

HOB3S OCD

MAY 03 2013

OCD Hobbs

Form 3160-3
(March 2012)

RECEIVED UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

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

5. Lease Serial No.
NMNM1134182

6. If Indian, Allottee or Tribe Name

7. If Unit or CA Agreement, Name and No.

8. Lease Name and Well No.
Madera 17 Federal #1H <39880>

9. API Well No.
30-025-41199

10. Field and Pool or Exploratory
Antelope Ridge/Bone Spring, North

11. Sec., T. R. M. or Blk. and Survey or Area
Sec. 17 T24S R34E

12. County or Parish
Lea County

13. State
NM

1a. Type of work: ☒ DRILL ☐ REENTER

1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone

2. Name of Operator Regeneration Energy Corp.

3a. Address PO Box 210
Artesia, NM 88211-0210

3b. Phone No. (include area code)
(575)736-3535

4. Location of Well (Report location clearly and in accordance with any State requirements.)*

At surface 330' FNL 380' FEL Unit letter A (NENE) SHL

At proposed prod. zone 330' FSL 380' FEL Unit letter P BHL

14. Distance in miles and direction from nearest town or post office*
20 miles from Jal

15. Distance from proposed* location to nearest property or lease line, ft.
(Also to nearest drig. unit line, if any) 330"

16. No. of acres in lease
640

17. Spacing Unit dedicated to this well
160

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. About 5000'

19. Proposed Depth
MD:13573 TVD:9200

20. BLM/BIA Bond No. on file
NMB000764

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3561' GL

22. Approximate date work will start*
12/01/2012

23. Estimated duration
45 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

- Well plat certified by a registered surveyor.
- A Drilling Plan.
- A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
- Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
- Operator certification
- Such other site specific information and/or plans as may be required by the BLM.

25. Signature



Name (Printed/Typed)
William Miller

Date
09/28/2012

Title

Landman

Approved by (Signature) /s/George MacDonell

Name (Printed/Typed)

Date

Title

FIELD MANAGER

Office

CARLSBAD FIELD OFFICE

MAY 01 2013

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)

Carlsbad Controlled Water Basin

KC 09/31/13

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Approval Subject to General Requirements
& Special Stipulations Attached

JUN 04 2013

Regeneration Energy Corp.
DRILLING AND OPERATIONS PROGRAM

Madera 17 Federal #1H
Surf: 330' FNL & 380' FEL,
BHL: 330' FSL & 380' FEL
Section 17, T24S, R34E
Lea County, New Mexico

In conjunction with Form 3160-3, Application for Permit to Drill subject well, Regeneration Energy Corp. submits the following ten items of pertinent information in accordance with BLM requirements.

1. Geological surface formation: Permian
2. The estimated tops of geologic markers & estimated depths at which anticipated water, oil or gas formations are expected to be encountered are as follows:

Fresh Water	475'
Rustler	1154'
Top Salt	1714'
Bottom Salt	5054'
Delaware	5289'
Bone Spring	8979'
Avalon Shale	9099'
TD	13600'

No other formations are expected to give up oil, gas, or fresh water in measurable quantities. The surface fresh water sands will be protected by setting 13 3/8" casing at 1200' and circulating cement back to surface. All intervals will be isolated by setting 9 5/8" and 5 1/2" casing to total depth and tying back cement 200' into 9 5/8 casing.

3. Proposed Casing Program:

Hole Size	Interval <i>see COH 1288'</i>	OD Casing	New or Used	Wt	Collar	Grade	Collapse Design Factor	Burst Design Factor	Tension Design Factor
17 1/2"	0' - 1200'	13 3/8"	New	54.5#	STC	J-55	1.125	1.125	1.6
12 1/4"	0' - 3500'	9 5/8"	New	36#	LTC	J-55	1.125	1.125	1.6
12 1/4"	3500' - 4500'	9 5/8"	New	40#	LTC	J-55	1.125	1.125	1.6
12 1/4"	4500' - 5200'	9 5/8"	New	40#	LTC	N-80	1.125	1.125	1.6
7 7/8"	5200' - 13600'	5 1/2"	New	17#	LTC	P110	1.125	1.125	1.6

production string all the way to surface 0' - 13,600'
per william miller 4/5/2013

5. Proposed Cement Program:

See Halliburton program for odd. Eves

- a. 13 3/8" Surf Cement to surface with 750sx "CZ" 13.5ppg yield 1.75. Tail 850 sx "C" wt 14.8 ppg yield 1.34.
10% cog + 100% excess OH
- b. 9 5/8" Int Cement to surface with 1200 sx "C" Light 13.5ppg yield 1.72. Tail 400 sx "C" wt 14.8ppg yield 1.34.
10% cog + 100% OH
- c. 5 1/2" Prod 1st Stage lead with 330 sx "HLH" wt 12.5ppg yield 2.0. Tail 850sx "H" 14.4ppg yield 1.27. *45% + 35% 12.5* 2nd Stage lead with 180 sx "HLC" *2.0* yield *1.34*. Tail in with 100 sk "H" wt 14.8 yield 1.34. DVT @ 6500'.

The above cement volumes could be revised pending the caliper measurement from the open hole logs. The top of cement is designed to reach approximately 200' above the 9 5/8" casing shoe. The surface casing shoe shall be set in the anhydrite to ensure adequate sealing. (If cement does not circulate to the surface the operator may then use ready-mix cement to fill the remaining annulus. The operator is not required to use an excess of 100% cement volume to fill the annulus. **All casing is new and API approved.**)

See COA

6. Minimum Specifications for Pressure Control:

Nipple up on 13 3/8" casing with a 2M system (Hydri) and test to 50% by independent tester, nipple up on 9 5/8" with 3M system & test to 3000# with independent tester.

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. A 2" kill line and a 3" choke line will be included in the drilling spool located below the ram-type BOP. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold with 3000 psi WP rating.

7. Estimated BHP: 4200 psi.

8. Mud Program: The applicable depths and properties of this system are as follows:

See COA

Depth	Type System	Mud Weight	Viscosity (sec)	Waterloss (cc)
0' - 1200'	Fresh Water	8.4 - 8.6	29	N.C.
1200' - 5200'	Brine	9.9 - 10.0	29	N.C.
5200' - 13600'	Cut Brine	8.8 - 9.0	29	N.C.

- The necessary mud products for weight addition and fluid loss control will be on location at all times.
- A visual and electronic mud monitoring system will be rigged up prior to spud to detect changes in the volume of mud system. The electronic system consists of a pit volume totalizer, stroke counter and flow sensor at flow line.

- If weight and/or viscosity are introduced to the mud system a daily mud check will be performed by mud contractor, along with tourly check by rig personnel.
- After setting intermediate casing, a third party gas unit detection system will be installed at the flow line.

9. Auxiliary Well Control and Monitoring Equipment:

- a. A Kelly cock will be in the drill string at all times.
- b. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor at all times.
- c. Hydrogen Sulfide detection equipment will be in operation after drilling out the 13 3/8" casing shoe until the 5 1/2" casing is cemented. Breathing equipment will be on location upon drilling the 13 3/8" shoe until total depth is reached.

See
COA

10. Testing, Logging and Coring Program:

- a. Drill stem tests will be based on geological sample shows.
- b. The open hole electrical logging program will be:
 - i. Total Depth to Intermediate Casing: Dual Laterolog-Micro Laterolog and Gamma Ray. Compensated Neutron – Z Density log with Gamma Ray and Caliper.
 - ii. Total Depth to Surface: Compensated Neutron with Gamma Ray
 - iii. No coring program is planned
 - iv. Additional testing will be initiated subsequent to setting the 5 1/2" production casing. Specific intervals will be targeted based on log evaluation, geological sample shows and drill stem tests.

