NM OIL CONSERVATION
ARTESIA DISTRICT
OCT 31 2014

RECEIVED

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number	2 Pool Code	3 Pool Name
30-015-42770	98062	Seismic Monitor; Bone Spring

4 Property Code	5 Property Name	6 Well Number
300635	COTTON DRAW UNIT	99

7 OGRID No.	8 Operator Name	9 Elevation
6137	DEVON ENERGY PRODUCTION COMPANY, L.P.	3508.3

10 Surface Location

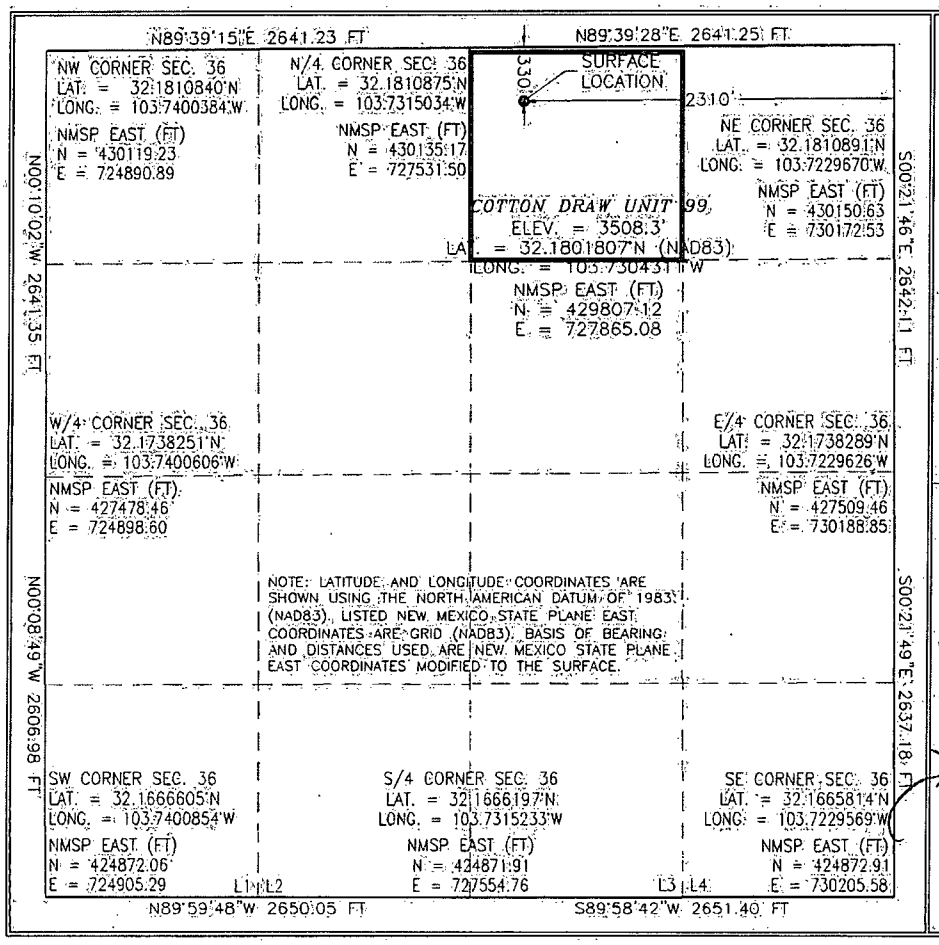
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	36	24 S	31 E		330	NORTH	2310	EAST	EDDY

