

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

OCD Hobbs  
HOBBS OCD  
AUG 17 2015

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

RECEIVED

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. NMNM-106715 (unit: NMNM-101361X)
1b. Type of Well: <input type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input checked="" type="checkbox"/> Other <b>INT</b> <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name N/A
2. Name of Operator <b>SM ENERGY COMPANY</b> <b>&lt;154903&gt;</b>		7. If Unit or CA Agreement, Name and No. EAST SHUGART DELAWARE UNIT <b>B</b>
3a. Address <b>3300 NORTH A STREET, BLDG. 7-200 MIDLAND, TX 79705</b>		8. Lease Name and Well No. EAST SHUGART DELAWARE UNIT 42 <b>&lt;25743&gt;</b>
3b. Phone No. (include area code) 432 688-3134		9. API Well No. 30-025- <b>42743</b>
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface 950' FNL & 1004' FWL At proposed prod. zone SAME		10. Field and Pool, or Exploratory SHUGART DELAWARE, EAST <b>&lt;56419&gt;</b>
14. Distance in miles and direction from nearest town or post office* 8 AIR MILES SW OF MALJAMAR, NM		11. Sec., T. R. M. or Blk. and Survey or Area LOT 1 19-18S-32E
15. Distance from proposed* location to nearest property or lease line, ft. 1001' to unit line (Also to nearest drig. unit line, if any)	16. No. of acres in lease 122.07 in lease 604.12 in unit <b>61 in project for well</b>	17. Spacing Unit dedicated to this well N/A
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 604' (Inca Fed. 4)	19. Proposed Depth 5500'	20. BLM/BIA Bond No. on file NMB-000805
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3,714' UNGRADED	22. Approximate date work will start* 12/01/2014	23. Estimated duration 1 MONTH

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 <b>[Signature]</b>	Name (Printed Typed) BRIAN WOOD (PHONE: 505 466-8120)	Date 08/17/2014
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Title CONSULTANT	(FAX: 505 466-9682)	
Approved by (Signature) <b>/s/ Chris Walls</b>	Name (Printed Typed) Office CARLSBAD FIELD OFFICE	Date <b>AUG 11 2015</b>

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.

APPROVAL FOR TWO YEARS

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)

Capitan Controlled Water Basin

**Ka 08/20/15**

Approval Subject to General Requirements  
& Special Stipulations Attached

SEE ATTACHED FOR  
CONDITIONS OF APPROVAL

**AUG 21 2015**

SM Energy Company  
East Shugart Delaware Unit 42  
950' FNL & 1004' FWL  
Sec. 19, T. 18 S., R. 32 E.  
Lea County, NM

DRILLING PLAN PAGE 1

Drilling Program

1. ESTIMATED TOPS

<u>Name</u>	<u>MD from KB (18')</u>	<u>Subsea Elevation</u>	<u>Fluid Content</u>
Quaternary	18'	+3,714'	fresh water
Rustler*	902'	+2,830'	---
Top salt	1,044'	+2,688'	---
Base salt	2,217'	+1,515'	---
Yates	2,307'	+1,425'	water, brine
Seven Rivers	2,889'	+843'	oil, gas, water, brine
Queen	3,522'	+210'	oil, gas, water, brine
Cherry Canyon	4,277'	-545'	oil, gas, water, brine
Brushy Canyon	4,712'	-980'	oil, gas
ESDU top pay sand	5,029'	-1,297'	oil, gas
ESDU zone 12	5,419'	-1,687'	base of unit
TD	5,500'	-1,786'	---

\*surface casing will be set at  $\approx$ 960'

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 00896) is 7,514' northwest. That well is 400' deep. Depth to water was not reported. Closest water well (CP 00672) with a water depth report is 7,780' 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

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## DRILLING PLAN PAGE 2

of the 8-5/8" casing. BOP controls will be installed before drilling out of the 8-5/8" 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.

