

OCD Hobbs

ATS-15-150

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

AUG 31 2015

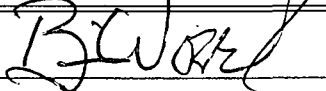
APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM-106716 (unit: NMNM-101361X)
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name N/A
2. Name of Operator SM ENERGY COMPANY (154903)		7. If Unit or CA Agreement, Name and No. EAST SHUGART DELAWARE UNIT
3a. Address 6301 HOLIDAY HILL ROAD, BLDG. 1 MIDLAND, TX 79707		8. Lease Name and Well No. (25743) EAST SHUGART DELAWARE UNIT 37
3b. Phone No. (include area code) 432 688-3134		9. API Well No. 30-025- 42770
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface 996' FSL & 443' FWL (m) At proposed prod. zone 966' FSL & 553' FWL (m)		10. Field and Pool, or Exploratory SHUGART DELAWARE, EAST (56419)
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 4 18-18S-32E
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) SHL: 324' (lease) & 324' (unit) BHL: 354' (lease) & 354' (unit)	16. No. of acres in lease 82.05 in lease 604.12 in unit	17. Spacing Unit dedicated to this well LOT 4 18-18S-32E
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. SH: 597' (Federal 2) BH: 586' (Federal 2)	19. Proposed Depth TVD: 5500' MD: 5505'	20. BLM/BIA Bond No. on file NMB-000805
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3,725' UNGRADED	22. Approximate date work will start* 01/02/2015	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 	Name (Printed/Typed) BRIAN WOOD (PHONE: 505 466-8120)	Date 10/26/2014
Title CONSULTANT (FAX: 505 466-9682)		
Approved by (Signature) 	Name (Printed/Typed) Steve Caffey	Date AUG 26 2015
Title FIELD MANAGER CARLSBAD FIELD OFFICE		

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

K2
08/31/15

PM

Approval Subject to General Requirements
& Special Stipulations Attached

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

AUG 31 2015

SM Energy Company
East Shugart Delaware Unit 37
SHL: 996' FSL & 443' FWL
BHL: 966' FSL & 553' FWL
Sec. 18, T. 18 S., R. 32 E., Lea County, NM

DRILL PLAN PAGE 1
HOBBS, NM

AUG 31 2015

RECEIVED

Drilling Program

1. ESTIMATED TOPS

<u>Name</u>	<u>MD from KB (18')</u>	<u>Subsea Elevation</u>	<u>Fluid Content</u>
Quaternary	18'	+3,725'	fresh water
Rustler*	888'	+2,855'	---
Top salt	1,018'	+2,725'	---
Base salt	2,205'	+1,538'	---
Yates	2,298'	+1,445'	water, brine
Seven Rivers	2,881'	+862'	oil, gas, water, brine
Queen	3,553'	+190'	oil, gas, water, brine
Cherry Canyon	4,306'	-563'	oil, gas, water, brine
Brushy Canyon	4,659'	-916'	oil, gas
ESDU top pay sand	5,083'	-1,340'	oil, gas
ESDU zone 12	5,448'	-1,705'	base of unit
TD**	5,505'	-1,762'	---

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

** TVD = 5,500'

2. NOTABLE ZONES

Water zones will be protected with casing, cement, and weighted mud. Fresh water found while drilling will be recorded. Closest water well (CP 00672) is 6,500' 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-

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DRILL PLAN PAGE 2

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

Hole O. D.	Casing O. D.	Pounds/foot	Grade	Set Interval	Collar	Age
12.25"	8.625"	24	J-55	0' - 960' ^{975'}	S T & C	New
7.785"	5.5"	15.5	J-55	0' - 5505'	L T & 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:

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	960' ^{975'}	450	GL	14.8	1.34	603	100%	1
production	5505'	520	700'	12.5	1.96	1019	35%	2
		270		14.8	1.34	361		3

Blend 1: Surface casing will be cemented to the surface with 100% excess (≥450 sacks = 603 cubic feet) Class C light + 2% CaCl₂ + 4% bentonite +

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DRILL PLAN PAGE 3

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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DRILL 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. A triple combo with spectral gamma ray log will be run in the open hole. Compensated neutron - GR CCL log will be run the cased hole from TD to surface.

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 H₂S is expected during the drilling phase. Nevertheless, H₂S 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 H₂S. If any H₂S is detected, then the mud weight will be increased and H₂S inhibitors will be added to control the gas. An H₂S drilling operations contingency plan is attached. H₂S will be activated at least 500' above the Yates top.

See
COA

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

8. OTHER INFORMATION

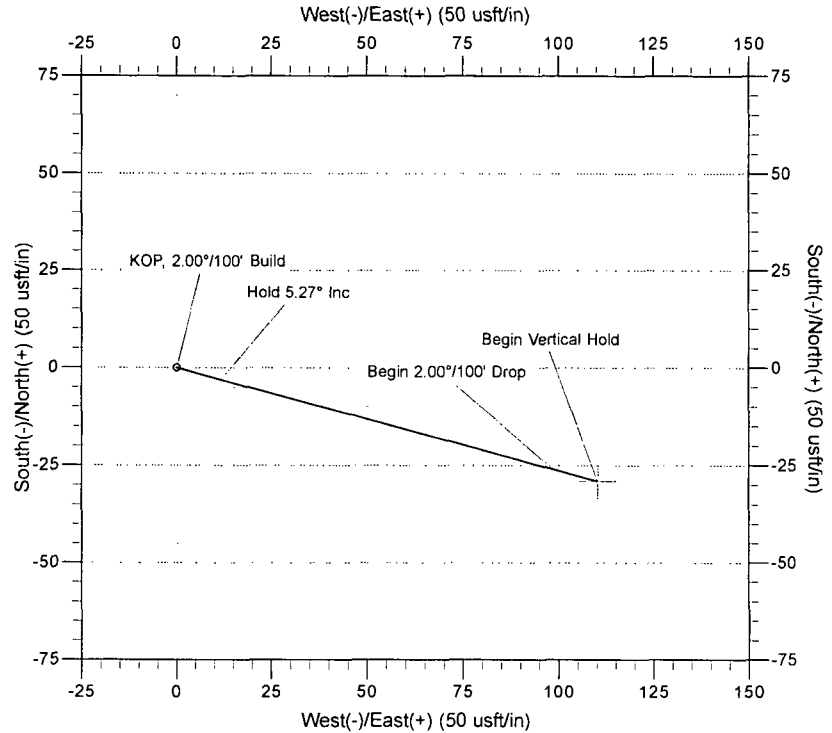
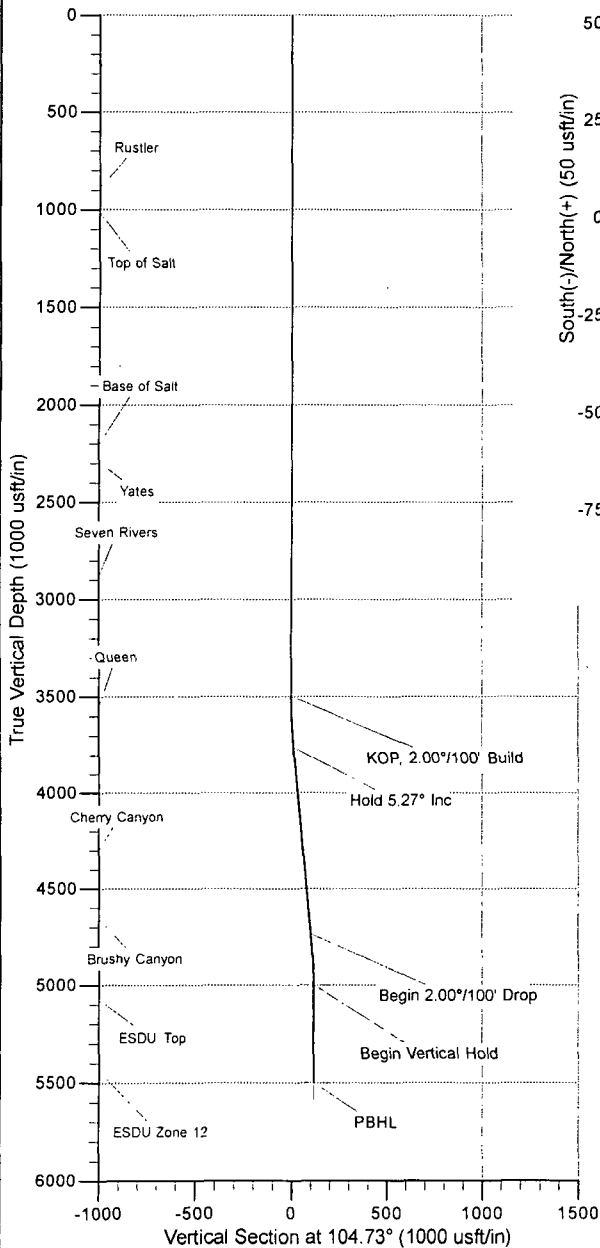
The anticipated spud date is upon approval. It is expected it will take 1 month to drill and complete the well.