11 Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

12 Dedicated Acres	13 Joint or Infill	14 Consolidation Code	15 Order No.
40 ac			

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature — Date: 10/30/14

Trina C. Couch, Regulatory Analyst
Printed Name

trina.couch@dvn.com
E-mail Address

18 SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

OCTOBER 8, 2014
Date of Survey

Signature and Seal of Professional Surveyor

Certificate Number: CLEMON F. JARAMILLO, PLS 12797

SURVEY NO. 3428

devon

Cotton Draw Unit 99 APD
Science Well

- Procedure
- Drilling Plan
- C-102

Purpose of Using Cotton Draw Unit #99 as a Laboratory

The Cotton Draw Unit #99 is a proposed new drill vertical well in S36-T24S – R31E. Devon would like to use the well to collect information critical to our understanding and development of several reservoirs in the vicinity. The two main test types to be conducted are Diagnostic Fracture Injection Tests (DFITs) and limited entry fracture stimulations with radioactive tracer beads. The DFIT test consists of a small, low rate pump-in followed by pressure monitoring as the pressure falls off. It will be used to provide reservoir, fracture closure pressure, and permeability to help calibrate the reservoir(s) geomechanical model. The fracture stimulations will be used to represent a single fracture stage in a horizontal well. The primary goal of the test is to see actual fracture height, but it will also provide the opportunity to better understand the fracture geometries, assess potential barriers, and provide the information to improve our development plans (vertical and lateral spacing of horizontals).

The basic sequence of study would be:

1. Drill, case and cement the well with a similar well construction as a typical well in the area
2. Perforate in the bottom zone (will be around 10 ft of perf holes)
3. Pump in ~50 bbls of fluid in selected Lower 2nd Bone Spring interval for DFIT #1
4. Shut well in for 2-3 weeks recording pressure fall-off, waiting for radial flow
5. Pump fracture stimulation w/ radioactive tracer beads
6. Log fracture stimulated reservoir w/ GR and Temperature Logs
7. Flow back long enough to bleed down pressures
8. Plug and Abandon 2nd Bone Spring Perforations

We will be following the basic procedure in steps 2-8 in the following other zones. Some zones we are planning for both the DFIT and the limited entry fracture stimulation and some will only have a DFIT. The zones and the planned tests are noted below with approximate depths in the offset wells logs–

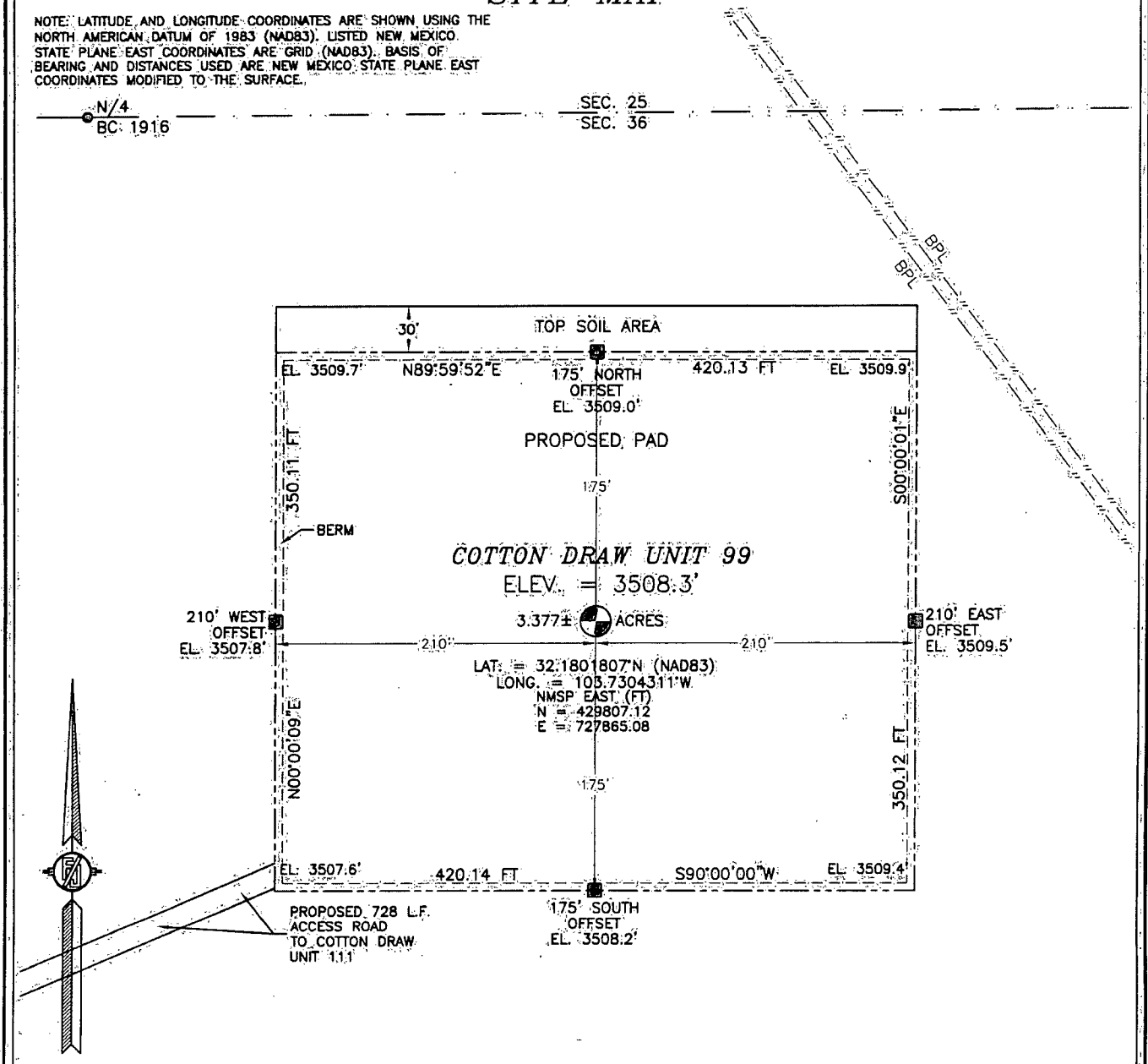
1) Lower 2nd Bone Spring Sand (10,450) – DFIT/Tracer Frac
2) Upper 2nd Bone Spring Sand (10,150) – DFIT/ Tracer Frac
3) Lower Avalon Shale (9,100) – DFIT/ Tracer Frac
4) Mid Avalon Shale (8,800') - DFIT
5) Lower Brushy Canyon (8,180') – DFIT/ Tracer Frac
6) Middle Brushy Canyon (7,950') – DFIT

