OCD Artesia

Form 3160-5
(March 2012)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires: October 31, 2014

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

***SUBMIT IN TRIPLICATE** – Other instructions on page 2.*

5. Lease Serial No.
NMNM23768 5

6. If Indian, Allottee or Tribe Name

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

1. Type of Well
☐ Oil Well ☐ Gas Well ☑ Other SWD

8. Well Name and No.
PHILLIPS SWD FEDERAL #1

2. Name of Operator
CHEVRON U.S.A. INC.

9. API Well No.
30-015-25530

3a. Address
15 SMITH ROAD
MIDLAND, TEXAS 79705

3b. Phone No. *(include area code)*
432-687-7375

10. Field and Pool or Exploratory Area
DELAWARE BASIN, NORTH

4. Location of Well *(Footage, Sec., T.,R.,M., or Survey Description)*
330 FSL, & 2063 FEL, SECTION 1, UL: O,T-26S, R-29E

11. County or Parish, State
EDDY COUNTY, NEW MEXICO

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☑ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
	☐ Alter Casing	☐ Fracture Treat	☐ Reclamation	☐ Well Integrity
☐ Subsequent Report	☐ Casing Repair	☐ New Construction	☐ Recomplete	☑ Other RUN STEP RATE TEST & STIMULATE
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
☐ Final Abandonment Notice	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.)

CHEVRON U.S.A. INC. REQUESTS APPROVAL TO CONDUCT A STEP RATE TEST ON THE SUBJECT WELL, AND STIMULATE.

PLEASE FIND ATTACHED, THE INTENDED PROCEDURE, WELLBORE DIAGRAM, AND C-144 INFORMATION FOR NMOCD.

RECEIVED
MAY 12 2014
NMOCD ARTESIA

Accepted for record
NMOCD JC 5-14-14

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

SUBJECT TO LIKE
APPROVAL BY STATE

14. I hereby certify that the foregoing is true and correct. Name *(Printed/Typed)*
DENISE PINKERTON

Title REGULATORY SPECIALIST

Signature Denise Pinkerton

Date 02/04/2013

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by Paul R Swartz

Title PET

Date MAY 7 2014

Conditions of approval, if any, are attached. Approval of this notice 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.

Office

APPROVED
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

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.

(Instructions on page 2)

Phillips Federal SWD 1 (Delaware) Step Rate Test and Stimulation 1/16/2013

API # 3001525530
State/County: NM/ Eddy
SEC 1-26S-29E, 327 FSL & 2068 FEL
Job: Conduct Step-Rate Test

Well Data:

- Currently injecting approximately 500-1500 bbls at 585 psi
- Max surface pressure is 844 psi as per IPI approved by NMOCD in September 2010
- Perforations: 4220'-4275', 4290'-4320', 4525'-4575', 4675'-4730', 5095'-5150'
- TD @ 5650'

Procedure:

1. ***This procedure is based on the most recent information regarding wellbore configuration and equipment that could be found in the Midland Office well files and computer databases as of 1/16/2013. Verify what is in the hole with the well file in the Eunice Field office. Discuss w/ WEO Engineer, Workover Rep, OS, ALS, and FS prior to rigging up on well regarding any hazards or unknown issues pertaining to the well.***

2. Ensure that the well has been shut in for 2 days prior to the test. For verification call Production Engineer, Alyssa Davanzo, at (720) 244-4417 or (432) 687-7659.

3. MIRU step rate test control trailer. RU pump truck and transport.

4. NU lubricator and test to 4500 psi.

5. RIH BH pressure gauge using slickline operations to ~4685', the midpoint of the perforations.

6. Begin conducting step rate test. Maintain a stable rate of 100 BWIPD for 10 minutes and wait for the pressure to stabilize before continuing the test.

7. Pump each 10 minute interval at the following injection rates: 200 BPD, 400 BPD, 600 BPD, 800 BPD, 1000 BPD, 1500 BPD, 2000 BPD, and 2500 BPD. Injection rates may vary based on collected data from the previous step and the estimated frac pressure. Three data points above and below the frac pressure are required for a complete test. Pump approximately 50 bbls total, assuming each stage is 10 minutes.