### 4. CASING & CEMENT

See  
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Hole O. D.	Casing O. D.	Pounds/foot	Grade	Set Interval	Collar	Age
12.25"	8.625"	24	J-55	0' - <del>960'</del> <sup>975'</sup>	S T & C	New
7.785"	5.5"	15.5	J-55	0' - 5500'	L T & C	New

\*Surface casing will be set at approximately ~~960'~~ <sup>975'</sup> 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:

Burst = 1.0

Collapse = 1.125

Tensile Strength = 1.8

casing	casing depth	sacks	TOC	pounds per gallon	cubic feet per sack	total cubic feet	excess	blend
surface	<del>960'</del> <sup>975'</sup>	450	GL	14.8	1.34	603	100%	1
production	5500'	520	700'	12.5	1.96	1019	35%	2
		270		14.8	1.34	361		3

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DRILLING PLAN PAGE 3

Blend 1: Surface casing will be cemented to the surface with 100% excess ( $\geq 450$  sacks = 603 cubic feet) Class C light + 2%  $\text{CaCl}_2$  + 4% bentonite + 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.

Interval	Type	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

975

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.

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DRILLING PLAN PAGE 4

#### 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 logs 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.

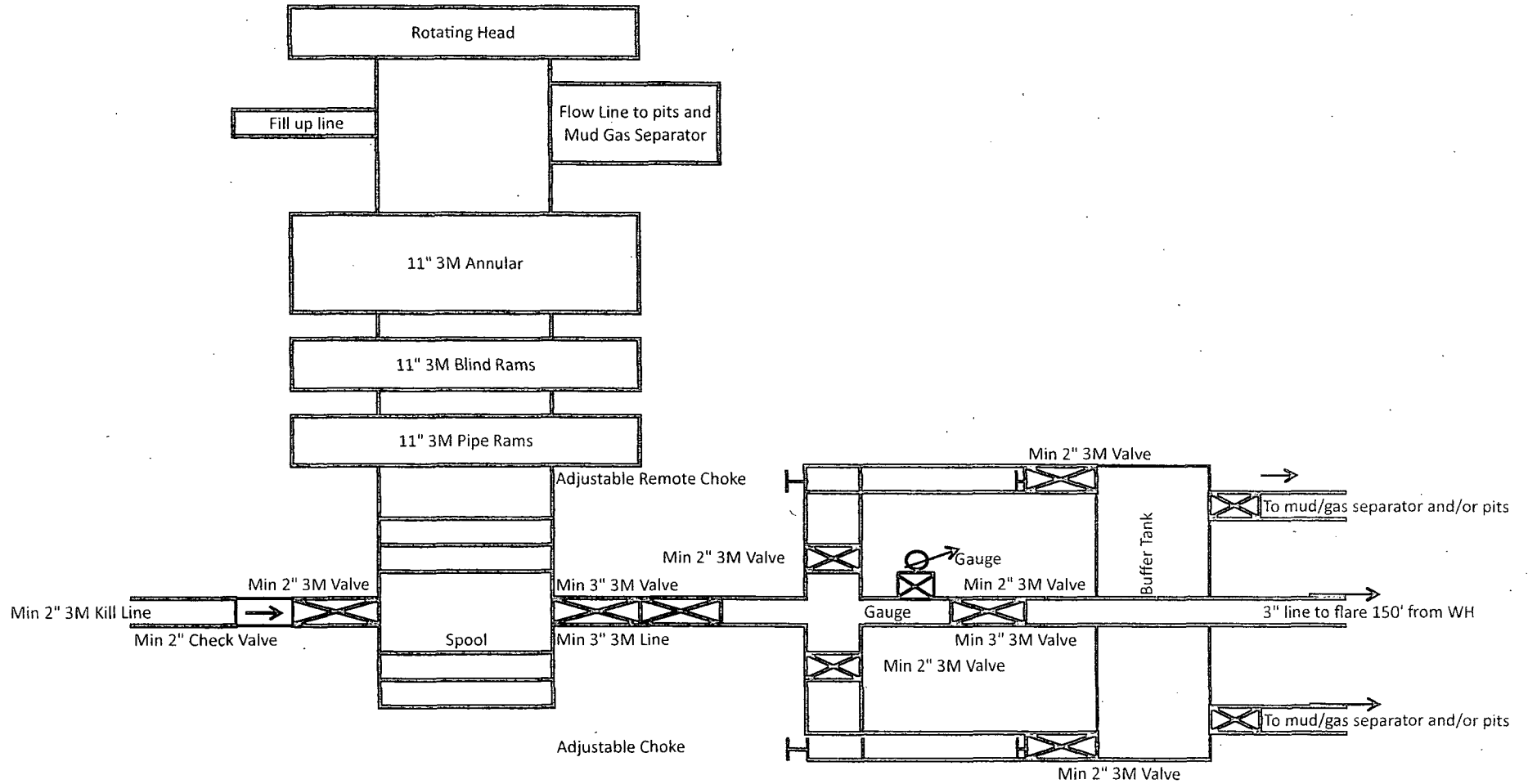
*H<sub>2</sub>S has been reported within 1 mile of proposed project, See COA*  
~~No~~ H<sub>2</sub>S is expected during the drilling phase. Nevertheless, H<sub>2</sub>S monitoring equipment will be on the rig floor and air packs will be available before drilling out of the surface casing. The mud logger will be warned to use a gas trap to detect H<sub>2</sub>S. If any H<sub>2</sub>S is detected, then the mud weight will be increased and H<sub>2</sub>S inhibitors will be added to control the gas. An H<sub>2</sub>S drilling operations contingency plan is attached. H<sub>2</sub>S will be activated at least 500' above the Yates top.