Company: SM Energy Company
 Site: East Shugart Delaware Unit
 Well: #37
 Project: Lea County, New Mexico (NAD 83)
 Rig Name: Original Well Elev



ANNOTATIONS								
MD	Inc	Azi	TVD	+N/-S	+E/-W	V Sect	Departure	Annotation
3500.00	0.00	0.00	3500.00	0.00	0.00	0.00	0.00	KOP, 2.00°/100' Build
3763.54	5.27	104.73	3763.16	-3.08	11.71	12.11	12.11	Hold 5.27° Inc
4741.34	5.27	104.73	4736.84	-25.92	98.59	101.94	101.94	Begin 2.00°/100' Drop
5004.88	0.00	0.00	5000.00	-29.00	110.30	114.05	114.05	Begin Vertical Hold
5504.88	0.00	0.00	5500.00	-29.00	110.30	114.05	114.05	PBHL



Azimuths to Grid North
 True North: -0.28°
 Magnetic North: 7.10°

Magnetic Field
 Strength: 48579.7snT
 Dip Angle: 60.54°
 Date: 2014/08/06
 Model: WMM_2010

US State Plane 1983
 New Mexico Eastern Zone

Created By: HLH
 Date: 13:31, August 22 2014
 Plan: Design #2

The customer should only rely on this document after independently verifying all paths, targets, coordinates, lease and hard lines represented. Any decisions made or wells drilled utilizing this or any other information supplied by MS Energy are at the sole risk and responsibility of the customer. MS Energy is not responsible for the accuracy of this schematic or the information contained herein.



MS Energy Services
Planning Report



Database: EDM 5000.1 Conroe DB
Company: SM Energy Company
Project: Lea County, New Mexico (NAD 83)
Site: East Shugart Delaware Unit
Well: #37
Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well #37
TVD Reference: WELL @ 3743.00usft (Original Well Elev)
MD Reference: WELL @ 3743.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project	Lea County, New Mexico (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Well	#37				
Well Position	+N/-S	634,458.20 usft	Northing:	634,458.20 usft	Latitude: 32° 44' 35.098 N
	+E/-W	701,328.00 usft	Easting:	701,328.00 usft	Longitude: 103° 48' 46.720 W
Position Uncertainty	0.00 usft		Wellhead Elevation:	Ground Level: 3,725.00 usft	

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	WMM_2010	2014/08/06	7.38	60.54	48,580

Design	Design #2				
Audit Notes:					
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.00	0.00	0.00	104.73	

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,763.54	5.27	104.73	3,763.16	-3.08	11.71	2.00	2.00	0.00	104.73	
4,741.34	5.27	104.73	4,736.84	-25.92	98.59	0.00	0.00	0.00	0.00	
5,004.88	0.00	0.00	5,000.00	-29.00	110.30	2.00	-2.00	0.00	180.00	VP v2 - East Shugart
5,504.88	0.00	0.00	5,500.00	-29.00	110.30	0.00	0.00	0.00	0.00	PBHL v2 - East Shugart



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Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
888.00	0.00	0.00	888.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,018.00	0.00	0.00	1,018.00	0.00	0.00	0.00	0.00	0.00	0.00
Top of Salt									
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,205.00	0.00	0.00	2,205.00	0.00	0.00	0.00	0.00	0.00	0.00
Base of Salt									
2,298.00	0.00	0.00	2,298.00	0.00	0.00	0.00	0.00	0.00	0.00
Yates									
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,881.00	0.00	0.00	2,881.00	0.00	0.00	0.00	0.00	0.00	0.00
Seven Rivers									
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP, 2.00°/100' Build									
3,553.00	1.06	104.73	3,553.00	-0.12	0.47	0.49	2.00	2.00	0.00
Queen									
3,600.00	2.00	104.73	3,599.98	-0.44	1.69	1.75	2.00	2.00	0.00
3,700.00	4.00	104.73	3,699.84	-1.77	6.75	6.98	2.00	2.00	0.00
3,763.54	5.27	104.73	3,763.16	-3.08	11.71	12.11	2.00	2.00	0.00
Hold 5.27° Inc									



