OCD Hobbs

14-933

Form 3160-3
(August 2007)

SECRETARY'S POTASH

HOBBS OCD

DEC 27 2016

RECEIVED

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010

UNORTHODOX LOCATION

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
SHL: LC-065607 BHL: LC-064194

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

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

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

8. Lease Name and Well No. (317197)
North Lea 5 Fed Com #3H

2. Name of Operator Read and Stevens, Inc. (18917)

9. API Well No.
30-025-43509

3a. Address 400 N. Pennsylvania Ave #1000
Roswell, NM 88201

3b. Phone No. *(include area code)*
575-622-3770

10. Field and Pool, or Exploratory (96637)
Teas; Bone Spring, East

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface 280' FNL 2340' FEL (B2)
At proposed prod. zone 330' FSL 2290' FWL (N)

11. Sec., T. R. M. or Blk. and Survey or Area
Sec. 5 T-20S R-34E

14. Distance in miles and direction from nearest town or post office*
26 miles WSW of Hobbs

12. County or Parish
Lea

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)
280'

16. No. of acres in lease
2722.39

17. Spacing Unit dedicated to this well
160.04

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.
See raduis maps attached.

19. Proposed Depth
10,820.70'TVD / 15,106'MD

20. BLM/BIA Bond No. on file
NM-2310

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
GL - 3636.9' RKB - 3658.9'

22. Approximate date work will start*
04/15/2017

23. Estimated duration
60 days until completion

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 RL

Name *(Printed/Typed)*
Rory McMinn

Date
10/26/2016

Title
Project Manager

Approved by *(Signature)* /s/Cody Layton

Name *(Printed/Typed)*

Date
DEC 20 2016

Title FIELD MANAGER

Office 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

KZ 12/27/16

Witness Surface & Intermediate Casing

SEE ATTACHED FOR CONDITIONS OF APPROVAL

Approval Subject to General Requirements & Special Stipulations Attached

KZ

Read and Stevens, Inc.
Drilling Prognosis
North Lea 5 Fed Com #3H

Revision date: October 27, 2016

Surface Location:	280' FNL, 2340' FEL Section 5, T-20-S, R-34-E Lea County, New Mexico
Bottom Hole:	330' FSL, 2290' FWL Section 5, T-20-S, R-34-E Lea County, New Mexico
Planned Total Depth:	10,820.70' TVD / 15,106' MD
RKB: 3658.9	GL: 3636.9
Preparer:	Rory McMinn

15 November 2016

Contents

Article I. *General Provisions:*

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

Article II. *Permit Expiration*

If the permit terminates prior to drilling and drilling cannot be commenced within 180 days after expiration, an operator is required to submit Form 3106-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 180 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 180 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 180 day extension.)

Article III. *Estimated Formation Tops (geoprognosis with TVD's adjusted to actual KB):*

Formation	TVD	Subsea	Thickness	Type
Rustler	1525'	-2137'		
Top of Salt	1712'	-1950'		
Base of Salt	3155'	-507'		
Tansil	3155'	-507'		
Yates	3635'	-27'		
Seven Rivers	3807'	145'		
Goat Seep Reef	4235'	573'		
Delaware	5743'	2081'	2537'	Hydrocarbon
Bone Spring Lime	8280'	4618'		
Avalon	8773'	5111'	622'	Hydrocarbon
1st Bone Spring	9395'	5733'	552'	Hydrocarbon
2nd Bone Spring	9947'	6285'	663'	Hydrocarbon
3rd Bone Spring	10610'	6948'	610'	Hydrocarbon

POD, Water Column Reports attached.

Article IV. *Pressure Control:*

A 13-5/8" 5M BOP and 5M choke manifold will be used. See schematics below.
BOP test shall be conducted:

A. when initially installed
B. whenever any seal subject to test pressure is broken
C. following related repairs
D. at 30 day intervals

BOP, choke, kill lines, Kelly cock, inside BOP, etc. will be hydro tested to 250psi(low) and 5,000psi(high). The annular will be tested to 250psi (low) and 2500psi (high).

BOP will be function tested on each trip.

All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 59 Sec. 17

Minimum Working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 9-5/8 inch intermediate casing show shall be 5000 (5M) psi. 5M system requires an HCR valve, remote kill line ad annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips the minimum wait time before cut-off is eight hours after bumping the pug. BOP/BOPE testing can begin after cut-off or once cement reaches 500PSI compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater prior to initiating the test (see casing segment as lead cement may be critical item).

a. The results of the test shall be reported to the appropriate BLM office.

b. All Tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

c. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.

See COA

A Co-Flex hose may be used from the BOP to the Choke Manifold. If this is used the manufacture specifications and certifications will be furnished prior to use. A variance is requested for the use of the Co-Flex hose. Below is an example of a typical test sheet.

CONTITECH

Fluid Technology

Quality Document

QUALITY CONTROL INSPECTION AND TEST CERTIFICATE			CERT. N°: 205
PURCHASER: ContiTech Beattie Co.			P.O. N°: 004790
CONTITECH ORDER N°: 493177	HOSE TYPE: 3" ID		Choke and Kill Hose
HOSE SERIAL N°: 60295	NOMINAL / ACTUAL LENGTH:		10,67 m / 10,67 m
W.P. 68,9 MPa 10000 psi	T.P. 103,4 MPa 15000 psi	Duration: 60	min.