Potential Pumping Schedule (10 min/Stage)				
Stage	BWIPD	BWIPM	Volume/Stage	Rounded Volume/Stage
1	100	0.07	0.69	1.00
2	200	0.14	1.39	2.00
3	400	0.28	2.78	3.00
4	600	0.42	4.17	5.00
5	800	0.56	5.56	6.00
6	1000	0.69	6.94	7.00
7	1500	1.04	10.42	11.00
8	2000	1.39	13.89	14.00
9	2500	1.74	17.36	18.00
		Total bbls	**63.19**	**70.00**

8. Record stabilized pressure and injection rate for each step and chart results.

9. POOH with BH pressure gauge.

10. ND lubricator.

11. RDMO step rate test equipment and pump truck.

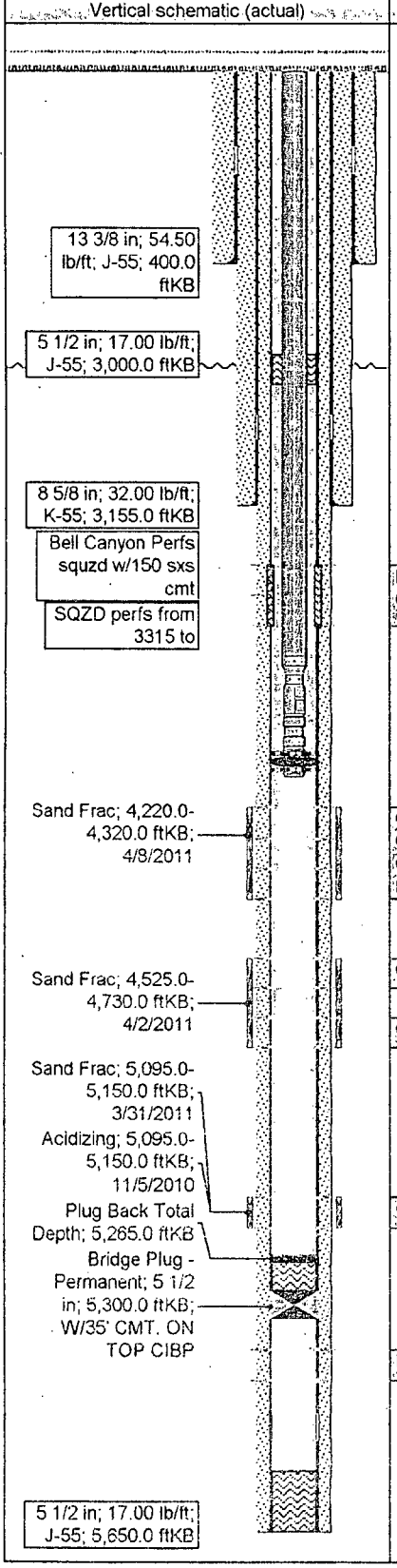
Current Wellbore Schematic

WELL (PN): PHILLIPS SWD FEDERAL 1 RE(CVX) (631381)
FIELD OFFICE:
FIELD: Delaware Basin North
STATE / COUNTY: NEW MEXICO / EDDY
LOCATION: SEC 1-26S-29E, 327 FSL & 2068 FEL
ROUTE: HOB-NM-ROUTE 32- RODNEY ACOSTA
ELEVATION: GL: 3,011.0 KB: 3,023.0 KB Height: 12.0
DEPTHS: TD: 5,650.0

Chesapeake ENERGY

API #: 3001525530
Serial #:
SPUD DATE: 1/6/1986
RIG RELEASE: 1/22/1986
FIRST SALES:

VERTICAL - Original Hole, 10/19/2012 2:05:54 PM



Surface Casing; Set @ 400.0 ftKB ; Original Hole

Set Tension (kips) | Mud Weight | Cut Pull Date | Depth Cut Pull (ftKB)

Item Des	OD (in)	ID (in)	Drift (in)	Wt (lb/ft)	Grade	Top Thread	Top (ftKB)	Btm (ftKB)	Len (ft)
Casing Joints	13 3/8	12.615		54.50	J-55	ST&C	12.0	318.0	306.00
Float Collar	13 3/8	12.615		54.50	J-55	ST&C	318.0	319.0	1.00
Casing Joints	13 3/8	12.615		54.50	J-55	ST&C	319.0	399.0	80.00
Float Shoe	13 3/8	12.615		54.50	J-55	ST&C	399.0	400.0	1.00

Production Casing; Set @ 3,000.0 ftKB ; Original Hole

Set Tension (kips) | Mud Weight | Cut Pull Date | Depth Cut Pull (ftKB)

