

ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION
- Engineering Bureau -
1220 South St. Francis Drive, Santa Fe, NM 87505



ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

Application Acronyms:

[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]
[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]
[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]
[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

[1] **TYPE OF APPLICATION** - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Simultaneous Dedication
☐ NSL ☐ NSP ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
☒ WFX ☐ PMX ☐ SWD ☐ IPI ☐ EOR ☐ PPR

[D] Other: Specify PMX project R-4430 established PM

- WFX
- CROSS TIMBERS
ENERGY LLC
298299

RECEIVED
OCD
JUL 22 2014

[2] **NOTIFICATION REQUIRED TO:** - Check Those Which Apply, or Does Not Apply

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners

[B] ☒ Offset Operators, Leaseholders or Surface Owner

[C] ☒ Application is One Which Requires Published Legal Notice

[D] ☐ Notification and/or Concurrent Approval by BLM or SLO
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ☒ For all of the above, Proof of Notification or Publication is Attached, and/or,

[F] ☐ Waivers are Attached

WCHS
- NVA4#235
30-025-28315
- NVA4#241
30-025-28601
- NVA4#269
30-025-28919
- NVA4#276
30-025-29233
- NVA4#281
30-025-29238
- NVA4#300
30-025-29610

[3] **SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.**

[4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

Robbie A Grigg

Print or Type Name

Robbie A Grigg
Signature

Reg Compliance

Title

7/14/2014

Date

rgrigg@msspartners.com

e-mail Address

Pool
- VACUUM
Also, North
61760

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: X Secondary Recovery Pressure Maintenance Disposal Storage
Application qualifies for administrative approval? Yes No

II. OPERATOR: CROSS TIMBERS ENERGY, LLC

ADDRESS: 400 WEST 7th STREET, FORT WORTH, TEXAS 76102

CONTACT PARTY: ROBBIE GRIGG PHONE: 817-334-7842

III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection.
Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? X Yes No
If yes, give the Division order number authorizing the project: R-4430

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).

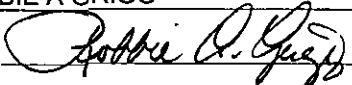
*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: ROBBIE A GRIGG TITLE: REGULATORY COMPLIANCE

SIGNATURE:  DATE: 7/14/2014

E-MAIL ADDRESS: rgrigg@mspartners.com

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: R-4430 10-27-1972

III. B.

Additional well data:

(All following data is the same for each proposed well unless noted.)

1. Is this a new well drilled for injection? No.
This well was originally drilled for the purpose of producing oil & gas.
2. Name of the Injection Formation: Abo
3. Name of Field or Pool: North Vacuum Abo
4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail. i.e. sacks of cement or plug(s) used.
No.
5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area:
 - ✓ NVAU #235: Drinkard overlying @ 7689-8005'; Wolfcamp underlying @ 8610'-NA.
 - NVAU #241: Drinkard overlying @ 7679-8048'; Wolfcamp underlying @ 8672'-NA.
 - ✓ NVAU #269: Drinkard overlying @ 7791-8134'; Wolfcamp underlying @ 8821'-NA.
 - NVAU #276: Drinkard overlying @ 7761-8129'; Wolfcamp underlying @ 8772'-NA.
 - ✓ NVAU #281: Drinkard overlying @ NA-8045'; Wolfcamp underlying @ 8663'-NA.
 - ✓ NVAU #300: Drinkard overlying @ 7810-8181'; Wolfcamp underlying @ 8904'-NA.

VII.

1. Proposed average and maximum daily rate and volume of fluids to be injected;
250 BWPD per well avg. 650 BWPD per well maximum.
2. Whether the system is open or closed;
Closed.
3. Proposed average and maximum injection pressure;
Maximum 4350 psi; Average 4200 psi;
4. Injection water source, analysis and compatibility;
Ogalala water will be injected because of the adverse effects of produced water on the tight Abo

above 0.2 psi/ft
Numerous IPI for Unit - all well specific
Currently no SRT for wells

formation.

