HOBBS OCD

MAY 0 5 2015

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ATS-15-203

Form 3160-3
(August 2007)

R-111-POTASH

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NMNM

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No. 033955	
6. If Indian, Allotee or Tribe Name NA	
1a. Type of work: ☑ DRILL ☐ REENTER	7. If Unit or CA Agreement, Name and No. NA
1b. Type of Well: ☐ Oil Well ☐ Gas Well ☑ Other ☑ Single Zone ☐ Multiple Zone	8. Lease Name and Well No. Halfway SWD; FEDERAL #1 (39361)
2. Name of Operator R360 Permian Basin, LLC (289936)	9. API Well No. ~~NA~~ 30-025-42545
3a. Address 3 Waterway Square Place, Suite 110 The Woodlands, TX 77380	3b. Phone No. (include area code) 832-442-2200
	10. Field and Pool, or Exploratory SWD; DEVONIAN (96101)
4. Location of Well (Report location clearly and in accordance with any State requirements.*) At surface ~~N 32 33 14", W 103 15' 34"~~ 22-T20S-R32E 845 S 1030W (M)	11. Sec., T. R. M. or Blk. and Survey or Area T20S R32E S22 SW1/4
At proposed prod. zone ~~N 32 33 14", W 103 15' 34"~~ 22-T20S-R32E 845 S 1030W	
14. Distance in miles and direction from nearest town or post office* 28 Miles Northeast of Carlsbad, NM on Highway 62	12. County or Parish Lea / 13. State NM
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drlg. unit line, if any) 808'	16. No. of acres in lease 18.5 / 17. Spacing Unit dedicated to this well NA
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. >1/2 mile	19. Proposed Depth 16,000 / 20. BLM/BIA Bond No. on file 929591818
21. Elevations (Show whether DF, KDB, RT, GL, etc.) Surface 3,533' ASL, Injection 14,350' GL, TD 16,000' GL	22. Approximate date work will start* 03/01/2015 / 23. Estimated duration 90 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:

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 [signature]	Name (Printed/Typed) C.S. RUANE	Date 12/8/14
Title DIRECTOR of ENGINEER		
Approved by (Signature) /S/ JEANETTE MARTINEZ	Name (Printed/Typed)	Date APR 27 2015
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

DEC 10 2014

Kz 05/05/15

NM OIL CONSERVATION
ARTESIA, NM

Approval Subject to General Requirements & Special Stipulations Attached

SEE ATTACHED FOR CONDITIONS OF APPROVAL

MAY 07 2015

R360 Environmental Solutions Inc.

Halfway SWD #1 APD, Blue Bird Drilling Island

Drilling Plan

1. **Location:**

Legal: 808' FSL 1007 FWL Unit M (SW/4, SW/4) Section 22, Township 20 South, Range 32 East
Lea County, New Mexico

GPS: 32.533889 -103.759444

O&G Lease#: NMNM-033955

2. **Elevation Above Sea Level:** 3,533'

3. **Geologic Name of Surface Formation:** Alluvium

4. **Proposed Drilling Depth:** 16,000'

5. **Estimated Tops of All Geologic Formations:**

Formation	Estimated Top (feet)	Bearing
Triassic		<10' of perched water @ 40' BGS
Salado	350	N/A
Tansil	2,800	N/A
Yates	2,950	N/A
Capitan	3,300	N/A
Delaware Mountain	5,100	Hydrocarbons
Bone Spring	8,100	Hydrocarbons
Wolfcamp	10,650	Hydrocarbons
Strawn	11,950	Hydrocarbons
Atoka	12,250	Hydrocarbons
Morrow	12,725	Hydrocarbons
Barnett	13,375	Hydrocarbons
Mississippian Lime	13,650	Hydrocarbons
Woodford Shale	14,175	Hydrocarbons
Devonian (Target)	**14,350**	**N/A**
Montoya	15,600	N/A
Simpson	15,950	N/A
Ellenberger	16,300	N/A

