SECRETARY'S POTASH 15-1014

~~Operator~~ Copy OCD Copy

HOBBS OCD

Form 3160-3
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR JUN 28 2016
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER RECEIVED

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

1a. Type of work: ☑ DRILL ☐ REENTER	5. Lease Serial No. NMNM-012845
	6. If Indian, Allotee or Tribe Name NA
	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. West Gramma Ridge SWD#1 (316382)
2. Name of Operator R360 Permian Basin, LLC (289936)	9. API Well No. 30-025-43328
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 25' 29.16", W 103 43' 05.28" (C3) At proposed prod. zone N 32 25' 29.16", W 103 43' 05.28"	11. Sec., T. R. M. or Blk. and Survey or Area Sec. 6 22S 32E 1105 FNL 1480 FWL
14. Distance in miles and direction from nearest town or post office* 29 miles east of Carlsbad.	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) 1400' West	16. No. of acres in lease / 17. Spacing Unit dedicated to this well NA
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 2000' Northwest	19. Proposed Depth 16550' / 20. BLM/BIA Bond No. on file ~~929591818~~ NMB001255
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* / 23. Estimated duration 90 Days

24. Attachments SWD-1598

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) Chris Ruane	Date 5/2/15
Title Director of Engineering		
Approved by (Signature) /s/George MacDonell	Name (Printed Typed)	Date JUN 23 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, m... States any false, fictitious or fraudulent statements or represen... department or agency of the United

See attached NMOCD Conditions of Approval

(Continued on page 2) *(Instructions on page 2)

Carlsbad Controlled Water Basin

Kz 06/29/16

SEE ATTACHED FOR CONDITIONS OF APPROVAL

Kz

Approval Subject to General Requirements & Special Stipulations Attached

West Gamma Ridge SWD #1 Drilling Plan

1. **Location**:

   Legal: 1105' FNL 1480' FWL Unit C, T. 22 S, R 32 E. Section 6: NW ¼ - "West Gamma Ridge"

   Lea County, New Mexico

   GPS: 32.4247667°, -103.7181333°

   O&G Lease#: NMNM-012845

2. **Elevation Above Sea Level:** 3,611'

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

4. **Proposed Drilling Depth:** 16,550'

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

Formation	Estimated Top (feet)	Bearing
Triassic		<10' of perched water @ 40' BGS
Dewey Lake	430	
Salado	520	N/A
Tansil	N/A	N/A
Yates	N/A	N/A
Capitan	N/A	N/A
Delaware Mountain	3830	Hydrocarbons
Bone Spring	7660	Hydrocarbons
Wolfcamp	10,960	Hydrocarbons
Strawn	12,570	Hydrocarbons
Atoka	12,840	Hydrocarbons
Morrow	13,320	Hydrocarbons
Barnett	14,330	Hydrocarbons
Mississippian Lime	14,940	Hydrocarbons
Woodford Shale	15,340	Hydrocarbons
Devonian (Target)	**15,550**	**N/A**
Montoya		N/A
Simpson		N/A
Ellenberger		N/A

6. **Proposed Casing Program:**

Name	Hole (inches)	Size (inches)	Setting Depth (Feet)	Grade	Weight (lbs/ft)	Thread	Condition	Burst SF	Coll. SF	Ten. SF
Surface	26	20	1060	J55	106.4	LTC	New	1.2	1.125	1.6
1st Intermediate	17 ½	13 3/8	3,500	J55	68	LTC	New	1.2	1.125	1.6
2nd Intermediate	12 ¼	9 5/8	10,960	L80	53.5	LTC	New	1.2	1.125	1.6
Production	8 ½	7	0-120	HCL80	35	LTC	New	1.2	1.125	1.6
Production	8 ½	7	120-12,230	P-110	29	LTC	New	1.2	1.125	1.6
Production	8 ½	7	12,230-15,550	HCL80	35	LTC	New	1.2	1.125	1.6
Tubing	$5\frac{7}{8}$	4 ½	0-5,000	P-110	11.6	LTC	New	1.2	1.125	1.6
Tubing	$5\frac{7}{8}$	4 ½	5,000-15,550	L-80	11.6	LTC	New	1.2	1.125	1.6
Open Hole	5.875		15,550-16,550	NA	NA	NA	NA			

7. **Drilling Procedure**: 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. 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 15,550', OH Logs (Paragraph 12) will be run 15,550'-10,960' 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-15,550'. The depths from 15,550' to 16,550' 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 15,550' inside the 7". All intervals will be logged prior to running casing per BLM/OCD requirements.

