

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL **OR REENTER**

14-777

DEC 09 2016

RECEIVED

5. Lease Serial No.
NM89059 **NM 129 262**

6. If Indian, Allottee or Tribe Name

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

8. Lease Name and Well No. **SWD (317145)**
RED RUBY 35 FEDERAL 11

9. API Well No. **30-025-34003**
~~30-025-34003~~ **SWD**

10. Field and Pool, or Exploratory **(96802)**
SWD: BELL CANYON-CHERRY
11. Sec., T. R. M. or Blk. and Survey or Area **CANYON**
A, Sec 35, T23S, R32E Mer NMP

1a. Type of work: DRILL REENTER (Conversion)
1b. Type of Well: Oil Well Gas Well Other SWD Single Zone Multiple Zone

2. Name of Operator **ENERGEN RESOURCES CORPORATION (162.828)**

3a. Address **3300 N. A St. Bldg 4 Ste 100 Midland TX 79705**
3b. Phone No. (include area code) **432-687-1155**

4. Location of Well (Report location clearly and in accordance with any State requirements.)*
At surface **(A) NENE 1100 FNL 820 FEL**
At proposed prod. zone **SWD well**

14. Distance in miles and direction from nearest town or post office*
APPROX 35 MILES FROM JAL, NM

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) **829'**
16. No. of acres in lease **Cox 35 Federal lse 320 ac**

17. Spacing Unit dedicated to this well **NA**

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. **appr 4000' from the Cox 35 Fed wells**
19. Proposed Depth **6750**

20. BLM/BIA Bond No. on file **NM2707, NMB000747**

21. Elevations (Show whether DF, KDB, RT, GL, etc.) **3681 GL**
22. Approximate date work will start* **07/01/2014**

23. Estimated duration **14 days**

24. Attachments **SWD-1501**

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 **Brenda Rathjen** Name (Printed/Typed) **Brenda F Rathjen brenda.rathjen@energen.com** Date **7/28/2014**

Title **Regulatory Analyst 432-688-3323**

Approved by (Signature) **/s/ George MacDonell** Name (Printed/Typed) **George MacDonell** Date **JUL 22 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)

Carlsbad Controlled Water Basin

12/09/16 *(Instructions on page 2)

SEE ATTACHED FOR CONDITIONS OF APPROVAL

Approval Subject to General Requirements & Special Stipulations Attached

ENERGEN RESOURCES CORPORATION

Red Ruby 35 Federal SWD 1

1100' FNL and 830' FEL
Sec 35, T-23-S, R-32-E
Lea, Co. NM
Triste Draw Delaware Field
Cherry Canyon SWD Procedure
to Re-enter and Complete as SWD

Date: July 24, 2014

API#: 30-025-34003

AFE No: PB041214

Cost: \$1,703,272

TD: 9100'

PBTD: SURF' (P&A - 8/17/97)

KB: 3694'

GL: 3681'

Surface Casing:
(Existing)

13-3/8" 48-61#/ft, J-55 at 865'.
Cemented w/725 sx Class C, circulated.

-SEE CASING/TUBING/CEMENT/MUD TABLES FOR SPECS-

Intermediate Casing:
(Existing)

8-5/8" 32#/ft, K-55 @ 4762'.
Cemented w/1575 sx Class C, circulated.

SEE CASING/TUBING/CEMENT/MUD TABLES FOR SPECS-

Injection Casing:
(PROPOSED)

5-1/2" 17#/ft, L-80 @ 6750'.
Cement w/1165 sx

SEE CASING/TUBING/CEMENT/MUD TABLES FOR SPECS-

Injection Tubing:
(PROPOSED)

3-1/2" 9.3#/ft, J-55 @ 4950', 5-1/2" AS-1 Pkr @ 4950'

SEE CASING/TUBING/CEMENT/MUD TABLES FOR SPECS-

Perforations:
(PROPOSED)

5050' - 6650'

See Re-Entry Procedure and Wellbore Diagram

*See COAs - need to submit
sundry for completion
approval*

Re-entry Procedure

- 1) Set and test Anchors.
- 2) Dig out to 8-5/8" and prepare wellhead and flange.
 - a) After welding flange, test to 5000 psi against surface plug.
- 3) MIRU Pulling Unit
- 4) Install BOPE w/ 2 7/8" pipe rams (see attached diagram for BOP & manifold). Pressure test BOP's to 500 psi Low & 3,000 psi High pressure. PU Bit and collars and RIH w/ tubing.
 - a) PU 6,800 feet of 2-7/8 7.9# PH-6 workstring, 5 drill collars and a 7-5/8" cut bit.
- 5) RU Reverse Unit. Drill cement plugs @ 15', 809', 2590', and 4700'.
 - a) Drill with 9.0# KCl based drilling mud. Maintain circulation while drilling. Circulate bottoms up after each plug drilled.
- 6) Drill to 6,750', Circulate clean.
 - a) Circulate bottoms up x 2 (twice).
- 7) Circulate and condition open hole for casing and cement. POOH.