MS Energy Services
Planning Report



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Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well #37
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North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,800.00	5.27	104.73	3,799.47	-3.93	14.95	15.46	0.00	0.00	0.00
3,900.00	5.27	104.73	3,899.05	-6.27	23.84	24.65	0.00	0.00	0.00
4,000.00	5.27	104.73	3,998.63	-8.60	32.72	33.83	0.00	0.00	0.00
4,100.00	5.27	104.73	4,098.21	-10.94	41.61	43.02	0.00	0.00	0.00
4,200.00	5.27	104.73	4,197.78	-13.28	50.49	52.21	0.00	0.00	0.00
4,300.00	5.27	104.73	4,297.36	-15.61	59.38	61.39	0.00	0.00	0.00
4,305.66	5.27	104.73	4,303.00	-15.74	59.88	61.91	0.00	0.00	0.00
Cherry Canyon									
4,400.00	5.27	104.73	4,396.94	-17.95	68.26	70.58	0.00	0.00	0.00
4,500.00	5.27	104.73	4,496.51	-20.28	77.14	79.77	0.00	0.00	0.00
4,600.00	5.27	104.73	4,596.09	-22.62	86.03	88.95	0.00	0.00	0.00
4,659.16	5.27	104.73	4,655.00	-24.00	91.28	94.39	0.00	0.00	0.00
Brushy Canyon									
4,700.00	5.27	104.73	4,695.67	-24.95	94.91	98.14	0.00	0.00	0.00
4,741.34	5.27	104.73	4,736.84	-25.92	98.59	101.94	0.00	0.00	0.00
Begin 2.00°/100' Drop									
4,800.00	4.10	104.73	4,795.30	-27.14	103.22	106.73	2.00	-2.00	0.00
4,900.00	2.10	104.73	4,895.15	-28.51	108.44	112.13	2.00	-2.00	0.00
5,004.88	0.00	0.00	5,000.00	-29.00	110.30	114.05	2.00	-2.00	0.00
Begin Vertical Hold									
5,082.88	0.00	0.00	5,078.00	-29.00	110.30	114.05	0.00	0.00	0.00
ESDU Top									
5,100.00	0.00	0.00	5,095.12	-29.00	110.30	114.05	0.00	0.00	0.00
5,200.00	0.00	0.00	5,195.12	-29.00	110.30	114.05	0.00	0.00	0.00
5,300.00	0.00	0.00	5,295.12	-29.00	110.30	114.05	0.00	0.00	0.00
5,400.00	0.00	0.00	5,395.12	-29.00	110.30	114.05	0.00	0.00	0.00
5,447.88	0.00	0.00	5,443.00	-29.00	110.30	114.05	0.00	0.00	0.00
ESDU Zone 12									
5,504.88	0.00	0.00	5,500.00	-29.00	110.30	114.05	0.00	0.00	0.00
PBHL									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
VP v2 - East Shugart De	0.00	0.00	5,000.00	-29.00	110.30	634,429.20	701,438.30	32° 44' 34.806 N	103° 48' 45.430 W
- plan hits target center									
- Point									
PBHL v2 - East Shugart	0.00	0.00	5,500.00	-29.00	110.30	634,429.20	701,438.30	32° 44' 34.806 N	103° 48' 45.430 W
- plan hits target center									
- Point									



Database: EDM 5000.1 Conroe DB
Company: SM Energy Company
Project: Lea County, New Mexico (NAD 83)
Site: East Shugart Delaware Unit
Well: #37
Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well #37
TVD Reference: WELL @ 3743.00usft (Original Well Elev)
MD Reference: WELL @ 3743.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
888.00	888.00	Rustler		0.00	
1,018.00	1,018.00	Top of Salt		0.00	
2,205.00	2,205.00	Base of Salt		0.00	
2,298.00	2,298.00	Yates		0.00	
2,881.00	2,881.00	Seven Rivers		0.00	
3,553.00	3,553.00	Queen		0.00	
4,305.66	4,303.00	Cherry Canyon		0.00	
4,659.16	4,655.00	Brushy Canyon		0.00	
5,082.88	5,078.00	ESDU Top		0.00	
5,447.88	5,443.00	ESDU Zone 12		0.00	

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3,500.00	3,500.00	0.00	0.00	KOP, 2.00°/100' Build
3,763.54	3,763.16	-3.08	11.71	Hold 5.27° Inc
4,741.34	4,736.84	-25.92	98.59	Begin 2.00°/100' Drop
5,004.88	5,000.00	-29.00	110.30	Begin Vertical Hold
5,504.88	5,500.00	-29.00	110.30	PBHL



SM Energy Company

Lea County, New Mexico (NAD 83)

East Shugart Delaware Unit

#37

Wellbore #1

Design #2

Anticollision Report

22 August, 2014



MS Energy Services

Anticollision Report



Company: SM Energy Company
Project: Lea County, New Mexico (NAD 83)
Reference Site: East Shugart Delaware Unit
Site Error: 0.00 usft
Reference Well: #37
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #2

Local Co-ordinate Reference: Well #37
TVD Reference: WELL @ 3743.00usft (Original Well Elev)
MD Reference: WELL @ 3743.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Conroe DB
Offset TVD Reference: Offset Datum

Reference:	Design #2		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.00usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.00 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	2014/08/22			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	5,504.88	Design #2 (Wellbore #1)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
East Shugart Delaware Unit						
#36 - Wellbore #1 - Design #1	3,500.00	3,495.00	237.91	222.45	15.392	CC, ES
#36 - Wellbore #1 - Design #1	3,600.00	3,587.76	241.03	225.18	15.208	SF
#41 - Wellbore #1 - Design #1	5,041.91	5,038.93	726.23	704.26	33.056	CC
#41 - Wellbore #1 - Design #1	5,504.88	5,501.90	726.27	702.28	30.272	ES, SF

Offset Design													
East Shugart Delaware Unit - #36 - Wellbore #1 - Design #1													
Survey Program: O-MWD													
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-89.42	2.40	-237.90	237.96				
100.00	100.00	95.00	95.00	0.09	0.09	-89.42	2.40	-237.90	237.91	237.73	0.18	1,323.936	
200.00	200.00	195.00	195.00	0.32	0.31	-89.42	2.40	-237.90	237.91	237.29	0.62	382.125	
300.00	300.00	295.00	295.00	0.54	0.53	-89.42	2.40	-237.90	237.91	236.84	1.07	221.905	
400.00	400.00	395.00	395.00	0.77	0.76	-89.42	2.40	-237.90	237.91	236.39	1.52	156.350	
500.00	500.00	495.00	495.00	0.99	0.98	-89.42	2.40	-237.90	237.91	235.94	1.97	120.694	
600.00	600.00	595.00	595.00	1.22	1.20	-89.42	2.40	-237.90	237.91	235.49	2.42	98.281	
700.00	700.00	695.00	695.00	1.44	1.43	-89.42	2.40	-237.90	237.91	235.04	2.87	82.889	
800.00	800.00	795.00	795.00	1.67	1.65	-89.42	2.40	-237.90	237.91	234.59	3.32	71.665	
900.00	900.00	895.00	895.00	1.89	1.88	-89.42	2.40	-237.90	237.91	234.14	3.77	63.118	
1,000.00	1,000.00	995.00	995.00	2.12	2.10	-89.42	2.40	-237.90	237.91	233.69	4.22	56.393	
1,100.00	1,100.00	1,095.00	1,095.00	2.34	2.33	-89.42	2.40	-237.90	237.91	233.24	4.67	50.962	
1,200.00	1,200.00	1,195.00	1,195.00	2.56	2.55	-89.42	2.40	-237.90	237.91	232.79	5.12	46.486	
1,300.00	1,300.00	1,295.00	1,295.00	2.79	2.78	-89.42	2.40	-237.90	237.91	232.34	5.57	42.733	
1,400.00	1,400.00	1,395.00	1,395.00	3.01	3.00	-89.42	2.40	-237.90	237.91	231.90	6.02	39.540	
1,500.00	1,500.00	1,495.00	1,495.00	3.24	3.23	-89.42	2.40	-237.90	237.91	231.45	6.47	36.791	
1,600.00	1,600.00	1,595.00	1,595.00	3.46	3.45	-89.42	2.40	-237.90	237.91	231.00	6.92	34.400	
1,700.00	1,700.00	1,695.00	1,695.00	3.69	3.68	-89.42	2.40	-237.90	237.91	230.55	7.37	32.301	
1,800.00	1,800.00	1,795.00	1,795.00	3.91	3.90	-89.42	2.40	-237.90	237.91	230.10	7.82	30.443	
1,900.00	1,900.00	1,895.00	1,895.00	4.14	4.13	-89.42	2.40	-237.90	237.91	229.65	8.26	28.787	
2,000.00	2,000.00	1,995.00	1,995.00	4.36	4.35	-89.42	2.40	-237.90	237.91	229.20	8.71	27.302	
2,100.00	2,100.00	2,095.00	2,095.00	4.59	4.58	-89.42	2.40	-237.90	237.91	228.75	9.16	25.962	
2,200.00	2,200.00	2,195.00	2,195.00	4.81	4.80	-89.42	2.40	-237.90	237.91	228.30	9.61	24.748	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation



MS Energy Services

Anticollision Report



Company: SM Energy Company
Project: Lea County, New Mexico (NAD 83)
Reference Site: East Shugart Delaware Unit
Site Error: 0.00 usft
Reference Well: #37
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #2

Local Co-ordinate Reference: Well #37
TVD Reference: WELL @ 3743.00usft (Original Well Elev)
MD Reference: WELL @ 3743.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Conroe DB
Offset TVD Reference: Offset Datum

Offset Design East Shugart Delaware Unit - #36 - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (")	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
2,300.00	2,300.00	2,295.00	2,295.00	5.04	5.03	-89.42	2.40	-237.90	237.91	227.85	10.06	23.643		
2,400.00	2,400.00	2,395.00	2,395.00	5.26	5.25	-89.42	2.40	-237.90	237.91	227.40	10.51	22.632		
2,500.00	2,500.00	2,495.00	2,495.00	5.49	5.48	-89.42	2.40	-237.90	237.91	226.95	10.96	21.704		
2,600.00	2,600.00	2,595.00	2,595.00	5.71	5.70	-89.42	2.40	-237.90	237.91	226.50	11.41	20.849		
2,700.00	2,700.00	2,695.00	2,695.00	5.94	5.92	-89.42	2.40	-237.90	237.91	226.05	11.86	20.059		
2,800.00	2,800.00	2,795.00	2,795.00	6.16	6.15	-89.42	2.40	-237.90	237.91	225.60	12.31	19.326		
2,900.00	2,900.00	2,895.00	2,895.00	6.39	6.37	-89.42	2.40	-237.90	237.91	225.15	12.76	18.645		
3,000.00	3,000.00	2,995.00	2,995.00	6.61	6.60	-89.42	2.40	-237.90	237.91	224.70	13.21	18.011		
3,100.00	3,100.00	3,095.00	3,095.00	6.84	6.82	-89.42	2.40	-237.90	237.91	224.25	13.66	17.418		
3,200.00	3,200.00	3,195.00	3,195.00	7.06	7.05	-89.42	2.40	-237.90	237.91	223.80	14.11	16.863		
3,300.00	3,300.00	3,295.00	3,295.00	7.28	7.27	-89.42	2.40	-237.90	237.91	223.35	14.56	16.342		
3,400.00	3,400.00	3,395.00	3,395.00	7.51	7.50	-89.42	2.40	-237.90	237.91	222.90	15.01	15.853		
3,500.00	3,500.00	3,495.00	3,495.00	7.73	7.72	-89.42	2.40	-237.90	237.91	222.45	15.46	15.392 CC, ES		
3,600.00	3,599.98	3,587.76	3,587.74	7.94	7.92	-89.38	2.15	-239.22	241.03	225.18	15.85	15.208 SF		
3,700.00	3,699.84	3,679.56	3,679.45	8.13	8.10	-89.28	1.35	-243.43	250.67	234.47	16.19	15.479		
3,800.00	3,799.47	3,770.27	3,769.87	8.33	8.28	-89.14	0.03	-250.42	266.54	250.00	16.54	16.116		
3,900.00	3,899.05	3,859.87	3,858.93	8.54	8.46	-89.10	-1.80	-260.08	286.12	269.21	16.91	16.923		
4,000.00	3,998.63	3,948.30	3,946.48	8.74	8.65	-89.16	-4.11	-272.29	308.67	291.40	17.28	17.866		
4,100.00	4,098.21	4,044.34	4,041.29	8.95	8.87	-89.30	-6.95	-287.28	332.98	315.32	17.66	18.853		
4,200.00	4,197.78	4,141.33	4,137.05	9.17	9.10	-89.44	-9.82	-302.43	357.31	339.26	18.05	19.792		
4,300.00	4,297.36	4,238.32	4,232.81	9.39	9.33	-89.56	-12.69	-317.58	381.64	363.19	18.45	20.688		
4,400.00	4,396.94	4,335.32	4,328.57	9.61	9.58	-89.66	-15.55	-332.73	405.97	387.13	18.85	21.541		
4,500.00	4,496.51	4,432.31	4,424.33	9.83	9.83	-89.75	-18.42	-347.88	430.31	411.06	19.25	22.355		
4,600.00	4,596.09	4,529.30	4,520.09	10.06	10.09	-89.83	-21.29	-363.03	454.64	434.98	19.65	23.131		
4,700.00	4,695.67	4,640.46	4,630.02	10.29	10.36	-89.93	-24.34	-379.13	477.90	457.82	20.09	23.790		
4,800.00	4,795.30	4,758.37	4,747.23	10.52	10.63	-89.95	-26.72	-391.72	496.81	476.25	20.56	24.164		
4,900.00	4,895.15	4,878.36	4,866.93	10.73	10.89	-89.97	-28.22	-399.66	508.64	487.60	21.04	24.178		
5,000.00	4,995.12	4,999.48	4,988.01	10.92	11.14	-89.98	-28.80	-402.68	512.98	491.49	21.49	23.873		
5,100.00	5,095.12	5,101.59	5,090.12	11.12	11.34	-89.98	-28.80	-402.70	513.00	491.11	21.89	23.432		
5,200.00	5,195.12	5,201.59	5,190.12	11.33	11.55	-89.98	-28.80	-402.70	513.00	490.66	22.34	22.968		
5,300.00	5,295.12	5,301.59	5,290.12	11.55	11.77	-89.98	-28.80	-402.70	513.00	490.22	22.78	22.521		
5,400.00	5,395.12	5,401.59	5,390.12	11.77	11.99	-89.98	-28.80	-402.70	513.00	489.78	23.22	22.091		
5,500.00	5,495.12	5,501.59	5,490.12	11.99	12.20	-89.98	-28.80	-402.70	513.00	489.33	23.67	21.677		
5,504.88	5,500.00	5,506.47	5,495.00	12.00	12.21	-89.98	-28.80	-402.70	513.00	489.31	23.69	21.657		



MS Energy Services

Anticollision Report



Company: SM Energy Company
Project: Lea County, New Mexico (NAD 83)
Reference Site: East Shugart Delaware Unit
Site Error: 0.00 usft
Reference Well: #37
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #2