*Note – permitting the well to the Wolfcamp but we will most likely opt to only drill this to just below the top of the 3rd Bone Spring Limestone.

Possible future wellbore utility – pressure monitoring well. We would run a series of downhole gauges and plugs to monitor pressures long term out of certain perforations. Contingent on approval

SECTION 36, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SITE MAP

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83). LISTED NEW MEXICO STATE PLANE EAST COORDINATES ARE GRID (NAD83). BASIS OF BEARING AND DISTANCES USED ARE NEW MEXICO STATE PLANE EAST COORDINATES MODIFIED TO THE SURFACE.



010 50' 100 200'

SCALE 1" = 100'

DIRECTIONS TO LOCATION:

FROM THE INTERSECTION OF NM HWY 128 (JAL HWY) AND CR 1 (ORLA ROAD) GO SOUTH ON CR 1 FOR 6.3 MILES TO MONSANTO ROAD ON RIGHT GO WEST 2.10 MILES TO ROAD INTERSECTION TURN RIGHT GO NORTH 0.8 MILES ROAD TURNS LEFT GO WEST 2.0 MILES TO ROAD INTERSECTION TURN RIGHT GO NORTH 1.85 MILES TO ROAD INTERSECTION TURN LEFT GO WEST 0.3 MILES TO ROAD INTERSECTION TURN RIGHT GO NORTH 0.4 MILES PAST CATTLE GUARD TURN RIGHT GO EAST 0.65 MILES TO ROAD INTERSECTION TURN LEFT GO NORTH 0.85 MILES TO SOUTHEAST CORNER OF EXISTING COTTON DRAW UNIT 111, FOLLOW FLAGS NORTHEAST 730 L.F. TO SOUTHWEST CORNER OF PROPOSED PAD.

DEVON ENERGY PRODUCTION COMPANY, L.P.