- a) POOH to surface, PU Casing scraper, TIH to 6750. Ream if necessary. Circulate bottoms up once.
- 8) RU to run 5.5" casing. Change out BOP pipe rams from 2 7/8" to 5 1/2" pipe rams.
- a) RIH 5.5" 17#/ft L-80 LT&C casing to 6750'. Include DV Tool to set at +/- ~~4810~~⁴⁸¹² ft. and cement shoe and float collar. Bow spring centralizer every 3rd jt. in open hole section.
- 9) Cement 5.5" casing raising TOC to surface as follow:
- a) Pump Stage 1 cement slurry w/ 500 sx. of 65:35 Class C:Poz + 25 lbs./sk. Silica Flour + 1/4 pps Flocele + 50% excess mixed @ 15.2 ppg raising cement up to bottom of DV Tool set at +/- ~~4810~~⁴⁸¹² ft.
- b) Displace cement with mud & wiper plug down to float collar. Bump plug to 3,000 psi. Check floats.
- c) Drop dart and open DV Tool and circulate up DV Tool with mud for two bottoms up circulations.
- d) Pump Stage 2 cement slurry of 710 sx Lead Slurry of 50:50 Class C:Poz + 2% gel + 1/4pps. Slurry to surface + 50% excess mixed @ 12.2 ppg.
- e) Drop wiper plug and displace cement with fresh water down to DV Tool.
- f) Bump wiper plug in DV Tool and pressure up to an estimated pressure of +/- 1,500 psi over cement lift pressure to close DV Tool.
- g) SI well.
- h) WOC 36 hrs.
- 10) RU reverse unit & recirculating pump. PU a 4 1/2" cut bit and RIH with 2-7/8" 7.9#/ft PH-6 workstring and drill out DV Tool @ +/- ~~4810~~⁴⁸¹² ft. & clean out to PBTD @ ~6710'. Displace casing with 2 % KCL water. Circulate bottoms up and POOH & SB workstring.
- 11) Run CBL/GR/CCL.
- a) Run Radial CBL from TD to surface.
- 12) Change out BOP pipe rams from 5 1/2" to 2 7/8" pipe rams.
- 13) Perforate & acidize the Cherry Canyon as per schedule from 5050' to 6650' as follows:
- a) Perforate and acidize via 3 stages as follows:
- Stage 1: 6650'-6210', 215 feet of perfs – 860 perfs - 30,100 gallons of 15% HCL inhibited acid w/ Rock Salt as diverter. (amount of rock salt will be determined based on service company recommendation prior to pumping acid treatment)
 - Stage 2: 6183'-5676', 209 feet of perfs – 836 perfs – 29,260 gallons of 15% HCL inhibited acid w/ Rock Salt as diverter. (amount of rock salt will be determined based on service company recommendation prior to pumping acid treatment)
 - Stage 3: 5624'-5050', 264 feet of perfs – 1056 perfs – 36,960 gallons of 15% HCL inhibited acid w/ Rock Salt as diverter. (amount of rock salt will be determined based on service company recommendation prior to pumping acid treatment)
- b) All perforations to be shot @ 4 spf, 120 deg. phasing w/ 3 1/2 inch carrier guns & 21 gram charges.
- c) PU & RIH w/ 5 1/2" AS-1 packer and 5 1/2" RBP, PSN & 2 7/8" 7.9 #/ft PH-6 tubing workstring. Set RBP @ ~75 ft. below bottom perforation & set packer @ +/- 150 ft. above top perforation for each stage and isolate with RBP & PKR. Test packer & annulus to 500 psi. prior to pumping acid down tubing.
- d) Acidize each perforation interval/stage by pumping down 2 7/8" workstring at "matrix" pump rate of 6 bpm on each stage
- e) Displace acid to top perf. with 2% KCL water between stages.
- 14) RIH with 2-7/8" 7.9#/ft PH-6 workstring and drill out plugs using 4 1/2 inch cut bit. Circulate bottoms up once and POOH & LD workstring.
- 15) PU & RIH with injection equipment to +/- 5000 ft. as follows:

*See COA
must submit
Sundry for
completion
approval.*

a) RIH on 3.5" 9.3# J-55 EUE 8Rd IPC (TK-99) tubing, X nipple, 1 jt. Tubing, X nipple – 5-1/2" Arrowset-1 "Nickel Plated" Packer w/ wireline guide & on-off tool.