IX. Describe the proposed stimulation program:

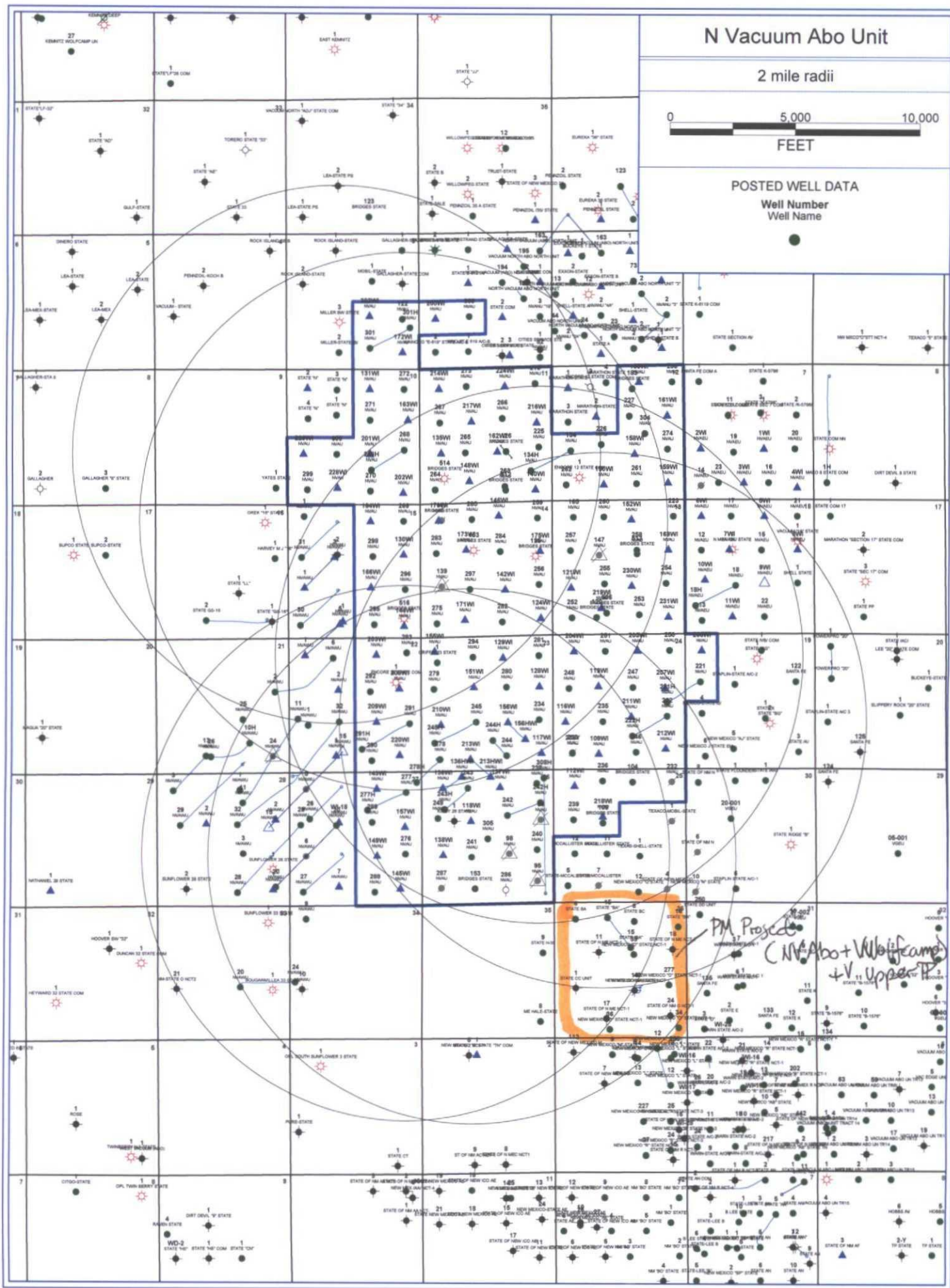
Matrix acidize via straddle packer or rock-salt diversion

XII. Cross Timbers Energy LLC has examined the available geologic and engineering data and finds no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