11. Potential Hazards:

- a. No abnormal pressures or temperatures are expected. There is no known presence of H2S in this area. If H2S is encountered the operator will comply with the provisions of Onshore Oil and Gas Order No. 6. No lost circulation is expected to occur. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. Estimated BHP: 4200 psi. Estimated BHT: 135°. No H2S is anticipated to be encountered.

12. Anticipated starting date and Duration of Operations:

- a. Road and location construction will begin after the BLM has approved the APD. Anticipated spud date will be as possible after BLM approval and as soon as a rig will be available. Move in operations and drilling is expected to take 45 days.

*For future wells—
operator is to
summarize*

Job Information

Surface Casing

Well Name: Madera 17 Federal

Well #: 1H

17-1/2" Hole

Inner Diameter

Job Excess

0 - 1200 ft (MD)

17.500 in

100 %

Surface Casing

Outer Diameter

Inner Diameter

Linear Weight

Thread

Casing Grade

0 - 1200 ft (MD)

13.375 in

12.615 in

54.50 lbm/ft

STC

K-55

*Reviewing this
document shows
reviews of all
operator
documents.*

Calculations

Surface Casing

Spacer:

Total Spacer

= 112.29 ft³

= 20.00 bbl

Spacer:

Total Spacer

= 224.58 ft³

= 40.00 bbl

Cement : (401.47 ft fill)

401.47 ft * 0.6946 ft³/ft * 100 %

= 557.75 ft³

Total Lead Cement

= 557.75 ft³

= 99.34 bbl

Sacks of Cement

= 750 sks

Cement : (798.53 ft fill)

798.53 ft * 0.6946 ft³/ft * 100 %

= 1109.38 ft³

Tail Cement

= 1109.38 ft³

= 197.59 bbl

Shoe Joint Volume: (40.00 ft fill)

40.00 ft * 0.868 ft³/ft

= 34.72 ft³

= 6.18 bbl

Tail plus shoe joint

= 1144.10 ft³

= 203.77 bbl

Total Tail

= 850 sks

Total Pipe Capacity:

1200.00 ft * 0.868 ft³/ft

= 1041.56 ft³

= 185.51 bbl

Displacement Volume to Shoe Joint:

Capacity of Pipe - Shoe Joint

= 185.51 bbl - 6.18 bbl = 179.33 bbl

Job Recommendation**Surface Casing**

Install floating equipment, run casing to bottom, and circulate a minimum of 2-3 hole volumes prior to cementing as follows:

Fluid Instructions

Fluid 1: Water Spacer
Pump 20 bbl Fresh Water

Fluid Density: 0 lbm/gal
Fluid Volume: 20 bbl

Fluid 2: Spacer Sweep
Pump 40 bbl Gel Spacer
2.5 lbm/bbl WG-19 (Gelling Agent)

Fluid Density: 0 lbm/gal
Fluid Volume: 40 bbl

Fluid 3: ExtendaCem - CZ
EXTENDACEM (TM) SYSTEM
0.125 lbm/sk Poly-E-Flake (Lost Circulation Additive)

Fluid Weight 13.50 lbm/gal
Slurry Yield: 1.75 ft³/sk
Total Mixing Fluid: 9.18 Gal/sk
Top of Fluid: 0 ft
Calculated Fill: 401.47 ft
Volume: 233.10 bbl
Calculated Sacks: 750 sks
Proposed Sacks: 750 sks

Fluid 4: HalCem - C
HALCEM (TM) SYSTEM
2 % Calcium Chloride - Flake (Accelerator)
0.125 lbm/sk Poly-E-Flake (Lost Circulation Additive)

Fluid Weight 14.80 lbm/gal
Slurry Yield: 1.35 ft³/sk
Total Mixing Fluid: 6.37 Gal/sk
Top of Fluid: 401.47 ft
Calculated Fill: 798.53 ft
Volume: 203.77 bbl
Calculated Sacks: 850 sks
Proposed Sacks: 850 sks

Job Information**Intermediate Casing**

Well Name: Madera 17 Federal

Well #: 1H

Surface Casing	0 - 1200 ft (MD)
Outer Diameter	13.375 in
Inner Diameter	12.615 in
Linear Weight	54.50 lbm/ft
Thread	STC
Casing Grade	K-55
Job Excess	10 %

12-1/4" Hole	1200 - 5200 ft (MD)
Inner Diameter	12.250 in
Job Excess	100 %

Intermediate Casing	0 - 3170 ft (MD)
Outer Diameter	9.625 in
Inner Diameter	8.921 in
Linear Weight	36 lbm/ft
Thread	LTC
Casing Grade	J-55

Intermediate Casing	3170 - 4170 ft (MD)
Outer Diameter	9.625 in
Inner Diameter	8.835 in
Linear Weight	40 lbm/ft
Thread	LTC
Casing Grade	J-55

Intermediate Casing	4170 - 5200 ft (MD)
Outer Diameter	9.625 in
Inner Diameter	8.835 in
Linear Weight	40 lbm/ft
Thread	LTC
Casing Grade	N-80

Calculations**Intermediate Casing**

Spacer:

$$\begin{aligned} 281.46 \text{ ft} * 0.3627 \text{ ft}^3/\text{ft} * 10 \% &= 112.29 \text{ ft}^3 \\ \text{Total Spacer} &= 112.29 \text{ ft}^3 \\ &= 20.00 \text{ bbl} \end{aligned}$$

Cement : (3379.69 ft fill)

$$\begin{aligned} 232.85 \text{ ft} * 0.3627 \text{ ft}^3/\text{ft} * 10 \% &= 92.90 \text{ ft}^3 \\ 1970.00 \text{ ft} * 0.3132 \text{ ft}^3/\text{ft} * 100 \% &= 1233.96 \text{ ft}^3 \\ 1000.00 \text{ ft} * 0.3132 \text{ ft}^3/\text{ft} * 100 \% &= 626.38 \text{ ft}^3 \\ 176.84 \text{ ft} * 0.3132 \text{ ft}^3/\text{ft} * 100 \% &= 110.77 \text{ ft}^3 \\ \text{Total Lead Cement} &= 2064.00 \text{ ft}^3 \\ &= 367.61 \text{ bbl} \\ \text{Sacks of Cement} &= 1200 \text{ sks} \end{aligned}$$

Cement : (853.16 ft fill)

$$\begin{aligned} 853.16 \text{ ft} * 0.3132 \text{ ft}^3/\text{ft} * 100 \% &= 534.40 \text{ ft}^3 \\ \text{Tail Cement} &= 534.40 \text{ ft}^3 \\ &= 95.18 \text{ bbl} \end{aligned}$$

Shoe Joint Volume: (0.00 ft fill)

$$\begin{aligned} 0.00 \text{ ft} * 0.4257 \text{ ft}^3/\text{ft} &= 0.00 \text{ ft}^3 \\ &= 0.00 \text{ bbl} \\ \text{Tail plus shoe joint} &= 534.40 \text{ ft}^3 \\ &= 95.18 \text{ bbl} \\ \text{Total Tail} &= 400 \text{ sks} \end{aligned}$$

Total Pipe Capacity:

$$\begin{aligned} 3170.00 \text{ ft} * 0.4341 \text{ ft}^3/\text{ft} &= 1375.99 \text{ ft}^3 \\ 1000.00 \text{ ft} * 0.4257 \text{ ft}^3/\text{ft} &= 425.74 \text{ ft}^3 \\ 1030.00 \text{ ft} * 0.4257 \text{ ft}^3/\text{ft} &= 438.51 \text{ ft}^3 \\ &= 399.00 \text{ bbl} \end{aligned}$$

Displacement Volume to Shoe Joint:

$$\begin{aligned} \text{Capacity of Pipe - Shoe Joint} &= 399.00 \text{ bbl} - 0.00 \text{ bbl} \\ &= 399.00 \text{ bbl} \end{aligned}$$