Item Des	OD (in)	ID (in)	Drift (in)	Wt (lb/ft)	Grade	Top Thread	Top (ftKB)	Btm (ftKB)	Len (ft)
Casing Joints	5 1/2	4.892		17.00	J-55	ST&C	12.0	3,000.0	2,988.00

Intermediate Casing; Set @ 3,155.0 ftKB ; Original Hole

Set Tension (kips) | Mud Weight | Cut Pull Date | Depth Cut Pull (ftKB)

Item Des	OD (in)	ID (in)	Drift (in)	Wt (lb/ft)	Grade	Top Thread	Top (ftKB)	Btm (ftKB)	Len (ft)
Casing Joints	8 5/8	7.921		32.00	K-55	ST&C	12.0	3,073.0	3,061.00
Float Collar	8 5/8	7.921		32.00	K-55	ST&C	3,073.0	3,074.0	1.00
Casing Joints	8 5/8	7.921		32.00	K-55	ST&C	3,074.0	3,154.0	80.00
Float Shoe	8 5/8	7.921		32.00	K-55	ST&C	3,154.0	3,155.0	1.00

Production Casing; Set @ 5,650.0 ftKB ; Original Hole

Set Tension (kips) | Mud Weight | Cut Pull Date: 10/2/1987 | Depth Cut Pull (ftKB): 2,998.7

Item Des	OD (in)	ID (in)	Drift (in)	Wt (lb/ft)	Grade	Top Thread	Top (ftKB)	Btm (ftKB)	Len (ft)
Casing Joints	5 1/2	4.892		17.00	J-55	ST&C	12.0	5,568.0	5,556.00
Float Collar	5 1/2	4.892		17.00	J-55	ST&C	5,568.0	5,569.0	1.00
Casing Joints	5 1/2	4.892		17.00	J-55	ST&C	5,569.0	5,649.0	80.00
Float Shoe	5 1/2	4.892		17.00	J-55	ST&C	5,649.0	5,650.0	1.00

Description: Surface Casing Cement

12.0-400.0

Top of Cement (ftKB): 12.0 Top Measurement Method: Returns to Surface

Fluid	Pump Start Date	Amount (sacks)	Class	Dens (lb/gal)	Vol Pumped (bbl)	Yield (ft³/sack)
Lead	1/6/1986	20				

Description: Intermediate Casing Cement

12.0-3,155.0

Top of Cement (ftKB): 12.0 Top Measurement Method: Returns to Surface

Fluid	Pump Start Date	Amount (sacks)	Class	Dens (lb/gal)	Vol Pumped (bbl)	Yield (ft³/sack)
Lead	1/6/1986	800				
Tail	1/6/1986	200				
Top Out	1/6/1986	30				

Description: Production Liner

3,000.0-5,650.0

Top of Cement (ftKB): 3,000.0 Top Measurement Method: Cement Bond Log

Fluid	Pump Start Date	Amount (sacks)	Class	Dens (lb/gal)	Vol Pumped (bbl)	Yield (ft³/sack)
Lead	1/6/1986	825				