Pressure test with water at ambient temperature

See attachment. (1 page)

↑ 10 mm = 10 Min.

→ 10 mm = 20 MPa

COUPLINGS Type	Serial N°	Quality	Heat N°
3" coupling with	226 229	AISI 4130	H0434
4 1/16" Swivel Flange end		AISI 4130	31742
Hub		AISI 4130	G9496

ASSET NO.: 66-0628

API Spec 16 C
Temperature rate:"B"

All metal parts are flawless

WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER INSPECTED AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.

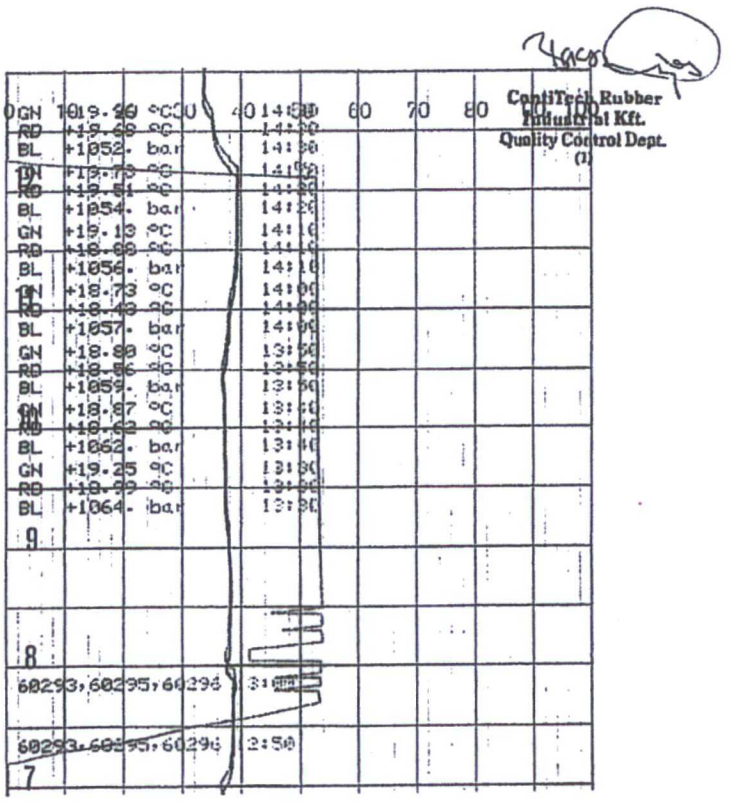
STATEMENT OF CONFORMITY: We hereby certify that the above items/equipment supplied by us are in conformity with the terms, conditions and specifications of the above Purchaser Order and that these items/equipment were fabricated inspected and tested in accordance with the referenced standards, codes and specifications and meet the relevant acceptance criteria and design requirements.

COUNTRY OF ORIGIN HUNGARY/EU

Date:	Inspector	Quality Control
21. February 2011.		ContiTech Rubber Industrial Kft. Quality Control Dept. (1)

ATTACHMENT OF QUALITY CONTROL INSPECTION AND TEST CERTIFICATE No. 203, 203, 200

Page: 1 / 1



ContiTech Rubber Industrial Kft. Quality Control Dept. (1)

A variance is requested to use 1502(15,000psi working pressure) hammer unions downstream of the Choke Manifold used to connect the mud/gas separator and panic line.

See COA

Article V. *Casing Program (minimum):*

All casing is new API casing.

Hole Size	Casing	Weight lb/ft	Grade	Conn	MD/RKB	
	20"				120'	
16"	13.375"	54.5	J-55	STC	~~1550'~~ 1600'	Set 25' into Rustler
12.25"	9.625"	40	L-80	LTC	~~5723'~~ 5450'	Set 20' above Delaware
8.5"	5.5"	17	P-110	BTC	15482'	

Size	Collapse psi	SF	Burst psi	SF	Tension Klbs	SF	Max Setting Depth TVD
13.375	1130	3.08	2730	3.54	514	5.66	2568
9.625	3090	1.28	5750	2.03	727	3.33	7022
5.5	7480	1.55	10640	1.29	568	3.06	17000

13.375" casing will be set 25' into the Rustler
9.625" casing will be set 20' above the Delaware

Article VI. *Cement Program:*

Section 6.01 13.375" Surface Casing

Lead: 0 – 1250'

Slurry WT	Yield	Sx	Gallons/ Sack	Excess	Additives
13.5ppg	1.93cuft/sk	557	9.71	100%	Class C + 4% bwoc Bentonite II + 2% bwoc Calcium Chloride + 0.25 lbs/sack Cello Flake + 0.005% bwoc Static Free + 0.005 gps FP- 6L

Tail: 1250' – 1550'

Slurry WT	Yield	Sx	Gallons/ Sack	Excess	Additives
14.8ppg	1.34cuft/sk	166	6.35	100%	Class C + 1.5% bwoc Calcium Chloride + 0.005 lbs/sack Static Free + 0.005 gps FP-6L

Circulate cement to surface. If cement does not circulate a 1" grout string will be used to perform a top job.