Job Recommendation

Intermediate Casing

Install floating equipment, run casing to bottom, and circulate a minimum of 2-3 hole volumes prior to cementing as follows:

Fluid Instructions

Fluid 1: Spacer Sweep

Pump 20 bbl Gel Spacer Fresh Water

2.5 lbm/bbl WG-19 (Gelling Agent)

Fluid Density: 0 lbm/gal

Fluid Volume: 20 bbl

Fluid 2: HalCem - C + 4% Gel

HALCEM (TM) SYSTEM

4 % Bentonite (Light Weight Additive)

Fluid Weight 13.50 lbm/gal

Slurry Yield: 1.72 ft³/sk

Total Mixing Fluid: 9.11 Gal/sk

Top of Fluid: 967.15 ft

Calculated Fill: 3379.69 ft

Volume: 367.61 bbl

Calculated Sacks: 1200 sks

Proposed Sacks: 1200 sks

Thickening Time: 03:22

04:35 50 psi

10:30 500 psi

24:00 1040 psi

Estimated Slurry Properties:

Compressive Strengths @ 98 °F

Fluid 3: HalCem - C

HALCEM (TM) SYSTEM

1 % Calcium Chloride - Flake (Accelerator)

0.125 lbm/sk Poly-E-Flake (Lost Circulation Additive)

Fluid Weight 14.80 lbm/gal

Slurry Yield: 1.34 ft³/sk

Total Mixing Fluid: 6.34 Gal/sk

Top of Fluid: 4346.84 ft

Calculated Fill: 853.16 ft

Volume: 95.18 bbl

Calculated Sacks: 400 sks

Proposed Sacks: 400 sks

Job Information**Whipstock Plug**

Well Name: Madera 17 Federal	Well #: 1H
Intermediate Casing	0 - 5200 ft (MD)
Outer Diameter	9.625 in
Inner Diameter	8.921 in
Linear Weight	36 lbm/ft
Thread	LTC
Casing Grade	J-55
7-7/8" Pilot Hole	5200 - 9800 ft (MD)
Inner Diameter	7.875 in
Job Excess	35 %
Drill Pipe	0 - 9800 ft (MD)
Outer Diameter	4.500 in
Inner Diameter	3.958 in
Linear Weight	13.75 lbm/ft

Calculations**Whipstock Plug**

Cement : (783.79 ft fill)	
$783.79 \text{ ft} * 0.3382 \text{ ft}^3/\text{ft} * 35 \%$	= 357.90 ft ³
Plug Cement	= 357.90 ft ³
	= 63.74 bbl
Total Pipe Capacity: (9800.00 ft MD)	= 70.85 ft ³

Job Recommendation**Whipstock Plug**

Run drill pipe to desired depth and condition hole as necessary prior to cementing as follows:

Fluid Instructions

Cement Plug 9124 – 8096 ft (MD)

Fluid 1: PlugCem - H

PLUGCEM (TM) SYSTEM

0.4 % CFR-3 (Dispersant)

0.1 % HR-601 (Retarder)

Fluid Weight	15.60 lbm/gal
Slurry Yield:	1.19 ft ³ /sk
Total Mixing Fluid:	5.37 Gal/sk
Top of Fluid:	9016.21 ft
Calculated Fill:	783.79 ft
Volume:	63.74 bbl
Calculated Sacks:	300 sks
Proposed Sacks:	300 sks

Job Information

Stage Production Casing

Well Name: Madera 17 Federal

Well #: 1H

Intermediate Casing	0 - 5200 ft (MD)
Outer Diameter	9.625 in
Inner Diameter	8.921 in
Linear Weight	36 lbm/ft
Thread	LTC
Casing Grade	J-55
Job Excess	10 %

7-7/8" Hole	5200 - 9200 ft (MD)
Inner Diameter	7.875 in
Job Excess	45 %

7-7/8" Hole	9200 - 13600 ft (MD)
	9200 - 9200 ft (TVD)
Inner Diameter	7.875 in
Job Excess	35 %

Multiple Stage Cementer	6500 ft (MD)
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Production Casing	0 - 9200 ft (MD)
Outer Diameter	5.500 in
Inner Diameter	4.892 in
Linear Weight	17 lbm/ft
Thread	LTC
Casing Grade	HCP110

Production Casing	9200 - 13600 ft (MD)
	9200 - 9200 ft (TVD)
Outer Diameter	5.500 in
Inner Diameter	4.892 in
Linear Weight	17 lbm/ft
Thread	BTC
Casing Grade	HCP110

Calculations

Stage Production Casing

Stage 1

Spacer:

$$\begin{aligned} 230.05 \text{ ft} * 0.2691 \text{ ft}^3/\text{ft} * 10 \% &= 68.09 \text{ ft}^3 \\ 175.94 \text{ ft} * 0.1733 \text{ ft}^3/\text{ft} * 45 \% &= 44.20 \text{ ft}^3 \\ \text{Total Spacer} &= 112.29 \text{ ft}^3 \\ &= 20.00 \text{ bbl} \end{aligned}$$

Spacer:

$$\begin{aligned} 531.92 \text{ ft} * 0.1733 \text{ ft}^3/\text{ft} * 45 \% &= 133.63 \text{ ft}^3 \\ \text{Total Spacer} &= 133.63 \text{ ft}^3 \\ &= 23.80 \text{ bbl} \end{aligned}$$

Spacer:

$$\begin{aligned} 446.99 \text{ ft} * 0.1733 \text{ ft}^3/\text{ft} * 45 \% &= 112.29 \text{ ft}^3 \\ \text{Total Spacer} &= 112.29 \text{ ft}^3 \\ &= 20.00 \text{ bbl} \end{aligned}$$

Cement : (2682.36 ft fill)

$$\begin{aligned} 2682.36 \text{ ft} * 0.1733 \text{ ft}^3/\text{ft} * 45 \% &= 673.86 \text{ ft}^3 \\ \text{Total First Stage Lead Cement} &= 673.86 \text{ ft}^3 \\ &= 120.02 \text{ bbl} \\ \text{Sacks of Cement} &= 330 \text{ sks} \end{aligned}$$

Cement : (4562.79 ft fill)

$$\begin{aligned} 162.79 \text{ ft} * 0.1733 \text{ ft}^3/\text{ft} * 45 \% &= 40.90 \text{ ft}^3 \\ 4400.00 \text{ ft} * 0.1733 \text{ ft}^3/\text{ft} * 35 \% &= 1029.13 \text{ ft}^3 \\ \text{First Stage Tail Cement} &= 1070.03 \text{ ft}^3 \\ &= 190.58 \text{ bbl} \end{aligned}$$

Shoe Joint Volume: (40.00 ft fill)

$$\begin{aligned} 40.00 \text{ ft} * 0.1305 \text{ ft}^3/\text{ft} &= 5.22 \text{ ft}^3 \\ &= 0.93 \text{ bbl} \\ \text{Tail plus shoe joint} &= 1075.25 \text{ ft}^3 \\ &= 191.51 \text{ bbl} \\ \text{Total Tail} &= 850 \text{ sks} \end{aligned}$$

Total Pipe Capacity:

$$\begin{aligned} 9200.00 \text{ ft} * 0.1305 \text{ ft}^3/\text{ft} &= 1200.85 \text{ ft}^3 \\ 4400.00 \text{ ft} * 0.1305 \text{ ft}^3/\text{ft} &= 574.32 \text{ ft}^3 \\ &= 316.17 \text{ bbl} \end{aligned}$$

Displacement Volume to Shoe Joint:

$$\begin{aligned} \text{Capacity of Pipe - Shoe Joint} &= 316.17 \text{ bbl} - 0.93 \text{ bbl} \\ &= 315.24 \text{ bbl} \end{aligned}$$