Report Printed: 10/19/2012

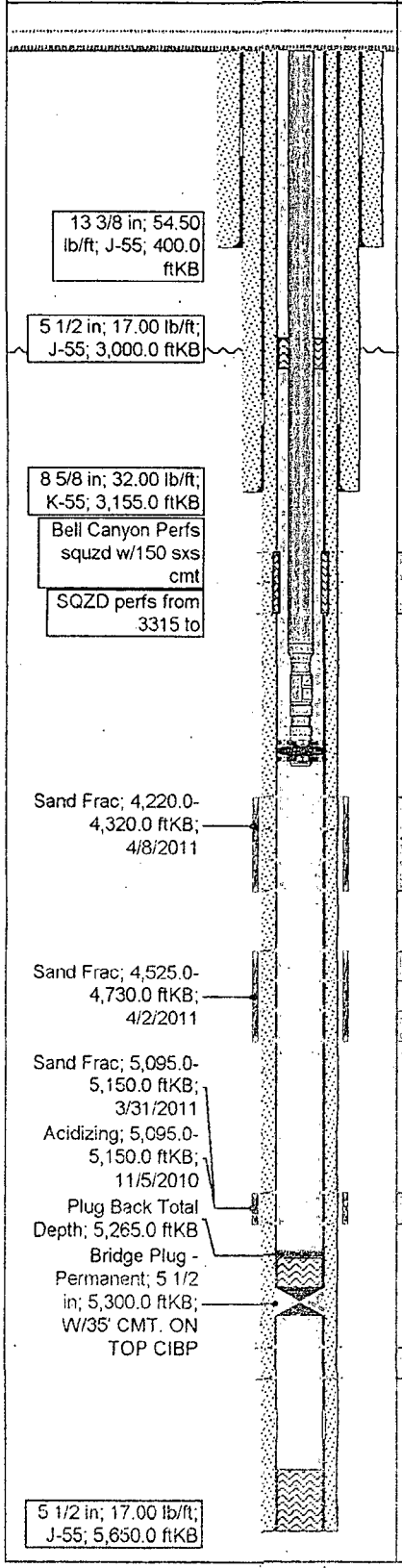
Current Wellbore Schematic

WELL (PN): PHILLIPS SWD FEDERAL 1 RE(CVX) (631381)
FIELD OFFICE:
FIELD: Delaware Basin North
STATE / COUNTY: NEW MEXICO / EDDY
LOCATION: SEC 1-26S-29E, 327 FSL & 2068 FEL
ROUTE: HOB-NM-ROUTE 32- RODNEY ACOSTA
ELEVATION: GL: 3,011.0 KB: 3,023.0 KB Height: 12.0
DEPTHS: TD: 5,650.0

Chesapeake ENERGY

API #: 3001525530
Serial #:
SPUD DATE: 1/6/1986
RIG RELEASE: 1/22/1986
FIRST SALES:

VERTICAL - Original Hole, 10/19/2012 2:05:55 PM



Description: Cement Plug
5,609.0-5,650.0
Top of Cement (ftKB): 5,609.0 Top Measurement Method: Volume Calculations

Fluid	Pump Start Date	Amount (sacks)	Class	Dens (lb/gal)	Vol Pumped (bbl)	Yield (ft³/sack)

Description: Cement Plug
3,000.0-3,050.0
Top of Cement (ftKB): 3,000.0 Top Measurement Method:

Fluid	Pump Start Date	Amount (sacks)	Class	Dens (lb/gal)	Vol Pumped (bbl)	Yield (ft³/sack)

Description: Cement Plug
2,950.0-3,000.0
Top of Cement (ftKB): 2,950.0 Top Measurement Method: Temperature Log

Fluid	Pump Start Date	Amount (sacks)	Class	Dens (lb/gal)	Vol Pumped (bbl)	Yield (ft³/sack)

Description: Cement Plug
350.0-450.0
Top of Cement (ftKB): 350.0 Top Measurement Method: Temperature Log

Fluid	Pump Start Date	Amount (sacks)	Class	Dens (lb/gal)	Vol Pumped (bbl)	Yield (ft³/sack)

Description: Cement Plug
12.0-62.0
Top of Cement (ftKB): 12.0 Top Measurement Method: Temperature Log

Fluid	Pump Start Date	Amount (sacks)	Class	Dens (lb/gal)	Vol Pumped (bbl)	Yield (ft³/sack)

Description: Production Casing Cement
12.0-3,000.0
Top of Cement (ftKB): 12.0 Top Measurement Method: Returns to Surface

Fluid	Pump Start Date	Amount (sacks)	Class	Dens (lb/gal)	Vol Pumped (bbl)	Yield (ft³/sack)
Lead	10/8/2010	500	C	14.80		1.33

Description: Cement Squeeze
3,315.0-3,357.0
Top of Cement (ftKB): 3,315.0 Top Measurement Method: Wireline Tag

Fluid	Pump Start Date	Amount (sacks)	Class	Dens (lb/gal)	Vol Pumped (bbl)	Yield (ft³/sack)
Lead	10/21/2010	100	C	14.80	23.0	1.33
Tail		50	C	14.80	11.0	1.33

Description: Cement Plug
5,265.0-5,300.0
Top of Cement (ftKB): 5,265.0 Top Measurement Method:

Fluid	Pump Start Date	Amount (sacks)	Class	Dens (lb/gal)	Vol Pumped (bbl)	Yield (ft³/sack)

Tubing String: Tubing - Production

Set Depth (ftKB)	Wellbore	Run Date	Pull Date	Cut Pull Date	Depth Cut Pull (ft...
4,197.5	Original Hole	4/19/2011			