COTTON DRAW UNIT 99

LOCATED 330 FT. FROM THE NORTH LINE AND 2310 FT. FROM THE EAST LINE OF SECTION 36, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO

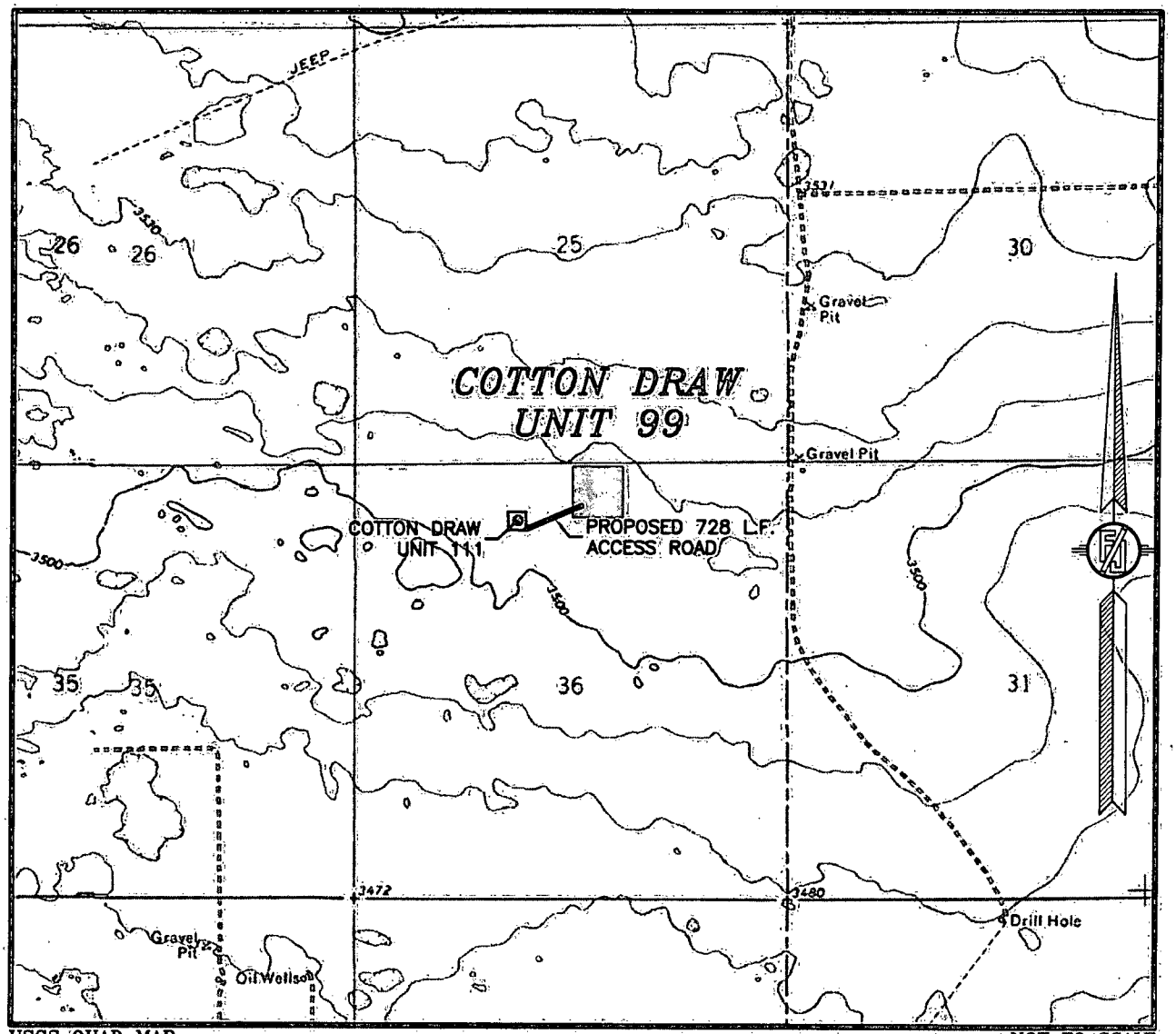
OCTOBER 8, 2014

SURVEY NO. 3428

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

SECTION 36, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

LOCATION VERIFICATION MAP



USGS QUAD MAP:
PADUCA BREAKS NW

NOT TO SCALE

DEVON ENERGY PRODUCTION COMPANY, L.P.