Local Co-ordinate Reference: Well #37
TVD Reference: WELL @ 3743.00usft (Original Well Elev)
MD Reference: WELL @ 3743.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM 5000.1 Conroe DB
Offset TVD Reference: Offset Datum

Offset Design East Shugart Delaware Unit - #41 - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWVD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	145.96	-776.30	524.40	936.85					
100.00	100.00	93.00	93.00	0.09	0.09	145.96	-776.30	524.40	936.82	936.65	0.18	5,267.264		
200.00	200.00	193.00	193.00	0.32	0.30	145.96	-776.30	524.40	936.82	936.20	0.62	1,515.633		
300.00	300.00	293.00	293.00	0.54	0.53	145.96	-776.30	524.40	936.82	935.76	1.07	877.472		
400.00	400.00	393.00	393.00	0.77	0.75	145.96	-776.30	524.40	936.82	935.31	1.52	617.480		
500.00	500.00	493.00	493.00	0.99	0.98	145.96	-776.30	524.40	936.82	934.86	1.97	476.342		
600.00	600.00	593.00	593.00	1.22	1.20	145.96	-776.30	524.40	936.82	934.41	2.42	387.720		
700.00	700.00	693.00	693.00	1.44	1.43	145.96	-776.30	524.40	936.82	933.96	2.87	326.901		
800.00	800.00	793.00	793.00	1.67	1.65	145.96	-776.30	524.40	936.82	933.51	3.32	282.576		
900.00	900.00	893.00	893.00	1.89	1.87	145.96	-776.30	524.40	936.82	933.06	3.76	248.835		
1,000.00	1,000.00	993.00	993.00	2.12	2.10	145.96	-776.30	524.40	936.82	932.61	4.21	222.293		
1,100.00	1,100.00	1,093.00	1,093.00	2.34	2.32	145.96	-776.30	524.40	936.82	932.16	4.66	200.867		
1,200.00	1,200.00	1,193.00	1,193.00	2.56	2.55	145.96	-776.30	524.40	936.82	931.71	5.11	183.208		
1,300.00	1,300.00	1,293.00	1,293.00	2.79	2.77	145.96	-776.30	524.40	936.82	931.26	5.56	168.404		
1,400.00	1,400.00	1,393.00	1,393.00	3.01	3.00	145.96	-776.30	524.40	936.82	930.81	6.01	155.813		
1,500.00	1,500.00	1,493.00	1,493.00	3.24	3.22	145.96	-776.30	524.40	936.82	930.36	6.46	144.974		
1,600.00	1,600.00	1,593.00	1,593.00	3.46	3.45	145.96	-776.30	524.40	936.82	929.91	6.91	135.544		
1,700.00	1,700.00	1,693.00	1,693.00	3.69	3.67	145.96	-776.30	524.40	936.82	929.46	7.36	127.267		
1,800.00	1,800.00	1,793.00	1,793.00	3.91	3.90	145.96	-776.30	524.40	936.82	929.01	7.81	119.942		
1,900.00	1,900.00	1,893.00	1,893.00	4.14	4.12	145.96	-776.30	524.40	936.82	928.56	8.26	113.415		
2,000.00	2,000.00	1,993.00	1,993.00	4.36	4.35	145.96	-776.30	524.40	936.82	928.11	8.71	107.561		
2,100.00	2,100.00	2,093.00	2,093.00	4.59	4.57	145.96	-776.30	524.40	936.82	927.66	9.16	102.282		
2,200.00	2,200.00	2,193.00	2,193.00	4.81	4.80	145.96	-776.30	524.40	936.82	927.21	9.61	97.497		
2,300.00	2,300.00	2,293.00	2,293.00	5.04	5.02	145.96	-776.30	524.40	936.82	926.76	10.06	93.139		
2,400.00	2,400.00	2,393.00	2,393.00	5.26	5.25	145.96	-776.30	524.40	936.82	926.32	10.51	89.155		
2,500.00	2,500.00	2,493.00	2,493.00	5.49	5.47	145.96	-776.30	524.40	936.82	925.87	10.96	85.497		
2,600.00	2,600.00	2,593.00	2,593.00	5.71	5.70	145.96	-776.30	524.40	936.82	925.42	11.41	82.128		
2,700.00	2,700.00	2,693.00	2,693.00	5.94	5.92	145.96	-776.30	524.40	936.82	924.97	11.86	79.014		
2,800.00	2,800.00	2,793.00	2,793.00	6.16	6.15	145.96	-776.30	524.40	936.82	924.52	12.31	76.128		
2,900.00	2,900.00	2,893.00	2,893.00	6.39	6.37	145.96	-776.30	524.40	936.82	924.07	12.76	73.445		
3,000.00	3,000.00	2,993.00	2,993.00	6.61	6.59	145.96	-776.30	524.40	936.82	923.62	13.21	70.945		
3,100.00	3,100.00	3,093.00	3,093.00	6.84	6.82	145.96	-776.30	524.40	936.82	923.17	13.65	68.609		
3,200.00	3,200.00	3,193.00	3,193.00	7.06	7.04	145.96	-776.30	524.40	936.82	922.72	14.10	66.422		
3,300.00	3,300.00	3,293.00	3,293.00	7.28	7.27	145.96	-776.30	524.40	936.82	922.27	14.55	64.371		
3,400.00	3,400.00	3,393.00	3,393.00	7.51	7.49	145.96	-776.30	524.40	936.82	921.82	15.00	62.442		
3,500.00	3,500.00	3,493.00	3,493.00	7.73	7.72	145.96	-776.30	524.40	936.82	921.37	15.45	60.625		
3,600.00	3,599.98	3,627.60	3,627.56	7.94	8.02	145.93	-773.46	524.38	933.79	917.83	15.96	58.518		
3,700.00	3,699.84	3,763.89	3,763.52	8.13	8.33	145.83	-764.15	524.34	924.18	907.74	16.44	56.213		
3,800.00	3,799.47	3,894.27	3,893.03	8.33	8.62	145.65	-749.24	524.26	908.28	891.37	16.92	53.695		
3,900.00	3,899.05	3,992.64	3,990.52	8.54	8.85	145.57	-736.13	524.19	890.36	873.03	17.33	51.366		
4,000.00	3,998.63	4,091.01	4,088.02	8.74	9.08	145.48	-723.02	524.12	872.44	854.69	17.76	49.133		
4,100.00	4,098.21	4,189.38	4,185.51	8.95	9.32	145.39	-709.92	524.05	854.53	836.34	18.18	46.992		
4,200.00	4,197.78	4,287.75	4,283.01	9.17	9.56	145.29	-696.81	523.98	836.61	817.99	18.62	44.939		
4,300.00	4,297.36	4,386.13	4,380.50	9.39	9.81	145.19	-683.71	523.91	818.70	799.65	19.05	42.970		
4,400.00	4,396.94	4,484.50	4,478.00	9.61	10.06	145.08	-670.60	523.84	800.79	781.30	19.49	41.080		
4,500.00	4,496.51	4,582.87	4,575.49	9.83	10.32	144.97	-657.50	523.77	782.88	762.95	19.94	39.267		
4,600.00	4,596.09	4,671.30	4,663.18	10.06	10.54	144.93	-646.07	523.71	765.34	744.99	20.35	37.613		
4,700.00	4,695.67	4,752.43	4,743.87	10.29	10.71	145.02	-637.67	523.66	749.86	729.15	20.72	36.196		
4,800.00	4,795.30	4,834.14	4,825.35	10.52	10.87	145.18	-631.53	523.63	737.16	716.07	21.09	34.947		
4,900.00	4,895.15	4,916.45	4,907.56	10.73	11.02	145.28	-627.69	523.61	729.22	707.75	21.47	33.972		
5,000.00	4,995.12	4,999.08	4,990.18	10.92	11.17	145.31	-626.22	523.60	726.29	704.48	21.81	33.301		
5,041.91	5,037.03	5,038.93	5,030.03	11.00	11.24	145.32	-626.20	523.60	726.23	704.26	21.97	33.056 CC		