6. **Proposed Casing Program**: 106.5 per operator

Name	Hole (inches)	Size (inches)	Setting Depth (Feet)	Grade	Weight (lbs/ft)	Thread	Condition	Burst SF	Coll. SF	Ten. SF
Surface	24	20	1060	J55	~~106.4~~	LTC	New	1.2	1.125	1.6
1st Intermediate	17 ½	13 3/8	2,900	J55	68	BTC	New	1.2	1.125	1.6
2nd Intermediate	12 ¼	9 5/8	4900	L80	47	LTC	New	1.2	1.125	1.6
Production	8 ¾	7	0-120	HCL80	35	LTC	New	1.2	1.125	1.6
Production	8 ¾	7	120-11,000	P-110	29	LTC	New	1.2	1.125	1.6
Production	8 ¾	7	11,000-14,300	HCL80	35	LTC	New	1.2	1.125	1.6
Tubing	5.879	4 ½	0-5,000	P-110	11.6	LTC	New	1.2	1.125	1.6
Tubing	5.879	4 ½	5,000-14,300	L-80	11.6	LTC	New	1.2	1.125	1.6
Open Hole	5.875		14300-16000	NA	NA	NA	NA	See COA		

7. Drilling Procedure: MIRU McVay Drilling Rig #10. Spud well and drill down each interval to total depth of that interval, staying in compliance with OCD/BLM rules and regulations and following this APD drilling plan. Casing off the Potash and Capitan with separate strings per the BLM. Each casing string will be cemented and cement will be circulated to surface. There are DV Tools in the casing strings to insure getting cement all the way to surface. Mud weights are spelled out below in paragraph 10 – Types and Characteristics of mud system. After reaching total casing depth of 14,300', OH Logs (Paragraph 12) will be run 14300-5100 GR-CNL to surf,we will cement the 7" as spelled out in this APD. We will pick up a 5 7/8" bit to drill the injection interval for the open-hole completion, OH logs (see Paragraph 12) will be run TD-14300 . The depths from 14,300' to 16,000' will not have a casing string, thus an "open-hole" completion. The Devonian target zone for injecting is a depleted zone considered to be under pressured and will be drilled with cut brine 8.4-8.9 PPG. The injection tubing will be set to depth of 14,300' inside the 7". All intervals will be logged prior to running casing per BLM/OCD re

8. **Pressure Controls**: * See COA

A 10M 13-5/8" BOP system (Double Ram and Annular preventer) will be installed and tested prior to drilling out the surface casing shoe. The BOP system used to drill the intermediate hole will be test per BLM Onshore Oil and Gas Order 2.

A 10M 13-5/8" BOP system (Double Ram and Annular preventer) will be installed and tested prior to drilling out the intermediate casing shoe. The BOP system used to drill the production hole will be test per BLM Onshore Oil and Gas Order 2.

The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a Kelly cock, floor safety valve, choke lines, and choke manifold rated at 5,000 psi WP.

9. **Cement Program**:

Surface: Float/Landing Collar set @ 1015'. We will circulate cement to surface

Interval	Amount (sacks)	Ft of Fill	Excess (%)	PPG	Ft^3/sx	Volume (ft^3)	Cement Type
Lead	800	346	100	13.5	1.75	1400	Premium Plus C Cement + 0.005 lbs/sack Static Free + 2% bwoc Calcium Chloride +0.05% bwoc R-3 + 0.25 lbs/sack Cello Flake + 0.005 gps FP-6L + 4% bwoc Bentonite II
Tail	575	714	100	14.8	1.34	770	Premium Plus C Cement + 0.005 lbs/sack Static Free + 2% bwoc Calcium Chloride +0.005 gps FP-6L

1st Intermediate: Stage 1 Float/Landing Collar set @ 1800, Stage 2 Collar set @ 1,800'. We will circulate cement to surface.