Cement volumes will be adjusted proportionately once actual casing depth is determined and washout from a fluid caliper.

Section 6.02 9.625" Intermediate Casing

A DV tool and ECP will be used to cement this 9⅝" casing if losses are encountered during drilling. DV tool and ECP placement will be determined if and when the loss circulation is encountered. DV tool and ECP placement will be a minimum of 100' above the lost circulation zone and a minimum of 100' from the previous casing shoe.

(i) Cement detail if DV tool is used: Assuming losses at 3250'. DV tool and ECP will be placed at 3100'. Actual DV tool placement will be determined when and if losses are encountered. DV tool will be placed 150' above loss zone and a minimum of 100' below the last casing shoe.

Cement Stage 1
Lead: 3100' – 5223'

Slurry WT	Yield	Sx	Gallons/ Sack	Excess	Additives
12.6ppg	2.13cuft/sk	562	8.81	80%	Class C (35:65) + Poz (Fly Ash) + 4% bwoc Bentonite II + 5% bwoc MPA-5 + 0.25% bwoc FL-52 + 5 lbs/sack LCM-1 + 0.125 lbs/sack Cello Flake + 0.005 lbs/sack Static Free + 0.005 gps FP-6L + 1.2% bwoc Sodium Metasilicate + 5% bwow Sodium Chloride

Tail :5223' – 5723'

Slurry WT	Yield	Sx	Gallons/ Sack	Excess	Additives
14.8ppg	1.33cuft/sk	220	6.35	80%	Class C

Cement Stage 2
Lead: 0-3100'

Slurry WT	Yield	Sx	Gallons/ Sack	Excess	Additives
12.6ppg	2.13cuft/sk	690	8.81	80%	Class C (35:65) + Poz (Fly Ash) + 4% bwoc Bentonite II + 5% bwoc MPA-5 + 0.25% bwoc FL-52 + 5 lbs/sack LCM-1 + 0.125 lbs/sack Cello Flake + 0.005 lbs/sack Static Free + 0.005 gps FP-6L + 1.2% bwoc Sodium Metasilicate + 5% bwow Sodium Chloride

Once DV tool placement is determined cement volumes will be adjusted proportionately.

(ii) Cement detail if no DV tool is used:

Lead: 0 – 5223'

Slurry WT	Yield	Sx	Gallons/ Sack	Excess	Additives
12.5ppg	2.13cuft/sk	1236	8.81	80%	Class C (35:65) + Poz (Fly Ash) + 4% bwoc Bentonite II + 5% bwoc MPA-5 + 0.25% bwoc FL-52 + 5 lbs/sack LCM-1 + 0.125 lbs/sack Cello Flake + 0.005 lbs/sack Static Free + 0.005 gps FP-6L + 1.2% bwoc Sodium Metasilicate + 5% bwow Sodium Chloride

Tail: 5223' – 5723'

Slurry WT	Yield	Sx	Gallons/ Sack	Excess	Additives
14.8ppg	1.33cuft/sk	222	6.35	80%	Class C

Circulate cement to surface. If cement does not circulate to surface a top squeeze job or casing perforation will be used. As well, a temperature survey or CBL will be performed.

Cement volumes will be adjusted proportionately once actual casing depth is determined and washout from a fluid caliper.

Section 6.03 5.5" Production Casing

Lead: 0 – 11000'

Slurry WT	Yield	Sx	Gallons/ Sack	Excess	Additives
11.9ppg	2.38cuft/sk	2600	13.22	80%	Class H (50:50) + Poz (Fly Ash) + 10% bwoc Bentonite II + 5% bwow Sodium Chloride + 5 lbs/sack LCM-1 + 0.005 lbs/sack Static Free + 0.005 gps FP-6L

Tail: 11000 - TD

Slurry WT	Yield	Sx	Gallons/ Sack	Excess	Additives
13.2ppg	1.62cuft/sk	750.4	9.45	20%	Class H (15:61:11) Poz (Fly Ash):Class H Cement:CSE-2 + 4% bwow Sodium Chloride + 3 lbs/sack LCM-1 + 0.6% bwoc FL-25 + 0.005 gps FP-6L + 0.005% bwoc Static Free

Circulate cement to surface. If cement does not circulate to surface a top squeeze job or casing perforation will be used. As well, a temperature survey or CBL will be performed.
Cement volumes will be adjusted proportionately once actual depth is determined and washout from a fluid caliper.

Article VII. *Product Descriptions:*

Bentonite II
P105

CSE-2
An additive which contributes to low density, high compressive strength development of cement slurries at all temperature ranges. This material also controls free water without the need for standard extenders.

Calcium Chloride
A powdered, flaked or pelletized material used to decrease thickening time and increase the rate of strength development.

Cello Flake
Graded (3/8 to 3/4 inch) cellophane flakes used as a lost circulation material.

Class C Cement
Intended for use from surface to 6000 ft., and for conditions requiring high early strength and/or sulfate resistance.