Item Des	OD (in)	ID (in)	Drift (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Jts
Tubing	2 7/8	2.441	2.347	6.50	L-80	12.0	4,187.9	4,175.95	134
Cross Over: Reducing	2 7/8	0.000		2.00		4,187.9	4,188.3	0.35	1
Profile Nipple: F	2 3/8	1.500				4,188.3	4,189.3	1.00	1

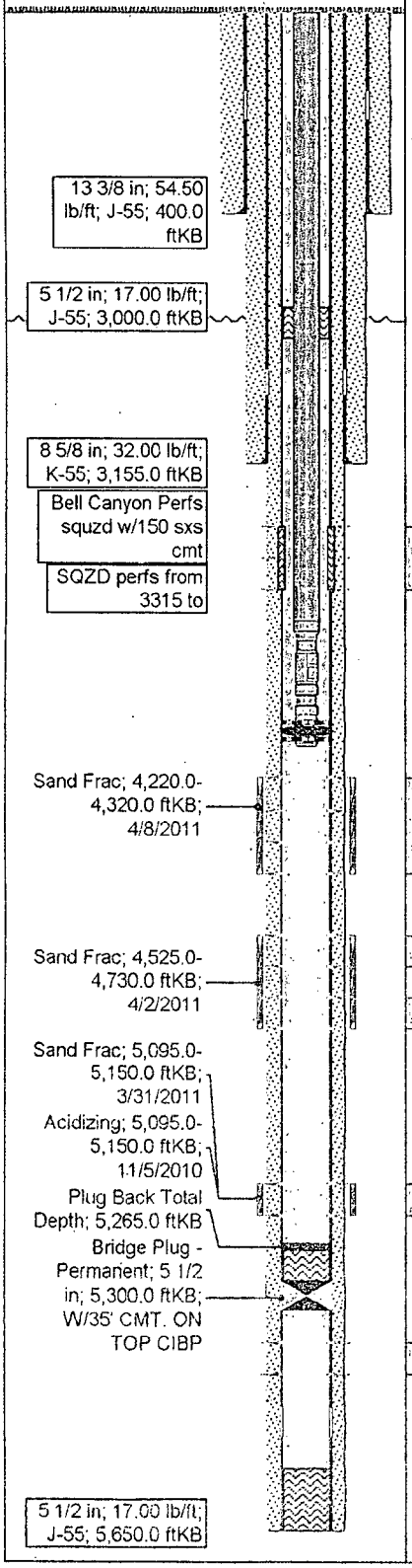
Current Wellbore Schematic

WELL (PN): PHILLIPS SWD FEDERAL 1 RE(CVX) (631381)
FIELD OFFICE:
FIELD: Delaware Basin North
STATE / COUNTY: NEW MEXICO / EDDY
LOCATION: SEC 1-26S-29E, 327 FSL & 2068 FEL
ROUTE: HOB-NM-ROUTE 32- RODNEY ACOSTA
ELEVATION: GL: 3,011.0 KB: 3,023.0 KB Height: 12.0
DEPTHS: TD: 5,650.0

Chesapeake ENERGY

API #: 3001525530
Serial #:
SPUD DATE: 1/6/1986
RIG RELEASE: 1/22/1986
FIRST SALES:

VERTICAL - Original Hole, 10/19/2012 2:05:55 PM



Item Des	OD (in)	ID (in)	Drift (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Jts
On-Off Tool	2 3/8					4,189.3	4,190.3	1.00	1
Packer	2 3/8	0.000		5.50		4,190.3	4,197.5	7.25	1

Perforations

Date	Zone	Top (ftKB)	Btm (ftKB)	Shot Dens (shots/ft)	Current Status
1/6/1986	BELL CANYON, Original Hole	3,315.0	3,357.0		Squeezed
3/25/2011	CHERRY CANYON, Original Hole	4,220.0	4,275.0	1.0	Open
4/7/2011	CHERRY CANYON, Original Hole	4,290.0	4,320.0	1.0	Open
4/2/2011	CHERRY CANYON, Original Hole	4,525.0	4,575.0	1.0	Open
4/2/2011	CHERRY CANYON, Original Hole	4,675.0	4,730.0	1.0	Open
10/27/2010	CHERRY CANYON, Original Hole	5,095.0	5,150.0	2.0	Open
1/6/1986	DELAWARE, Original Hole	5,324.0	5,392.0		Isolated