13 3/8 Contingency Cement design as follows:

If hole conditions warrant and we will adjust DVT depth per circulation requirements. The current estimated setting is 1800' and cement volumes will be adjusted proportionally to maintain equivalent excess in all slurries.

Interval	Amount (sacks)	Ft of Fill	Excess (%)	PPG	Ft^3/sx	Volume (ft^3)	Cement Type
Stage 1 Lead	620	1460'	100	12.7	2.10	1302	Premium Plus C Cement + 0.005 lbs/sack Static Free + 5% bwow Sodium Chloride +0.25 lbs/sack Cello Flake + 0.005 gps FP-6L + 2% bwoc Sodium Metasilicate
Stage 1 Tail	275	340'	100	14.8	1.35	372	Premium Plus C Cement + 0.005 lbs/sack Static Free + 2% bwow Sodium Chloride + 0.5% bwoc CD-32 + 0.6% bwoc FL-62 + 0.005 gps FP-6L + 0.4% bwoc Sodium Metasilicate
Stage 2 Lead	770	714' to surface	100	11.9	2.46	1895	(50:50) Poz (Fly Ash):Premium Plus C Cement + 0.005 lbs/sack Static Free + 5% bwow Sodium Chloride + 5 lbs/sack LCM-1 + 3% bwoc FL-52 + 0.005 gps FP-6L + 3% bwoc Sodium Metasilicate + 10% bwoc Bentonite II
Stage 2 Tail	275	386'	100	14.8	1.35	372	Premium Plus C Cement + 0.005 lbs/sack Static Free + 1.5% bwoc Calcium Chloride + 0.005 gps FP-6L

2nd Intermediate: Stage 1 Float/Landing Collar set @ 4855', Stage 2 Collar set @ 3,300'

9 5/8 Contingency Cement design as follows: * See COA

If hole conditions warrant and we will adjust ECP/DVT depth per circulation requirements. The current estimated setting is 3300' and cement volumes will be adjusted proportionally to maintain equivalent excess in all slurries.

See COA

Interval	Amount (sacks)	Ft of Fill	Excess (%)	PPG	Ft^3/sx	Volume (ft^3)	Cement Type
Stage 1 Lead	245	838	50	11.9	2.10	514	(50:50) Poz (Fly Ash):Premium Plus H Cement + 0.005 lbs/sack Static Free + 2% bwow Sodium Chloride + 0.5% bwoc FL-25 + 0.005 gps FP-6L + 2% bwoc Bentonite II
Stage 1 Tail	200	762'	0	14.2	1.27	254	(50:50) Poz (Fly Ash):Premium Plus H Cement + 0.005 lbs/sack Static Free + 2% bwow Sodium Chloride + 0.5% bwoc FL-52 + 0.005 gps FP-6L + 2% bwoc Bentonite II
Stage 2 Lead	450	2485'	50	12.7	2.07	932	Premium Plus C Cement + 0.005 lbs/sack Static Free + 5% bwow Sodium Chloride + 0.25 lbs/sack Cello Flake + 0.005 gps FP-6L + 0.4% bwoc Sodium Metasilicate
Stage 2 Tail	250	815'	50	14.8	1.35	337	Premium Plus H Cement + 0.005 lbs/sack Static Free + 2% bwow Sodium Chloride + 0.5% bwoc CD-32 + 0.6% bwoc FL-62 + 0.005 gps FP-6L + 0.4% bwoc Sodium Metasilicate

Production: Stage 1 Float/Landing Collar set @ 14,260', Stage 2 Collar set @ 10,500', Stage 3 Collar set @ 5,175'. We will circulate cement to surface.

7" Contingency Cement design as follows:

If hole conditions warrant and we will adjust ECP/DVT depth per circulation requirements. The current estimated setting is 5175' and 10,500' cement volumes will be adjusted proportionally to maintain equivalent excess in all slurries.