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AND 2310 FT. FROM THE EAST LINE OF
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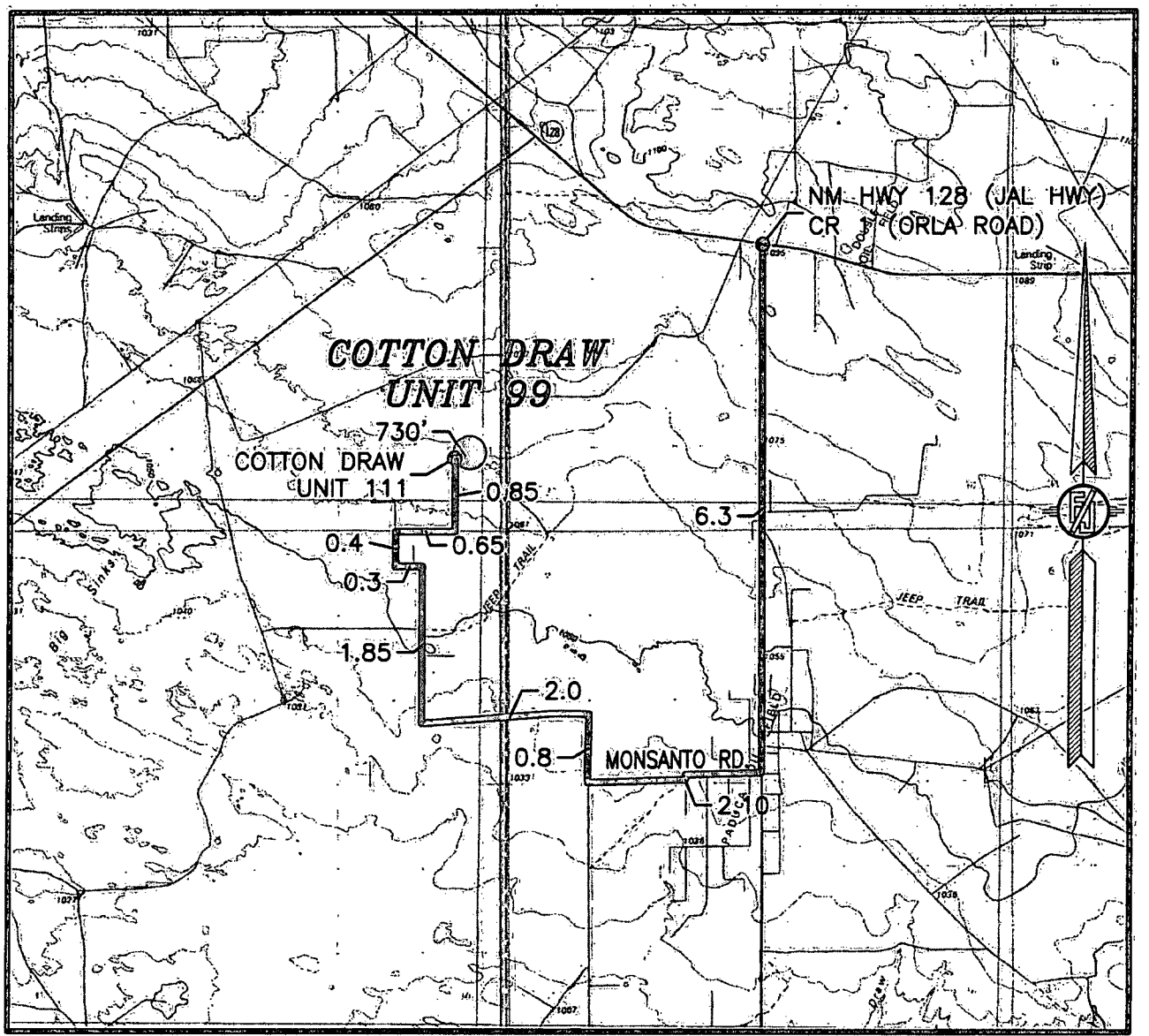
SECTION 36, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