Class H Cement
Class H cement is an API type, all-purpose oil well cement which is used without modification in wells up to 8,000 ft. It possesses a moderate sulfate resistance. With the use of accelerators or retarders, it can be used in a wide range of well depths and temperatures.

FL-25
An all-purpose salt-tolerant fluid loss additive that provides exceptional fluid loss control across a wide range of temperatures and salinity conditions and remedial cementing applications.

FL-52
A water soluble, high molecular weight fluid loss additive used in medium to low density slurries. It is functional from low to high temperature ranges.

FP-6L
A clear liquid that decreases foaming in slurries during mixing.

LCM-1
A graded (8 to 60 mesh) naturally occurring hydrocarbon, asphaltite. It is used as a lost circulation material at low to moderate temperatures and will act as a slurry extender. Cement compressive strength is reduced.

MPA-5
Used to enhanced compressive, tensile, fleural strength development and reduced permeability

Poz (Fly Ash)
A synthetic pozzolan, (primarily Silicon Dioxide). When blended with cement, Pozzolan can be used to create lightweight cement slurries used as either a filler slurry or a sulfate resistant completion cement.

Sodium Chloride
At low concentrations, it is used to protect against clay swelling.

Sodium Metasilicate
An extender used to produce economical, low density cement slurry.

Static Free
An anti-static additive used to prevent air entrainment due to agglomerated particles. Can be used in Cementing and Fracturing operations to aid in the flow of dry materials.

See COA

Article VIII. *Mud Program:*

Depth	Hole	Type	MW	PV	YP	WL	pH	Sol %
0-1550 1600'	16"	Fresh Water	8.4-8.9	10-12	12-15	NC	9.5	<3.0
1550-5723 5450'	12.25"	Brine	9.8-10	1-2	1-2	NC	9.5	<1.0
5723- KOP	8.5"	Cut Brine	8.4-8.6	1-2	1-2	NC	9.5	<1.0
KOP-TD	8.5"	Cut Brine	8.9-9.1	4-6	4-6	18-20	9.5	<3.0

Sufficient mud will be on location to control any abnormal conditions encountered. Such as but not limited to a kick, lost circulation and hole sloughing.

Article IX. *Mud Monitoring System:*
A Pason PVT system will be rigged up prior to spudding the well. A volume monitoring system that measures, calculates, and displays readings from the mud system on the rig to alert the rig crew of impending gas kicks and lost circulation issues.

Components

a) PVT Pit Bull monitor:
Acts as the heart of the system, containing all the controls, switches, and alarms. Typically, it is mounted near the driller's console.

b) Junction box:
Provides a safe, convenient place for making the wiring connections.

c) Mud probes:
Measure the volume of drilling fluid in each individual tank.

d) Flow sensor:
Measures the relative amount of mud flowing in the return line.

Article X. *Logging, Drill stem testing and Coring:*
2 man mud logging will start after surface casing has been set.

8.75" hole will have LWD (Gamma Ray) to section TD.

Article XI. *Bottom Hole:*
Temperature is expected to be 163°F, using a 0.76°/100' gradient. The bottom hole pressure is expected to be 4792psi maximum using a pressure gradient of 0.44psi/ft. With a partially evacuated hole and a gradient of 0.22psi the maximum surface pressure would be 2396psi.

Article XII. *Abnormal Conditions:*
See COA
Temperature is expected to be normal. All zones are expected to be normal pressure.
Lost circulation is possible in both the 16" and 12.25" hole sections. 20ppb of LCM will be maintained in the active system at all times while drilling these sections. As well, a 50bbl pill of 50ppb LCM will be premixed in the slug pit in case lost circulation is encountered. If complete loss circulation is encountered in the Goat Soap Reef the Brine will be switched over to fresh water. The BLM will be notified of this and an inspector requested to witness the drilling fluid swap. Daily reports will be submitted to the BLM if losses are encountered.

See COA

Article XIII. *H2S:*

No H2S is expected. But there is the possibility of the presence of H2S. Attached is the H2S response plan. H2S response plan will be put into effect after surface casing has been set and BOPE has been nippled up.

