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Office  
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1625 N. French Dr., Hobbs, NM 87240  
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1301 W. Grand Ave., Artesia, NM 88210  
District III  
1000 Rio Brazos Rd., Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM  
87505

State of New Mexico  
Energy, Minerals and Natural Resources

Form C-103

June 19, 2008

OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

WELL API NO. 30-045-34426
5. Indicate Type of Lease STATE <input type="checkbox"/> FEE <input type="checkbox"/>
6. State Oil & Gas Lease No.
7. Lease Name or Unit Agreement Name: Central Basin SWD
8. Well Number 1
9. OGRID Number 162928
10. Pool name or Wildcat Entrada

**SUNDRY NOTICES AND REPORTS ON WELLS**  
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

1. Type of Well: Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other SWD
2. Name of Operator Energen Resources Corporation
3. Address of Operator 2198 Bloomfield Highway, Farmington, NM 87401
4. Well Location Unit Letter <u>N</u> : <u>690</u> feet from the <u>South</u> line and <u>1727</u> feet from the <u>West</u> line Section <u>09</u> Township <u>28N</u> Range <u>13W</u> NMPM County <u>San Juan</u>
11. Elevation (Show whether DR, RKB, RT, GR, etc.) 6015' GL

12. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

PERFORM REMEDIAL WORK ☐ PLUG AND ABANDON ☐  
TEMPORARILY ABANDON ☐ CHANGE PLANS ☐  
PULL OR ALTER CASING ☐ MULTIPLE COMPL ☐  
DOWNHOLE COMMINGLE ☐

OTHER: Perfrom step rate test

☒

SUBSEQUENT REPORT OF:

REMEDIAL WORK ☐ ALTERING CASING ☐  
COMMENCE DRILLING OPNS. ☐ P AND A ☐  
CASING/CEMENT JOB ☐

OTHER:

☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Energen Resources plans to perform a step rate test according to the attached procedure to determine formation breakdown pressure in an effort to get the maximum allowable injection pressure increased.

\* Down hole gauges are required on wells deeper than 2000ft.

\* A minimum of three steps are required below the break-over point

Spud Date:

Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE [Signature] TITLE District Engineer DATE 10/20/2011

Type or print name Adam Klem E-mail address: AKlem@energen.com PHONE 505.325.6800

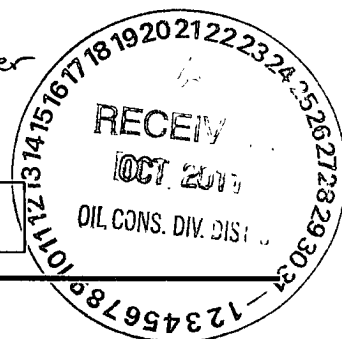
For State Use Only

Deputy Oil & Gas Inspector,  
District #3

APPROVED BY [Signature] TITLE Deputy Oil & Gas Inspector, District #3 DATE 11/3/11

Conditions of Approval (if any):

AV





## ***Step Rate Test Procedure***

### **Central Basin SWD**

**API #: 30-045-34426 / DP#: 3120773A**

**Field: Entrada/Bluff**

**San Juan County, New Mexico**

### **TEST PROCEDURE**

#### **A. OBJECTIVE:**

1. Perform Step Rate Injection Test to determine fracture pressure of injection zone

#### **B. WELL DATA:**

**DEPTHS:** TD: 7,706' PBTD: 7,611'

**ELEVATIONS:** GL: 6,015' KB: 6,032' (17' KBM)

**SURFACE CASING:** 10 3/4" K-55 40.5# ST&C casing set @ 600'.  
Cemented in a single stage w/ 380 sacks, the cement was circulated.

**INTERMEDIATE CASING:** 7 5/8" K-55 26.40# LT&C casing set @ 4,675'.  
Cemented in two stages w/ 915 sacks, the cement was circulated.

**PRODUCTION LINER:** 5 1/2" N-80 17# casing set @ 7,706'. Top of liner @ 4,445'.  
Cemented in a single stage w/ 370 sacks, TOC @ 4,714'.

## C. PROCEDURE:

1. Shut in Central Basin SWD for at least 24 hrs prior to testing to determine shut in formation pressures.

**NOTE:** If the shut in well flows, attach gauge to tubing string to measure the static surface pressure.

2. Conduct bradenhead test with OCD representative observing test.
3. Blow down casing to 0 psi.
4. MIRU pump truck for Step Rate Test.

5. Perform injection test as follows:

Rate [bbl/min]	Time [min]	Volume [bbl]
0.5	15	7.5
1	15	15
1.5	15	22.5
2	15	30
2.5	15	37.5
3	15	45
3.5	15	52.5

6. Record injection rates using a chart recorder or a strip chart in addition to pump truck's computer recorder.
7. Measure and record casing and bradenhead surface pressure with a gauge and recorder.
8. Measure and record injection pressures with a gauge and recorder. Record each step. Pressures must be corrected for the estimated frictional losses at each rate.
9. If the formation fracture pressure has definitively been exceeded (with at least three injection rate/pressure points greater than breakdown pressure), the test can be stopped.
10. Once test is completed, stop pumping. Close the line valve. Record ISIP. Allow pressure to bleed off into the formation.

## D. ANALYSIS:

1. Estimated Maximum injection rate: 4 bbl/min  
Estimated formation permeability:  $\leq 5$ md
2. Plot injection rates vs. stabilized pressure values graphically as a constant slope straight line to

the point where formation fracture pressure is exceeded. Continue to plot to two rate/pressure points that were obtained after the formation breakdown.

3. The ISIP will be considered the minimum pressure required to hold open a fracture in the formation.
4. In the event that no clear breakdown is observed, another SRT will be pumped with downhole pressure gauges.