:** FWL	
	Twsp: 23S	**Range:** 33E	**Section:** 33
	Aliquot: SESW	**Lot:**	**Tract:**
	STATE: NEW MEXICO	**Meridian:** NEW MEXICO PRINCIPAL	**County:** LEA
	Latitude: 32.2548161	**Longitude:** -103.5788169	
BHL	**Elevation:** -6389	**MD:** 19993	**TVD:** 10079
Leg #: 1	**Lease Type:** STATE	**Lease #:** STATE	
	NS-Foot: 330	**NS Indicator:** FSL	
	EW-Foot: 2160	**EW Indicator:** FWL	

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 158H

Twsp: 23S **Range:** 33E **Section:** 33

Aliquot: SESW **Lot:** **Tract:**

Drilling Plan

Section 1 - Geologic Formations

ID: Surface formation **Name:** UNKNOWN

Lithology(ies):

OTHER - Surface

Elevation: 3689 **True Vertical Depth:** 0 **Measured Depth:** 0

Mineral Resource(s):

NONE

Is this a producing formation? N

ID: Formation 1 **Name:** RUSTLER

Lithology(ies):

ANHYDRITE

Elevation: 2370 **True Vertical Depth:** 1319 **Measured Depth:** 1319

Mineral Resource(s):

NONE

Is this a producing formation? N

ID: Formation 2 **Name:** TOP OF SALT

Lithology(ies):

SALT

Elevation: 1869 **True Vertical Depth:** 1820 **Measured Depth:** 1820

Mineral Resource(s):

NONE

Is this a producing formation? N

ID: Formation 3 **Name:** BASE OF SALT

Lithology(ies):

SALT

Elevation: -1231 **True Vertical Depth:** 4920 **Measured Depth:** 4920

Mineral Resource(s):

NONE

Is this a producing formation? N

ID: Formation 4 **Name:** DELAWARE

Lithology(ies):

SANDSTONE

Elevation: -1481 **True Vertical Depth:** 5170 **Measured Depth:** 5170

Mineral Resource(s):

NATURAL GAS

OIL

Is this a producing formation? N

ID: Formation 5 **Name:** BRUSHY CANYON LOWER

Lithology(ies):

SANDSTONE

Elevation: -5167 **True Vertical Depth:** 8856 **Measured Depth:** 8856

Mineral Resource(s):

NATURAL GAS

OIL

Is this a producing formation? N

ID: Formation 6 **Name:** BONE SPRING LIME

Lithology(ies):

LIMESTONE

Elevation: -5410 **True Vertical Depth:** 9099 **Measured Depth:** 9099

Mineral Resource(s):

NATURAL GAS

OIL

Is this a producing formation? N

ID: Formation 7 **Name:** BONE SPRING

Lithology(ies):

SILTSTONE

Elevation: -5590 **True Vertical Depth:** 9279 **Measured Depth:** 9279

Mineral Resource(s):

NATURAL GAS

OIL

Is this a producing formation? N

ID: Formation 8 **Name:** BONE SPRING

Lithology(ies):

SILTSTONE

Elevation: -5927 **True Vertical Depth:** 9616 **Measured Depth:** 9616

Mineral Resource(s):

NATURAL GAS

OIL

Is this a producing formation? N

ID: Formation 9 **Name:** BONE SPRING

Lithology(ies):

SILTSTONE

Elevation: -6278 **True Vertical Depth:** 9967 **Measured Depth:** 9967

Mineral Resource(s):

NATURAL GAS

OIL

Is this a producing formation? Y

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 158H

ID: Formation 10 **Name:** BONE SPRING 1ST

Lithology(ies):

SANDSTONE

Elevation: -6533 **True Vertical Depth:** 10222 **Measured Depth:** 10222

Mineral Resource(s):

NATURAL GAS

OIL

Is this a producing formation? N

Section 2 - Blowout Prevention

Pressure Rating (PSI): 3M **Rating Depth:** 5100

Equipment: 3M rotating head, mud-gas seperator, panic line, and flare will be rigged up prior to drilling out surface casing.