Stage 2

Spacer:

$$\begin{aligned} 379.39 \text{ ft} * 0.2691 \text{ ft}^3/\text{ft} * 10 \% &= 112.29 \text{ ft}^3 \\ \text{Total Spacer} &= 112.29 \text{ ft}^3 \\ &= 20.00 \text{ bbl} \end{aligned}$$

HALLIBURTON

Cement : (1330.58 ft fill)

$$\begin{aligned} 562.78 \text{ ft} * 0.2691 \text{ ft}^3/\text{ft} * 10 \% &= 166.58 \text{ ft}^3 \\ 767.80 \text{ ft} * 0.1733 \text{ ft}^3/\text{ft} * 45 \% &= 192.88 \text{ ft}^3 \\ \text{Total Second Stage Lead Cement} &= 359.46 \text{ ft}^3 \\ &= 64.02 \text{ bbl} \\ \text{Sacks of Cement} &= 180 \text{ sks} \end{aligned}$$

Cement : (532.20 ft fill)

$$\begin{aligned} 532.20 \text{ ft} * 0.1733 \text{ ft}^3/\text{ft} * 45 \% &= 133.70 \text{ ft}^3 \\ \text{Second Stage Tail Cement} &= 133.70 \text{ ft}^3 \\ &= 23.81 \text{ bbl} \end{aligned}$$

Shoe Joint Volume: (0.00 ft fill)

$$\begin{aligned} 0.00 \text{ ft} * 0.1305 \text{ ft}^3/\text{ft} &= 0.00 \text{ ft}^3 \\ &= 0.00 \text{ bbl} \\ \text{Tail plus shoe joint} &= 133.70 \text{ ft}^3 \\ &= 23.81 \text{ bbl} \\ \text{Total Tail} &= 100 \text{ sks} \end{aligned}$$

Total Pipe Capacity:

$$\begin{aligned} 6500.00 \text{ ft} * 0.1305 \text{ ft}^3/\text{ft} &= 848.43 \text{ ft}^3 \\ &= 151.11 \text{ bbl} \end{aligned}$$

Displacement Volume to Shoe Joint:

$$\begin{aligned} \text{Capacity of Pipe - Shoe Joint} &= 151.11 \text{ bbl} - 0.00 \text{ bbl} \\ &= 151.11 \text{ bbl} \end{aligned}$$

Job Recommendation

Stage Production Casing

Install floating equipment, run casing to bottom, and circulate a minimum of 2-3 hole volumes prior to cementing as follows:

Fluid Instructions

Stage 1

Fluid 1: Water Spacer

Pump 20 bbl Fresh Water

Fluid Density: 0 lbm/gal

Fluid Volume: 20 bbl

Fluid 2: Reactive Spacer

Pump 1000 gallons Super Flush 101

Fluid Density: 10 lbm/gal

Fluid Volume: 23.80 bbl

Fluid 3: Spacer Sweep

Pump 20 bbl Gel Spacer Fresh Water

2.5 lbm/bbl WG-19 (Gelling Agent)

Fluid Density: 0 lbm/gal

Fluid Volume: 20 bbl

Fluid 4: EconoCem - HLH

ECONOCHEM (TM) SYSTEM

0.5 % HR-601 (Retarder)

0.3 % Halad(R)-322 (Low Fluid Loss Control)

3 % Salt (Salt)

3 lbm/sk Kol-Seal (Lost Circulation Additive)

0.125 lbm/sk Poly-E-Flake (Lost Circulation Additive)

Fluid Weight 12.50 lbm/gal

Slurry Yield: 2.04 ft³/sk

Total Mixing Fluid: 11.06 Gal/sk

Top of Fluid: 6354.85 ft

Calculated Fill: 2682.36 ft

Volume: 120.02 bbl

Calculated Sacks: 330 sks

Proposed Sacks: 330 sks

Fluid 5: VersaCem - H

VERSACHEM (TM) SYSTEM

0.5 % LAP-1 (Low Fluid Loss Control)

0.3 % CFR-3 (Dispersant)

0.2 % HR-601 (Retarder)

5 % Salt (Salt)

0.25 lbm/sk D-AIR 5000 (Defoamer)

Fluid Weight 14.40 lbm/gal

Slurry Yield: 1.27 ft³/sk

Total Mixing Fluid: 5.65 Gal/sk

Top of Fluid: 9037.21 ft

Calculated Fill: 4562.79 ft

Volume: 191.51 bbl

Calculated Sacks: 850 sks

Proposed Sacks: 850 sks

HALLIBURTON

Multiple Stage Cementer

6500 ft (MD)

Stage 2

Fluid 1: Water Spacer

Pump 20 bbl Fresh Water

Fluid Density: 0 lbm/gal

Fluid Volume: 20 bbl

Fluid 2: EconoCem - HLC

ECONOCEM (TM) SYSTEM

0.1 % HR-601 (Retarder)

3 % Salt (Salt)