8. **Pressure Controls:**

A 10M 13-5/8" BOP system (Double Ram and Annular preventer) and 2 power chokes installed on manifold and 1 manual choke per BLM Onshore Order 2, 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	820	700	100	13.5	1.69	1386	Class C + 2% Gel + 0.2% Antifoam + 0.125 lb/sk Polyflake
Tail	580	360	100	14.8	1.33	771	Class C + 0.125 lb/sk Polyflake

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	284	500'	100	11.9	2.45	695	Class C + 2% Sodium Metasilicate + 0.1% Dispersant + 0.2% Antifoam + 0.2% Retarder
Stage 1 Tail	652	600'	100	14.8	1.33	868	Class C + 0.125 lbs/sk Polyflake
Stage 2 Lead	804	1550'	100	11.9	2.45	1969	Class C + 2% Sodium Metasilicate + 0.1% Dispersant + 0.2% Antifoam
Stage 2 Tail	259	250'	100	14.8	1.34	348	Class C + 1% Calcium Chloride + 0.125 lbs/sk Polyflake

2nd Intermediate: Stage 1 Float/Landing Collar set @ 10,915', Stage 2 Collar set @ 3830'

9 5/8 Contingency Cement design as follows:

If hole conditions warrant and we will adjust ECP/DVT depth per circulation requirements. The current estimated setting is 3830' 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	513	2700	50	11	2.47	695	TXI + 2% Sodium Metasilicate + 0.2 % Dispersant + 0.2% Antifoam + 0.4% Retarder
Stage 1 Tail	237	600	50	14.8	1.33	868	Class C + 0.3% Retarder + 0.2% Antifoam
Stage 2 Lead	1252	7360	50	11.9	2.45	1969	Class C + 2% Sodium Metasilicate + 0.2 % Dispersant + 0.2% Antifoam + 0.4% Retarder
Stage 2 Tail	106	300	50	14.8	1.34	141	Class C + 1% Calcium Chloride + 0.125 lbs/sk Polyflake

Production: Stage 1 Float/Landing Collar set @ 15,505', Stage 2 Collar set @ 10,600', Stage 3 Collar set @ 7660'. 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 7660' and 10,600' 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	653	4450	50	13.5	1.29	842	TXI + 1.5 gal/sk GASBLOK +0.08 gal/sk D80 Dispersant + 0.04 gal/sk D801 Retarder + 0.05 gal/sk D175A Antifoam + 2% D176 Expanding Agent
Lead							
Stage 1 Tail	141	600	50	16.4	1.09	130	Class H + 0.4% D167 Fluid loss + 0.3% D800 Retarder + 2% D176 Expanding agent
Stage 2 Lead	305	4834	25	11.5	2.39	728	TXI + 10% D154 Extender + 0.6% D112 Fluid loass + 0.1% D208 Viscosifier + 3% D174 Expanding Agent + 4 lbs/sk Mica + 0.2% D65 Dispersant
Stage 2 Tail	100	500	25	16.4	1.09	109	Class H + 0.4% D167 Fluid loss + 0.3% D800 Retarder + 2% D176 Expanding agent
Stage 3 Lead	312	4590	25	11.5	2.16	674	TXI + 1.5% D79 Sodium Metasilicate + 5% D154 Extender + 1% D112 Fluid Loss + 0.2% D65 Dispersant + 0.2% D46 Antifoam
Stage 3 Tail	65	586	25	14.8	1.34	84	Class C + 0.3% D167 Fluid loss + 0.2% D13 Retarder + 0.2% D65 Dispersant

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 – 7660	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
7660 – 15,550		10.1 – 11.5	36 – 44	6 – 14	12 – 18	10 – 12	9.5 – 10.0	<6
15,550' 16,550	Cut brine	8.4 - 8.9	28 - 30	0 - 1	0 - 1	NC	9. – 9.5	<6

Our goal for <u>all</u> 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:**
    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 15,550 to Intermediate casing and TD-15,550
    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:**

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 work string. TIH, release retrievable bridge plug and pull out of hole. Pick up treating packer. TIH to 15,500' and set. Test back side to 1000 psi. Acidize down tubing with five 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 15,500'. 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.