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:

Thistle Unit 158H_3M BOPE Double Ram and CLS Schematic_09-14-2016.pdf

BOP Diagram Attachment:

Thistle Unit 158H_3M BOPE Double Ram and CLS Schematic_09-14-2016.pdf

Pressure Rating (PSI): 3M **Rating Depth:** 10079

Equipment: 3M rotating head, mud-gas seperator, panic line, and flare will be rigged up prior to drilling out surface casing.

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:

Thistle Unit 158H_3M BOPE Double Ram and CLS Schematic_09-14-2016.pdf

BOP Diagram Attachment:

Thistle Unit 158H_3M BOPE Double Ram and CLS Schematic_09-14-2016.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 158H

Section 3 - Casing

String Type: SURFACE **Other String Type:**

Hole Size: 17.5

Top setting depth MD: 0 **Top setting depth TVD:** 0

Top setting depth MSL: -6389

Bottom setting depth MD: 1400 **Bottom setting depth TVD:** 1400

Bottom setting depth MSL: -7789

Calculated casing length MD: 1400

Casing Size: 13.375 **Other Size**

Grade: H-40 **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: 1.18 **Burst Design Safety Factor:** 2.64

Joint Tensile Design Safety Factor type: BUOYANT **Joint Tensile Design Safety Factor:** 8.05

Body Tensile Design Safety Factor type: BUOYANT **Body Tensile Design Safety Factor:** 8.05

Casing Design Assumptions and Worksheet(s):

Thistle Unit 158H_Surface Casing Assumptions_09-14-2016.docx

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 158H

String Type: INTERMEDIATE **Other String Type:**

Hole Size: 12.25

Top setting depth MD: 0 **Top setting depth TVD:** 0

Top setting depth MSL: -6389

Bottom setting depth MD: 5100 **Bottom setting depth TVD:** 5100

Bottom setting depth MSL: -11489

Calculated casing length MD: 5100

Casing Size: 9.625 **Other Size**

Grade: J-55 **Other Grade:**

Weight: 40

Joint Type: OTHER **Other Joint Type:** btc

Condition: NEW

Inspection Document:

Standard: API

Spec Document:

Tapered String?: N

Tapered String Spec:

Safety Factors

Collapse Design Safety Factor: 1.15 **Burst Design Safety Factor:** 1.77

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):

Thistle Unit 158H_Intermediate Casing Assumptions_09-14-2016.docx

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 158H

String Type: INTERMEDIATE **Other String Type:**

Hole Size: 12.25

Top setting depth MD: 4300 **Top setting depth TVD:** 4300

Top setting depth MSL: -10689

Bottom setting depth MD: 5100 **Bottom setting depth TVD:** 5100

Bottom setting depth MSL: -11489

Calculated casing length MD: 800

Casing Size: 9.625 **Other Size**

Grade: HCK-55 **Other Grade:**

Weight: 40

Joint Type: OTHER **Other Joint Type:** btc

Condition: NEW

Inspection Document:

Standard: API

Spec Document:

Tapered String?: N

Tapered String Spec:

Safety Factors

Collapse Design Safety Factor: 1.58 **Burst Design Safety Factor:** 1.47

Joint Tensile Design Safety Factor type: BUOYANT **Joint Tensile Design Safety Factor:** 4.5

Body Tensile Design Safety Factor type: BUOYANT **Body Tensile Design Safety Factor:** 4.5

Casing Design Assumptions and Worksheet(s):

Thistle Unit 158H_Intermediate Casing Assumptions_09-14-2016.docx

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 158H

String Type: PRODUCTION **Other String Type:**

Hole Size: 8.75

Top setting depth MD: 0 **Top setting depth TVD:** 0

Top setting depth MSL: -6389

Bottom setting depth MD: 20016 **Bottom setting depth TVD:** 10079

Bottom setting depth MSL: -6389

Calculated casing length MD: 20016

Casing Size: 5.5 **Other Size**

Grade: P-110 **Other Grade:**

Weight: 17

Joint Type: OTHER **Other Joint Type:** BTC

Condition: NEW

Inspection Document:

Standard: API

Spec Document:

Tapered String?: N

Tapered String Spec:

Safety Factors

Collapse Design Safety Factor: 1.56 **Burst Design Safety Factor:** 1.93

Joint Tensile Design Safety Factor type: BUOYANT **Joint Tensile Design Safety Factor:** 2.09

Body Tensile Design Safety Factor type: BUOYANT **Body Tensile Design Safety Factor:** 2.09

Casing Design Assumptions and Worksheet(s):

Thistle Unit 158H_Production Casing Assumptions_09-14-2016.docx

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Section 4 - Cement

Casing String Type: INTERMEDIATE

Stage Tool Depth:

Lead

Top MD of Segment: 0	**Bottom MD Segment:** 0	**Cement Type:** N/A
Additives: N/A	**Quantity (sks):** 0	**Yield (cu.ff./sk):** 0
Density: 0	**Volume (cu.ft.):** 0	**Percent Excess:**

Casing String Type: SURFACE

Stage Tool Depth: 300

Lead

Top MD of Segment: 0	**Bottom MD Segment:** 300	**Cement Type:** C
Additives: N/A	**Quantity (sks):** 185	**Yield (cu.ff./sk):** 1.72
Density: 13.5	**Volume (cu.ft.):** 312	**Percent Excess:** 50

Tail

Top MD of Segment: 300	**Bottom MD Segment:** 1400	**Cement Type:** C
Additives: N/A	**Quantity (sks):** 825	**Yield (cu.ff./sk):** 1.33
Density: 14.8	**Volume (cu.ft.):** 1106	**Percent Excess:** 50

Stage Tool Depth: 300

Lead

Top MD of Segment: 0	**Bottom MD Segment:** 300	**Cement Type:** C
Additives: N/A	**Quantity (sks):** 235	**Yield (cu.ff./sk):** 1.33
Density: 14.8	**Volume (cu.ft.):** 312	**Percent Excess:** 50

Stage Tool Depth:

Lead

Top MD of Segment: 0	**Bottom MD Segment:** 1400	**Cement Type:** C
Additives: 1% Calcium Chloride	**Quantity (sks):** 1090	**Yield (cu.ff./sk):** 1.34
Density: 14.8	**Volume (cu.ft.):** 1459	**Percent Excess:** 50

Casing String Type: INTERMEDIATE

Stage Tool Depth:

Lead

Top MD of Segment: 0 **Bottom MD Segment:** 4100 **Cement Type:** C

Additives: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sks Poly-E-Flake **Quantity (sks):** 905 **Yield (cu.ff./sk):** 1.85

Volume (cu.ft.): 1669 **Percent Excess:** 30

Density: 12.9

Tail

Bottom MD Segment: 5100 **Cement Type:** H

Top MD of Segment: 4100 **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: 5500

Lead

Top MD of Segment: 4800 **Bottom MD Segment:** 4900 **Cement Type:** C

Additives: 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 **Quantity (sks):** 20 **Yield (cu.ff./sk):** 3.31

Volume (cu.ft.): 66 **Percent Excess:** 25

Density: 10.9

Tail

Bottom MD Segment: 5000 **Cement Type:** H

Quantity (sks): 30 **Yield (cu.ff./sk):** 1.33

Top MD of Segment: 4900 **Volume (cu.ft.):** 39 **Percent Excess:** 25

Additives: 0.125 lbs/sack Poly-E-Flake

Density: 14.8

Stage Tool Depth: 5500

Lead

Top MD of Segment: 5000 **Bottom MD Segment:** 10000 **Cement Type:** C

Additives: 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 **Quantity (sks):** 420 **Yield (cu.ff./sk):** 3.31

Volume (cu.ft.): 1389 **Percent Excess:** 25

Density: 10.9

Tail

Bottom MD Segment: 19993 **Cement Type:** H

Quantity (sks): 2320 **Yield (cu.ff./sk):** 1.2

Top MD of Segment: 10000 **Volume (cu.ft.):** 2783 **Percent Excess:** 25

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

Density: 14.5

Percent Excess: 25

Stage Tool Depth:

Lead

Top MD of Segment: 4900 **Bottom MD Segment:** 10000 **Cement Type:** H

Additives: Poz (Fly Ash) + 0.3% BWOC HR-601 + 10% bwoc Bentonite **Quantity (sks):** 580 **Yield (cu.ff./sk):** 2.31

Density: 11.9 **Volume (cu.ft.):** 1389 **Percent Excess:** 25

Tail

Top MD of Segment: 10000 **Bottom MD Segment:** 19993 **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):** 2320 **Yield (cu.ff./sk):** 1.2

Density: 14.5 **Volume (cu.ft.):** 2783 **Percent Excess:** 25

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:** 5100

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:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 158H

Top Depth: 0 **Bottom Depth:** 1400

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:

Top Depth: 5100 **Bottom Depth:** 19993

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:

Section 6 - Test, Logging, Coring

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

Will run GR/CNL fromTD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.

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

GR

Coring operation description for the well:

N/A

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 4356 **Anticipated Surface Pressure:** 2138.62

Anticipated Bottom Hole Temperature(F): 160

Anticipated abnormal proessures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 158H

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Thistle Unit 158H_H2S Plan_09-14-2016.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Thistle Unit 158H_Directional Plan_09-14-2016.pdf

Other proposed operations facets description:

MULTI-BOWL VERBIAGE
MULTI-BOWL WELLHEAD
CLOSED LOOP DESIGN PLAN
ANTI-COLLISION PLAN

Other proposed operations facets attachment:

Thistle Unit 158H_Multi-Bowl Verbiage_3M_09-14-2016.pdf
Thistle Unit 158H_Closed Loop Design Plan_09-14-2016.pdf
Thistle Unit 158H_Multi-Bowl Wellhead_09-14-2016.pdf
Thistle Unit 158H_AC Report_09-14-2016.pdf

Other Variance attachment:

Thistle Unit 158H_H_P Co-flex hose_09-14-2016.pdf

SUPO

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Thistle Unit 158H_Access Route Map_09-14-2016.pdf

Existing Road Purpose: ACCESS,FLUID TRANSPORT **Row(s) Exist?** NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 158H

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? NO

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

Thistle Unit 158H_one mile map_09-14-2016.pdf

Existing Wells description:

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

Submit or defer a Proposed Production Facilities plan? SUBMIT

Estimated Production Facilities description: THISTLE UNIT 28 CTB 2

Production Facilities description: Thistle Unit 28 CTB 2 Plat, Battery Connect, Battery Electric, Flowlines (Buried)

Production Facilities map:

Thistle Unit 158H_THISTLE_UNIT_28_CTB_2_BATTERY_CONNECT_09-14-2016.PDF
Thistle Unit 158H_THISTLE_UNIT_28_CTB_2_BATTERY_ELECTRIC_09-14-2016.PDF
Thistle Unit 158H_THISTLE_UNIT_28_CTB_2_P_09-14-2016.PDF
Thistle Unit 158H_Thistle Unit 28 CTB 2 Flowline_11-17-2016.pdf

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

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 158H

Source land ownership: STATE

Water source transport method: PIPELINE,TRUCKING

Source transportation land ownership: STATE

Water source volume (barrels): 270000 **Source volume (acre-feet):** 34.801136

Source volume (gal): 11340000

Water source and transportation map:

Thistle Unit 158H_Water Source_Transfer Map_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:

Additional information attachment:

Section 6 - Construction Materials

Construction Materials description: Dirt fill and caliche will be used to construct well pad. Caliche will be coming from the Brininstool Caliche Pit in the NENE of Section 20 - T23S-R33E
Construction Materials source location attachment:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 158H

Section 7 - Methods for Handling Waste

Waste type: PRODUCED WATER

Waste content description: Average produced BWPD over the first year of production.

Amount of waste: 500 barrels

Waste disposal frequency : Daily

Safe containment description: N/A

Safe containmant attachment:

Waste disposal type: RECYCLE **Disposal location ownership:** STATE

Disposal type description:

Disposal location description: All produced water will be recycled at our Thistle water reuse facility. Any excess water that cannot be recycled will be sent to one of our 3 SWD's (Caballo 9 St 1, Rio Blanco 33 Fed 2, Rio Blanco 4 Fed Com 3) or to OWL (third-party; state tie-in).