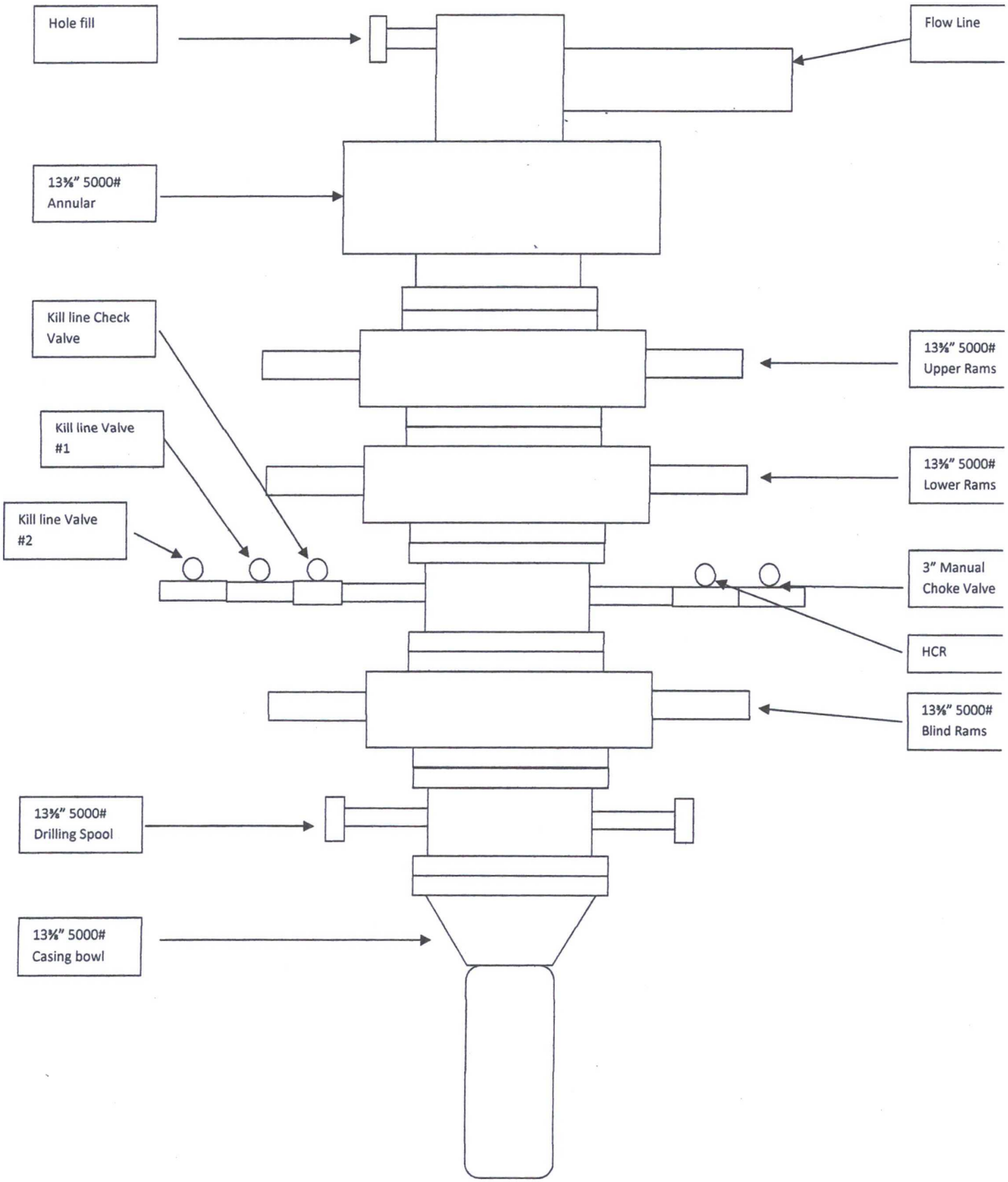
Article XIV. *Directional:*

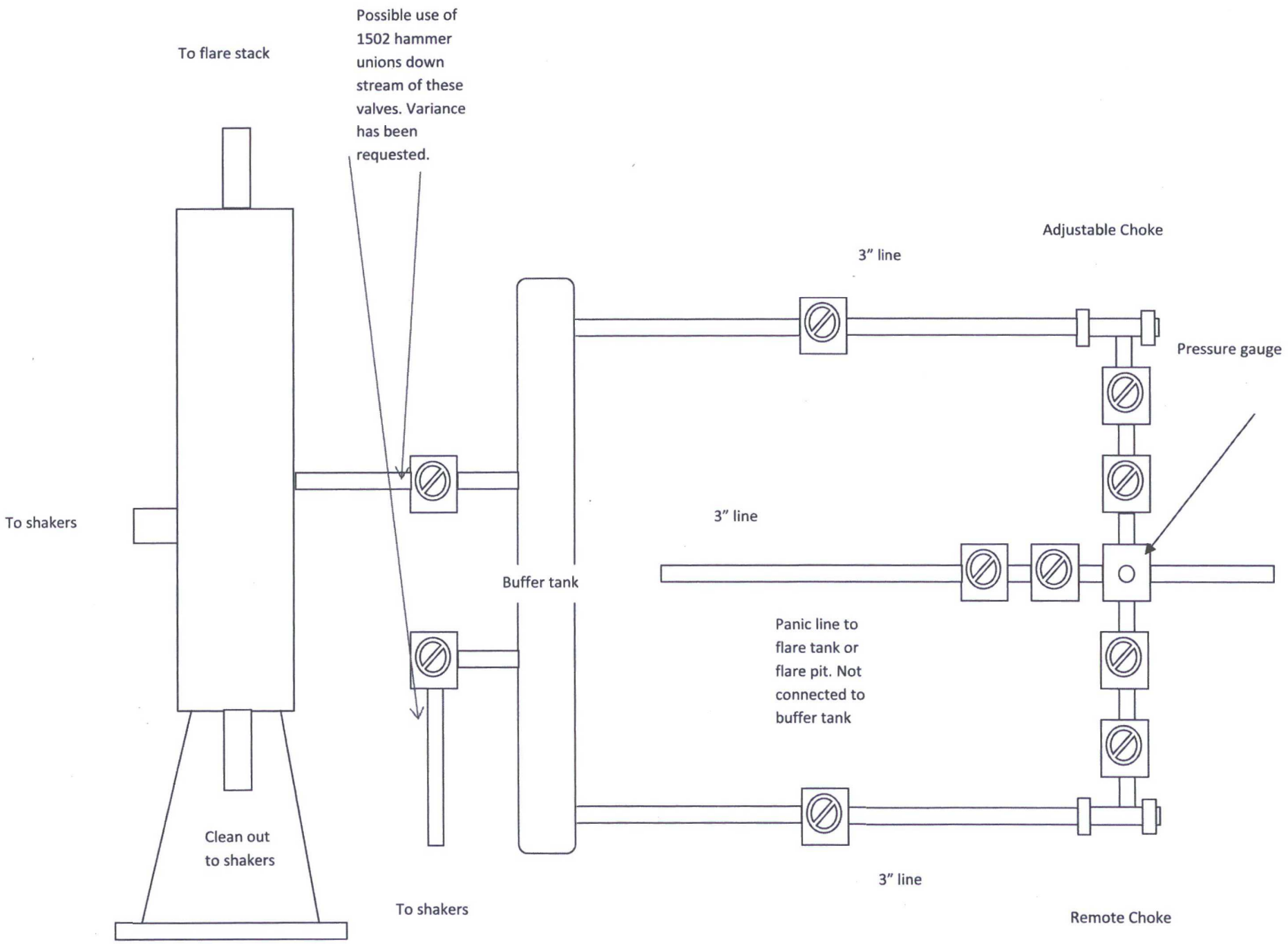
Directional survey plan and plot attached.