West Gramma Ridge SWD #1 Drilling Plan

1. Location:

   Legal: 1105' FNL 1480' FWL Unit C, T. 22 S, R 32 E. Section 6: NW ¼

   Lea County, New Mexico

   GPS: 32.4247667°, -103.7181333°

   O&G Lease#: NMNM-012845

2. Elevation Above Sea Level: 3,611'

3. Geologic Name of Surface Formation: Alluvium

4. Proposed Drilling Depth: 16,550'

5. Estimated Tops of All Geologic Formations:

Formation	Estimated Top (feet)	Bearing
Triassic		<10' of perched water @ 40' BGS
Dewey Lake	430	
Salado	520	N/A
Tansil	N/A	N/A
Yates	N/A	N/A
Capitan	N/A	N/A
Delaware Mountain	3830	Hydrocarbons
Bone Spring	7660	Hydrocarbons
Wolfcamp	10,960	Hydrocarbons
Strawn	12,570	Hydrocarbons
Atoka	12,840	Hydrocarbons
Morrow	13,320	Hydrocarbons
Barnett	14,330	Hydrocarbons
Mississippian Lime	14,940	Hydrocarbons
Woodford Shale	15,340	Hydrocarbons
Devonian (Target)	15,550	N/A
Montoya		N/A
Simpson		N/A
Ellenberger		N/A

Cambrian Management
EXECUTIVE SUMMARY WELLBORE DIAGRAM

WELL NAME:	R 360 West Gamma Ridge SWD 1			STATE:	New Mexico		Permit #			Job #	
LOCATION:	T 22 S, R 32 E Sec 6 NE 1/4 NW 1/4			COUNTY:	Lea		Spud	TD	Rig Release	rig Days	
LOCATION:				DATE	Drill					0	
ELEVATION:					Complete					0	
API#							TVD	16550	PBTD		
Drill Contractor	TBD			PREPARED B	A Rickard		Total Depth	16550			
	DEPTH	HOLE SIZE	CASING SIZE	WEIGHT	GRADE	THREAD	CMT	CMT VOL	TOC	centralizers	DV Depth
Conductor CASING:						See cement slurries below					
Surf CASING:	1060	26"	20"	106.4 ppf	J55	LTC	See cement tab on bottom		surface	TBD	none
1st Int CASING:	3500	17 1/2	13 3/8"	68 ppf	J-55	LTC			surface	TBD	1800
2nd Int CASING:	10960	12 1/4"	9 5/8"	53.5	L-80	LTC			surface	TBD	3830
Prod Casing	15550	8 1/2"	7"	35/29/35	CL80-P110-HCL	LTC			surface	Temp Survey	10600/7660
Tubing	15550	5 7/8"	4 1/2	11.6	P110-L80	8rnd LTC					