Fluid Weight 12.50 lbm/gal

Slurry Yield: 2.00 ft³/sk

Total Mixing Fluid: 11.01 Gal/sk

Top of Fluid: 4637.22 ft

Calculated Fill: 1330.58 ft

Volume: 64.02 bbl

Calculated Sacks: 180 sks

Proposed Sacks: 180 sks

Fluid 3: HalCem - C

HALCEM (TM) SYSTEM

Fluid Weight 14.80 lbm/gal

Slurry Yield: 1.34 ft³/sk

Total Mixing Fluid: 6.49 Gal/sk

Top of Fluid: 5967.80 ft

Calculated Fill: 532.20 ft

Volume: 23.81 bbl

Calculated Sacks: 100 sks

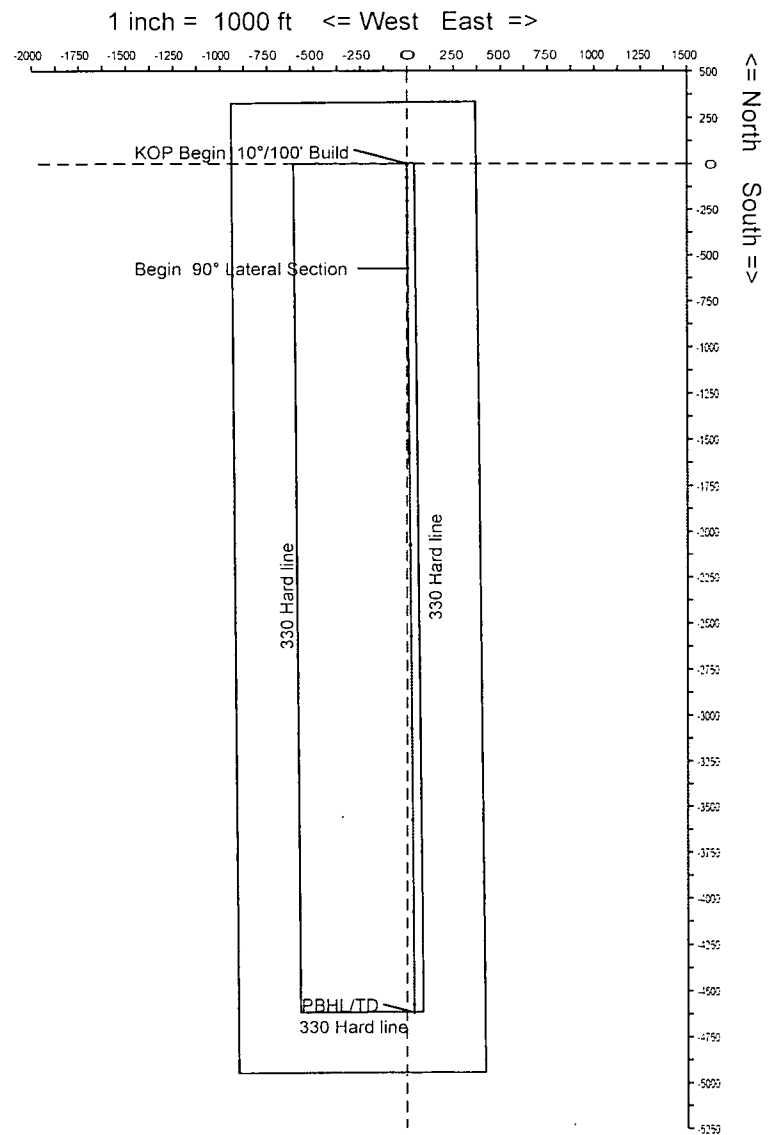
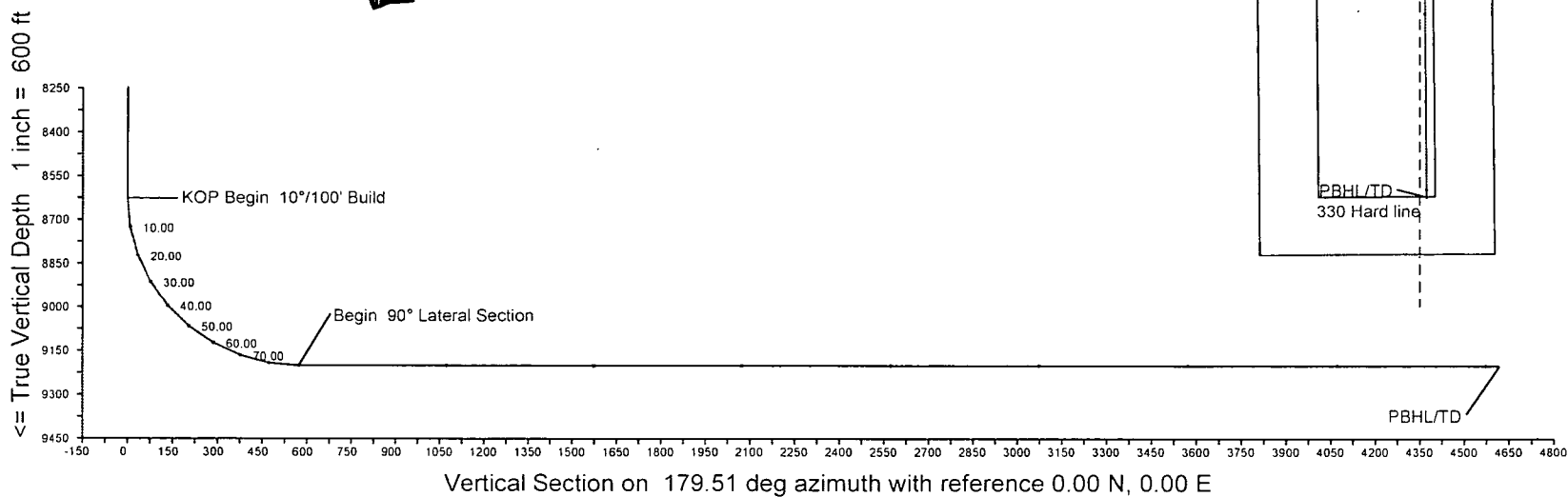
Proposed Sacks: 100 sks

ReGeneration Energy Group LLC

Madera 17 Fed 1H

Lea County, New Mexico

WELL PROFILE DATA rev0								
MD	Inc.	Azi.	TVD	N/-S	E/-W	DLS	Comment	09-18-2012
8627	0.00	179.51	8627	0	0	0.00	KOP Begin 10°/100' Build	
9527	90.00	179.51	9200	-573	5	10.00	Begin 90° Lateral Section	
13573	90.00	179.51	9200	-4618	39	0.00	PBHL/TD	



Professional Directional, Ltd

Company: ReGeneration Energy Group LLC
Well: Madera 17 Fed1H
Location: Lea County, New Mexico Sect17-24S-34E

Date: 18-Sep-2012
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Job# : 6799

MD (feet)	Inclination (degrees)	Azimuth (degrees)	TVD RKB (feet)	N/-S (feet)	E/-W (feet)	DLS (deg/100')	VS @ 179.51° Az (feet)	Grid Y	Grid X	Comments
Surface Location								446173.20	762588.30	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
1100.00	0.00	0.00	1100.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
1300.00	0.00	0.00	1300.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
1400.00	0.00	0.00	1400.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
1600.00	0.00	0.00	1600.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
1700.00	0.00	0.00	1700.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
1800.00	0.00	0.00	1800.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
1900.00	0.00	0.00	1900.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
2100.00	0.00	0.00	2100.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
2200.00	0.00	0.00	2200.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
2300.00	0.00	0.00	2300.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
2400.00	0.00	0.00	2400.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
2500.00	0.00	0.00	2500.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
2600.00	0.00	0.00	2600.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
2700.00	0.00	0.00	2700.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
2800.00	0.00	0.00	2800.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
2900.00	0.00	0.00	2900.00	0.00	0.00	0.00	0.00	446173.20	762588.30	

Professional Directional, Ltd

Company: ReGeneration Energy Group LLC
Well: Madera 17 Fed1H
Location: Lea County, New Mexico Sect17-24S-34E

Date: 18-Sep-2012
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MD (feet)	Inclination (degrees)	Azimuth (degrees)	TVD RKB (feet)	N/-S (feet)	E/-W (feet)	DLS (deg/100')	VS @ 179.51° Az (feet)	Grid Y	Grid X	Comments
3000.00	0.00	0.00	3000.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
3100.00	0.00	0.00	3100.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
3200.00	0.00	0.00	3200.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
3300.00	0.00	0.00	3300.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
3400.00	0.00	0.00	3400.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
3500.00	0.00	0.00	3500.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
3600.00	0.00	0.00	3600.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
3700.00	0.00	0.00	3700.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
3800.00	0.00	0.00	3800.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
3900.00	0.00	0.00	3900.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
4000.00	0.00	0.00	4000.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
4100.00	0.00	0.00	4100.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
4200.00	0.00	0.00	4200.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
4300.00	0.00	0.00	4300.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
4400.00	0.00	0.00	4400.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
4500.00	0.00	0.00	4500.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
4600.00	0.00	0.00	4600.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
4700.00	0.00	0.00	4700.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
4800.00	0.00	0.00	4800.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
4900.00	0.00	0.00	4900.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
5000.00	0.00	0.00	5000.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
5100.00	0.00	0.00	5100.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
5200.00	0.00	0.00	5200.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
5300.00	0.00	0.00	5300.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
5400.00	0.00	0.00	5400.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
5500.00	0.00	0.00	5500.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
5600.00	0.00	0.00	5600.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
5700.00	0.00	0.00	5700.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
5800.00	0.00	0.00	5800.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
5900.00	0.00	0.00	5900.00	0.00	0.00	0.00	0.00	446173.20	762588.30	

Professional Directional, Ltd

Company: ReGeneration Energy Group LLC
Well: Madera 17 Fed1H
Location: Lea County, New Mexico Sect17-24S-34E