VICINITY MAP



DISTANCES IN MILES

NOT TO SCALE

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SURVEY NO. 3428

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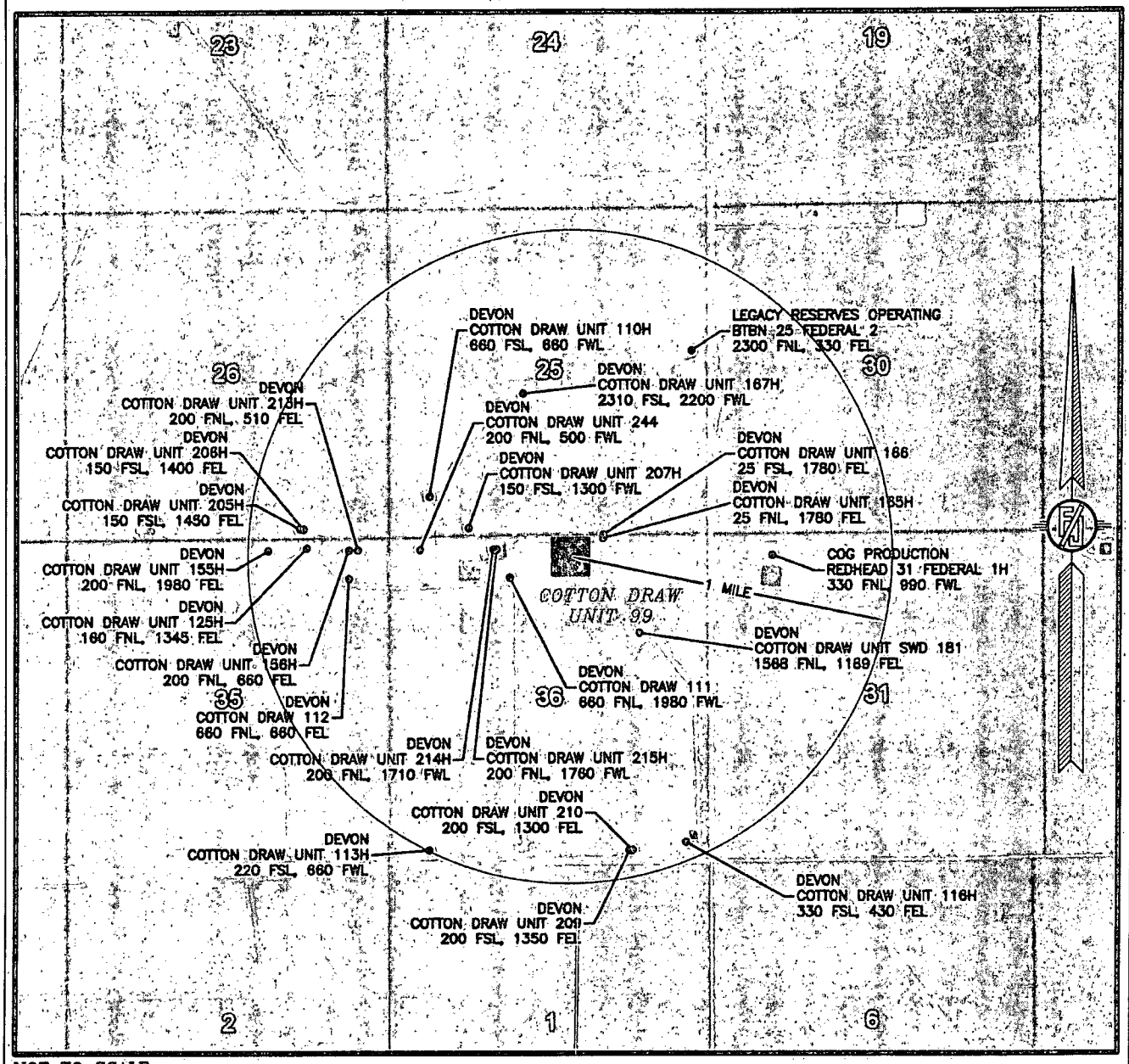
SECTION 36, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

AERIAL PHOTO



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
FEB. 2014

DEVON ENERGY PRODUCTION COMPANY, L.P.