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation



MS Energy Services
Anticollision Report



Company: SM Energy Company
Project: Lea County, New Mexico (NAD 83)
Reference Site: East Shugart Delaware Unit
Site Error: 0.00 usft
Reference Well: #37
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #2

Local Co-ordinate Reference: Well #37
TVD Reference: WELL @ 3743.00usft (Original Well Elev)
MD Reference: WELL @ 3743.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Conroe DB
Offset TVD Reference: Offset Datum

Offset Design East Shugart Delaware Unit - #41 - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Azimuth	Offset Wellbore Centre		Between	Between	Minimum	Separation	Warning	
Depth	Depth	Depth	Depth			from North	+N/-S	+E/-W	Centres	Ellipses	Separation	Factor		
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)			
5,100.00	5,095.12	5,097.03	5,088.12	11.12	11.35	145.31	-626.20	523.60	726.27	704.07	22.20	32.715		
5,200.00	5,195.12	5,197.03	5,188.12	11.33	11.57	145.31	-626.20	523.60	726.27	703.63	22.64	32.077		
5,300.00	5,295.12	5,297.03	5,288.12	11.55	11.79	145.31	-626.20	523.60	726.27	703.18	23.08	31.462		
5,400.00	5,395.12	5,397.03	5,388.12	11.77	12.01	145.31	-626.20	523.60	726.27	702.74	23.53	30.870		
5,500.00	5,495.12	5,497.03	5,488.12	11.99	12.23	145.31	-626.20	523.60	726.27	702.30	23.97	30.300		
5,504.88	5,500.00	5,501.90	5,493.00	12.00	12.24	145.31	-626.20	523.60	726.27	702.28	23.99	30.272 ES, SF		



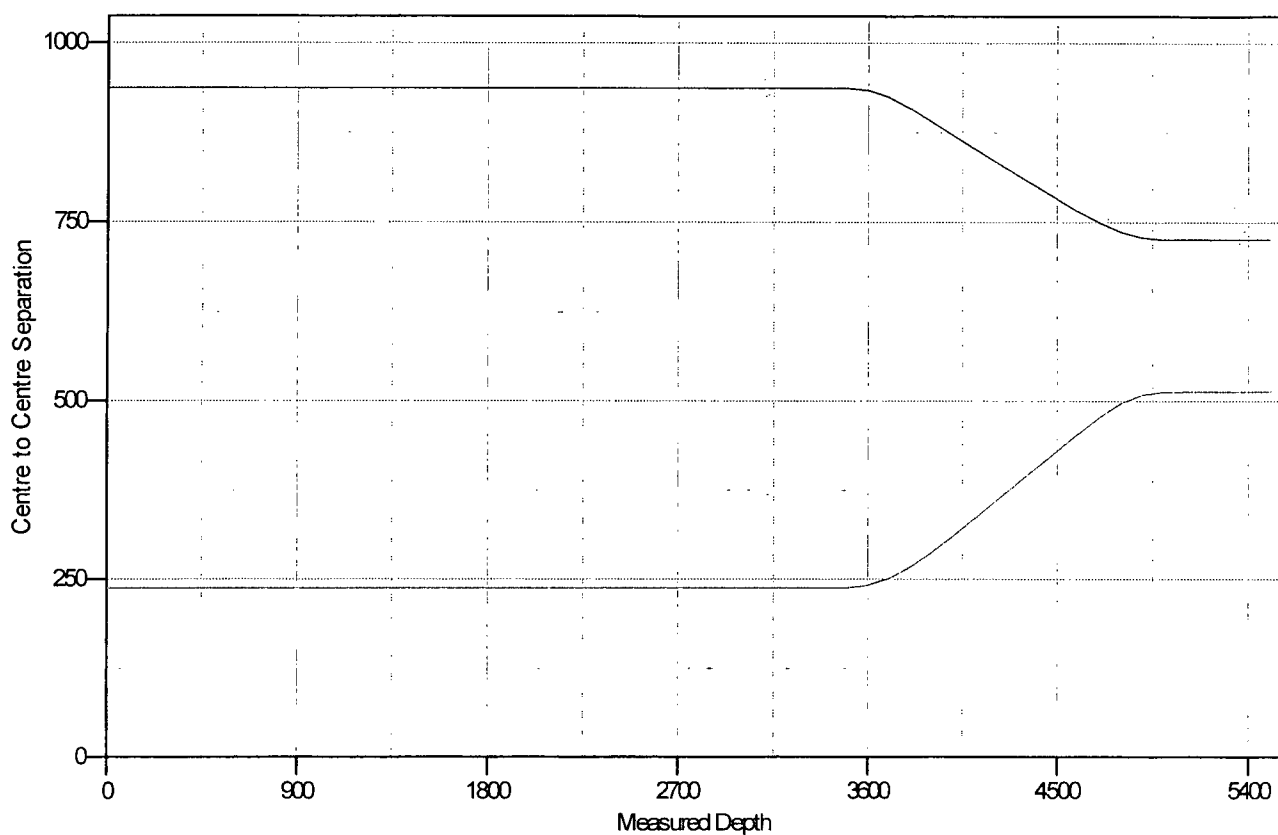
Company: SM Energy Company
Project: Lea County, New Mexico (NAD 83)
Reference Site: East Shugart Delaware Unit
Site Error: 0.00 usft
Reference Well: #37
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #2

Local Co-ordinate Reference: Well #37
TVD Reference: WELL @ 3743.00usft (Original Well Elev)
MD Reference: WELL @ 3743.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Conroe DB
Offset TVD Reference: Offset Datum

Reference Depths are relative to WELL @ 3743.00usft (Original Well E
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: #37
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: 0.28°