Date: 18-Sep-2012

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Job# : 6799

NAD27 NM East gr elev=3561 RKB=3578

MD (feet)	Inclination (degrees)	Azimuth (degrees)	TVD RKB (feet)	N-S (feet)	E/-W (feet)	DLS (deg/100')	VS @ 179.51° Az (feet)	Grid Y	Grid X	Comments
6000.00	0.00	0.00	6000.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
6100.00	0.00	0.00	6100.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
6200.00	0.00	0.00	6200.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
6300.00	0.00	0.00	6300.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
6400.00	0.00	0.00	6400.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
6500.00	0.00	0.00	6500.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
6600.00	0.00	0.00	6600.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
6700.00	0.00	0.00	6700.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
6800.00	0.00	0.00	6800.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
6900.00	0.00	0.00	6900.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
7000.00	0.00	0.00	7000.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
7100.00	0.00	0.00	7100.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
7200.00	0.00	0.00	7200.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
7300.00	0.00	0.00	7300.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
7400.00	0.00	0.00	7400.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
7500.00	0.00	0.00	7500.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
7600.00	0.00	0.00	7600.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
7700.00	0.00	0.00	7700.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
7800.00	0.00	0.00	7800.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
7900.00	0.00	0.00	7900.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
8000.00	0.00	0.00	8000.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
8100.00	0.00	0.00	8100.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
8200.00	0.00	0.00	8200.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
8300.00	0.00	0.00	8300.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
8400.00	0.00	0.00	8400.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
8500.00	0.00	0.00	8500.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
8600.00	0.00	0.00	8600.00	0.00	0.00	0.00	0.00	446173.20	762588.30	
8627.04	0.00	179.51	8627.04	0.00	0.00	0.00	0.00	446173.20	762588.30	KOP Begin 10°/100' Build
8727.04	10.00	179.51	8726.53	-8.70	0.07	10.00	8.70	446164.50	762588.37	
8827.04	20.00	179.51	8823.00	-34.55	0.29	10.00	34.55	446138.65	762588.59	

Professional Directional, Ltd

Company: ReGeneration Energy Group LLC
Well: Madera 17 Fed1H
Location: Lea County, New Mexico Sect17-24S-34E

Date: 18-Sep-2012
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NAD27 NM East gr elev=3561 RKB=3578

MD (feet)	Inclination (degrees)	Azimuth (degrees)	TVD RKB (feet)	N/-S (feet)	E/-W (feet)	DLS (deg/100')	VS @ 179.51° Az (feet)	Grid Y	Grid X	Comments
8927.04	30.00	179.51	8913.52	-76.76	0.65	10.00	76.76	446096.44	762588.95	
9027.04	40.00	179.51	8995.33	-134.04	1.14	10.00	134.05	446039.16	762589.44	
9127.04	50.00	179.51	9065.95	-204.66	1.74	10.00	204.67	445968.54	762590.04	
9227.04	60.00	179.51	9123.24	-286.47	2.44	10.00	286.48	445886.73	762590.74	
9327.04	70.00	179.51	9165.44	-376.98	3.21	10.00	376.99	445796.22	762591.51	
9427.04	80.00	179.51	9191.29	-473.45	4.03	10.00	473.46	445699.75	762592.33	
9527.04	90.00	179.51	9200.00	-572.94	4.88	10.00	572.96	445600.26	762593.18	Begin 90° Lateral Section
9627.04	90.00	179.51	9200.00	-672.93	5.73	0.00	672.96	445500.27	762594.03	
9727.04	90.00	179.51	9200.00	-772.93	6.58	0.00	772.96	445400.27	762594.88	
9827.04	90.00	179.51	9200.00	-872.93	7.43	0.00	872.96	445300.27	762595.73	
9927.04	90.00	179.51	9200.00	-972.92	8.28	0.00	972.96	445200.28	762596.58	
10027.04	90.00	179.51	9200.00	-1072.92	9.13	0.00	1072.96	445100.28	762597.43	
10127.04	90.00	179.51	9200.00	-1172.92	9.98	0.00	1172.96	445000.29	762598.28	
10227.04	90.00	179.51	9200.00	-1272.91	10.83	0.00	1272.96	444900.29	762599.13	
10327.04	90.00	179.51	9200.00	-1372.91	11.68	0.00	1372.96	444800.29	762599.98	
10427.04	90.00	179.51	9200.00	-1472.90	12.53	0.00	1472.96	444700.30	762600.83	
10527.04	90.00	179.51	9200.00	-1572.90	13.38	0.00	1572.96	444600.30	762601.68	
10627.04	90.00	179.51	9200.00	-1672.90	14.24	0.00	1672.96	444500.30	762602.54	
10727.04	90.00	179.51	9200.00	-1772.89	15.09	0.00	1772.96	444400.31	762603.39	
10827.04	90.00	179.51	9200.00	-1872.89	15.94	0.00	1872.96	444300.31	762604.24	
10927.04	90.00	179.51	9200.00	-1972.89	16.79	0.00	1972.96	444200.31	762605.09	
11027.04	90.00	179.51	9200.00	-2072.88	17.64	0.00	2072.96	444100.32	762605.94	
11127.04	90.00	179.51	9200.00	-2172.88	18.49	0.00	2172.96	444000.32	762606.79	
11227.04	90.00	179.51	9200.00	-2272.88	19.34	0.00	2272.96	443900.33	762607.64	
11327.04	90.00	179.51	9200.00	-2372.87	20.19	0.00	2372.96	443800.33	762608.49	
11427.04	90.00	179.51	9200.00	-2472.87	21.04	0.00	2472.96	443700.33	762609.34	
11527.04	90.00	179.51	9200.00	-2572.87	21.89	0.00	2572.96	443600.34	762610.19	
11627.04	90.00	179.51	9200.00	-2672.86	22.74	0.00	2672.96	443500.34	762611.04	
11727.04	90.00	179.51	9200.00	-2772.86	23.60	0.00	2772.96	443400.34	762611.90	
11827.04	90.00	179.51	9200.00	-2872.85	24.45	0.00	2872.96	443300.35	762612.75	

Professional Directional, Ltd

Company: ReGeneration Energy Group LLC
Well: Madera 17 Fed1H
Location: Lea County, New Mexico Sect17-24S-34E