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.

Waste type: FLOWBACK

Waste content description: Average produced BWPD over the flowback period (first 30 days of production).

Amount of waste: 2000 barrels

Waste disposal frequency : Daily

Safe containment description: N/A

Safe containmant attachment:

Waste disposal type: RECYCLE **Disposal location ownership:** STATE

Disposal type description:

Disposal location description: All produced water will be recycled at our Thistle water reuse facility. Any excess water that cannot be recycled will be sent to one of our 3 SWD's (Caballo 9 St 1, Rio Blanco 33 Fed 2, Rio Blanco 4 Fed Com 3) or to OWL (third-party; state tie-in).

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 158H

Waste type: DRILLING

Waste content description: Water Based Cuttings

Amount of waste: 1650 barrels

Waste disposal frequency : Daily

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: All cuttings will disposed of at R360, Sundance, or equivalent.

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

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

Thistle Unit 158H_2 Well Pad Rig Location Layout_11-17-2016.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: NEW

Recontouring attachment:

THISTLE UNIT 158H_Interim Reclamation_09-14-2016.pdf

Drainage/Erosion control construction: N/A

Drainage/Erosion control reclamation: N/A

Wellpad long term disturbance (acres): 1.46

Wellpad short term disturbance (acres): 4.156

Access road long term disturbance (acres): 0.05

Access road short term disturbance (acres): 0.05

Pipeline long term disturbance (acres): 0.53913224

Pipeline short term disturbance (acres): 0.53913224

Other long term disturbance (acres): 0

Other short term disturbance (acres): 0

Total long term disturbance: 2.0491323

Total short term disturbance: 4.7451324

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.

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:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 158H

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: JAMES **Last Name:** CRITTENDEN

Phone: (575)748-1854 **Email:** JAMES.CRITTENDEN@DVN.COM

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

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: WELL PAD

Describe:

Surface Owner: PRIVATE OWNERSHIP

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: PIPELINE

Describe:

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 158H

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: NEW ACCESS ROAD

Describe:

Surface Owner: PRIVATE OWNERSHIP

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: THISTLE UNIT **Well Number:** 158H

Disturbance type: EXISTING ACCESS ROAD

Describe:

Surface Owner: PRIVATE OWNERSHIP

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: Thistle Unit 28 CTB 2 Plat, Battery Connect, Battery Electric, Flowlines (Buried)

Use a previously conducted onsite? YES

Previous Onsite information: Previous Onsite 6/14/16 for Thistle Unit 158H & 154H. Notes supplied by CEHMM.

Other SUPO Attachment

Thistle Unit 158H_THISTLE_UNIT_28_CTB_2_BATTERY_CONNECT_09-14-2016.PDF
Thistle Unit 158H_THISTLE_UNIT_28_CTB_2_BATTERY_ELECTRIC_09-14-2016.PDF
Thistle Unit 158H_THISTLE_UNIT_28_CTB_2_P_09-14-2016.PDF
Thistle Unit 158H_Thistle Unit 28 CTB 2 Flowline_11-17-2016.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 158H

PWD

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:

Decribe 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:

Decribe 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:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 158H

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?

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 158H

Other regulatory requirements attachment:

Bond Info

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:

Operator Certification

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: Rebecca Deal **Signed on:** 09/14/2016

