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Form 3160-3
(March 2012)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☑ DRILL ☐ REENTER	5. Lease Serial No. NMNM 94186
	6. If Indian, Allotee or Tribe Name
	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 145H (30884)
2. Name of Operator DEVON ENERGY PRODUCTION COMPANY LP (6137)	9. API Well No. 30-025-43597
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 SESE / 124 FSL / 833 FEL / LAT 32.2542458 / LONG -103.5714348 (P) At proposed prod. zone NESE / 2630 FSL / 450 FEL / LAT 32.2756712 / LONG -103.5702098 (I)	11. Sec., T. R. M. or Blk. and Survey or Area SEC 33 / 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) 124 feet	16. No. of acres in lease 960 / 17. Spacing Unit dedicated to this well 240
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 215 feet	19. Proposed Depth 9678 feet / 17110 feet / 20. BLM/BIA Bond No. on file FED: CO1104
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3651 feet	22. Approximate date work will start* 02/15/2018 / 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 (Electronic Submission)	Name (Printed/Typed) Rebecca Deal / Ph: (405)228-8429	Date 09/14/2016
Title Regulatory Compliance Professional		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Cody Layton / Ph: (575)234-5959	Date 02/02/2017
Title Supervisor Multiple Resources	Office 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
02/13/17

APD ID: 10400005709 **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:** 145H

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

Application

Section 1 - General

APD ID: 10400005709 **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:** 145H

Well Name: THISTLE UNIT **Well Number:** 145H **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?** YES **New surface disturbance?** Y

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** THISTLE UNIT **Number:** 1H, 144H, 145H, & 156H

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:** 215 FT **Distance to lease line:** 124 FT

Reservoir well spacing assigned acres Measurement: 240 Acres

Well plat: THISTLE UNIT 145H_C-102 Signed_09-14-2016.pdf

Well work start Date: 02/15/2018 **Duration:** 45 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: 4717

	STATE: NEW MEXICO	**Meridian:** NEW MEXICO PRINCIPAL	**County:** LEA
	Latitude: 32.2542458	**Longitude:** -103.5714348	
SHL	**Elevation:** 3651	**MD:** 0	**TVD:** 0
Leg #: 1	**Lease Type:** STATE	**Lease #:** STATE	
	NS-Foot: 124	**NS Indicator:** FSL	
	EW-Foot: 833	**EW Indicator:** FEL	
	Twsp: 23S	**Range:** 33E	**Section:** 33
	Aliquot: SESE	**Lot:**	**Tract:**

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 145H

	STATE: NEW MEXICO	**Meridian:** NEW MEXICO PRINCIPAL	**County:** LEA
	Latitude: 32.2542458	**Longitude:** -103.5714348	
KOP	**Elevation:** -5558	**MD:** 9225	**TVD:** 9209
Leg #: 1	**Lease Type:** STATE	**Lease #:** STATE	
	NS-Foot: 200	**NS Indicator:** FSL	
	EW-Foot: 450	**EW Indicator:** FEL	
	Twsp: 23S	**Range:** 33E	**Section:** 33
	Aliquot: SESE	**Lot:**	**Tract:**
	STATE: NEW MEXICO	**Meridian:** NEW MEXICO PRINCIPAL	**County:** LEA
	Latitude: 32.2542458	**Longitude:** -103.5714348	
PPP	**Elevation:** -6036	**MD:** 9975	**TVD:** 9687
Leg #: 1	**Lease Type:** STATE	**Lease #:** STATE	
	NS-Foot: 330	**NS Indicator:** FSL	
	EW-Foot: 450	**EW Indicator:** FEL	
	Twsp: 23S	**Range:** 33E	**Section:** 33
	Aliquot: SESE	**Lot:**	**Tract:**
	STATE: NEW MEXICO	**Meridian:** NEW MEXICO PRINCIPAL	**County:** LEA
	Latitude: 32.2756712	**Longitude:** -103.5702098	
EXIT	**Elevation:** -6027	**MD:** 17110	**TVD:** 9678
Leg #: 1	**Lease Type:** FEDERAL	**Lease #:** NMNM94186	
	NS-Foot: 2630	**NS Indicator:** FSL	
	EW-Foot: 450	**EW Indicator:** FEL	
	Twsp: 23S	**Range:** 33E	**Section:** 28
	Aliquot: NESE	**Lot:**	**Tract:**
	STATE: NEW MEXICO	**Meridian:** NEW MEXICO PRINCIPAL	**County:** LEA
	Latitude: 32.2756712	**Longitude:** -103.5702098	
BHL	**Elevation:** -6027	**MD:** 17110	**TVD:** 9678
Leg #: 1	**Lease Type:** FEDERAL	**Lease #:** NMNM94186	
	NS-Foot: 2630	**NS Indicator:** FSL	
	EW-Foot: 450	**EW Indicator:** FEL	

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 145H

Twsp: 23S **Range:** 33E **Section:** 28

Aliquot: NESE **Lot:** **Tract:**

Drilling Plan

Section 1 - Geologic Formations

ID: Surface formation **Name:** UNKNOWN

Lithology(ies):