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OCTOBER 8, 2014

SURVEY NO. 3428

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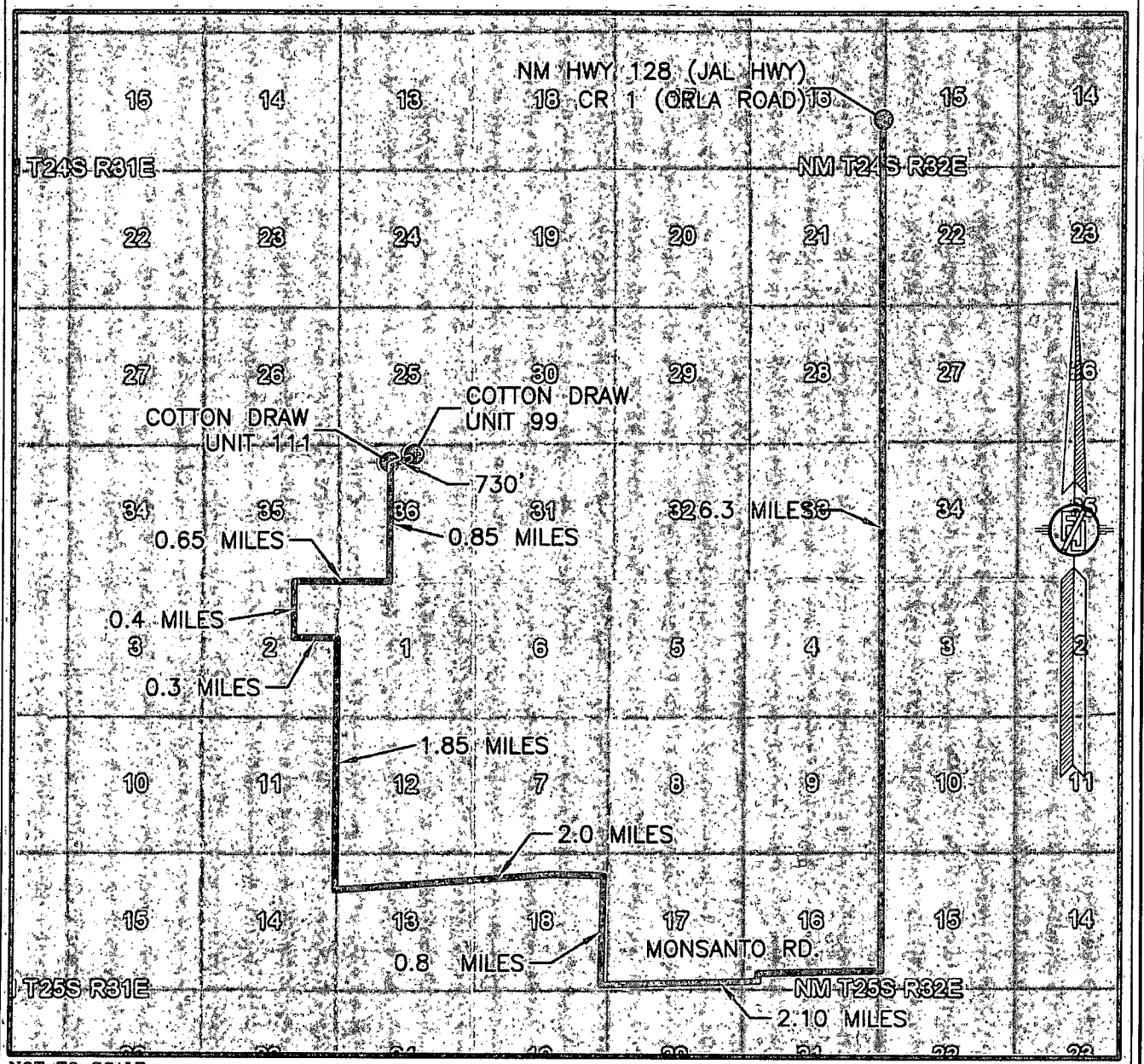
SECTION 36, TOWNSHIP 24 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