See COA

Interval	Amount (sacks)	Ft of Fill	Excess (%)	PPG	Ft^3/sx	Volume (ft^3)	Cement Type
Stage 1 Lead	770	3800'	35	13.5	1.49	782	(15:61:11) Poz (Fly Ash):Premium Plus H Cement:CSE-2 + 0.005 lbs/sack Static Free + 3 lbs/sack LCM-1 + 2% bwoc FL-62 + 0.005 gps FP- 6L + 0.25% bwoc Sodium Metasilicate + 0.5% bwoc BA-10A
Stage 2 Lead	495	1082'	25	12.7	1.95	965	(35:65) Poz (Fly Ash):Premium Plus H Cement + 0.005 lbs/sack Static Free + 0.7% bwoc FL-52 + 0.15% bwoc ASA-301 + 0.005 gps FP-6L
Stage 2 Tail	100	4243'	25	15.6	1.18	118	Premium Plus H + 0.005llbs/sack staticfree+2% bwow Sodium Chloride + 0.5% bwoc CD-32+0.6% bwoc FL-62 +0.005 gps FP-6L+0.4% bwoc sodium metasilicate
Stage 3 Lead	260	2982'	25	11.9	2.45	637	50:50 Poz Fly ash:premium plus c cement + 0.005 lbs/sack static free + 5% bwow sodium chloride + 5% bwoc LCM-1+3% bwoc FL-52+0.005 gps FP-6L+3% bwoc sodium metasilicate + 10% bwoc bentonite II
Stage 3 Tail	100	818'	35	14.8	1.34	134	Premium plus C cement + 0.005 lbs/sack static Free +1.5% bwoc calcium chloride + 0.005 gps FP-6L

The contingency ECP/DVT tool setting depth may change and cement will be adjusted accordingly.

10. **Type and Characteristics of Mud System:**

Depth MD/TVD (ft)	Mud Type	Mud Density (ppg)	Viscosity (sec/1000cc)	Plastic Viscosity (cP)	Yield Point ($lb/100ft^2$)	API Fluid Loss (cc)	pH	LGS %
120 – 450	New Gel/Soda Spud Mud	8.8 – 9.2	60 – 70	12 – 28	12 – 34	20	+/-9.0	<6
450 – 2,900	Brine Water	10.0 – 10.1	29 – 30	0 – 1	0 – 1	NC	9.5 – 10.0	<6
2,900 – 5,100	Existing Brine to New Zan D/White Starch/ Barite	10.0 -10.1	29 – 30	0 – 1	0 – 1	NC	9.5 – 10.0	<6
5,100 – 14,300		10.1 – 11.5	36 – 44	6 – 14	12 – 18	10 – 12	9.5 – 10.0	<6
14,300- 16,000	Cut brine	8.4 - 8.9	28 - 30	0 - 1	0 - 1	NC	9. – 9.5	<6

Our goal for all DVT and ECP is to run with full intentions of running the 2 stage job. This will help insure good tail cement and help insure cement to surface.

11. **Air Drilling Description:** Not applicable.

12. **Testing, Coring, and Logging Procedures:** See COA
    A. Mud logging program: 2 man unit from 2,900' (setting depth of salt string) to TD.
    B. Electric logging program: open hole logs CNL / LDT / CAL / GR, DLL / SGR (CNL/GR from base of Intermediate casing to surface) from 14300 to Intermediate casing and TD-14300
       Cased Hole Logs
       CBL w/ CCL from base of Intermediate casing to surface (if cement is not circulated to surface)
       CBL w/ CCL from production casing DV tool at 8,000' to 3,000' (estimated top of cement at 4,000')
    C. No DST's or cores are planned
    D. Sonic log: not required but available if needed

13. **Expected Bottom Hole Pressure and Temperature:** 6,440 psi , 170° F.