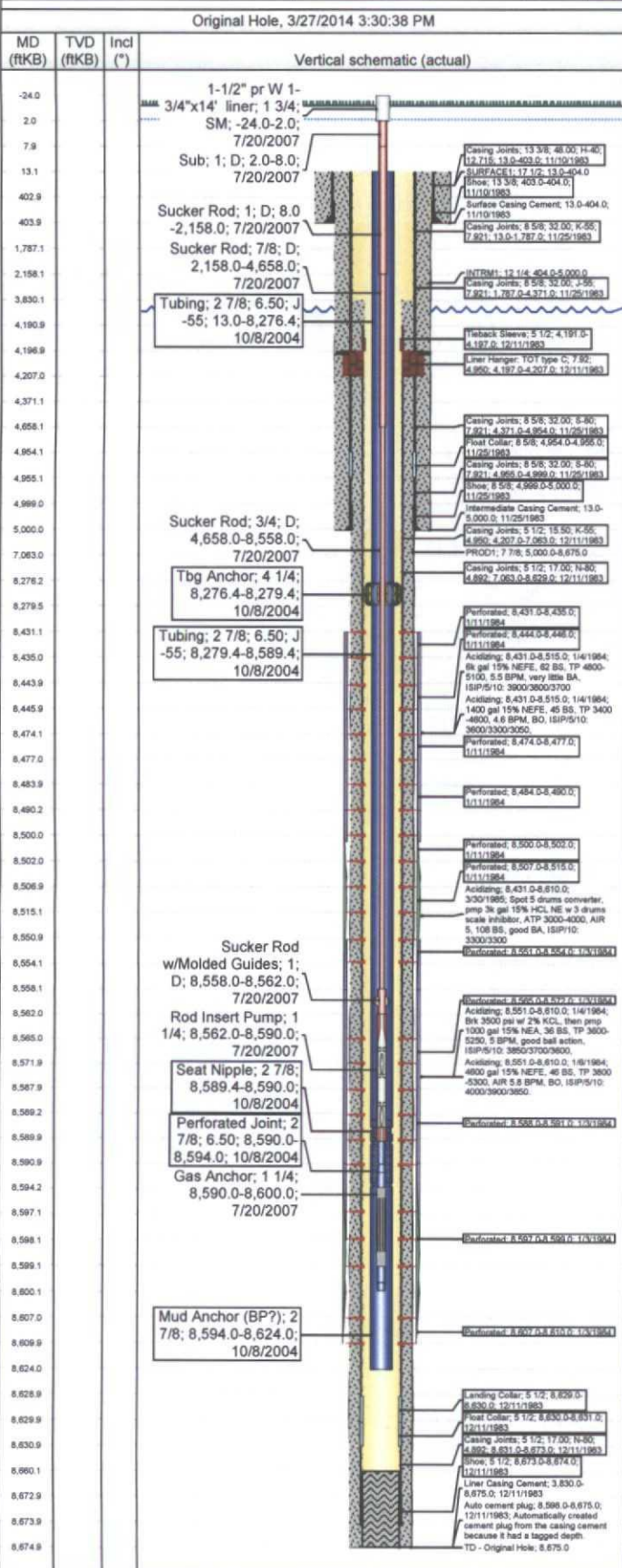
No individual citation

Require additional statement

Water Wells in area



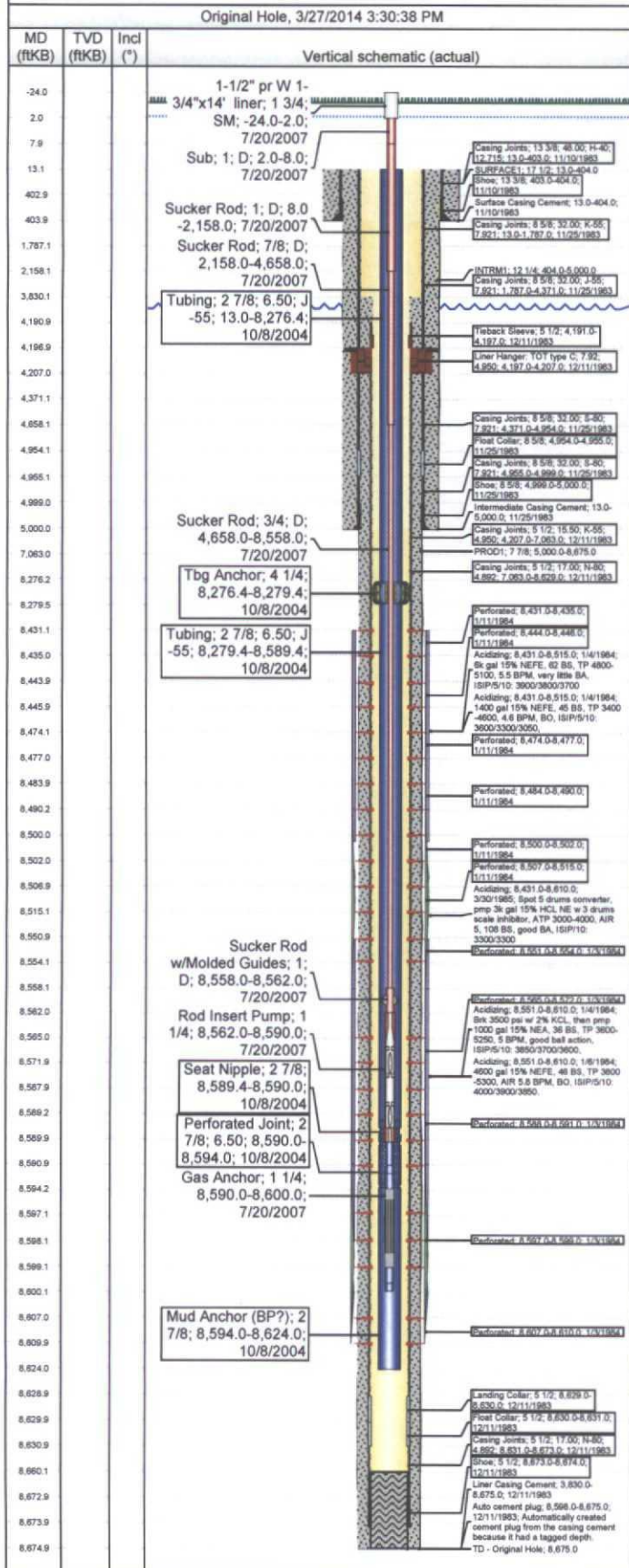
Well Name NORTH VACUUM ABO UNIT 235		API/UWI 3002528315		County Lea		State/Province New Mexico		Field Name VACUUM N	
Location 1880 FSL & 2000 FWL				Township 17S	Range 34E	Section 24	Latitude (°) 32° 34' 18.981" N		Longitude (°) 103° 30' 56.412" W
Section	Survey					Block	Township		Abstract
Original KB Elevation (ft) 4,010.00		Ground/Corrected Ground Elevation (ft) 4,023.31		KB-Ground Distance (ft) -13.31		Spud Date			