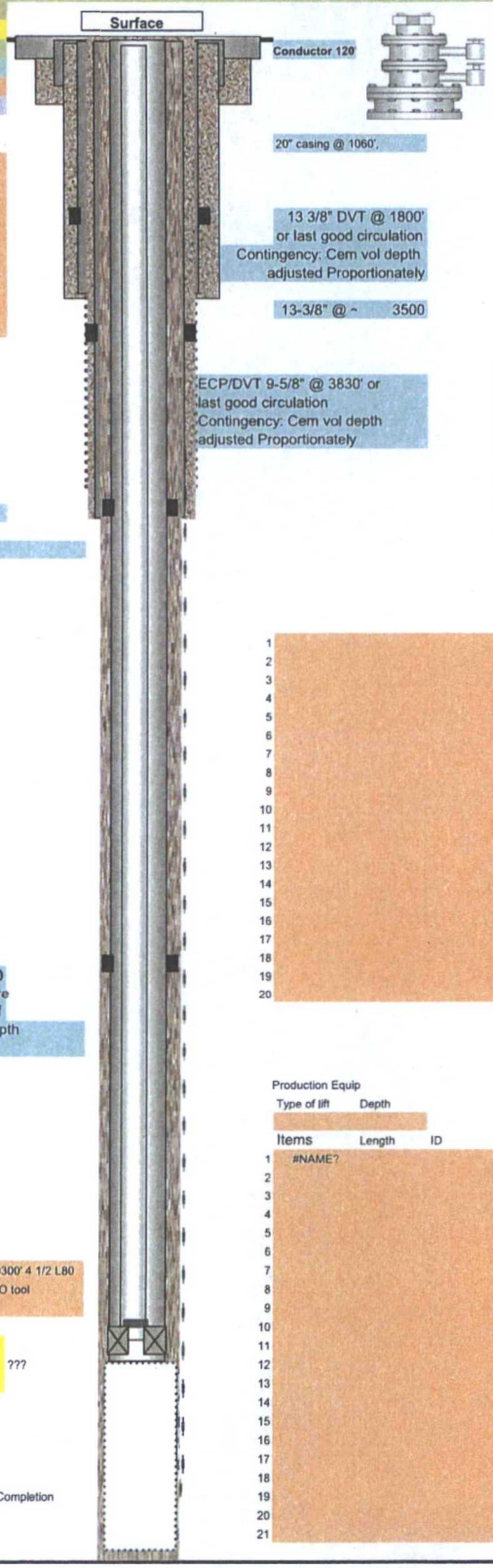
Water Board Depth

Last updated

Regulaton Mark Larson
Drilling Dallas
Complete Andy
Workover

Date

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



	Vendor	Type	Rating
C			
B			
A			

Geology

	Formation	Depth (top)
1	Dewey Lake	430
2	Salado	520
3	Tansil	
4	Yates	
5	Capitan	
6	Delaware Mountain	3830
7	Bone Spring	7760
8	Wolfcamp	10960
9	Strawn	12570
10	Atoka	12840
11	Morrow	13320
12	Barnett	14330
13	Mississippian Lime	14940
14	Woodford Shale	15340
15	Devonian	15550
16	Montoya	
17	Simpson	
18	Ellenberger	
19	Granite	

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Production Equip

Type of lift Depth

	Items	Length	ID	OD
1	#NAME?			
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3				
4				
5				
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7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				

See COA

6. Proposed Casing Program:

Name	Hole (inches)	Size (inches)	Setting Depth (Feet)	Grade	Weight (lbs/ft)	Thread	Condition	Burst SF	Coll. SF	Ten. SF
Surface	26	20	~~1060~~ 670	J55	~~106.4~~ 106.5	LTC BTC	New	1.2	1.125	1.6
1st Intermediate	17 ½	13 3/8	~~3,500~~ 4400	J55	68	~~LTC~~	New	1.2	1.125	1.6
2nd Intermediate	12 ¼	9 5/8	10,960	L80	53.5	LTC	New	1.2	1.125	1.6
Production	8 ½	7	0-120	HCL80	35	LTC	New	1.2	1.125	1.6
Production	8 ½	7	120-12,230	P-110	29	LTC	New	1.2	1.125	1.6
Production	8 ½	7	12,230-15,550	HCL80	35	LTC	New	1.2	1.125	1.6
Tubing	$5\frac{7}{8}$	4 ½	0-5,000	P-110	11.6	LTC	New	1.2	1.125	1.6
Tubing	$5\frac{7}{8}$	4 ½	5,000-15,550	L-80	11.6	LTC	New	1.2	1.125	1.6
Open Hole	5.875		15,550-16,550	NA	NA	NA	NA			

7. Drilling Procedure: 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. 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 15,550', OH Logs (Paragraph 12) will be run 15,550'-10,960' 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-15,550'. The depths from 15,550' to 16,550' 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 15,550' inside the 7". All intervals will be logged prior to running casing per BLM/OCD requirements.

