

Gravity & Magnetic Parameters				Surface Location				NAD83 New Mexico State Plane, Eastern Zone, US Feet				Miscellaneous			
Model:	HDGM 2015	Dip:	60.828°	Date:	13-Mar-2015	Lat:	N 32 48 22.89	Northing:	658748.12ftUS	Grid Conv:	0.5795°	Slot:	EdelWeisse	TVD Ref:	RKB(3779.4ft above Mean Sea Level)
MagDec:	7.16°	FS:	48499.366nT	Gravity FS:	998.546mgn (9.80665 Based)	Lon:	W 103 15 49.58	Easting:	869962.07ftUS	Scale Fact:	1.00003276	Plan:	28-21 EdelWeisse 28-21 State Com 1H Rev2		

Section 21

Edelweisse 28-21 State Com 1H Rev2 TD
 16843 MD 9480 TVD
 91°16' incl 359.31° az
 N=7444 E=-89

Edelweisse 28-21 State Com 1H BH
 16803 MD 9481 TVD
 91°16' incl 359.31° az
 N=7404 E=-89

Edelweisse 28-21 Hardline

Section 28

EOC
 9928 MD 9620 TVD
 91°16' incl 359.31° az
 N=531 E=-6

Tie In
 0 MD 0 TVD
 0.00° incl 359.31° az
 N=0 E=0

Grid North
 Tot Corr (M-to-G 6.580")
 Mag Dec (7.160")
 Grid Conv (0.580")

HOBBS CREEK

EW (ft) Scale = 1:1555(ft)

30-025-42562

MAY 18 2016

RECEIVED
MAY-18-2015

Devon Energy, Edel-weisse 28-21 State Com 1H

1. Geologic Formations

TVD of target	9631	Pilot hole depth	9900
MD at TD:	16,843'	Deepest expected fresh water:	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Rustler	2,218	Barren	
Top of Salt	2,344	Barren	
Base of Salt	5,400	Barren	
Grayburg	5,450	Oil	
Brushy Canyon	6,464	Oil	
1 st Bone Spring Lime	6,779	Oil	
1 st Bone Spring Sand	7,901	Oil	
2 nd Bone Spring Sand	8,461	Oil	
3 rd Bone Spring Lime	9,311	Oil	
3 rd Bone Spring Sand	9,541	Oil	
Wolfcamp	9701	Oil	

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

Devon Energy, Edel-weisse 28-21 State Com 1H

2. Casing Program

Hole Size	Casing Interval		Csg. Size	Weight (lbs)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
	From	To							
17.5"	0	2,300'	13.375"	61	J-55	BTC	1.47	3.56	4.33
12.25"	0	3,000'	9.625"	36	J-55	BTC	1.27	1.18	2.06
12.25	3,000'	5,450'	9.625	40	HCK-55	BTC	1.33	1.99	3.46
8.75"	0	9,050'	7"	29	P-110	BTC	1.95	1.32	2.80
8.75	9,050'	16,843'	5.5"	17	P-110	BTC	1.61	1.29	2.56
BLM Minimum Safety Factor							1.10	1.10	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 3 rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2 nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

Devon Energy, Edel-weisse 28-21 State Com 1H

3. Cementing Program

String	Number of sx	Weight lbs/gal	Water Volume g/sx	Yield cf/sx	Stage; Lead/Tail	Slurry Description
Surface	2425	14.8	6.34	1.35	Slurry	Premium Plus C Cement + 0.005 lbs/sack Static Free + 2% bwoc Calcium Chloride + 0.125 lbs/sack Cello Flake + 0.005 gps FP-6 + 56.3% Fresh Water
Intermediate	1446	12.8	8.23	1.66	Lead	(60:40) Poz (Fly Ash):Premium Plus C Cement + 0.005 lbs/sack Static Free + 5% bwow Sodium Chloride + 0.125 lbs/sack Cello Flake + 3 lbs/sack LCM-1 + 0.25% bwoc FL-52 + 0.005 gps FP-6L + 1.5% bwoc Sodium Metasilicate + 83.7% Fresh Water
	450	13.8	6.42	1.38	Tail	(60:40) Poz (Fly Ash):Premium Plus C Cement + 0.005 lbs/sack Static Free + 5% bwow Sodium Chloride + 0.125 lbs/sack Cello Flake + 0.005 gps FP-6L + 0.5% bwoc Sodium Metasilicate + 0.5% bwoc BA-10A + 4% bwoc MPA-5 + 65.3% Fresh Water
Production	260	12.5	11.01	2.01	Lead	(35:65) Poz (Fly Ash):Premium Plus H Cement + 3% bwow Sodium Chloride + 0.2% bwoc R-3 + 0.125 lbs/sack Cello Flake 0.7% bwoc FL-52 + 0.3% bwoc ASA-301 + 6% bwoc Bentonite + 105.5% Fresh Water
	2085	14.2	5.77	1.28	Tail	(50:50) Poz (Fly Ash):Class H Cement + 5% bwow Sodium Chloride + 0.3% bwoc CD-32 + 0.5% bwoc FL-25 + 0.4% bwoc FL-52 + 0.5% bwoc Sodium Metasilicate + 57.3% Fresh Water

Casing String	TOC	% Excess
13-3/8" Surface	0'	100%
9-5/8" Intermediate	0'	75%
7 x 5-1/2" Production Casing	5,250'	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		50% testing pressure
			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.
---	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Devon Energy, Edel-weisse 28-21 State Com 1H

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	<p>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.</p> <p>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.</p> <ul style="list-style-type: none"> • 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 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. <p>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.</p> <p>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.</p> <p>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.</p>

Devon Energy, Edel-weisse 28-21 State Com 1H

	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	2,300'	FW Gel	8.6-8.8	28-34	N/C
2,300'	5,450'	Saturated Brine	10.0-10.2	28-34	N/C
5,450'	16,843'	Cut Brine	8.5-9.3	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 from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
x	A pilot will be drilled first and two runs of logs with a quad combo and then FMI and Sonic on the second run before kicking off the lateral.
	Drill stem test? If yes, explain
	Coring? If yes, explain

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?
-----------	------------------------------

Devon Energy, Edel-weisse 28-21 State Com 1H

BH Pressure at deepest TVD	4657 psi
Abnormal Temperature	No

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

Hydrogen Sulfide (H ₂ S) monitors will be installed prior to drilling out the surface shoe. If H ₂ S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
N	H ₂ S is present
Y	H ₂ S Plan attached

8. Other facets of operation

Is this a walking operation? No.

Will be pre-setting casing? No.

Attachments

☒ Directional Plan

☐ Other, describe