Jobs					
Type	Start Date	Summary			
Drilling Original & Initial Completion	11/9/1983	D&C Abo, perf, acidize, swb 15% OC, 200'/hr FE, acidize again, swb 50% OC, 300'/hr FE, perf Abo, set RBP over prev perms, acidize, swb 5% OC, acidize again, swb 2% OC, pull RBP, POP.			
Scale Treatment	3/27/1985	Att pull tbg, shear TAC, stk, pmp 500 gal 15% HCL dwn tbg, wrk loose, POOH, hvy scale on 3jts abv SN, Mostly CaSO4, some CaCO3, RIH pkr, spot converter, acidize,			
Acid Dump	10/13/1985	Pmp 1000 gal 15% NEFE dwn csg, no soak/SI, RTP.			
Acid Dump	11/7/1985	Pmp 2 drums Champion Gypton T-131, 1000 gal 15% HCL NEFE, SD 24 hrs.			
Pump Repair	5/20/1987	Pull rds & pmp, RTP.			
Pump Repair	7/21/1987	Pull rds & pmp, drp SV, tst 500 psi, RTP.			
Pump Repair	7/23/1987	Pull rds & pmp, RTP.			
Tubing Change	10/2/1987	Pull rds & tbg, RIH, well flowing, couldn't kill, RTP.			
Casing Pressure Test	10/26/1987	Pull rds & tbg, RIH bit & scrpr, worked a while, RIH pkr to 5106', tst csg to sfc 1000 psi, good, set pkr @ 8392', tst liner to sfc 1000 psi, good, POOH pkr, RTP.			
Pump Repair	11/5/1987	Pull rds, pmp, RTP.			
Pump Repair	11/13/1987	Pull rds & pump, pull on TAC, holding, RTP.			
Test/Log/Profile	2/2/1988	Isolate perms 8431-8515, pump under pkr. 16% OC			
Test/Log/Profile	2/19/1988	Move RBP to isolate perms @ 8431-8446', POOH pkr, POP. 10% OC			
Downhole Commingle	3/3/1988	Pull RBP, RTP. 25% OC			
Tubing Change	7/28/1989	Pull rds, drop SV tst, pull tbg, RBIH teting, rplc SN, RTP.			
Rod Part	1/13/1990	Pull rd prt, fish pmp, RTP.			
Pump Repair	11/7/1990	Pull rds & pmp, drop SV tst tbg, hld gd, RTP.			
Tubing Change	11/17/1990	Pull rds & pmp, SV tst tbg, pull tbg, RBIH teting, brst 1 jt, RTP.			
Rod Part	5/5/1991	Pin brk 3 rds dwn, fish, pull pmp, RTP.			
Rod Part	10/7/1991	Pull rd prt, att fish, swb, strip out, RTP.			
Rod Part	7/27/1992	Rd prt 81 RFS, 1" pin brk, fish & hang.			
Pump Repair	7/24/1993				
Rod Part	6/26/1998	Rd prt 4 RFS, couldn't unseat pmp, strip out, RTP.			
Rod Part	2/1/2001	Rd prt 80 RFS, 1" pin brk, chg pmp, RTP.			
Rod Part	2/10/2001	Pin brk 81 RFS, fish, pull pmp, RTP.			
Rod Part	7/26/2001	1' pin brk 7 RFS, fish, RTP.			
Rod Part	10/26/2003	7/8 pin brk 108 RFS, fish, RTP.			
Rod Part	8/3/2004	1" pin brk 61 RFS, fish, RTP.			
Tubing Change	10/6/2004	Pull rds, pmp, tbg, tst tbg BIH, bad SN, RTP.			
Pump Repair	8/8/2006	Pull pmp, stk open, RTP.			
Lift Optimization	3/21/2007	Slw from 8.4 to 6.5 SPM			
Pump Repair	7/20/2007	Pull 3 rds, hvy prfn, hot oil, pull rds & pmp, RTP.			
Wellbore Sections					
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date
SURFACE1	Original Hole	17 1/2	13.0	404.0	11/10/1983
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date
INTRM1	Original Hole	12 1/4	404.0	5,000.0	11/11/1983