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

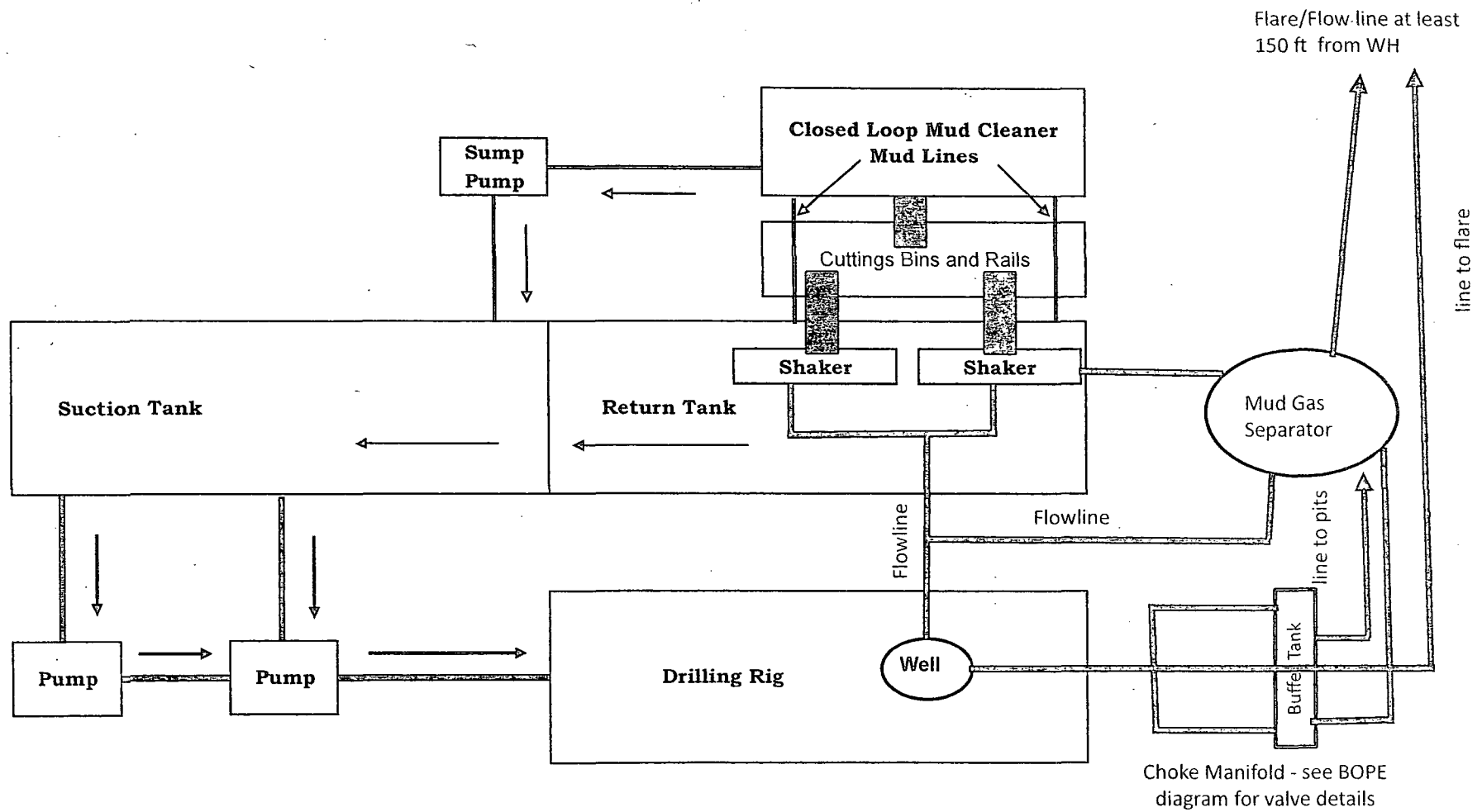
#### 8. OTHER INFORMATION

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

# BOP SCHEMATIC

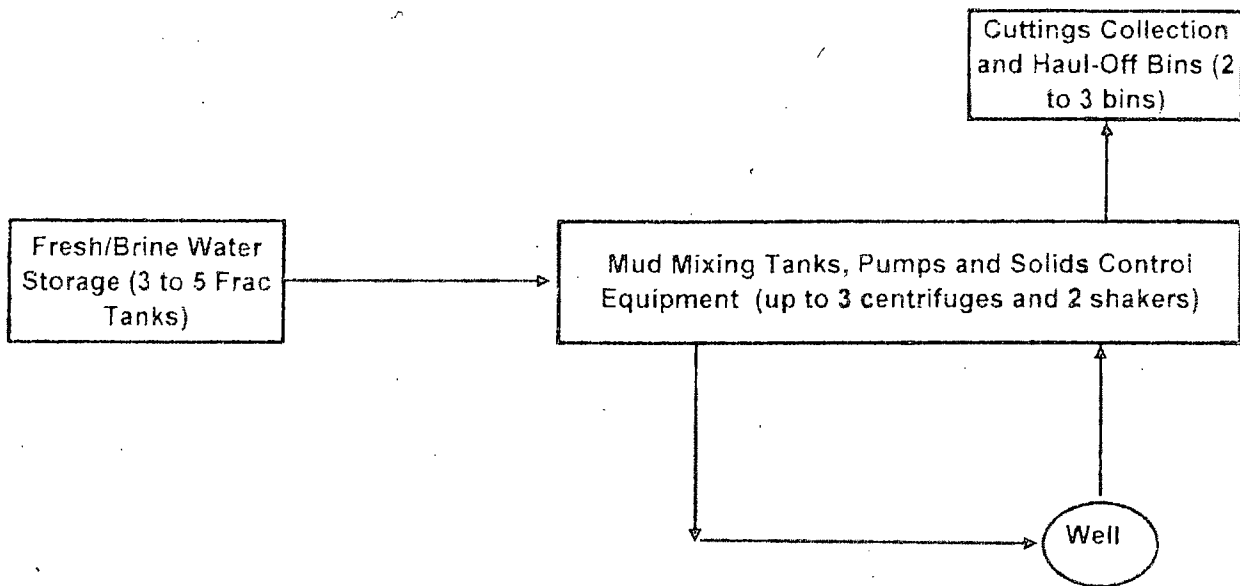


## Choke Manifold Schematic for Closed Loop System



# CLOSED-LOOP SYSTEM

## Design Plan:



## Operating and Maintenance Plan:

During drilling operations, third party service companies will utilize solids control equipment to remove cuttings from the drilling fluid and collect it in haul-off bins. Equipment will be closely monitored at all times while drilling by the derrick man and the service company employees.

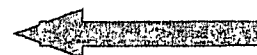
## Closure Plan:

During drilling operations, third party service companies will haul-off drill solids and fluids to an approved disposal facility as noted on the C-144 form. At the end of the well, all closed loop equipment will be removed from the location.



SM Energy Company  
East Shugart Delaware Unit 42  
rig diagram

NORTH



1" = 50'