14. **Abnormal Conditions:** Expecting a loss circulation zone in Capitan Reef. See COA

15. **H_2S Plan:** Breathing equipment will be available on location. If H_2S is encountered the operator will comply with the Onshore Oil and Gas Order No. 6. The H_2S measured amounts and formation will be reported to the BLM. Please see the attached H_2S Plan and the H_2S awareness map.

16. **Directional or Horizontal Survey:** The well is neither directional nor horizontal.

17. **Unit Well Current Unit POD:** The well is not in a unit or current unit POD.

18. **Work Schedule:** To be determined.

19. **Completion plans:** MIRU well service unit. PU 2 7/8" PH-6 workstring. TIH, release retrievable bridge plug and pull out of hole. Pick up treating packer. TIH to 14,250' and set. Test back side to 1000 psi. Acidize down tubing With 5 stages – 8000 gallons 15% HCL each stage followed by 1500 lbs of rock salt each stage. Release packer and pull out of hole.
Trip in hole with tubing with notched collar. Circulate clean to TD. Pull out of the hole and pick up 7" Arrow Set 1X packer. Trip in the hole to 14,250'. Set blanking plug and on/off tool. Release packer and pull out of hole, laying down 2 7/8" work string. Pick up 4 ½" lined injection tubing. Trip in hole and get on on/off tool. Release packer. Space out. Reset packer. Release on/off tool again. Circulate packer fluid. Get back on on/off tool. Nipple down BOP and nipple up well head. Schedule and perform MIT on tubing casing annulus per OCD and BLM guidelines. Turn well over to R360 for plumbing up surface facilities.

Cambrian Management
EXECUTIVE SUMMARY WELLBORE DIAGRAM

WELL NAME:	R 360 Hatfway SWD #1			STATE:	New Mexico		Permit #			Job #	
LOCATION:	808 FSL 1007 FWL Unit M (SW/4), SW/4)			COUNTY:	Lea		Spud	TD	Rig Release	rig Days	
LOCATION:	Scet 22, T 20S,R32E 32.533889 -103.759444			DATE		Drill				0	
ELEVATION:			GL 3533			Complete				0	
API#							TVD	16000	PBTD		
Drill Contractor	Precision Drilling and/or TBD			PREPARED B	A Rickard		Total Depth	16000			
	DEPTH	HOLE SIZE	SIZE	WEIGHT	GRADE	THREAD	CMT	CMT VOL	TOC + meth	centralizers	DV Depth
Conductor CASING:	120	24	20"						surface		none
Surf CASING:	1000	18.5"	16"	75	K55	STC			surface	TBD	none
1st Int CASING:	4900	14.75"	13.375"	72&61	L80, K55	LTC			surface	TBD	~2750'/4900'
2nd Int CASING:	12000	12.25"	9.625"	53.5 & 47	HCL80 & L-80	LTC			surface	TBD	8000'/12000'
Prod Casing	16000	8.5"	7"	35 & 29	HCL-80, P110	LTC			surface	Temp Survey	11000'/14300'
Tubing	14300		4 1/2	11.6	L80/CLS100	8rnd LTC					

Water Board Depth 1000' TBD
Last updated

Regulatory
Drilling DCF 11/11/2014
Complete AER 9/26/2014
Workover

Initial Potential
Oil(BOPD)
Gas (MCFD)
Water (BPD)
GOR
Flowing/Pumping
Choke
Flowing Tbg psi
Csg Pressure
Oil Gravity

Date

Present

Conductor 120'

16" 75#/ft @ 1000' cem surf

DVT 13-3/8" @ ~2750'

DVT 13-3/8" @ 4900' or last good circulation

13.375" 72 & 61 #/ft @ 4900' TD

DVT 9-5/8" @ ~4850'

DVT 9-5/8" ~8000

DVT 9-5/8" ~12,000'

9.625" @ ~12000' TD

CLS100

5000' 4 1/2 p110 9300' 4 1/2 L80
Arrowset 1X w/ O/O tool
F nipple R nipple

ECP and Dv tool 14300

11000' 7" p110
5000' 7" HCL80
7 " @ 16000'