Article XV. *Drilling Recorder:*

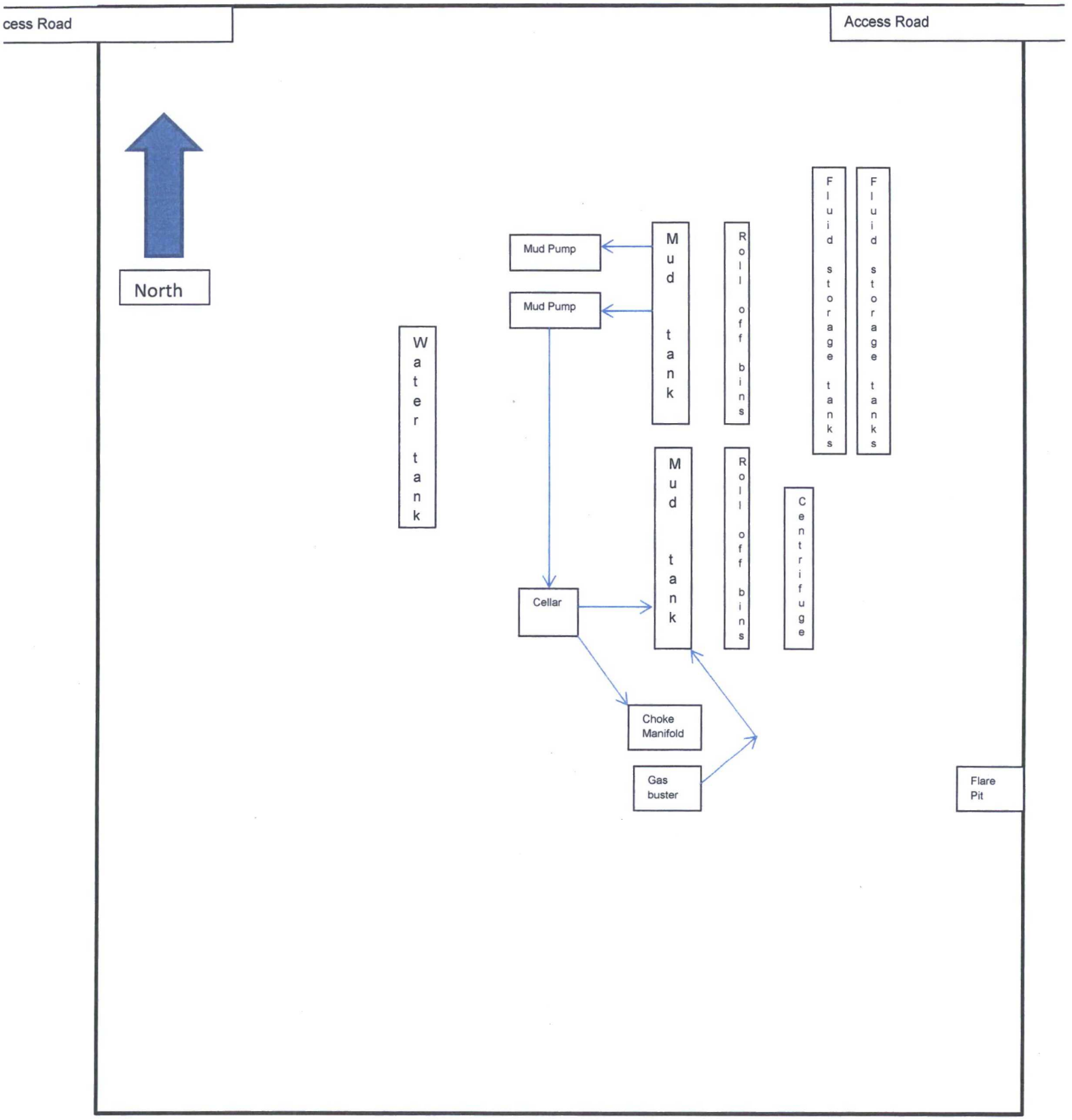
Rig up EDR & PVT prior to spud to record drilling times and other drilling parameters from surface to TD.