OTHER - Surface

Elevation: 3651 **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: 2316 **True Vertical Depth:** 1335 **Measured Depth:** 1335

Mineral Resource(s):

NONE

Is this a producing formation? N

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

Lithology(ies):

SALT

Elevation: 1811 **True Vertical Depth:** 1840 **Measured Depth:** 1840

Mineral Resource(s):

NONE

Is this a producing formation? N

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

Lithology(ies):

SALT

Elevation: -1299 **True Vertical Depth:** 4950 **Measured Depth:** 4950

Mineral Resource(s):

NONE

Is this a producing formation? N

ID: Formation 4 **Name:** DELAWARE

Lithology(ies):

SANDSTONE

Elevation: -1562 **True Vertical Depth:** 5213 **Measured Depth:** 5213

Mineral Resource(s):

NATURAL GAS

OIL

Is this a producing formation? N

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

Lithology(ies):

SANDSTONE

Elevation: -5236 **True Vertical Depth:** 8887 **Measured Depth:** 8887

Mineral Resource(s):

NATURAL GAS

OIL

Is this a producing formation? N

ID: Formation 6 **Name:** BONE SPRING 1ST

Lithology(ies):

LIMESTONE

Elevation: -5440 **True Vertical Depth:** 9091 **Measured Depth:** 9091

Mineral Resource(s):

NATURAL GAS

OIL

Is this a producing formation? N

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

Lithology(ies):

SILTSTONE

Elevation: -5597 **True Vertical Depth:** 9248 **Measured Depth:** 9248

Mineral Resource(s):

NATURAL GAS

OIL

Is this a producing formation? N

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

Lithology(ies):

SILTSTONE

Elevation: -5948 **True Vertical Depth:** 9599 **Measured Depth:** 9599

Mineral Resource(s):

NATURAL GAS

OIL

Is this a producing formation? Y

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

Lithology(ies):

SILTSTONE

Elevation: -6289 **True Vertical Depth:** 9940 **Measured Depth:** 9940

Mineral Resource(s):

NATURAL GAS

OIL

Is this a producing formation? N

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 145H

Section 2 - Blowout Prevention

Pressure Rating (PSI): 3M **Rating Depth:** 9687

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 145H_3M BOPE Double Ram and CLS Schematic_09-14-2016.pdf

BOP Diagram Attachment:

Thistle Unit 145H_3M BOPE Double Ram and CLS Schematic_09-14-2016.pdf

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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 145H_3M BOPE Double Ram and CLS Schematic_09-14-2016.pdf

BOP Diagram Attachment:

Thistle Unit 145H_3M BOPE Double Ram and CLS Schematic_09-14-2016.pdf

Section 3 - Casing

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 145H

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

Hole Size: 17.5

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

Top setting depth MSL: -6027

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

Bottom setting depth MSL: -7427

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 145H_Surface Casing Assumptions_09-14-2016.docx

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 145H

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

Hole Size: 12.25

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

Top setting depth MSL: -6027

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

Bottom setting depth MSL: -11127

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 145H_Intermediate Casing Assumptions_09-14-2016.docx

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 145H

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

Hole Size: 12.25

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

Top setting depth MSL: -10327

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

Bottom setting depth MSL: -11127

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 145H_Intermediate Casing Assumptions_09-14-2016.docx

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 145H

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

Hole Size: 8.75

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

Top setting depth MSL: -6027

Bottom setting depth MD: 17109 **Bottom setting depth TVD:** 9678

Bottom setting depth MSL: -6027

Calculated casing length MD: 17109

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 145H_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:	**Quantity (sks):** 865	**Yield (cu.ff./sk):** 1.33
Density: 14.8	**Volume (cu.ft.):** 1146	**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.):** 1458	**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:** 9500 **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):** 405 **Yield (cu.ff./sk):** 3.31

Volume (cu.ft.): 1336 **Percent Excess:** 25

Density: 10.9

Tail

Bottom MD Segment: 17109 **Cement Type:** H

Quantity (sks): 1850 **Yield (cu.ff./sk):** 1.2

Top MD of Segment: 9500 **Volume (cu.ft.):** 2215 **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:** 9500 **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.):** 1336 **Percent Excess:** 25

Tail

Top MD of Segment: 9500 **Bottom MD Segment:** 17109 **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):** 1850 **Yield (cu.ff./sk):** 1.2

Density: 14.5 **Volume (cu.ft.):** 2215 **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:** 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:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 145H

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:

Top Depth: 5100 **Bottom Depth:** 17109

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: 4223 **Anticipated Surface Pressure:** 2091.86

Anticipated Bottom Hole Temperature(F): 150

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:** 145H

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Thistle Unit 145H_H2S Plan_09-14-2016.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Thistle Unit 145H_Directional Plan_09-14-2016.pdf

Other proposed operations facets description:

MULTI-BOWL VERBIAGE
MULTI-BOWL WELLHEAD
CLOSED LOOP DESIGN PLAN
ANTICOLLISION PLAN

Other proposed operations facets attachment:

Thistle Unit 145H_Multi-Bowl Wellhead_09-14-2016.pdf
Thistle Unit 145H_Multi-Bowl Verbiage_3M_09-14-2016.pdf
Thistle Unit 145H_Closed Loop Design Plan_09-14-2016.pdf
Thistle Unit 145H_AC Report_09-15-2016.pdf

Other Variance attachment:

Thistle Unit 145H_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 145H_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:** 145H

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 145H_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 33 CTB 1

Production Facilities description: Thistle Unit 33 CTB 1 Attachments. CTB Plat, Battery Connect, Battery Connect Electric, Flowline Plat Attached - All flowlines are buried. Four 4" flowlines and one 4" gaslift line buried in the same trench from Thistle Unit 1H, 156H, 144H, & 145H to Thistle Unit 33 CTB 1.

Production Facilities map:

Thistle Unit 144H_THISTLE_UNIT_33_CTB_1_BAT_ELE_11-16-2016.PDF

Thistle Unit 144H_THISTLE_UNIT_33_CTB_1_BATCON_P_R1_11-16-2016.pdf

Thistle Unit 144H_THISTLE_UNIT_33_CTB_1_P_R1_11-16-2016.pdf

Thistle Unit 145H_Flowlines_12-15-2016.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:** 145H

Source land ownership: STATE

Water source transport method: PIPELINE

Source transportation land ownership: STATE

Water source volume (barrels): 202500 **Source volume (acre-feet):** 26.100851

Source volume (gal): 8505000

Water source and transportation map:

Thistle Unit 145H_Water Source Map_11-16-2016.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. Reason for showing two routes: 10" or 12" layflat hose. Preference is for 12", based on availability. The treated water is the preferred line. If we can't get enough volume we would supplement with fresh water.
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. Caliche map attached.
Construction Materials source location attachment:

Thistle Unit 145H_Caliche map_12-14-2016.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 145H

Section 7 - Methods for Handling Waste

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).

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: 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.

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 145H

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).

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 145H_Well Pad Layout_11-16-2016.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: NEW

Recontouring attachment:

Thistle Unit 145H_Interim Reclamation_09-14-2016.pdf

Drainage/Erosion control construction: N/A

Drainage/Erosion control reclamation: N/A

Wellpad long term disturbance (acres): 4.559

Wellpad short term disturbance (acres): 5.482

Access road long term disturbance (acres): 0

Access road short term disturbance (acres): 0

Pipeline long term disturbance (acres): 0.6965427

Pipeline short term disturbance (acres): 0.6965427

Other long term disturbance (acres): 0

Other short term disturbance (acres): 0

Total long term disturbance: 5.2555428

Total short term disturbance: 6.1785426

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:** 145H

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: NEW ACCESS ROAD

Describe:

Surface Owner: STATE GOVERNMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office: HOBBS FIELD OFFICE OCD

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: STATE GOVERNMENT

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:** 145H

DOD Local Office:

NPS Local Office:

State Local Office: HOBBS FIELD OFFICE OCD

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Disturbance type: WELL PAD

Describe:

Surface Owner: STATE GOVERNMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office: HOBBS FIELD OFFICE OCD

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:** 145H

Disturbance type: PIPELINE

Describe:

Surface Owner: STATE GOVERNMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office: HOBBS FIELD OFFICE OCD

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 33 CTB 1 Attachments . CTB Plat, Battery Connect, Battery Connect Electric, Flowline Plat - All flowlines are buried. Four 4" flowlines and one 4" gaslift line buried in the same trench from Thistle Unit 1H, 156H, 144H, & 145H to Thistle Unit 33 CTB 1. Caliche will be coming from the Brininstool Caliche Pit in the NENE of Section 20 - T23S-R33E. Caliche Map attached. Water Map Info - Reason for showing two routes: 10" or 12" layflat hose. Preference is for 12", based on availability. The treated water is the preferred line. If we can't get enough volume we would supplement with fresh water. Addl details shown on map.

Use a previously conducted onsite? YES

Previous Onsite information: ONSITE CONDUCTED 6/14/16 FOR THISTLE UNIT 156H, 145H, & 144H

Other SUPO Attachment

Thistle Unit 145H_THISTLE_UNIT_33_CTB_1_BAT_ELE_11-16-2016.PDF
Thistle Unit 145H_THISTLE_UNIT_33_CTB_1_BATCON_P_R1_11-16-2016.pdf
Thistle Unit 145H_THISTLE_UNIT_33_CTB_1_P_R1_11-16-2016.pdf
Thistle Unit 145H_Caliche map_12-14-2016.pdf
Thistle Unit 145H_Water Source Map_12-14-2016.pdf
Thistle Unit 145H_Flowlines_12-15-2016.pdf

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:

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

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 145H

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:

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

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: THISTLE UNIT **Well Number:** 145H

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

Phone: (405)228-8429

Email address: Rebecca.Deal@dvn.com

Field Representative

Representative Name:

Street Address:

City: **State:** **Zip:**

Phone:

Email address:

Payment Info

Payment

APD Fee Payment Method: PAY.GOV

pay.gov Tracking ID: 25TSOIU6