Title: Regulatory Compliance Professional

Street Address: 333 West Sheridan Avenue

City: Oklahoma City **State:** OK **Zip:** 73102

Phone: (405)228-8429

Email address: Rebecca.Deal@dvn.com

Field Representative

Representative Name: James Crittenden

Street Address: 6488 Seven Rivers Hwy

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 158H

City: Artesia **State:** NM **Zip:** 88210

Phone: (575)748-1854

Email address: james.crittenden@dvn.com

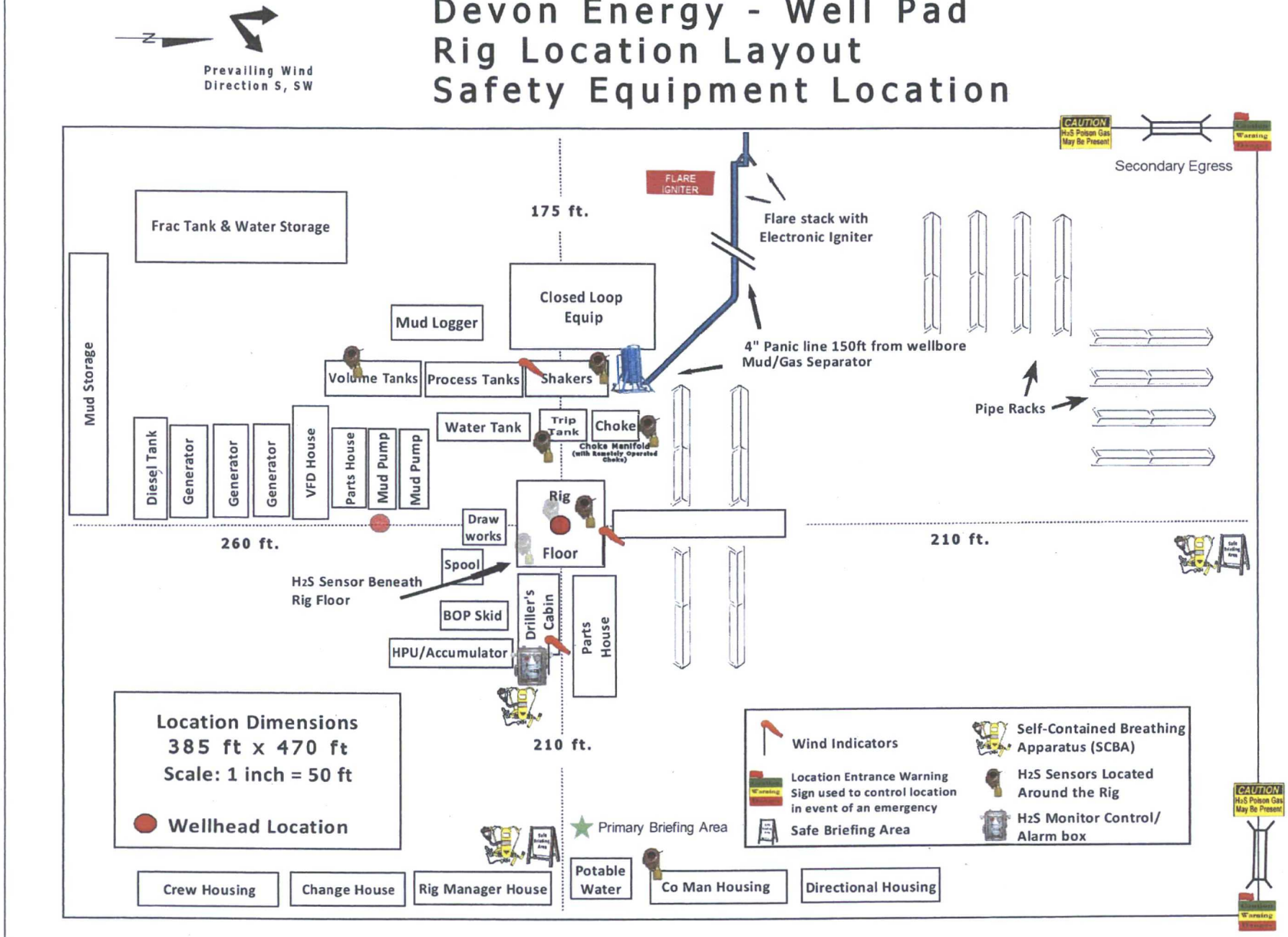
Payment Info

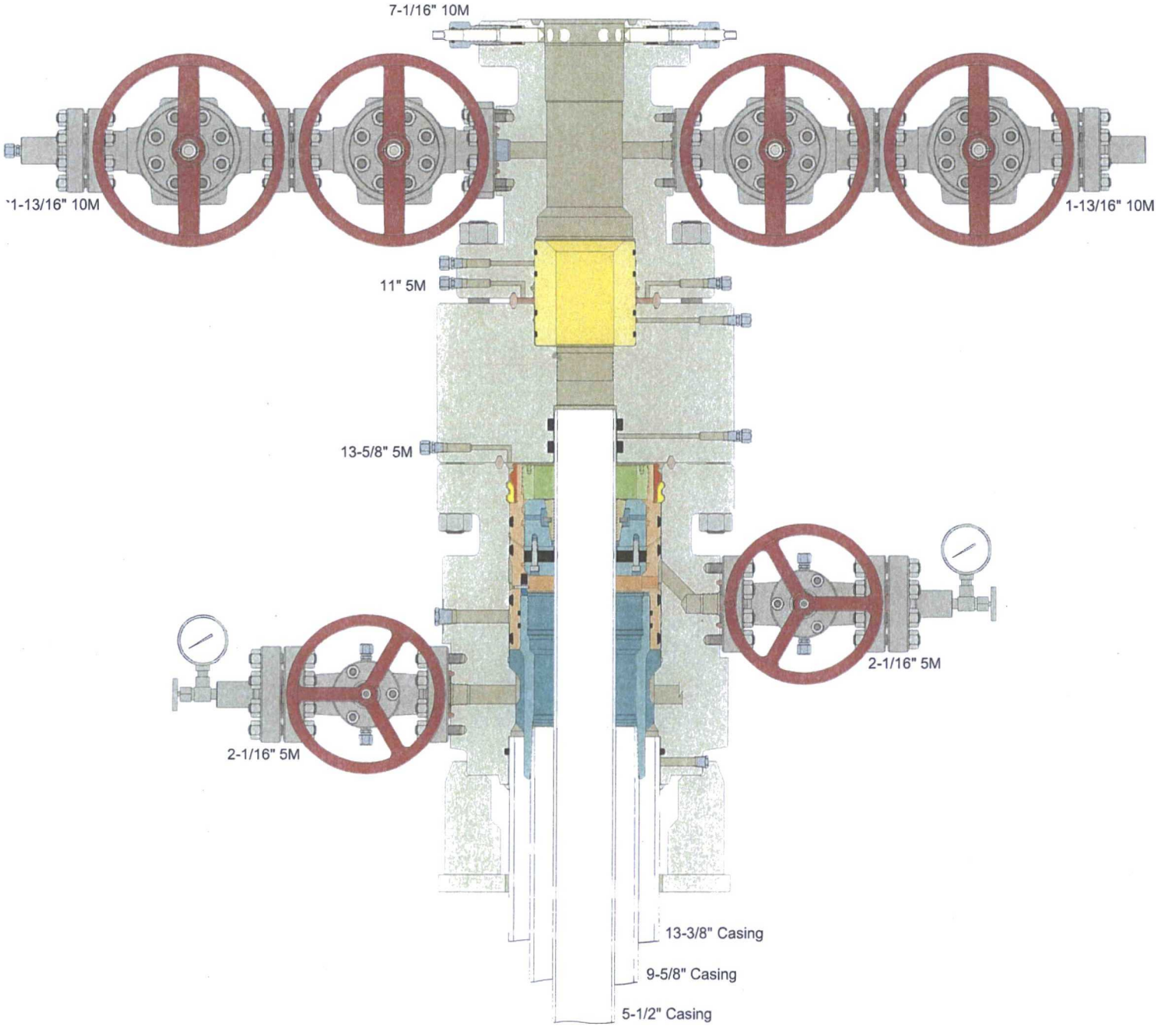
Payment

APD Fee Payment Method: PAY.GOV

pay.gov Tracking ID: 25TSPT34

Devon Energy - Well Pad
Rig Location Layout
Safety Equipment Location




7-1/16" 10M
1-13/16" 10M
1-13/16" 10M
11" 5M
13-5/8" 5M
2-1/16" 5M
2-1/16" 5M
13-3/8" Casing
9-5/8" Casing
5-1/2" Casing

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.

Cotton Draw Unit 291H

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