BOP Schematic




To flare stack
Possible use of 1502 hammer unions down stream of these valves. Variance has been requested.
Adjustable Choke
3" line
Pressure gauge
To shakers
3" line
Buffer tank
Panic line to flare tank or flare pit. Not connected to buffer tank
Clean out to shakers
To shakers
3" line
Remote Choke

Closed Loop Diagram



Design Plan, Operating Plan and Maintenance Plan, and Closure Plan for the OCD form C-144

Design Plan:

Fluid and cuttings coming from drilling operations will pass over the shale shaker with the cuttings going to the haul off bin and the cleaned fluid returning to the working steel pits.

Equipment Includes:

1-670bbl steel working pit
2-100bbl steel working suction pits
2-500bbl steel tanks
2-20yd^3 steel haul off bins
2-pumps (HHF-1600)
2-Shale shakers
1-Centrifuge
1-Desilter/Desander

Operating and Maintenance Plan:

Inspection to occur every tour for proper operation of system and individual components. If any problems are found they will be repaired and/or corrected immediately.

All drilling fluid circulated over shakers with cuttings discharged into roll off bins

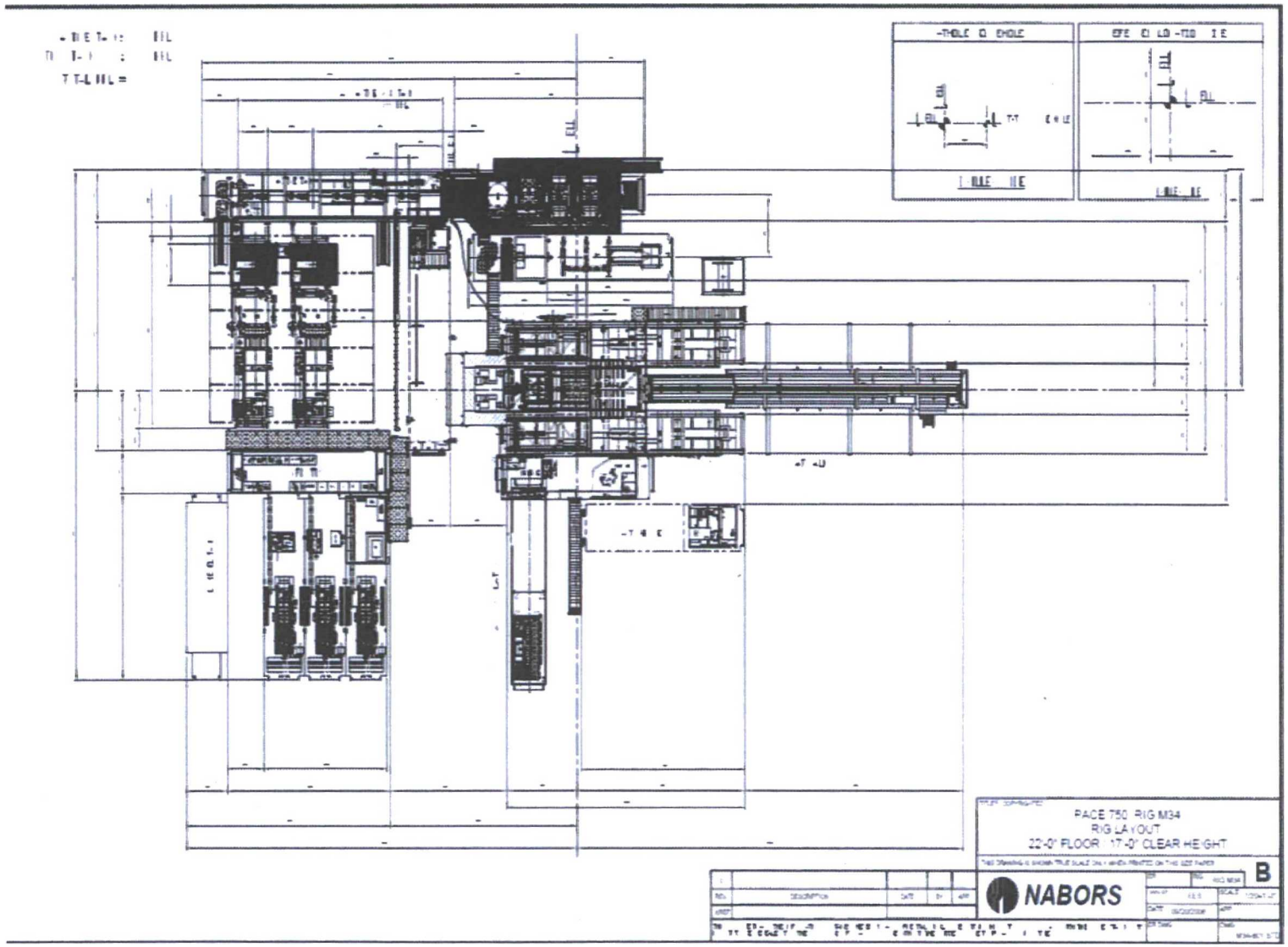
Fluid and fines below shakers are circulated with transfer pump through centrifuge