16) Circulate packer fluid.

17) Set packer in compression and allow for air to work out of annulus, then pressure test packer & annulus:

a) Pressure test packer to 1,000 psi. Hold for 30 minutes.

18) ND BOP, NU Injection wellhead.

19) Notify OCD personnel for final mechanical integrity testing.

20) RDMO pulling unit

21) RU SWD facility. Begin injection after C-108 injection permit is approved.

Red Ruby 35 Federal SWD 1

API 30-025-34003

07/14/16

Casing, Tubing, Cement, Mud tables:

Casing/Tubing Program:

Casing	Size	Depth	Grade	Weight	Connection	PSI	Calculated	PSI	Calculated	x1000 lbs	Calculated
		MD				Collapse	S.F.	Burst	S.F.	Tension	S.F.
Surface csg.	13 3/8"	-	J-55	48 ppf	Buttress	770	-	1730	-	541	-
Surface csg.	13 3/8"	865'	J-55	61 ppf	Buttress	1540	-	3090	-	962	-
Intermediate csg.	8 5/8"	4762'	K-55	32 ppf	Buttress	2530	-	3930	-	503	-
Injection csg.	5 1/2"	6750' (Planned)	L-80	17 ppf	LT & C	6390	1.89	7740	1.14	397	3.46
Injection Tubing	3-1/2"	5000' (Planned)	J-55	9.3 ppf	EUE 8 RD IPC TK-99	7400		6990		142.46	
Injection Packer	5-1/2"	5000' (Planned)	Arrowset-1, 7,000 psi x 3-1/2" 8 Rd. - "Nickel Plated" Packer								

Cement Program:

13 3/8" csg. @ 865'	Lead: 525 sxs Class C + 4% Gel + 2% CaCl ₂ + 1/4 pps Flocele, Tail w/ 200 sxs Class C + 2% CaCl ₂ + 1/4 pps Flocele + 100% Excess; TOC @ Surface
8 5/8" csg. @ 4762'	Lead: 1,100 sxs Class C = 9 pps Salt + 5 pps Gilsonite + 1 pps Econoloie + 1/4 pps Flocele, Tail w/ 475 sxs Class C + 2% CaCl ₂ ; TOC @ Surface
5 1/2" (Planned)	Stage 1: 500 sxs 65:35 Class C: Poz + 25 pps Silica Flour + 1/4 pps Flocele + 50% Excess @ 15.2 ppg, YIELD 2.83 ft ³ /sk; TOC @ Bottom of DV Tool @ +/- 4810 ft.; Stage 2: 710 sxs 50/50 Class C:Poz + 1/4 pps Flocele + 2% Gel, 50% Excess @ 12. 2 ppg, Yield 1.42 ft ³ /sk , TOC @ surface. DV Tool to be utilized at +/- 4810 ft.

See COA

4812' (50' below previous casing)

Mud Program:

Procedure	Type Mud	Funnel Viscosity	Plastic Viscosity	Yield Point	Water Loss	Ph	F.C.
7-7/8"OH - Drill out cement plugs	9.0 ppg Brine Mud	51 Sec/qt.	12	16	29 ml/30 min.	9.5	1/32

Energen Resources
Red Ruby 35 Federal SWD 1
Lea County, New Mexico

Elevation: GL 3681' KB 3694'
 Location: 1100' FNL, 830' FEL
 A, Sec 35, T-23-S, R-32-E

API #: 30-025-34003
 Spudded: 7/27/1997
 Completed: 8/18/1997
 P&A: 8/17/1997

**Proposed Conversion
 to SWD well**

Surface csg:
 13-3/8" 48 & 61#, J-55
 Set @ 865', Hole size 17-1/2"
 525 sxs Class C + 4% Gel + 2%
 CaCl2 + 1/4 pps Flocele, Tail w/
 200 sxs Class C + 2% CaCl2 +
 1/4 pps Flocele + 100% Excess;
 TOC @ Surface **865'**

Intermediate csg:
 8-5/8" 32#, K55 set @ 4762'
 Hole size 11"
 1,100 sxs Class C = 9 pps Salt +
 5 pps Gilsonite + 1 pps
 Econoloie + 1/4 pps Flocele, Tail
 w/ 475 sxs Class C + 2% CaCl2;
 TOC @ Surface

4762'

DV Tool set @ +/- 4810 ft.