Date: 18-Sep-2012

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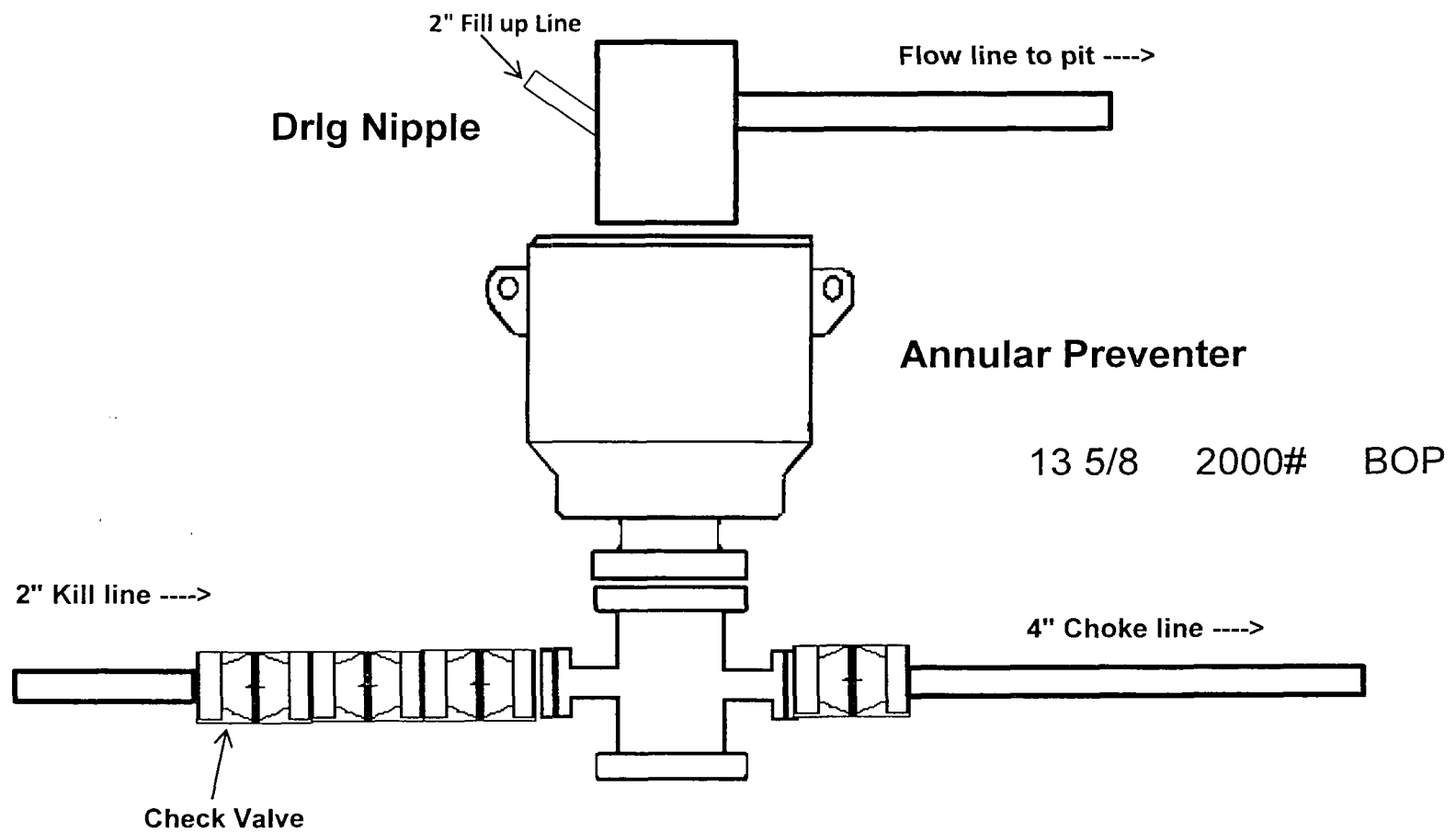
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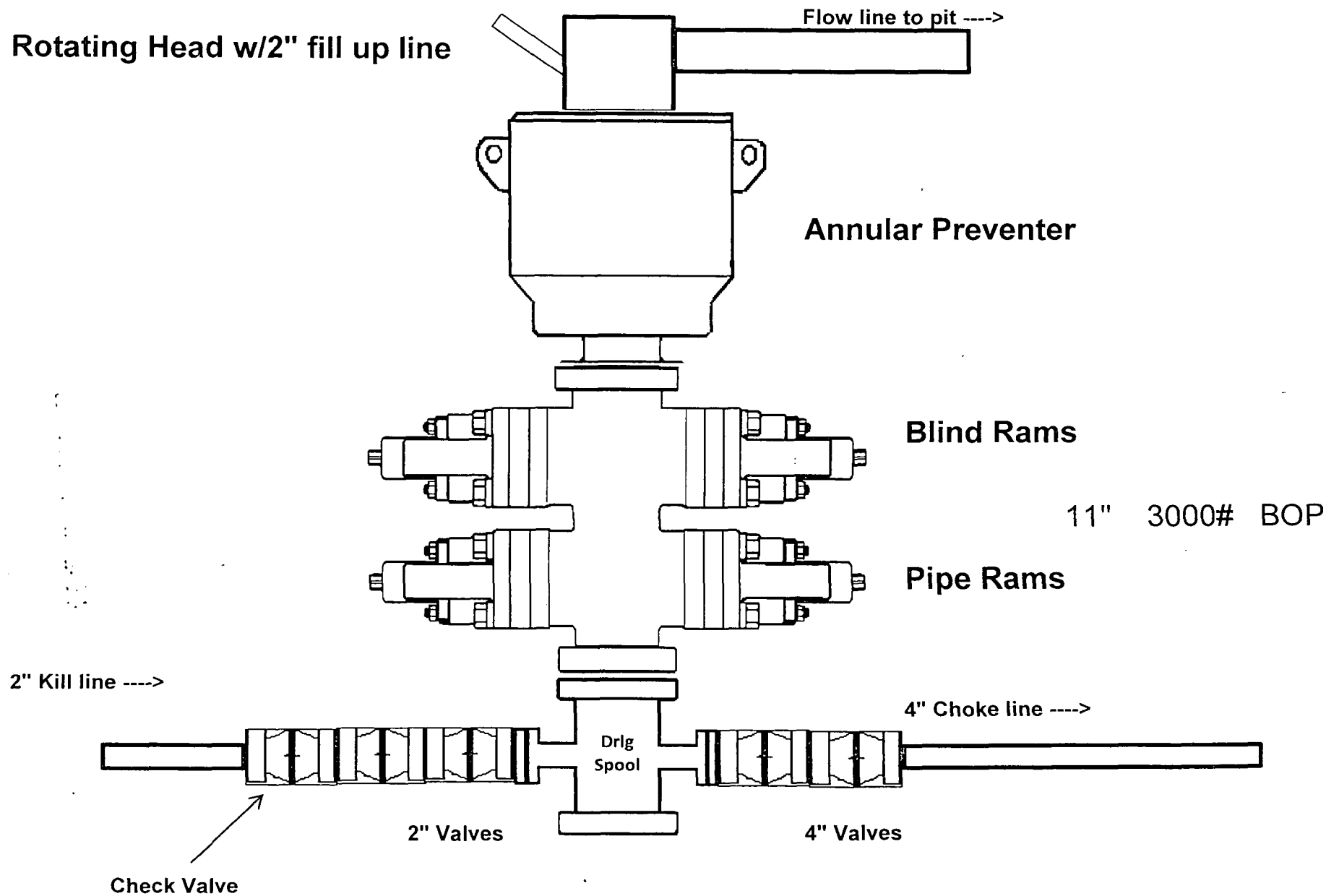
NAD27 NM East gr elev=3561 RKB=3578

MD (feet)	Inclination (degrees)	Azimuth (degrees)	TVD RKB (feet)	N-S (feet)	E-W (feet)	DLS (deg/100')	VS @ 179.51° Az (feet)	Grid Y	Grid X	Comments
11927.04	90.00	179.51	9200.00	-2972.85	25.30	0.00	2972.96	443200.35	762613.60	
12027.04	90.00	179.51	9200.00	-3072.85	26.15	0.00	3072.96	443100.35	762614.45	
12127.04	90.00	179.51	9200.00	-3172.84	27.00	0.00	3172.96	443000.36	762615.30	
12227.04	90.00	179.51	9200.00	-3272.84	27.85	0.00	3272.96	442900.36	762616.15	
12327.04	90.00	179.51	9200.00	-3372.84	28.70	0.00	3372.96	442800.37	762617.00	
12427.04	90.00	179.51	9200.00	-3472.83	29.55	0.00	3472.96	442700.37	762617.85	
12527.04	90.00	179.51	9200.00	-3572.83	30.40	0.00	3572.96	442600.37	762618.70	
12627.04	90.00	179.51	9200.00	-3672.82	31.25	0.00	3672.96	442500.38	762619.55	
12727.04	90.00	179.51	9200.00	-3772.82	32.10	0.00	3772.96	442400.38	762620.40	
12827.04	90.00	179.51	9200.00	-3872.82	32.96	0.00	3872.96	442300.38	762621.26	
12927.04	90.00	179.51	9200.00	-3972.81	33.81	0.00	3972.96	442200.39	762622.11	
13027.04	90.00	179.51	9200.00	-4072.81	34.66	0.00	4072.96	442100.39	762622.96	
13127.04	90.00	179.51	9200.00	-4172.81	35.51	0.00	4172.96	442000.39	762623.81	
13227.04	90.00	179.51	9200.00	-4272.80	36.36	0.00	4272.96	441900.40	762624.66	
13327.04	90.00	179.51	9200.00	-4372.80	37.21	0.00	4372.96	441800.40	762625.51	
13427.04	90.00	179.51	9200.00	-4472.80	38.06	0.00	4472.96	441700.41	762626.36	
13527.04	90.00	179.51	9200.00	-4572.79	38.91	0.00	4572.96	441600.41	762627.21	
13572.65	90.00	179.51	9200.00	-4618.40	39.30	0.00	4618.57	441554.80	762627.60	PBHL/TD