Stimulations & Treatments

CHERRY CANYON, Stage 3, Sand Frac, 4/8/2011

Min Top Dep...	Max Btm De...	Total Clean...	Avg Treat Pr...	Q Treat Avg...	Post ISIP (psi)	Comment
4,220.0	4,320.0	945.00	1,674.0	26.50	712.0	

Sand Size	Type	Amount	Conc (lb/gal)
20/40	Brown Sand	48,592.0	5.00

CHERRY CANYON, Stage 2, Sand Frac, 4/2/2011

Min Top Dep...	Max Btm De...	Total Clean...	Avg Treat Pr...	Q Treat Avg...	Post ISIP (psi)	Comment
4,525.0	4,730.0	981.00	1,914.0	26.00	711.0	

Sand Size	Type	Amount	Conc (lb/gal)
20/40	Brown Sand	48,592.0	5.00

CHERRY CANYON, Stage 1, Sand Frac, 3/31/2011

Min Top Dep...	Max Btm De...	Total Clean...	Avg Treat Pr...	Q Treat Avg...	Post ISIP (psi)	Comment
5,095.0	5,150.0	670.00	1,739.0	27.00	637.0	

Sand Size	Type	Amount	Conc (lb/gal)
20/40	Brown Sand	50,000.0	5.00

CHERRY CANYON, Stage 1, Acidizing, 11/5/2010

Min Top Dep...	Max Btm De...	Total Clean...	Avg Treat Pr...	Q Treat Avg...	Post ISIP (psi)	Comment
5,095.0	5,150.0	160.00	1,712.0	6.20	603.0	

Well Notes

Date	Type 1	Type 2	Com
3/25/2011	Schematic	Notes	850# SITP HOLD SAFETY MEETING RU CHOKE MANIFOLD & FRAC TANK FLWD 1044 BW & 0 BO IN 18 HRS. ON WIDE OPEN CHOKE F.T.P. 20#.
3/26/2011	Schematic	Notes	FLWD 732 BW & 0 BO IN 24 HRS. ON WIDEOPEN CHOKE F.T.P. 0#
3/27/2011	Schematic	Notes	FLWD BACK 428 BW & 0 BO IN 24 HRS. ON WIDEOPEN CHOKE. 0# F.T.P.
3/29/2011	Schematic	Notes	FLWD 147 BW & 0 BO IN 9 HRS. ON WIDEOPEN CHOKE. 0# F.T.P. ROAD PULLING UNIT TO LOC. HOLD SAFETY MEETING RIG UP KEY PULLING UNIT RECEIVE & RACK UP 166 JTS 9.30# 3 1/2" RENTAL TBG. NDWH & NUBOP & ENVIRO-PAN REL. PKR. TOH W/11 JTS 2 7/8" P.C.I.D. TBG CWI SDON.
3/30/2011	Schematic	Notes	450# SITP & SICP HOLD SAFETY MEETING TOH W/2 7/8" PCID TBG & PKR. CHANGE OUT TBG RAMSTO 3 1/2" & TEST TO 250# LOW SIDE & 5000# HIGH SIDE. DOWN 3 HRS. FOR BROKE DOWN TEST TRK. RU MONK PIPE TESTERS PU PKR TIH PICKING UP 63 JTS. 3 1/2" TBG & TESTING TO 8000# CWI SDON.