AERIAL ACCESS ROUTE MAP



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OCTOBER 8, 2014

SURVEY NO. 3428

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

Devon Energy, Cotton Draw Unit 99

1. Geologic Formations

TVD of target	9,980	Pilot hole depth	N/A
MD at TD:	11,500'	Deepest expected fresh water:	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Rustler	640	Barrren	
Top of Salt	1,033	Barren	
Lamar	4,120	Barren	
Delaware Group	4,365	Oil	
Bone Spring	8,270	Oil	
1st Bone Spring Sand	9,440	Oil	
2nd Bone Spring Lime	9,730	Oil	
2nd Bone Spring Sand	9,980	Oil	
3rd Bone Spring Lime	10,545	Oil	
3rd Bone Spring Sand	11,310	Oil	
Lower 3rd Bone Spring Sand	11,640	Oil	
Wolfcamp	11,760	Oil	

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

2. Casing Program

Hole Size	Casing Interval From	Casing Interval To	Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17.5"	0	800'	13.375"	48	H-40	STC	2.15	4.84	14.09
12.25"	0	4,300'	9.625"	40	J-55	LTC	1.149	1.77	3.02
8.75"	0	11,500'	5.5"	17	HCP-110	BTC	1.37	1.69	2.91
				BLM Minimum Safety Factor			1.125	1.00	1.6 Dry 1.8 Wet

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

Must have table for contingency casing

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

3. Cementing Program

Casing	# Sks	Wt. lb/ gal	H_2O gal/sk	Yld ft3/ sack	500# Comp. Strength (hours)	Slurry Description
Surf.	870	14.8	6.32	1.33	7	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
Inter.	910	12.9	9.81	1.85	17	Lead: (65:35) Class C Cement: Poz (Fly Ash): 6% BWOC Bentonite + 5% BWOW Sodium Chloride + 0.125 lbs/sack Poly-E-Flake
	430	14.8	6.32	1.33	6	Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake
Prod. Two Stage Option	810	12.5	10.86	1.96	30	1st Lead: (65:35) Class H Cement: Poz (Fly Ash) + 6% BWOC Bentonite + 0.25% BWOC HR-601 + 0.125 lbs/sack Poly-E-Flake
	540	14.5	5.31	1.2	25	1st Tail: (50:50) Class H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite
	DV/ECP Tool 4500'					
	30	11	14.81	2.55	22	2nd stage Lead: Tuned Light® Cement + 0.125 lb/sk Pol-E-Flake
	110	14.8	6.32	1.33	6	2nd stage Tail: Class C Cement + 0.125 lbs/sack Poly-E-Flake

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

Casing String	TOC	% Excess
Surface	0'	100%
Intermediate	0'	75%
Production Two Stage Option	1st Stage = 4500' / 2nd Stage = 3800'	25%

4. Pressure Control Equipment

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

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

*Specify if additional ram is utilized.

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

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

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

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

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

5. Mud Program

Depth		Type	Weight (ppg)	Viscosity	Water Loss
From	To				
0	800'	FW Gel	8.4-9.6	28-34	N/C
800'	4,300'	Saturated Brine	10.0-10.2	28-34	N/C
4,300'	11,500'	Cut Brine	8.5-10.0	28-34	N/C

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

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

6. Logging and Testing Procedures

Logging, Coring and Testing.	
X	Will run GR/CNL fromTD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No Logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain
X	Coring? If yes, explain -Core planned - 2nd Bone Spring Sand, Depth TBD

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

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	2022 psi
Abnormal Temperature	No

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

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

8. Other facets of operation

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

Attachments
__ Directional Plan
___ Other, describe