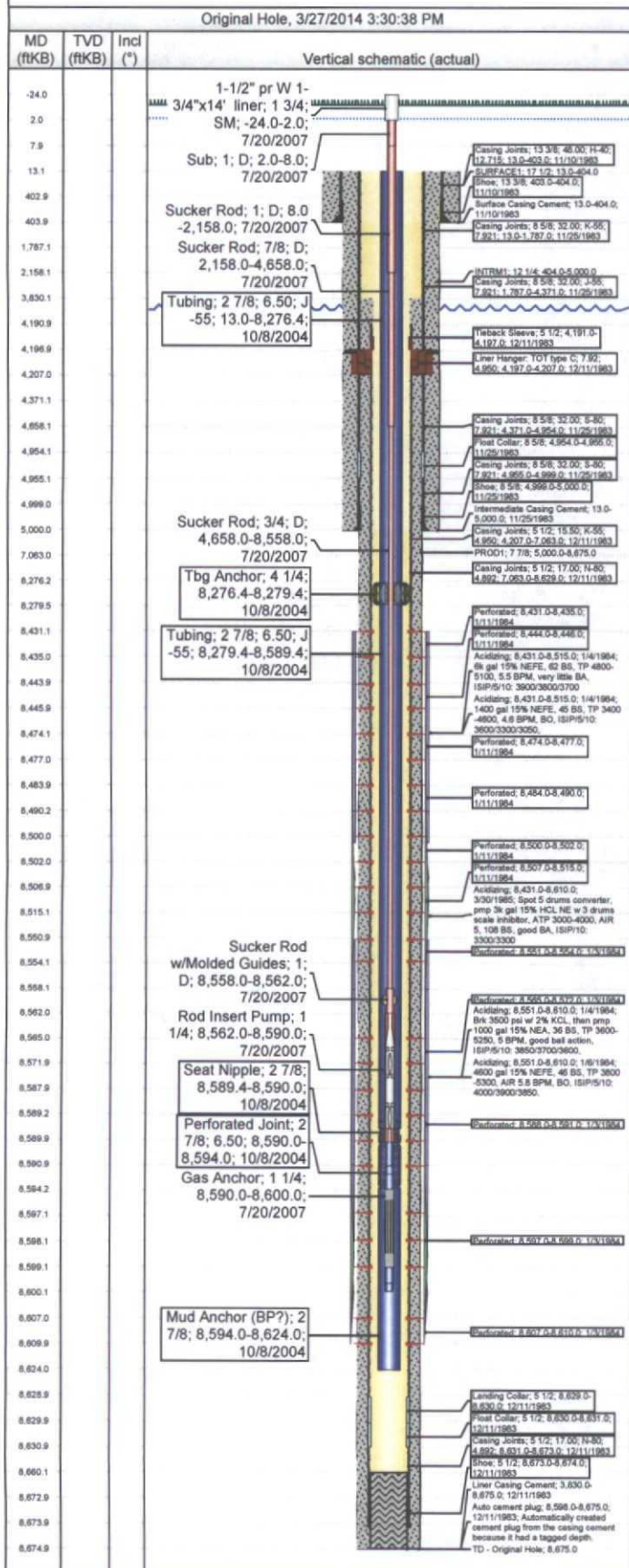
Schematic & History

#235



Wellbore Sections						
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date	
PROD1	Original Hole	7 7/8	5,000.0	8,675.0	11/26/1983	
Surface 404.0 ftKB 11/10/1983						
Comment						
OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Item Des
13 3/8	48.00	H-40	13.0	403.0	390.00	Casing Joints
13 3/8			403.0	404.0	1.00	Shoe
Intermediate 5,000.0 ftKB 11/25/1983						
Comment						
OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Item Des
8 5/8	32.00	K-55	13.0	1,787.0	1,774.00	Casing Joints
8 5/8	32.00	J-55	1,787.0	4,371.0	2,584.00	Casing Joints
8 5/8	32.00	S-80	4,371.0	4,954.0	583.00	Casing Joints
8 5/8			4,954.0	4,955.0	1.00	Float Collar
8 5/8	32.00	S-80	4,955.0	4,999.0	44.00	Casing Joints
8 5/8			4,999.0	5,000.0	1.00	Shoe
Liner 8,674.0 ftKB 12/11/1983						
Comment						
OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Item Des
5 1/2			4,191.0	4,197.0	6.00	Tieback Sleeve
7.921			4,197.0	4,207.0	10.00	Liner Hanger: TOT type C
5 1/2	15.50	K-55	4,207.0	7,063.0	2,856.00	Casing Joints
5 1/2	17.00	N-80	7,063.0	8,629.0	1,566.00	Casing Joints
5 1/2			8,629.0	8,630.0	1.00	Landing Collar
5 1/2			8,630.0	8,631.0	1.00	Float Collar
5 1/2	17.00	N-80	8,631.0	8,673.0	42.00	Casing Joints
5 1/2			8,673.0	8,674.0	1.00	Shoe
Cement Stages						
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Surface Casing Cement	13.0	404.0	Cement Returns	400 sx Class C + 2% CaCl, 1/4 ppsk FC, circ 60 sx, est 100% washout.		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Intermediate Casing Cement	13.0	5,000.0	Cement Returns	Lead: 3700 sx Class C + 4% gel, 15ppsk salt, 5 ppsk gilsonite, 1/4 ppsk FX; Tail: 200 sx Class C + 2% CaCl2, 1/4 ppsk FC, circ 113 sx, no flo on bksd (?).		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Liner Casing Cement	3,830.0	8,675.0	Bit Tag	Lead: 1050 sx Class H + 4% gel, 0.9% Halad 9, 1/4 ppsk FC; Tail: 200 sx Class H + 0.9% Halad, 1/4 ppsk FC. fit hld		
Perforations						
Top (ftKB)	Btm (ftKB)	Shot Dens (shot s/ft)	Date	Zone		Calculated Shot Total
8,551.0	8,554.0	1.0	1/3/1984	Abo, Original Hole		4
8,565.0	8,572.0	1.0	1/3/1984	Abo, Original Hole		8
8,588.0	8,591.0	1.0	1/3/1984	Abo, Original Hole		4
8,597.0	8,599.0	1.0	1/3/1984	Abo, Original Hole		3
8,607.0	8,610.0	1.0	1/3/1984	Abo, Original Hole		4
8,431.0	8,435.0	1.0	1/11/1984	Abo, Original Hole		5
8,444.0	8,446.0	1.0	1/11/1984	Abo, Original Hole		3