8. Pressure Controls: A 10M 13-5/8" BOP system (Double Ram and Annular preventer) and 2 power chokes installed on manifold and 1 manual choke per BLM Onshore Order 2, 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	820	700	100	13.5	1.69	1386	Class C + 2% Gel + 0.2% Antifoam + 0.125 lb/sk Polyflake
Tail	580	360	100	14.8	1.33	771	Class C + 0.125 lb/sk Polyflake

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.

See COA

Interval	Amount (sacks)	Ft of Fill	Excess (%)	PPG	Ft^3/sx	Volume (ft^3)	Cement Type
Stage 1 Lead	284	500'	100	11.9	2.45	695	Class C + 2% Sodium Metasilicate + 0.1% Dispersant + 0.2% Antifoam + 0.2% Retarder
Stage 1 Tail	652	600'	100	14.8	1.33	868	Class C + 0.125 lbs/sk Polyflake
Stage 2 Lead	804	1550'	100	11.9	2.45	1969	Class C + 2% Sodium Metasilicate + 0.1% Dispersant + 0.2% Antifoam
Stage 2 Tail	259	250'	100	14.8	1.34	348	Class C + 1% Calcium Chloride + 0.125 lbs/sk Polyflake

2nd Intermediate: Stage 1 Float/Landing Collar set @ 10,915', Stage 2 Collar set @ 3830'

9 5/8 Contingency Cement design as follows:

If hole conditions warrant and we will adjust ECP/DVT depth per circulation requirements. The current estimated setting is 3830' 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	513	2700	50	11	2.47	695	TXI + 2% Sodium Metasilicate + 0.2 % Dispersant + 0.2% Antifoam + 0.4% Retarder
Stage 1 Tail	237	600	50	14.8	1.33	868	Class C + 0.3% Retarder + 0.2% Antifoam
Stage 2 Lead	1252	7360	50	11.9	2.45	1969	Class C + 2% Sodium Metasilicate + 0.2 % Dispersant + 0.2% Antifoam + 0.4% Retarder
Stage 2 Tail	106	300	50	14.8	1.34	141	Class C + 1% Calcium Chloride + 0.125 lbs/sk Polyflake

Production: Stage 1 Float/Landing Collar set @ 15,505', Stage 2 Collar set @ 10,600', Stage 3 Collar set @ 7660'. 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 7660' and 10,600' 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	653	4450	50	13.5	1.29	842	TXI + 1.5 gal/sk GASBLOK +0.08 gal/sk D80 Dispersant + 0.04 gal/sk D801 Retarder + 0.05 gal/sk D175A Antifoam + 2% D176 Expanding Agent
Lead							
Stage 1 Tail	141	600	50	16.4	1.09	130	Class H + 0.4% D167 Fluid loss + 0.3% D800 Retarder + 2% D176 Expanding agent
Stage 2 Lead	305	4834	25	11.5	2.39	728	TXI + 10% D154 Extender + 0.6% D112 Fluid loass + 0.1% D208 Viscosifier + 3% D174 Expanding Agent + 4 lbs/sk Mica + 0.2% D65 Dispersant
Stage 2 Tail	100	500	25	16.4	1.09	109	Class H + 0.4% D167 Fluid loss + 0.3% D800 Retarder + 2% D176 Expanding agent
Stage 3 Lead	312	4590	25	11.5	2.16	674	TXI + 1.5% D79 Sodium Metasilicate + 5% D154 Extender + 1% D112 Fluid Loss + 0.2% D65 Dispersant + 0.2% D46 Antifoam
Stage 3 Tail	65	586	25	14.8	1.34	84	Class C + 0.3% D167 Fluid loss + 0.2% D13 Retarder + 0.2% D65 Dispersant

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 – 7660	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
7660 – 15,550		10.1 – 11.5	36 – 44	6 – 14	12 – 18	10 – 12	9.5 – 10.0	<6
15,550' 16,550	Cut brine	8.4 - 8.9	28 - 30	0 - 1	0 - 1	NC	9. – 9.5	<6

Our goal for <u>all</u> 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:**

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 15,550 to Intermediate casing and TD-15,550

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: None.**

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.