Report Printed: 10/19/2012

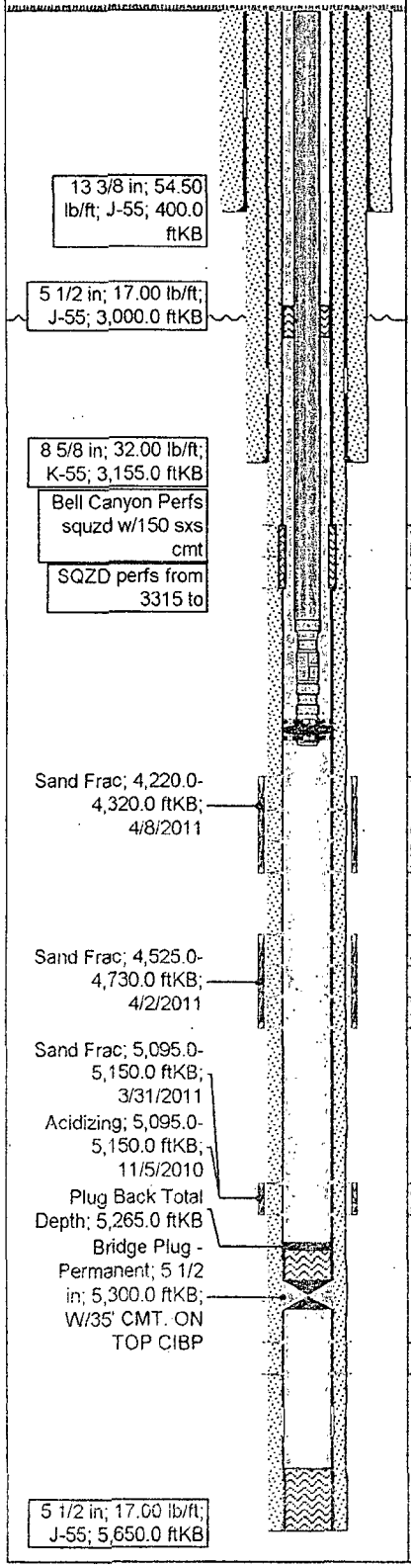
Current Wellbore Schematic

WELL (PN): PHILLIPS SWD FEDERAL 1 RE(CVX) (631381)
FIELD OFFICE:
FIELD: Delaware Basin North
STATE / COUNTY: NEW MEXICO / EDDY
LOCATION: SEC 1-26S-29E, 327 FSL & 2068 FEL
ROUTE: HOB-NM-ROUTE 32- RODNEY ACOSTA
ELEVATION: GL: 3,011.0 KB: 3,023.0 KB Height: 12.0
DEPTHS: TD: 5,650.0

Chesapeake ENERGY

API #: 3001525530
Serial #:
SPUD DATE: 1/6/1986
RIG RELEASE: 1/22/1986
FIRST SALES:

VERTICAL - Original Hole, 10/19/2012 2:05:56 PM



Well Notes

Date	Type 1	Type 2	Com
3/31/2011	Schematic	Notes	350# SITP & SICP HOLD SAFETY MEETING CONT. TIH PICKING UP 3 1/2" TBG & TESTING TO 8000#. RD MONK PIPE TESTING. RU REV. UNIT CIR. HOLE W/120 BW & SET PKR. @ 4998' NU FRAC HEAD & TEST CSG TO 1000# FOR 15 MIN. (OK) CWI SDON.
4/1/2011	Schematic	Notes	140# SITP & 0# SICP HOLD SAFETY MEETING RU CUDD ENERGY SER. TEST LINES TO 8000#. FRAC STAGE 1 CHERRY CANYON PERFS (5095' - 5150') AS PER DESIGN A.I.R. 27 BPM & A.T.P. 1739# TOTAL LOAD 670 BBL. 1 HR. SITP 550# FLWD BACK 1487 B.W. IN 17 HRS ON 26/64 CHOKE F.T.P. 80#.
4/3/2011	Schematic	Notes	FLWD BACK 105 B.W. IN 3 HRS. HOLD SAFETY MEETING ND FRAC HEAD NU ENVIRO-PAN REL. PKR TOH W/3 1/2" TBG & PKR. RU GRAY WIRELINE PU 5 1/2" CBP TIH TO 5000' SET CBP TOH PU 3 1/8" PERF GUNS TIH & PERFORATE CHERRY CANYON @ (4525' - 75' & 4675' - 4730') 1/JSPF IN 4 RUNS 107 TOTAL SHOTS R.D. GRAY WIRELINE. PU PKR TIH W/3 1/2" TBG TO 4411' RU REV. UNIT CIR. HOLE W/100 BW SET PKR. NU FRAC HEAD. RU CUDD & FRAC CHERRY CANYON PERFS (4525' - 4730') AS PER DESIGN. ISDP 711# (5) 671# (10) 632# (15) 619#. SHUT WELL IN R.D. CUDD ENERGY. AVG. RATE 26 BPM AVG. PRESSURE 1914#TOTAL LOAD 954 BBL.
4/8/2011	Schematic	Notes	400# SITP HOLD SAFETY MEETING FLWD BACK 278 BW IN 4 HRS. ND FRAC HEAD & NU ENVIRO-PAN REL. PKR. TOH W/ 3 1/2" TBG. RU GRAY WIRELINE PU 5 1/2" CBP TIH TO 4410' & SET CBP TOH PU 3 1/8" PERF GUNS TIH & PERFORATE CHERRY CANYON @ (4220' -75' & 4290' -4320') IN 3 RUNS 87 TOTAL SHOTS R.D. GRAY WIRELINE. PU PKR. TIH W/3 1/2" TBG TO 4077' N.D. ENVIRO-PAN RU REV. UNIT CIR. HOLE W/100 B.W. & SET PKR. N.U. FRAC HEAD. CWI SDON.
4/9/2011	Schematic	Notes	251# SITP HOLD SAFETY MEETING RU CUDD ENERGY SERVICE & SAND FRAC CHERRY CANYON PERFS (4220' - 4320') AS PER DESIGN ISDP 712# (5) 670# (10) 652# (15) 634#. AVG. RATE 26.5 BPM AVG. PRESSURE 1674#TOTAL LOAD 945 BBL.