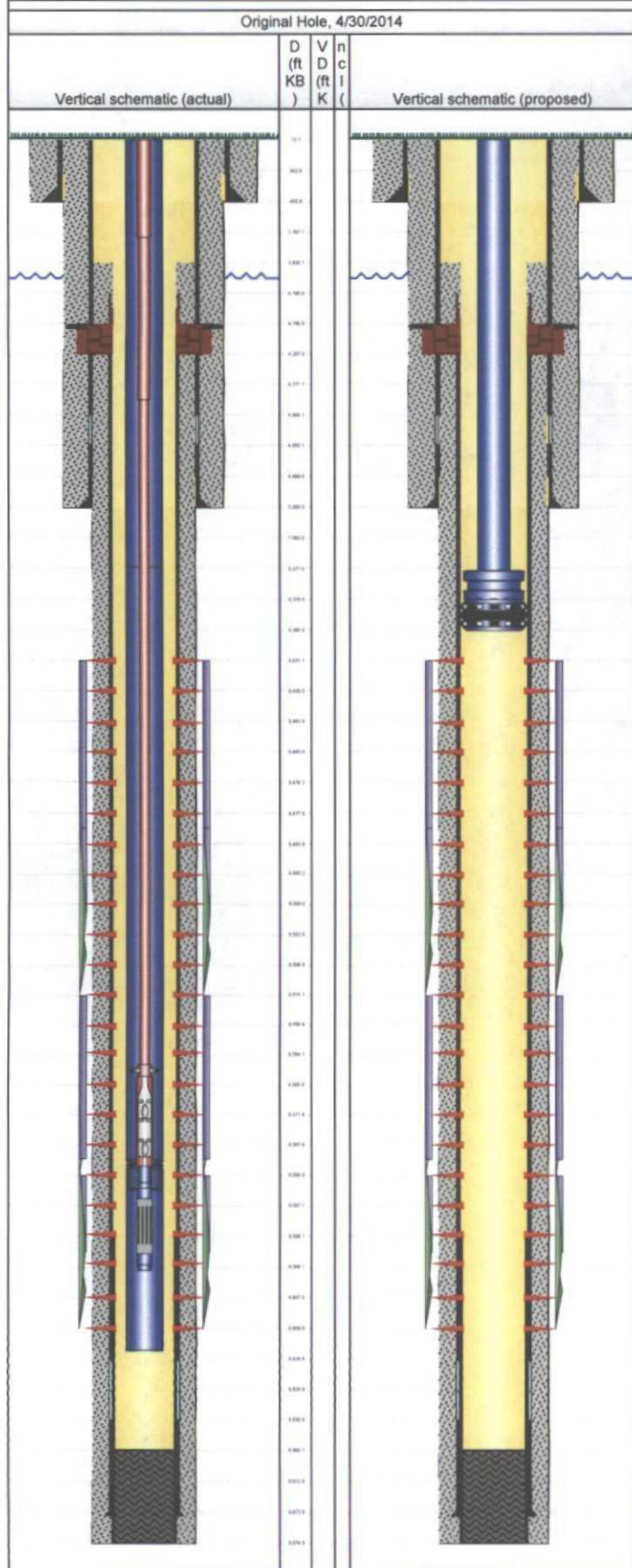
#235



Perforations							
Top (ftKB)	Btm (ftKB)	Shot Dens (shot s/ft)	Date	Zone	Calculated Shot Total		
8,474.0	8,477.0	1.0	1/11/1984	Abo, Original Hole	4		
8,484.0	8,490.0	1.0	1/11/1984	Abo, Original Hole	7		
8,500.0	8,502.0	1.0	1/11/1984	Abo, Original Hole	3		
8,507.0	8,515.0	1.0	1/11/1984	Abo, Original Hole	9		
Stim/Treat Stages							
Type	Start Date	Top (ftKB)	Btm (ftKB)	Com			
Acidizing	1/4/1984	8,551.0	8,610.0	Brk 3500 psi w/ 2% KCL, then pmp 1000 gal 15% NEA, 36 BS, TP 3600-5250, 5 BPM, good ball action, ISIP/5/10: 3850/3700/3600,			
Acidizing	1/6/1984	8,551.0	8,610.0	4600 gal 15% NEFE, 46 BS, TP 3800-5300, AIR 5.8 BPM, BO, ISIP/5/10: 4000/3900/3850.			
Acidizing	1/4/1984	8,431.0	8,515.0	1400 gal 15% NEFE, 45 BS, TP 3400-4600, 4.6 BPM, BO, ISIP/5/10: 3600/3300/3050,			
Acidizing	1/4/1984	8,431.0	8,515.0	6k gal 15% NEFE, 62 BS, TP 4800-5100, 5.5 BPM, very little BA, ISIP/5/10: 3900/3800/3700			
Acidizing	3/30/1985	8,431.0	8,610.0	Spot 5 drums converter, pmp 3k gal 15% HCL NE w 3 drums scale inhibitor, ATP 3000-4000, AIR 5, 108 BS, good BA, ISIP/10: 3300/3300			
Other In Hole							
Des	Com		OD (in)	Run Date	Top (ftKB)	Btm (ftKB)	
Tubing - Production set at 8,624.0ftKB on 10/8/2004 00:00							
Set Depth (ftKB)	Comment			Run Date	Pull Date		
8,624.0				10/8/2004			
Item Des	OD (in)	Wt (lb/ft)	Grade	Len (ft)	Jts	Top (ftKB)	Btm (ftKB)
Tubing	2 7/8	6.50	J-55	8,263.40	265	13.0	8,276.4
Tbg Anchor	4 1/4			3.00	1	8,276.4	8,279.4
Tubing	2 7/8	6.50	J-55	310.00	10	8,279.4	8,589.4
Seat Nipple	2 7/8			0.60	1	8,589.4	8,590.0
Perforated Joint	2 7/8	6.50		4.00	1	8,590.0	8,594.0
Mud Anchor (BP?)	2 7/8			30.00	1	8,594.0	8,624.0
Rod String on 7/20/2007 00:00							
Rod Description							
Rod String							
Item Des				OD (in)	Grade	Jts	Len (ft)
1-1/2" pr W 1-3/4"x14' liner				1 3/4	SM	1	26.00
Sub				1	D	1	6.00
Sucker Rod				1	D	86	2,150.00
Sucker Rod				7/8	D	100	2,500.00
Sucker Rod				3/4	D	156	3,900.00
Sucker Rod w/Molded Guides				1	D	1	4.00
Rod Insert Pump				1 1/4		1	28.00
Gas Anchor				1 1/4		1	10.00