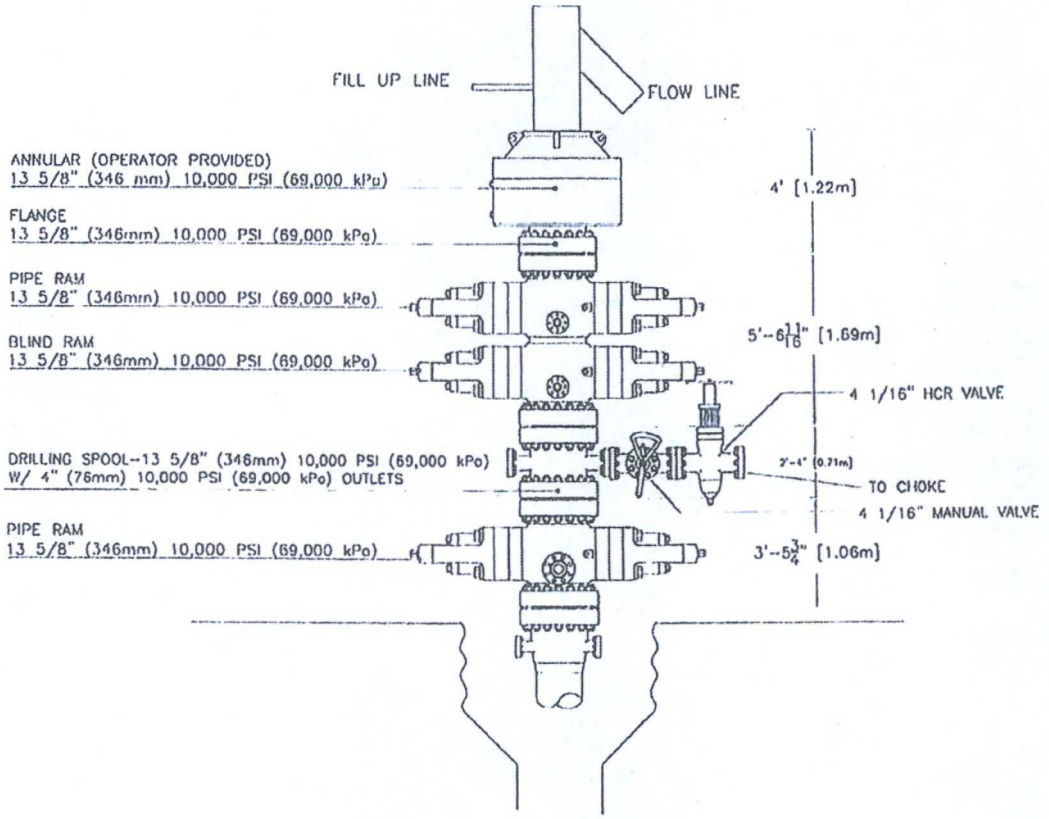
17. **Unit Well Current Unit POD:** The well is not in a unit or current unit POD.

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

19. **Completion plans:** MIRU well service unit. PU 2 7/8" PH-6 work string. TIH, release retrievable bridge plug and pull out of hole. Pick up treating packer. TIH to 15,500' and set. Test back side to 1000 psi. Acidize down tubing with five 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 15,500'. 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.

BOP LAYOUT

RIG 000



NOTE: CASING BOWL SET AT MATTING LEVEL AND 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