Vendor Type Rating

C
B
A

	Geology Formation	Depth (top)
1	Triassic	
2	Salado	350
3	Tansil	2800
4	Yates	2950
5	Capitan	3300
6	Delaware Mountain	5100
7	Bone Spring	8100
8	Wolfcamp	10650
9	Strawn	11950
10	Atoka	12250
11	Morrow	12725
12	Barnett	13375
13	Mississippian Lime	13650
14	Woodford Shale	14175
15	Devonian	14300
16	Montoya	15600
17	Simpson	15950
18	Ellenberger	16300
19	Granite	

1	Surface Casing 0'-1000'	circ to surface single stage
2	1st intermediate 0'-4900'	DVT @ top of Capitan (3500') and bottom of Salado (2750')
3	2nd intermediate 0'-12000'	DVT @ 8000' and 4850'
4	Long String 0'-15500'?	DVT @ 14350' w/ECP & DVT @ 11,000'
5	All Strings are to circulate cement to surface	

Production Equip
Type of lift Depth

	Items	Length	ID	OD
1	#NAME?			

	size	Wt	Grade	Connection	Pore pressure/ gradient #/gal	Collapse	Safety factor collapse	Tensile	Body/conection	safety factor tensile	Burst	Safety Factor burst	Buckle	safety factor buckle	Depth to colapse	Depth to tensile	Burst rating	Depth to buckle	
450'	20	94	J-55	ST&C	8.5	520	1.125	784000	connection	1.6	2110	1.2	N/A	N/A	1045.752	5212.766	1758.333	N/A	