4812'

Injection csg:
 5-1/2" 17#, L-80 set @ ~6750'
 DV Tool @ +/- 4810 ft., Cmt to Surf.
 Hole size 7-7/8"

Stage 1: 500 sxs 65:35 Class C:
 Poz + 25 pps Silica Flour + 1/4
 pps Flocele + 50% Excess @
 15.2 ppg. TOC to bottom of DV
 Tool @ +/- 4810 ft. **Stage 2:** 710
 sxs 50/50 Class C: Poz + 1/4 pps
 Flocele + 2% Gel, 50% Excess
 @ 12. 2 ppg. TOC @ surface.

6750'

45 sx cmt plug @ 7106'-7005'

60 sx plug 9075' - 8873'

TD: 9100'

Tubing:

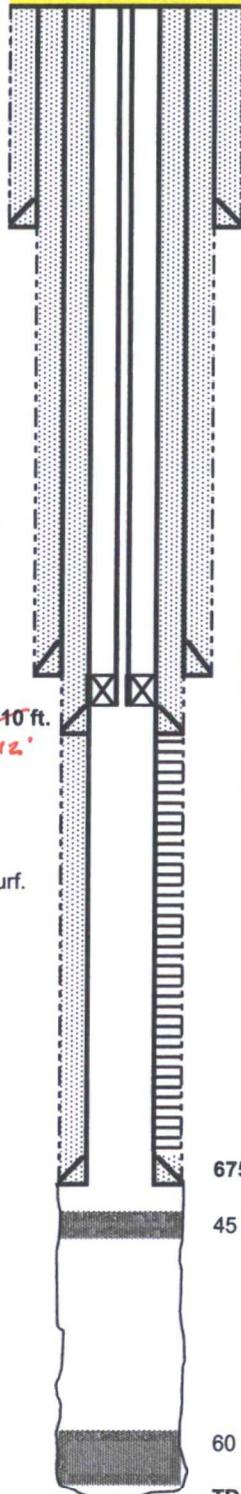
3-1/2", 9.3# J-55 EUE 8Rd IPC, EOT ~ 5000'

5-1/2" Arrowset-1, 7,000 psi x 3-1/2" 8Rd packer
 set ~5000'

Perfs: 5050' - 5624', 265' with 1056 perfs

5676' - 6183', 209' with 836 perfs

6210' - 6650', 215' with 860 perfs



Energen Resources
Red Ruby 35 Federal 1 (Dry Hole)
Lea County, New Mexico

Elevation: GL 3681'

KB 3694'

Location: 1100' FNL, 830' FEL

A, Sec 35, T-23-S, R-32-E

Spudded: 7/27/1997

Completed: 8/18/1997

API #: 30-025-34003

P&A: 8/17/1997

Current Status - P&A
as of 5/2/2014

Surface csg:

13-3/8" 48 & 61#, J-55
Set @ 865', Hole size 17-1/2"
525 sxs Class C + 4% Gel +
2% CaCl₂ + 1/4 pps Flocele,
Tail w/ 200 sxs Class C + 2%
CaCl₂ + 1/4 pps Flocele +
100% Excess; TOC @ Surface

865'

Cement to Surface with 15 sx from 15'

30 sx cmt plug 919' - 809'

30 sx cmt plug @ 2700'-2590'

Intermediate csg:

8-5/8" 32#, K55, set @ 4762'
Hole size 11"
1,100 sxs Class C = 9 pps Salt
+ 5 pps Gilsonite + 1 pps
Econoloie + 1/4 pps Flocele,
Tail w/ 475 sxs Class C + 2%
CaCl₂; TOC @ Surface

4762'