Proposed Schematic & Details

Well Name NORTH VACUUM ABO UNIT 235		API/UWI 3002528315		County Lea		State/Province New Mexico		Field Name VACUUM N	
Location 1880 FSL & 2000 FWL				Township 17S	Range 34E	Section 24	Latitude (") 32° 34' 18.981" N		Longitude (") 103° 30' 56.412" W
Section		Survey		Block		Township		Abstract	
Original KB Elevation (ft) 4,010.00		Ground/Corrected Ground Elevation (ft) 4,023.31		KB-Ground Distance (ft) -13.31		Spud Date			

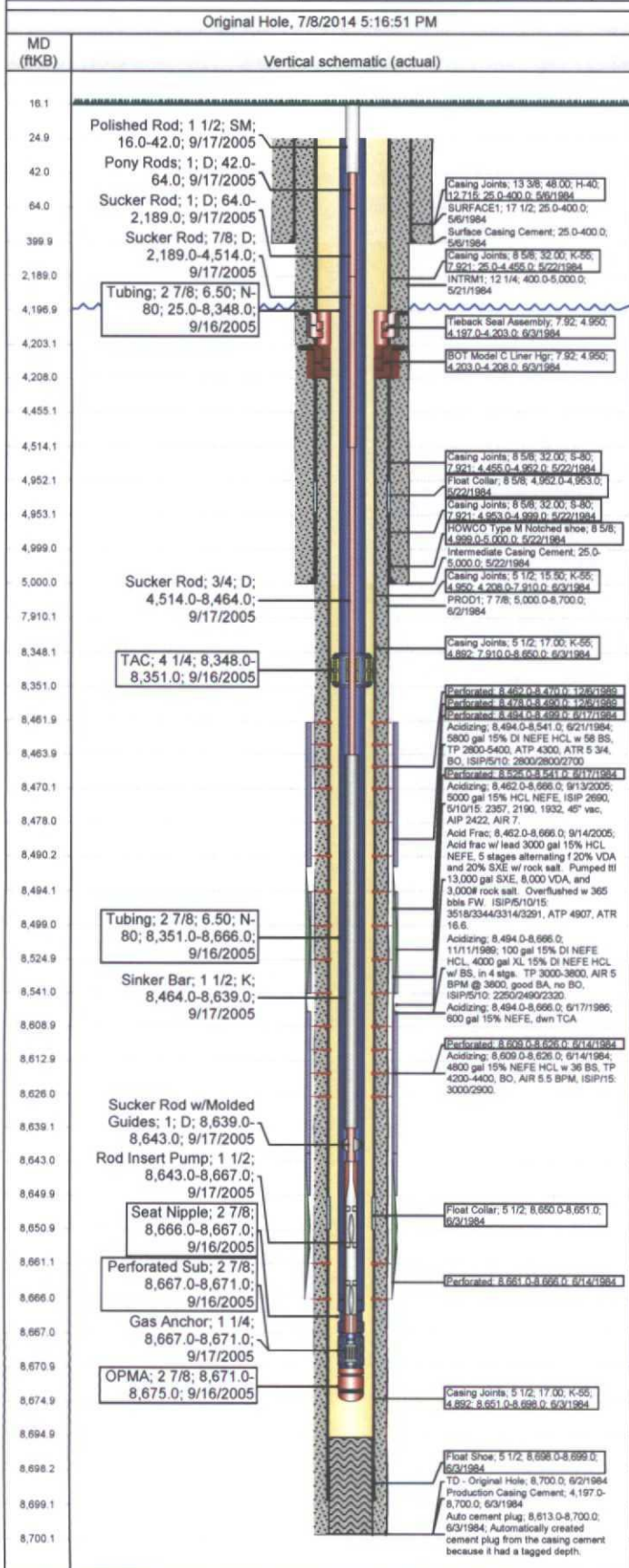


Jobs							
Convert To Injection, <dtmstart>							
Type Convert To Injection	Planned Start Date 4/20/2014	Objective PI prod eq, tst csg integrity, stim, install inj eq, perform MIT, turn to inj.					
Wellbore Sections							
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date		
Cement Stages							
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment			
Perforations							
Top (ftKB)	Btm (ftKB)	Shot Dens (shot s/ft)	Date	Zone	Calculated Shot Total		
Stim/Treat Stages							
Type	Start Date	Top (ftKB)	Btm (ftKB)	Com			
Acidizing	4/30/2014	8,431.0	8,610.0	2700 gal 15% HCL NEFE, pumped through straddle packer assembly			
Other In Hole							
Des	Com	OD (in)	Run Date	Top (ftKB)	Btm (ftKB)		
Tubing - Injection (IPC) set at 8,381.0ftKB on 4/30/2014 00:00							
Set Depth (ftKB)	Comment	Run Date	Pull Date				
8,381.0		4/30/2014					
Item Des	OD (in)	Wt (lb/ft)	Grade	Len (ft)	Jts	Top (ftKB)	Btm (ftKB)
Tubing - IPC	2 3/8		J-55	8,364.00	261	13.0	8,377.0
On-Off Tool w X profile or equiv	4 1/2			1.00	1	8,377.0	8,378.0
AS1X or equiv	4 5/8			3.00	1	8,378.0	8,381.0
<des> on <dtmrun>							
Rod Description							
Item Des	OD (in)	Grade	Jts	Len (ft)			

Existing Perfs (split on two pages)
~~8474'~~ to ~~8515'~~
 8431 8610

Schematic & History

Well Name NORTH VACUUM ABO UNIT 241		API/UWI 3002528601	County Lea		State/Province New Mexico		Field Name VACUUM N	
Location 1882 FSL & 2001 FWL			Township 17S	Range 34E	Section 26	Latitude (") 32° 34' 41.775" N		Longitude (") 103° 31' 58.44" W
Section	Survey				Block	Township		Abstract
Original KB Elevation (ft) 4,040.00		Ground/Corrected Ground Elevation (ft) 4,025.00		KB-Ground Distance (ft) 15.00		Spud Date		



Jobs					
Type	Start Date	Summary			