0-2900'	13.375	68	J-55	BT&C	9	1950	1.125	1140000	connection	1.6	3450	1.2	N/A	N/A	3703.704	10477.94	2875	N/A	
0-5100'	9.625	47	L-80	BT&C	9	4760	1.125	893000	connection	1.6	6870	1.2	N/A	N/A	9040.836	11875	5725	N/A	
0-120',	7	35	HCL-80	LT&C	12	11600	1.125	819000	connection	1.6	9960	1.2	N/A	N/A	16524.22	14625	8300	N/A	
120'-11,000'	7	29	P-110	LT&C	12	8510	1.125	797000	connection	1.6	11220	1.2	N/A	N/A	12122.51	17176.72	9350	N/A	
11,000'-14,300'	7	35	HCL-80	LT&C	12	11600	1.125	819000	connection	1.6	9960	1.2	N/A	N/A	16524.22	14625	8300	N/A	
0-5000 (Tubing)	4.5	11.6	P-110	LT&C	9	7560	1.125	279000	connection	1.6	10690	1.2	N/A	N/A	14358.97	15032.33	8908.333	N/A	
5000-14300 (Tubing)	4.5	11.6	L-80	LT&C	9	6350	1.125	212000	connection	1.6	7780	1.2	N/A	N/A	12060.78	11422.41	6483.333	N/A	
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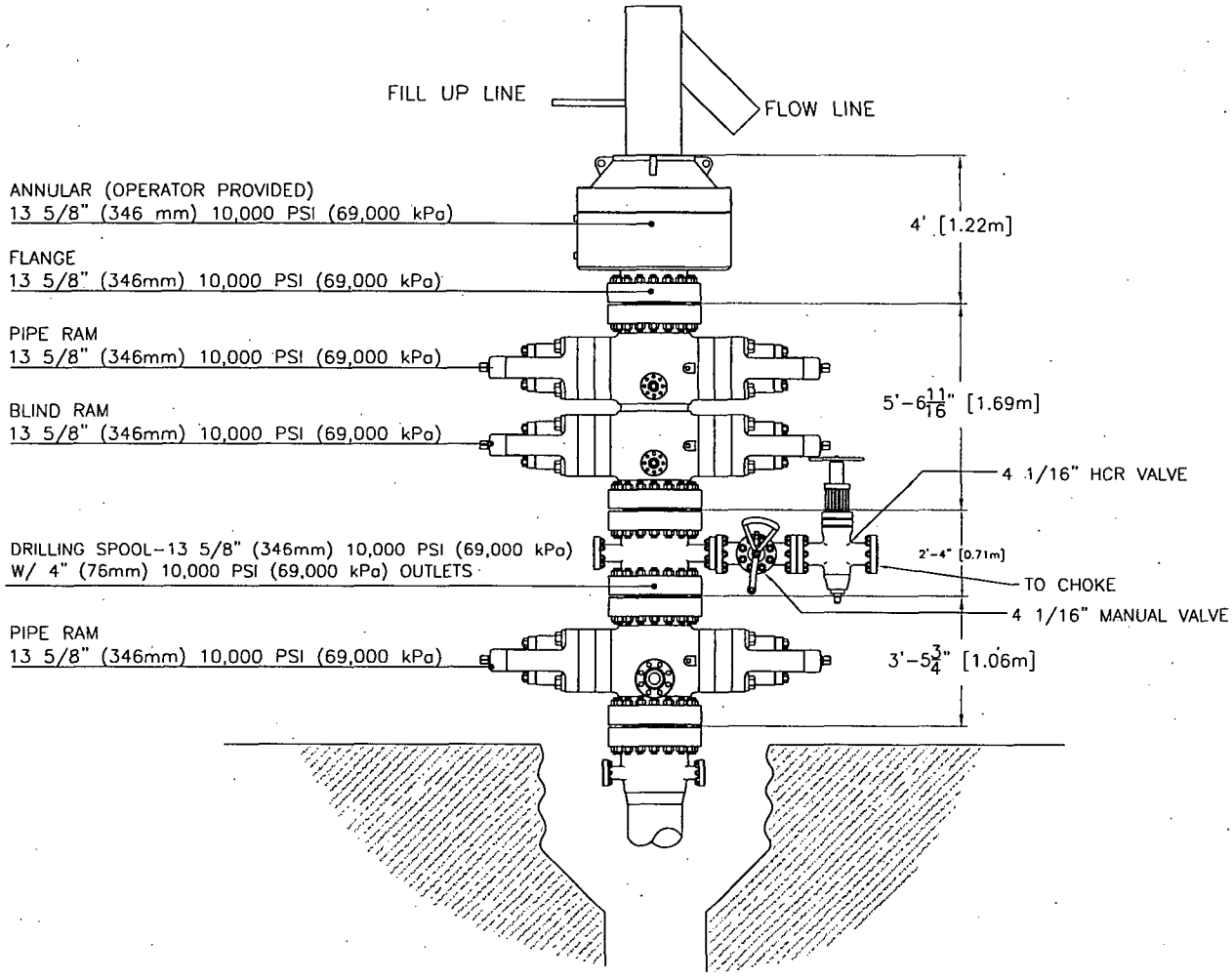
BOP LAYOUT

RIG 000



NOTE: CASING BOWL SET AT MATTING LEVEL AND $\frac{1}{2}$" ALLOWANCE FOR RING GASKET GAP.

STACK COMPONENTS REPRESENTED ARE SUBJECT TO AVAILABILITY, PLEASE CONFIRM WITH WELL CONTROL DEPARTMENT MANAGER.