70 sx cmt plug @ 4825' - 4700', Tagged plug

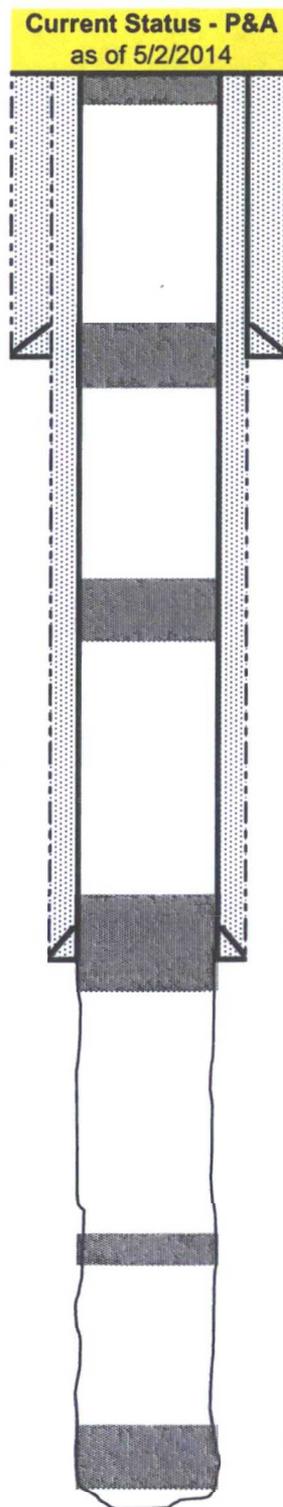
45 sx cmt plug @ 7106'-7005'

60 sx plug 9075' - 8873'

TD: 9100'

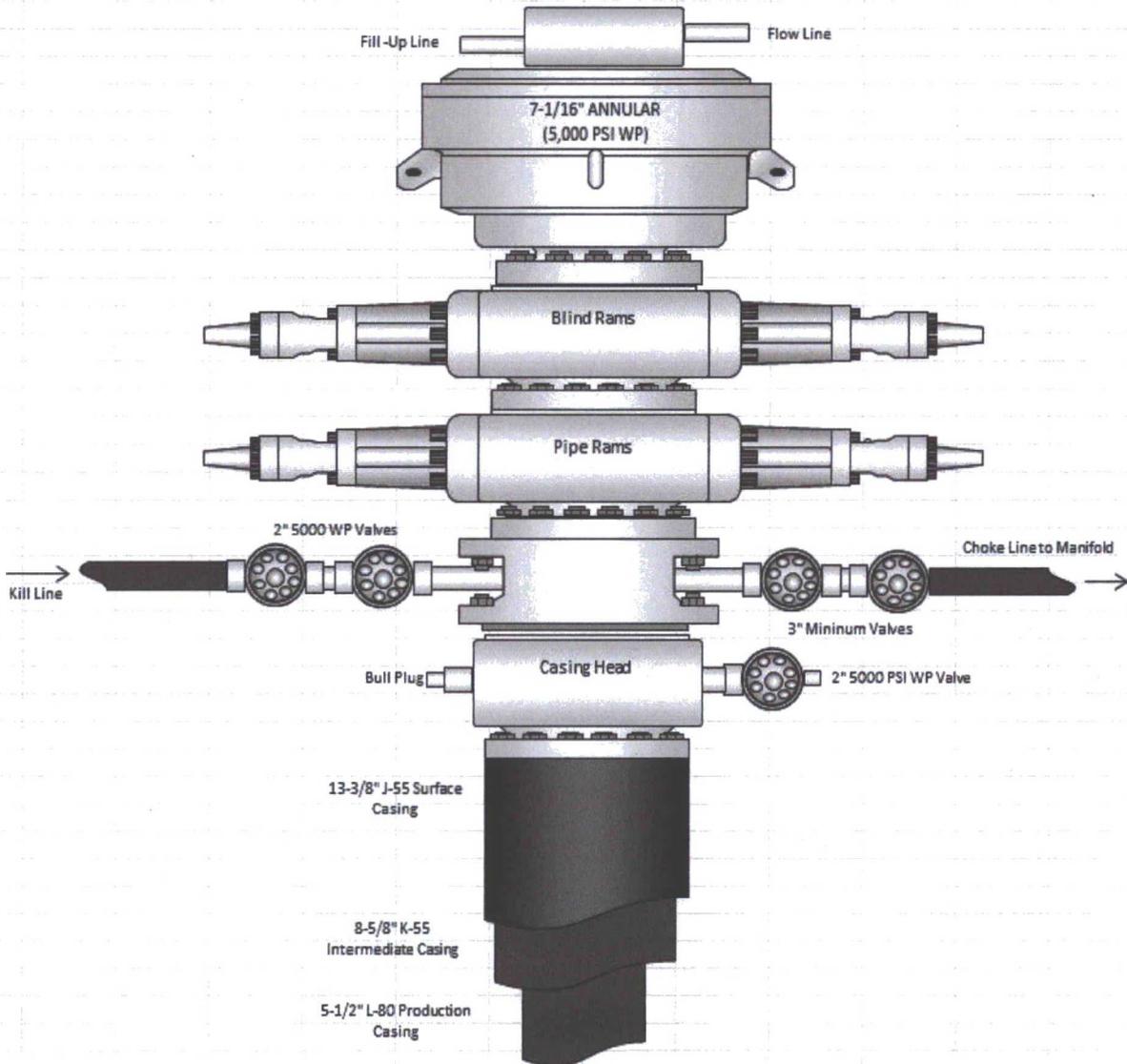
Formation Tops

Rustler: 1218'
Delaware Lime: 4850'
Delaware Sand: 5050'
Bone Springs: 8860'



