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APPLICATION FOR PERMIT TO DRILL OR REENTER       6. If Italian, Allore or Tribe Name NAA         1a. Type of work:       DRILL       REENTER       2. If Unit or CA Agreement, Name and NEAST SHUGGART DELAWARE UNIT         1b. Type of work:       O RILL       Gas Well       Other       Single Zone       Multiple Zone         2. Name of Operator SM ENERGY COMPANY       9. API Well No.       30-025-       9. API Well No.         3a. Address 3300 N. A STREET, BLDG 7-200       430 Finiter Ni. (network or are over 422 688-3122)       SHUGART DELAWARE, EAST SHUGART DE	DEPARTMENT OF	THE INTER		RE	CEIVED		
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At proposed prod. zone SAME         14. Distance from miles and direction from nearest town or post office*       12. County or Parish LEA       13. State MMLES SW OF MALJAMAR, NM         15. Distance from proposed*       360' to lease line hocation to nearest, many odd to unit line property or lease line, do to unit line, do to unit line property or lease line, do to unit line property or lease line, do to unit line appropriate forest Service Office).       10. BLMBIA Bond No. on file NMBO00605         21. Elevations (Show whether DF, KDB, RT, GL, etc.)       22. Approximate date work will start*       23. Estimated duration         3. A brilling Plan.       14. Attachments       14. MONTH       14. Attachments         15. Signature       4. Bond to cover the operations unless covered by an existing bond on file line. 20 above).       5. Operato	4. Location of Welt (Report location clearly and in accordance		quirements.*)			11. Sec., T. R. M. or	Blk. and Survey or Area
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Capitan Controlled Water Basin Main Controlled Water Basin	Capitan Controlled Water Basin		Ki	7, 1	3 Appro	val Subject to Ger	teral Requirements

SEE ATTACHI	ED FOR
CONDITIONS	OF APPROVAL

AUG 16 2013

SM Energy Company East Shugart Delaware Unit 32 2250' FNL & 1700' FWL Sec. 19, T. 18 S., R. 32 E. Lea County, NM **DRILLING PLAN PAGE 1** 

### HOBBS OCD

# AUG 07 2013

#### RECEIVED

#### **1. ESTIMATED TOPS**

Drilling Program

Name	<u>MD from KB (18')</u>	Subsea Elevation	<u>Fluid Content</u>
Quaternary	18'	+3,725'	fresh water
Rustler*	909'	+2,816'	·
Top salt	1,068'	+2,657'	
Base salt	2,247'	+1,478'	
Yates	2,420'	+1,305'	water, brine
Seven Rivers	2,913'	+812'	oil, gas, water, brine
Queen	3,565'	+160'	oil, gas, water, brine
Cherry Canyon	4,295'	-570'	oil, gas, water, brine
Brushy Canyon	4,730'	-1,005'	oil, gas
Delaware	5,030'	-1,305'	oil, gas
TD	5,500'	<b>,</b> -1,775'	
*surface casing wi	II be set at ≈9607	690	

### 2. NOTABLE ZONES

Water zones will be protected with casing, cement, and weighted mud. Fresh water found while drilling will be recorded. Closest existing water well (CP 00672) is 8,692' north. Water was reported in that well at a depth of 430'.

### 3. PRESSURE CONTROL

A 3,000 psi double ram BOP and 3,000 psi annular system will be installed after running the 8-5/8" casing. Pressure tests will be conducted before drilling out of the 8-5/8" casing. BOP controls will be installed before drilling out of the 8-



SM Energy Company East Shugart Delaware Unit 32 2250' FNL & 1700' FWL Sec. 19, T. 18 S., R. 32 E. Lea County, NM

5/8" casing and will remain in use until completion of drilling operations. BOPE will be inspected and operated as required by Onshore Order 2.

A Kelly cock valve and sub equipped with a full opening valve sized to fit the drill pipe and collars will be available on the rig floor and in the open position when the Kelly is not in use. A third party testing company will test the 11" BOPE to 3,000 psi and the annular to 1,500 psi before drilling below the surface casing shoe. The BOP/BOPE test will include a low-pressure test from 250 psi to 300 psi. The test will be held for a minimum of 10 minutes if the test is done with a test-plug and at least 30 minutes without a test plug. (A cup or J-packer will not be used in the test.) All BOPs and related equipment will comply with well control requirements in Onshore Order 2 and API RP 53 Section 17.