EQUIPMENT REPRESENTATION ONLY
NOT DRAWN TO SCALE

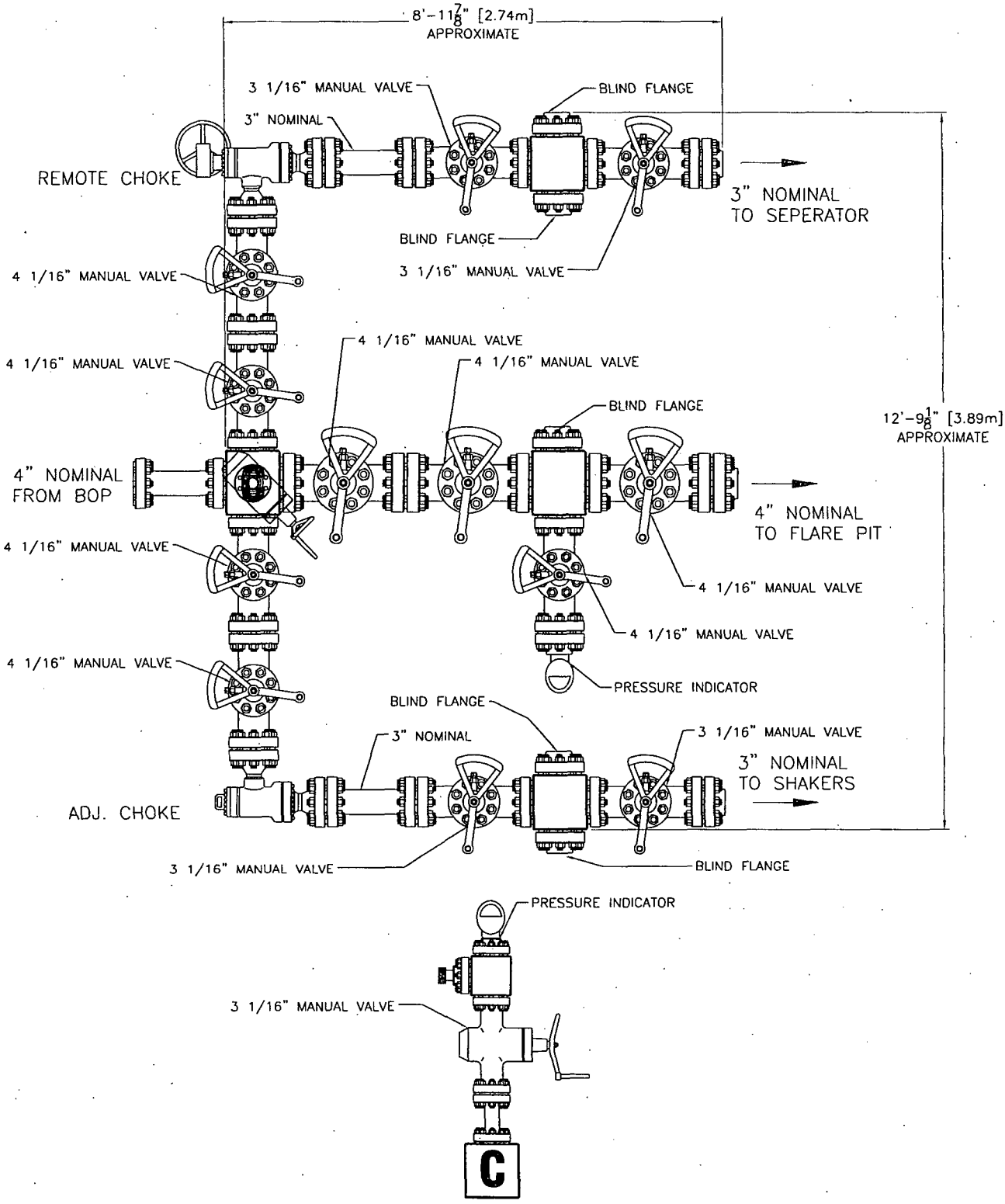
PRECISION DRILLING

DATE: 2014/02/26
DWG No.: BOP-000-008
DWG BY : EW

MANIFOLD LAYOUT

CO# 422

4 1/16" (103mm) x 3 1/16" (78mm) x 3 1/16" (78mm)10,000 PSI (69,000 kPa) SINGLE LINE



EQUIPMENT REPRESENTATION ONLY
NOT DRAWN TO SCALE

PRECISION DRILLING

DATE: 2011/09/08
DWG No.: 802-422-W7
DWG BY : MM