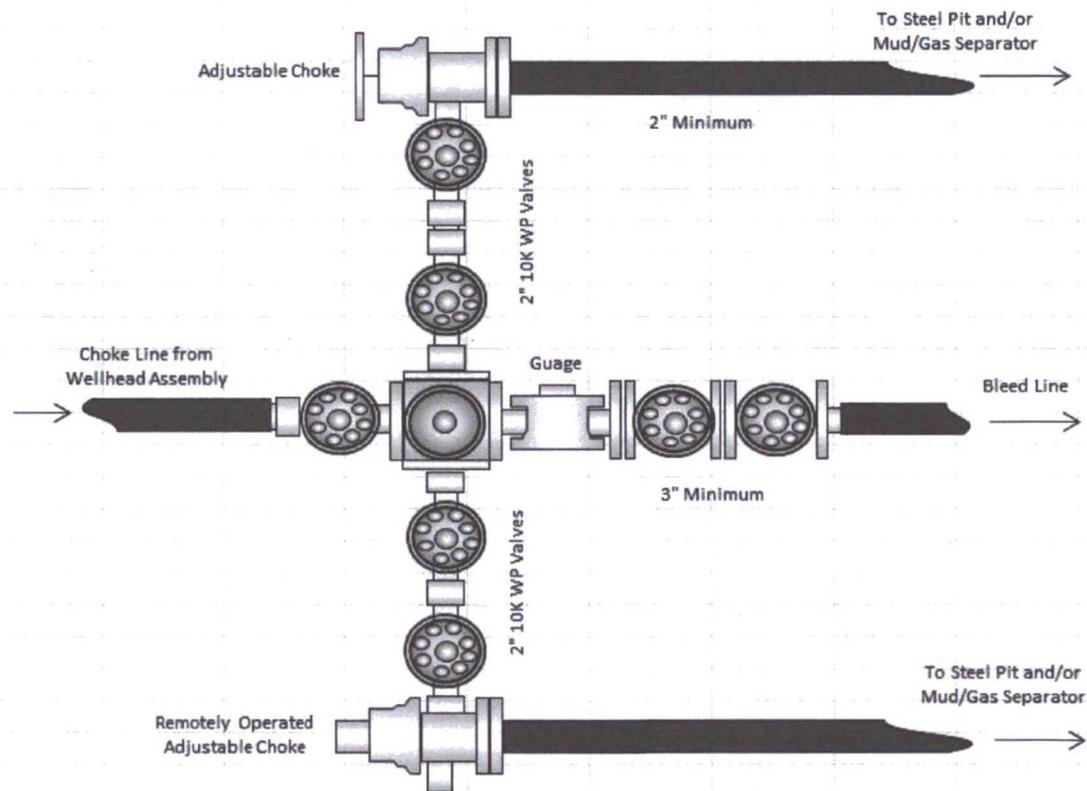


Red Ruby 35 Federal SWD 1 BOP Schematic

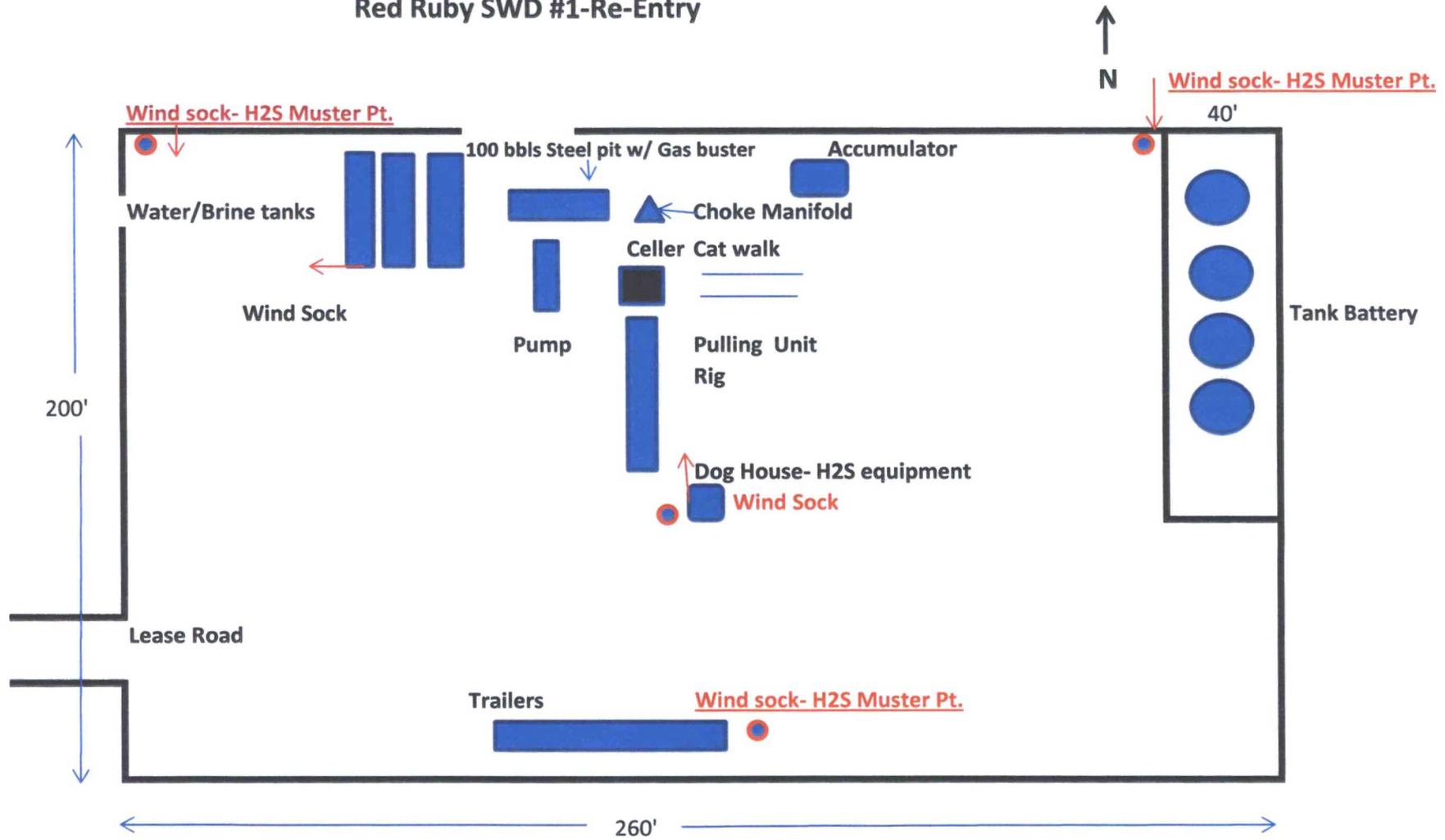


ENERGEN®

Red Ruby 35 Federal SWD 1 Choke Manifold Assembly Schematic (10,000 PSI WP)