Ladder Plot



LEGEND

—●— #36, Wellbore #1, Design #1 V0 —●— #41, Wellbore #1, Design #1 V0



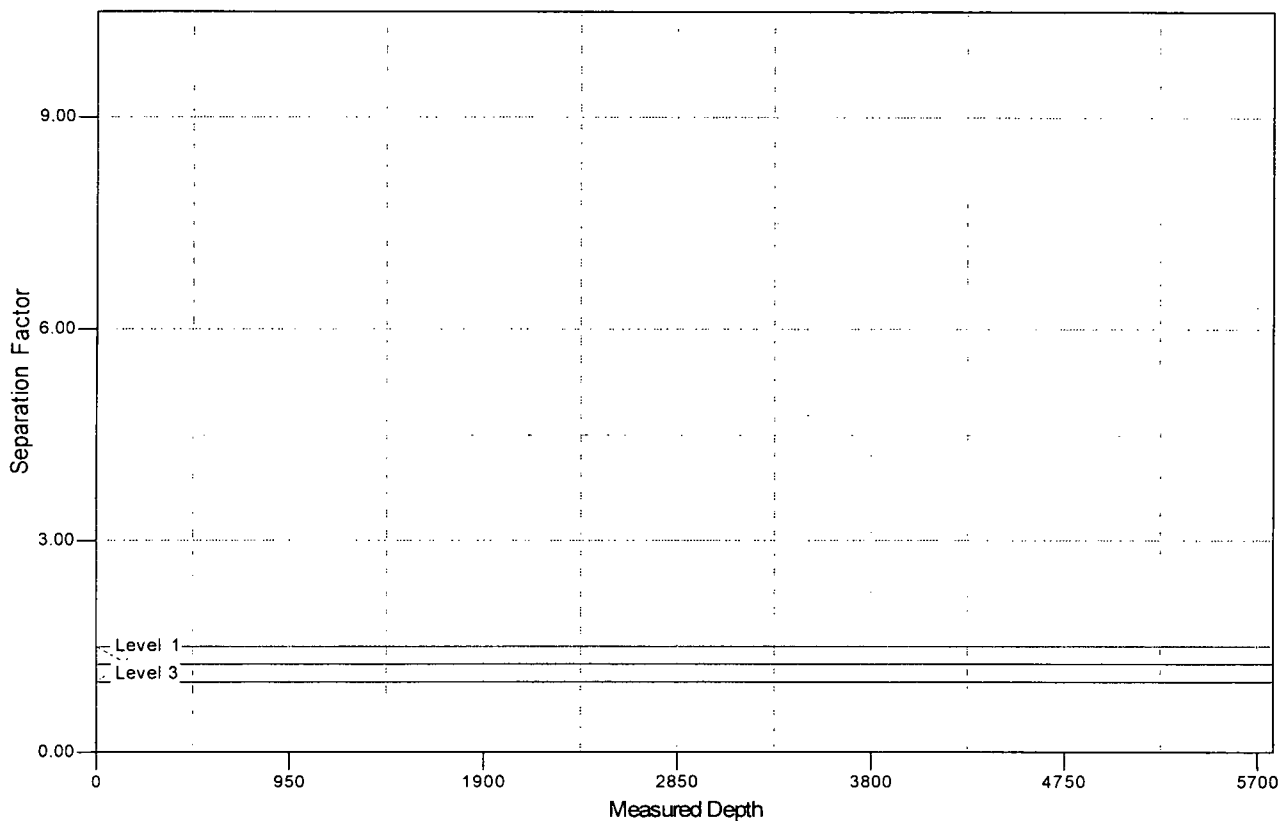
Company: SM Energy Company
Project: Lea County, New Mexico (NAD 83)
Reference Site: East Shugart Delaware Unit
Site Error: 0.00 usft
Reference Well: #37
Well Error: 0.00 usft
Reference Wellbore: Wellbore #1
Reference Design: Design #2

Local Co-ordinate Reference: Well #37
TVD Reference: WELL @ 3743.00usft (Original Well Elev)
MD Reference: WELL @ 3743.00usft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM 5000.1 Conroe DB
Offset TVD Reference: Offset Datum

Reference Depths are relative to WELL @ 3743.00usft (Original Well E
Offset Depths are relative to Offset Datum
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: #37
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: 0.28°