Roll off bins are lined and de watered with fluids recirculated into system

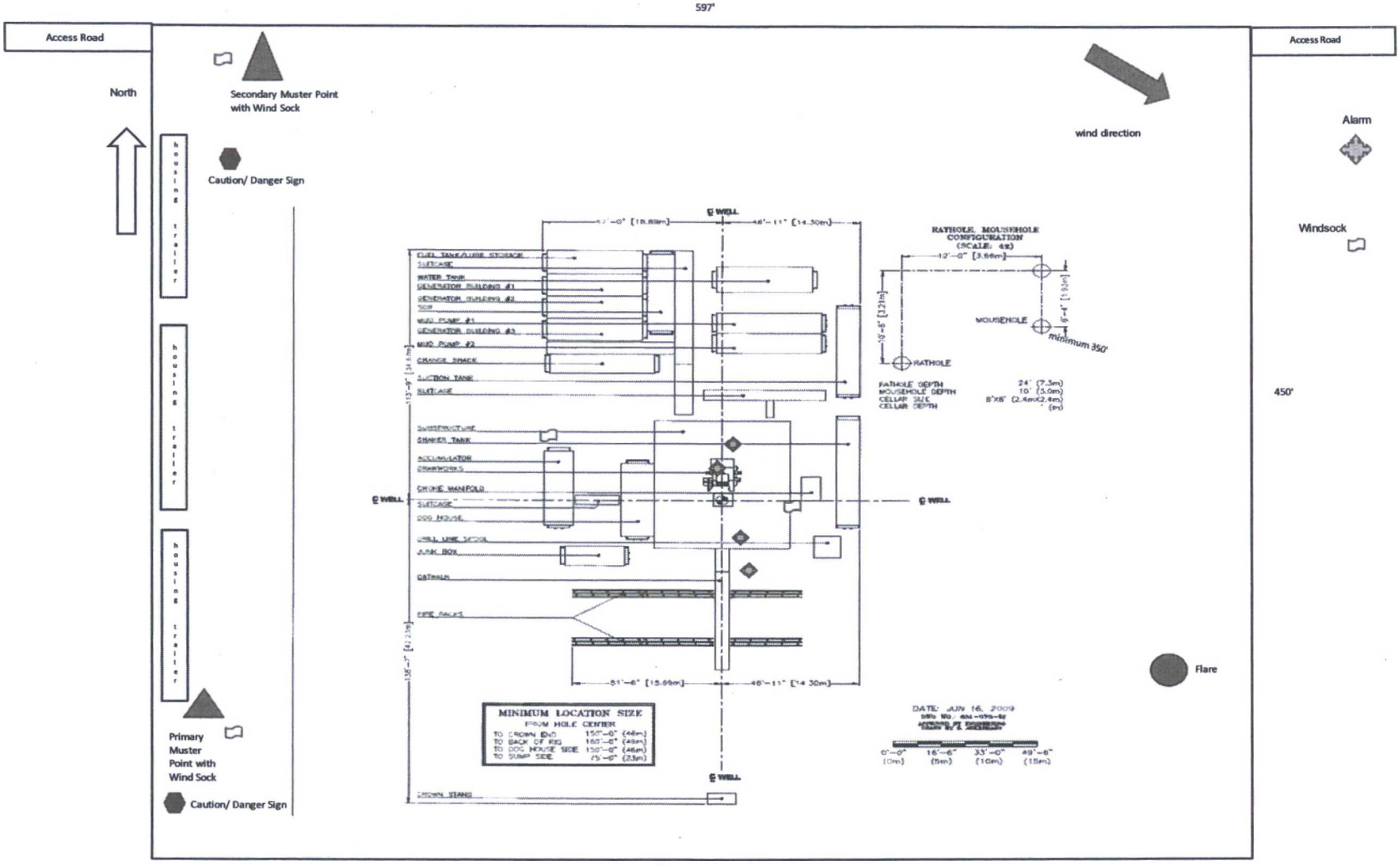
Additional tank is used to capture unused drilling fluid or cement returns from casing jobs.

Closure Plan:

All haul off bins containing cuttings will be removed from location and hauled to:
R360 Permit number R9166/NM-01-0006
GMI Permit number 711-019-001/NM-01-0019


PACE 750 RIG M34
RIG LAYOUT
22-0" FLOOR 17-0" CLEAR HEIGHT
NABORS
B

North Lea 5 Fed Com 3H - Site Layout



New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

No PODs found.

PLSS Search:

Section(s): 5 **Township:** 20S **Range:** 34E

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

No records found.

PLSS Search:

Section(s): 5 **Township:** 20S **Range:** 34E