Location and Pulling Unit Lay out Red Ruby SWD #1-Re-Entry



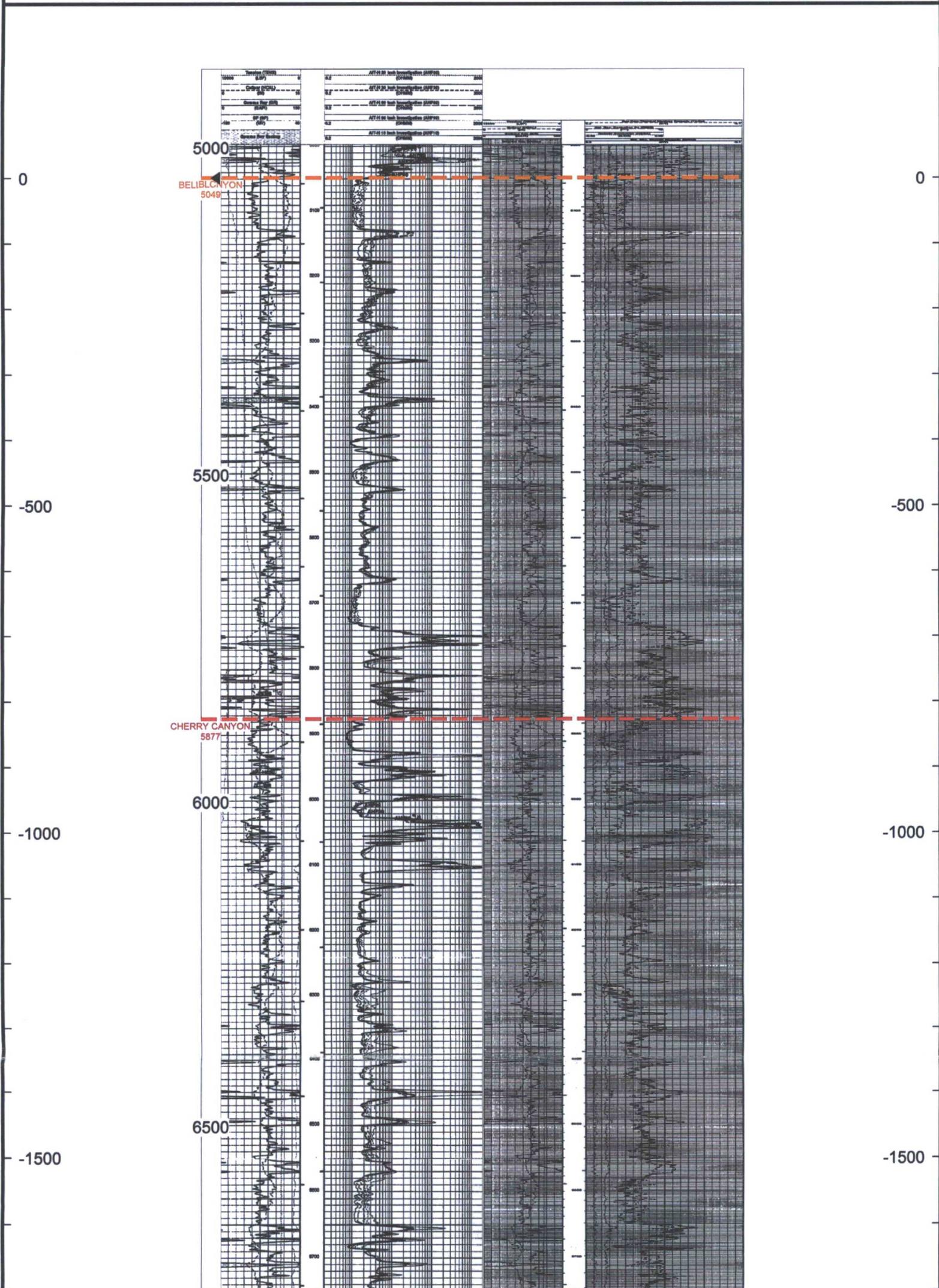
Hydrocarbon Potential in Energen's Proposed Injection Zone in Red Ruby 35 Federal #1

In review of the electric logs from the Red Ruby well, including neutron-density porosity and resistivity, the proposed injection interval is highly water-bearing. There appears to be 3 zones that possibly may contain some hydrocarbons: 1) 5054-56; 2) 5144-46; and 3) 5292-94. However, the water saturation ranges from a minimum of 68-86 percent, with all 3 intervals adjacent to water bearing zones. Therefore, considering the high water saturations within these thin zones, it is very unlikely the proposed injection zone has the potential to produce oil or gas in paying quantities.

30025340030000

PATTERSON PETRO
RED RUBY '35' FEDER 1
1101 FNL/829 FEL

TWP: 23 S - Range: 32 E - Sec. 35
Datum=3694.00



TD=9100.00

Closed Loop System Drill Pit

Design & Closure Plan

Red Ruby 35 Federal SWD 1

1100 FSL & 830 FEL

SECTION 35-T23S-R32E

Lea County, New Mexico

Operating and Maintenance

Energen Resources Corporation will be using all above ground steel pits (Closed Loop System) for fluid and cuttings while drilling. If any tank develops a leak we will have immediate visual discovery, we would then transfer the fluid to another tank then remove any contaminated soil and dispose of it in the cuttings bins for transportation. All leaks should be kept to less than 5 barrels. Rig crews will monitor the tanks at all times.

Equipment

3-Roll off bins with Tracks

2-500 bbl Open top Frac tanks

Closure Plan

During drilling operations all liquids, drilling fluids and cuttings will be hauled off via R360 (Formally Controlled Recovery Inc.) Permit R-9166 or any other approved facility.



Operator Certification

**Red Ruby 35 Federal 1D
API 30-025-34003
Lea County, New Mexico**

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein: that I am familiar with the conditions which currently 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 the company I represent, 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 16 day of May, 2014.
Name Boyd Holmes Boyd Holmes
Position Title Completion Superintendent
Address 3300 North "A" Street Bldg. 4, Suite 100 Midland, TX 79705
Telephone 432-687-1155
Field Representative (if not above signatory) _____
Address (if different from above) _____
Telephone (if different from above) _____
E-mail (optional) _____