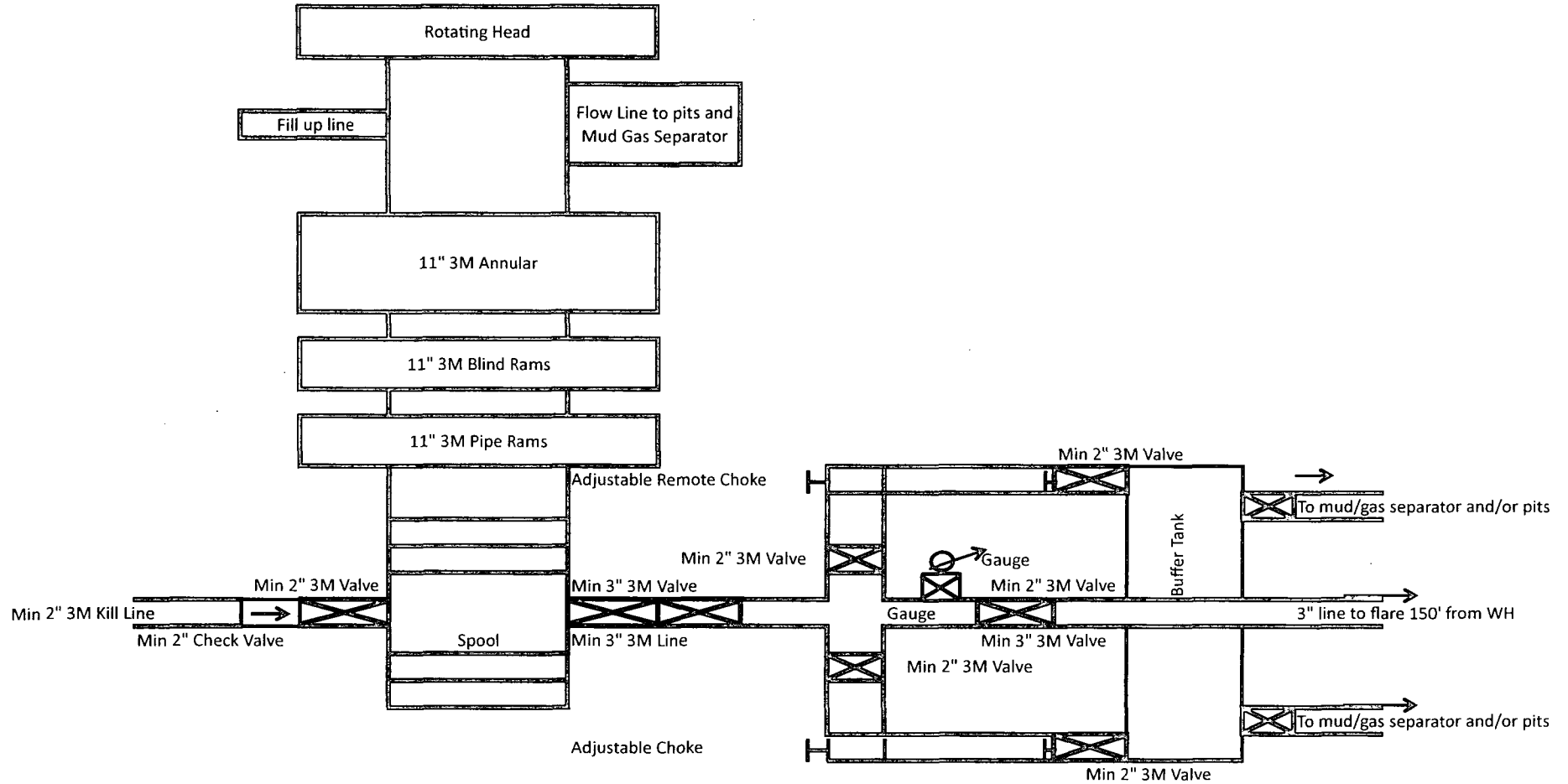
Separation Factor Plot



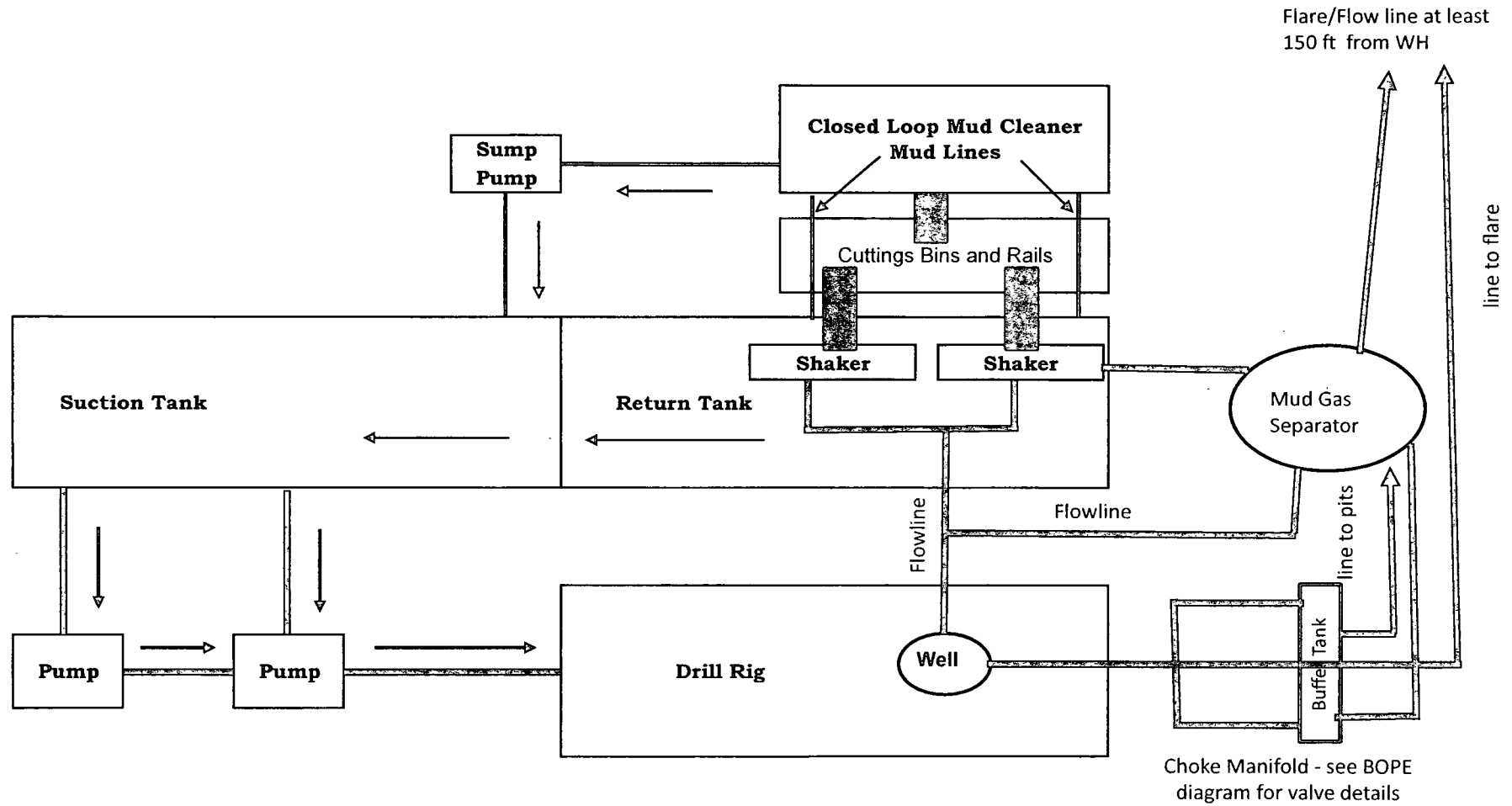
LEGEND

—◆— #36, Wellbore #1, Design #1 V0 —●— #41, Wellbore #1, Design #1 V0

BOP SCHEMATIC

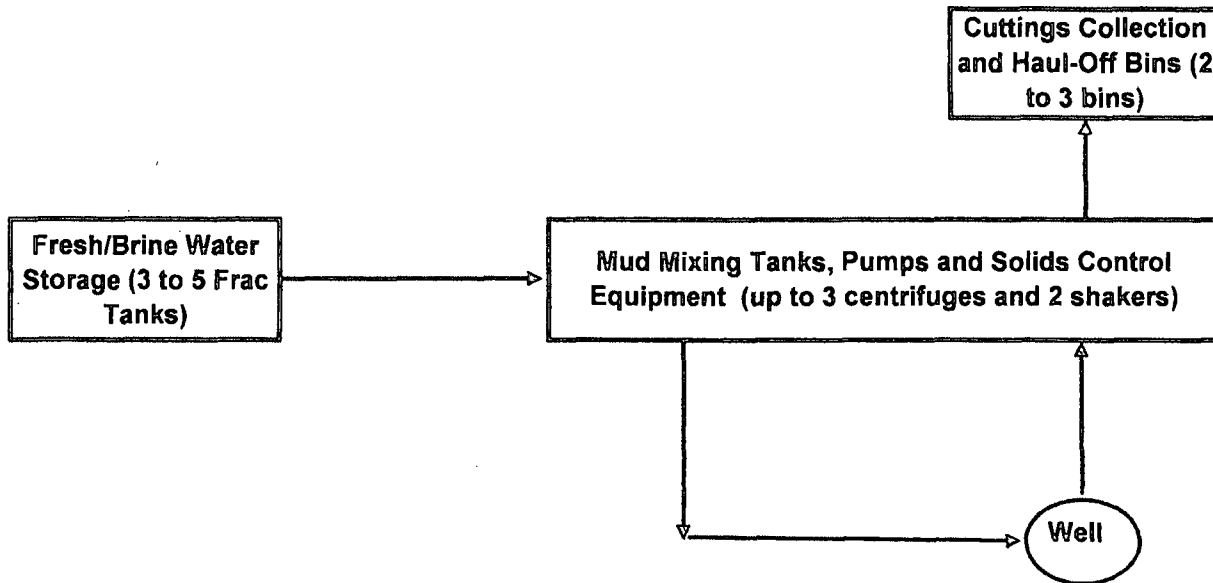


Choke Manifold Schematic for Closed Loop System



CLOSED-LOOP SYSTEM

Design Plan:



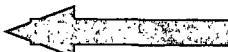
Operating and Maintenance Plan:

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 37
rig diagram

NORTH 
1" = 50'