Report Printed: 10/19/2012

Conditions of Approval

Chevron U.S. A. Inc.
Phillips SWD – 01
API 3001525530, T26S-R29E, Sec 01

May 07, 2014

1. Provide BLM with an electronic copy (Adobe Acrobat Document) cement bond log record from the top of the injection interval to top of cement. The CBL may be attached to a pswartz@blm.gov email.
2. Submit a stabilized injection profile survey for the well.
3. Submit the well's stabilized current psig/ft surface pressure to the top perforation.
4. Submit an anticipated bottom hole fracture pressure for the field or pool formation.
5. State the **targeted** maximum bbl/min injection rate. **The objective is to avoid fracturing the injection formation.**
6. Submit the injection fluid lbs/gal weight.
7. Stop injection and record the tubing pressure as it drops until it stabilizes at or below 0.2psig/ft to the top perforation for 8 hours. The well should be backflowed if the shut-in pressure is above 0.2psig/ft to the top perforation. Document the pressure test on a seven day full rotation calibrated recorder chart registering within 25 to 85 per cent of its full range.
8. Calculate eight injection rates by multiplying the targeted maximum bbl/min injection by 0.05 for Step 1, 0.10 for Step 2, 0.20 for Step 3, 0.40 for Step 5, 0.60 for Step 6, 0.80 for Step 7, and 1.00 for Step 8. Record both surface and top perforation step pressures at five minute increments. Each step's time duration (usually 30 minutes) should be within 1 minute or less of the preceding step. If stabilized pressure values ($\Delta \pm 15$psig) are not obtained between the last two (five minute) increments the test results will be considered inconclusive.
9. The Step Rate fluid used should be the same as the proposed injection fluid.
10. Flow rates are to be controlled with a constant flow regulator and measured with a turbine flow meter calibrated within 0.1 bbl/min. Record those rates using a chart recorder or strip chart.
11. Use a down hole transmitting pressure device and a surface pressure device with accuracies of ±10psig to measure pressures.
12. Notify BLM 575-200-7902 , if there is no response, 575-361-2822 as work begins. Some procedures are to be witnessed. If no answer, leave a voice mail or email with the API#, workover purpose, and a call back phone number. Note the contact, time, & date in your subsequent report.
13. When breakdown pressure is not achieved at the **targeted rate** the formation is accepting the injection fluid without fracturing, which is the **objective**.
14. When the formation fracture pressure has been exceeded as evidenced by at least two rate-pressure combinations greater than the breakdown pressure stop the test and record the bottom hole Instantaneous Shut-in Pressure. This ISIP is considered the minimum

pressure to hold open a fracture in this formation at this well. Fifty psig less than the ISIP is the maximum bottom hole pressure BLM will approve.

15. Record each interval step of time (min), rate (bbl/min), corresponding down hole and surface pressure (psig) along with a readable graph of that data. Submit that data to BLM with the shut-in pressure recording of paragraph 7 in a subsequent sundry Form 3160-5 within 30 days of completion.

Notes:
These conditions of approval for a step-rate test is an adaptation of principals and comments from several sources. The major resource being a paper dated January 12, 1999 from the United States Environmental Protection Agency, Region VIII, 999 18th Street – Suite 500, Denver, Colorado.

The intent of a step rate test is to establish that a proposed rate of injection into a formation is below fracture. Because it becomes likely that fracture pressure may be attained and exceeded it is considered a nonroutine fracturing job and requires a notice of intent. Reference: 43 CFR 3162.3-2 Subsequent well operations.

Compliance with these conditions of approval is necessary for an operator to gain BLM acceptance of an injection pressure increase.