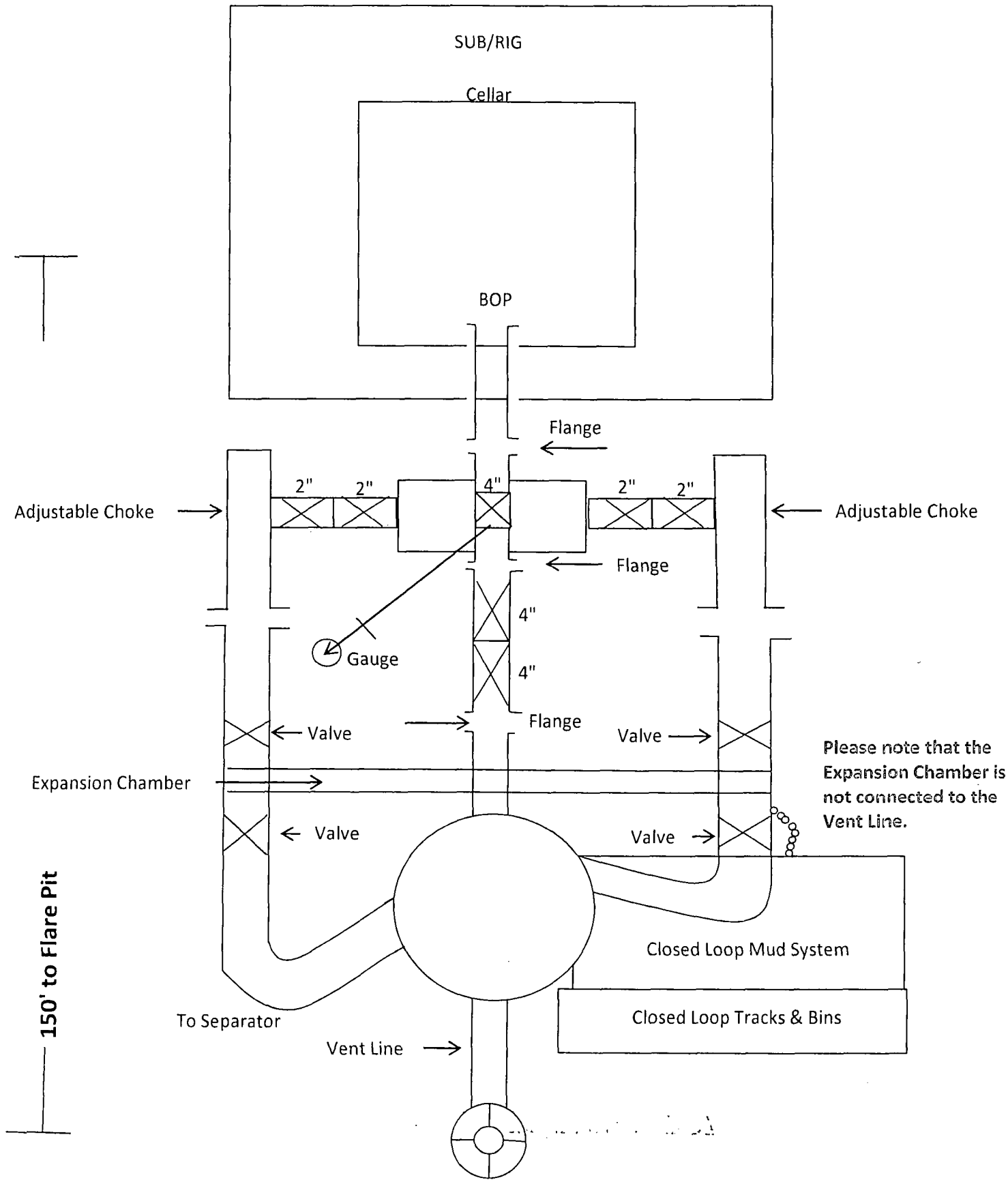
2,000 psi BOP Schematic



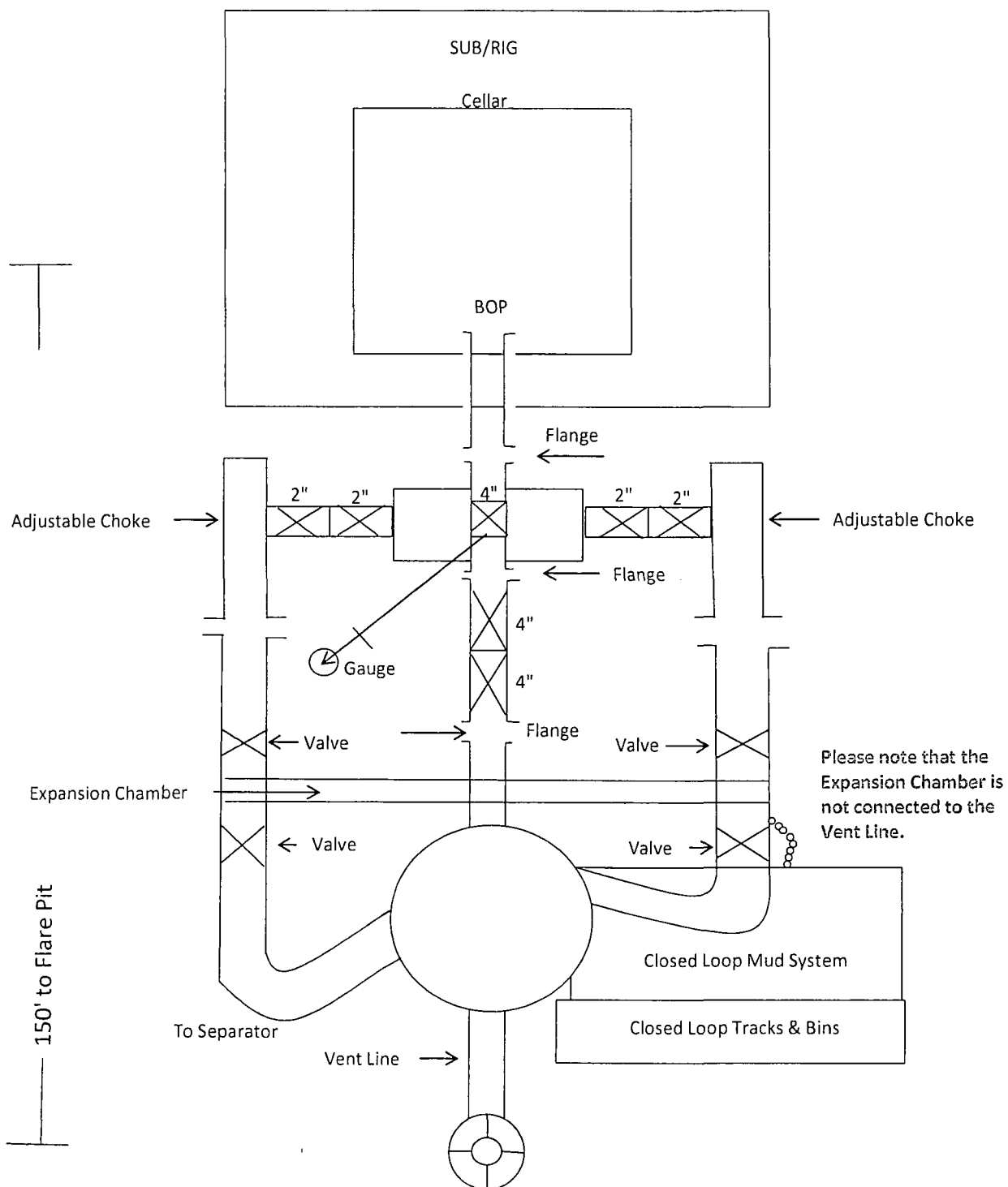
3,000 psi BOP Schematic



2M Choke Manifold Equipment



3M Choke Manifold Equipment



3M Choke Manifold Equipment