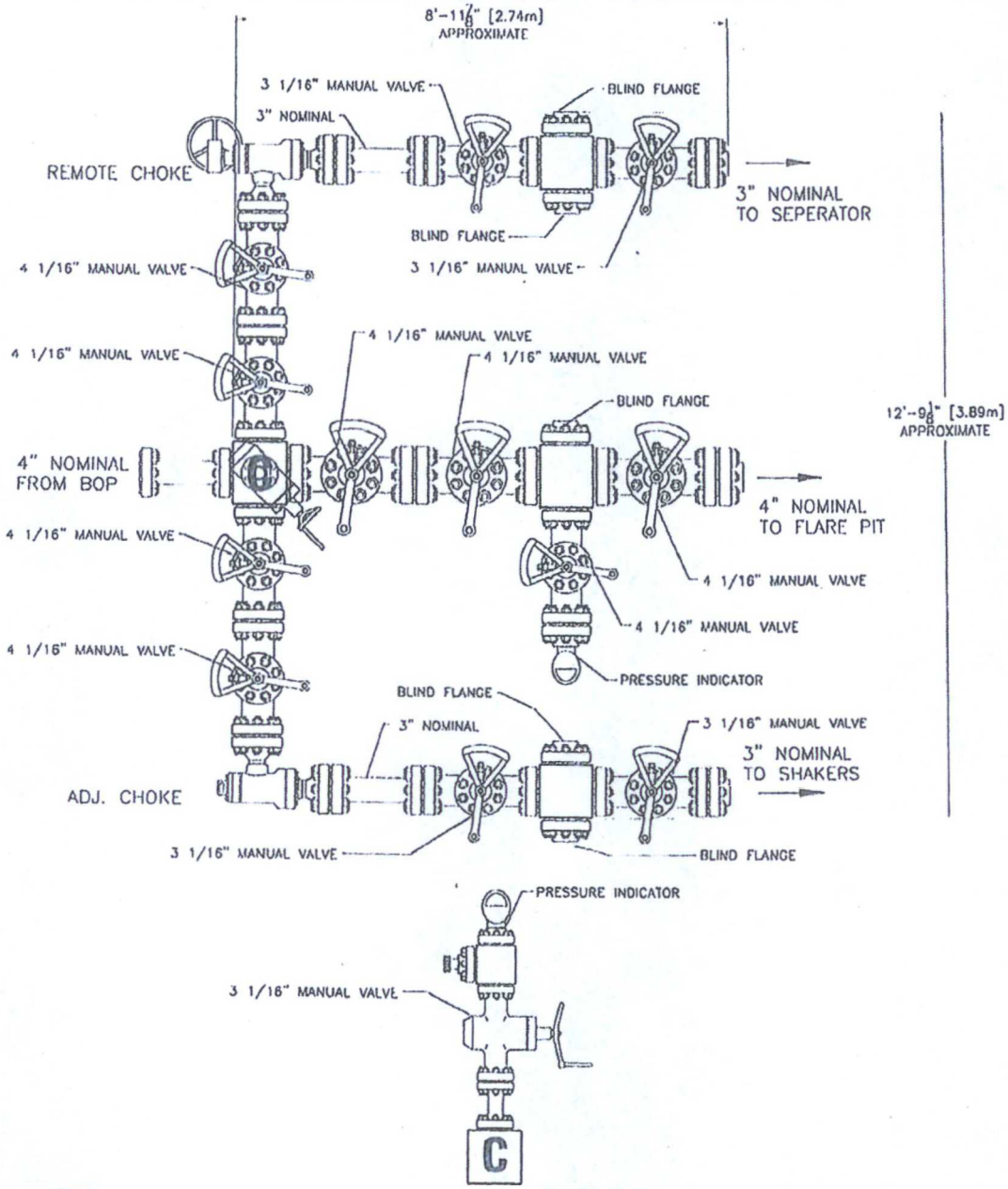
PRECISION DRILLING

DATE: 2014/02/26
DWG No.: BOP-000-006
DWG BY : EV

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.: 602-422-K7
DWG BY : MW

R360 Environmental Solutions Inc.

West Gramma Ridge SWD #1 APD

Operator Certification

I hereby certify that I, or persons under my direct supervision, have inspected the drill site and access road proposed herein; that I am familiar with the conditions that presently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or R360 Permian Basin LLC, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

Executed this 2nd day of September, 2015.

Signed: _____

Printed Name: Chris Ruane
Position: Director of Engineering
Address: 3 Waterway Square Place, Suite 110
The Woodlands, Texas 77380
Telephone (832) 442-2204
Email: chrisr@wasteconnections.com