Low pressure test first

# 4. CASING & CEMENT

Gad
COA
000

	4. <u>CASING &amp;</u>	1000					
	Hole O. D.	Casing O. D.	Pounds/foot	Grade	Set Interval	Collar	Age
A	12.25″	8.625″	24	J-55	0' - 960'*	ST&C	New
	7.785″	5.5″	15.5	J-55	0′ – 5500′	LT&C	New

\*Surface casing will be set at approximately 960' in a competent bed below the Magenta Dolomite, a member of the Rustler, and if salt is encountered, casing will be set at least 25' above the salt.

All casing is designed with a minimum of:

Collapse = 1.125

Tensile Strength = 1.8

casing	casing depth 1000	, sacks	тос	pounds per gallon	cubic feet per sack	total cubic feet	excess	blend
surface	_960	450	GL	14.8	1.34	603	100%	1
production	5500'	520	200'	12.5	1.96	1019	35%	2
production	3500	270		14.8	1.34	361	55%	3

Blend 1: Surface casing will be cemented to the surface with 100% excess  $(\geq 450 \text{ sacks} = 603 \text{ cubic feet})$  Class C light + 2% CaCl<sub>2</sub> + 4% bentonite +



# DRILLING PLAN PAGE 3

SM Energy Company East Shugart Delaware Unit 32 2250' FNL & 1700' FWL Sec. 19, T. 18 S., R. 32 E. Lea County, NM

81.4% fresh water mixed to yield 1.34 cubic feet per sack and 14.8 pounds per gallon. Centralizers will be installed as required by Onshore Order 2.

Production casing will be cemented to 700° with >35% excess (1,380 cubic feet). There will be at least 200' of overlap. Blend 2: Lead with 520 sacks (1,019 cubic feet) 35:65 poz (fly ash) Class C with 5% sodium chloride + 1/8 pound per sack cell flake + 65 bentonite + 107.8% fresh water mixed to yield 1.96 cubic feet per sack and 12.5 pounds per gallon. Blend 3: Tail with 270 sacks (361 cubic feet) Class C with 5% sodium chloride + 1/8 pound per sack cello flake + 0.4% sodium metasilicate + 4% MPA-5 mixed to yield 1.34 cubic feet per sack and 14.8 pounds per gallon.

A flow up the backside after the production cement job has occurred in wells in the field. An external casing packer will be placed at 1,800' on the production casing. The purpose the packer is to create a seal between the casing and the well bore to prevent the flow from communicating to the surface through any micro-annulus.

# 5. MUD PROGRAM

An electronic/mechanical mud monitor with a minimum pit volume totalizer, stroke counter, and flow sensor will be used. Circulation could be lost in any section of the hole. Lost circulation material (e.g., cedar bark) will be on location.

Zve COR

1 84	af)			
Interval	Туре	Weight	Viscosity	Fluid Loss
0' -,960'	fresh water spud mud	8.6 - 9.4	32-34	no control
960' - TD	brine	10	28-30	no control

A mud monitoring system will be in place to record slow pump rate, pit gain or loss, mud weight, viscosity, gel strength, filtration, and pH.



# DRILLING PAGE 4

SM Energy Company East Shugart Delaware Unit 32 2250' FNL & 1700' FWL Sec. 19, T. 18 S., R. 32 E. Lea County, NM

### 6. CORES, TESTS, & LOGS

No drill stem test or coring is planned. Mud log samples will be collected after drilling out from the surface casing. Samples will initially be collected every 20' until the Brushy Canyon is reached. Samples will be collected every 10' below the Brushy Canyon. Cased hole gamma ray/neutron longs will be run from surface to TD.

# 7. DOWN HOLE CONDITIONS

No abnormal pressure or temperature is expected. Maximum expected bottom hole pressure: 2,381 psi. Maximum expected bottom hole temperature: 110° F.

No  $H_2S$  is expected during the drilling phase. Nevertheless,  $H_2S$  monitoring equipment will be on the rig floor and air packs will be available before drilling out of the surface casing. The mud logger will be warned to use a gas trap to detect  $H_2S$ . If any  $H_2S$  is detected, then the mud weight will be increased and  $H_2S$  inhibitors will be added to control the gas. An  $H_2S$  drilling operations contingency plan is attached.

Lost circulation is expected in both the surface and production holes.

# 8. OTHER INFORMATION

The anticipated spud date is upon approval. It is expected it will take 1 month to drill and complete the well.