Drilling Original & Initial Completion	5/6/1984	D&C Abo producer. While Do cmt w WO rig, lost 1 cone, fish some teeth, DO to PBTD, circ. clean. Perf, acidize, flow, swab, perf, acidize, flow & swab, POP			
Acid Dump	6/17/1986	Acid dump dwn TCA			
Acidize	11/9/1989	Pull rods & pump, TFF @ 8690', RIH pkr, set @ 8458', acidize Abo, POP.			
Open Additional Pay - OAP	12/5/1989	Pull rods & tbq, perf Abo A, wash out w BJ Titan PFT tool, brk dwn w acid, POP.			
Pump Exchange	1/29/1998	PI pump, drop SV, tst good, RTP.			
Acid Frac	9/9/2005	PI rds & pmp, TFF 5' in. RIH trtg pkr, tag TOL @ 4197', stack out @ 4206', unable to work thru. RIH taper mill, dress liner, RIH to 8460', note tight spot @ 7734', RIH pkr, but still feel tight spots on first few jts of liner. Set pkr @ 8391', acidize Abo. Acid frac the Abo, flowback 210 bbls, POP. Chgd all 7/8 boxes fr SH to FH.			

Wellbore Sections					
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date
SURFACE1	Original Hole	17 1/2	25.0	400.0	5/6/1984
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date
INTRM1	Original Hole	12 1/4	400.0	5,000.0	5/7/1984
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date
PROD1	Original Hole	7 7/8	5,000.0	8,700.0	5/23/1984

Surface 400.0 ftKB 5/6/1984					
Comment					
OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Item Des
13 3/8	48.00	H-40	25.0	400.0	375.00 Casing Joints

Intermediate 5,000.0 ftKB 5/22/1984					
Comment					
OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Item Des
8 5/8	32.00	K-55	25.0	4,455.0	4,430.00 Casing Joints
8 5/8	32.00	S-80	4,455.0	4,952.0	497.00 Casing Joints
8 5/8			4,952.0	4,953.0	1.00 Float Collar
8 5/8	32.00	S-80	4,953.0	4,999.0	46.00 Casing Joints
8 5/8			4,999.0	5,000.0	1.00 HOWCO Type M Notched shoe

Production Liner 8,699.0 ftKB 6/3/1984					
Comment					
OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Item Des
7.921			4,197.0	4,203.0	6.00 Tieback Seal Assembly
7.921			4,203.0	4,208.0	5.00 BOT Model C Liner Hgr
5 1/2	15.50	K-55	4,208.0	7,910.0	3,702.00 Casing Joints
5 1/2	17.00	K-55	7,910.0	8,650.0	740.00 Casing Joints
5 1/2			8,650.0	8,651.0	1.00 Float Collar
5 1/2	17.00	K-55	8,651.0	8,698.0	47.00 Casing Joints
5 1/2			8,698.0	8,699.0	1.00 Float Shoe

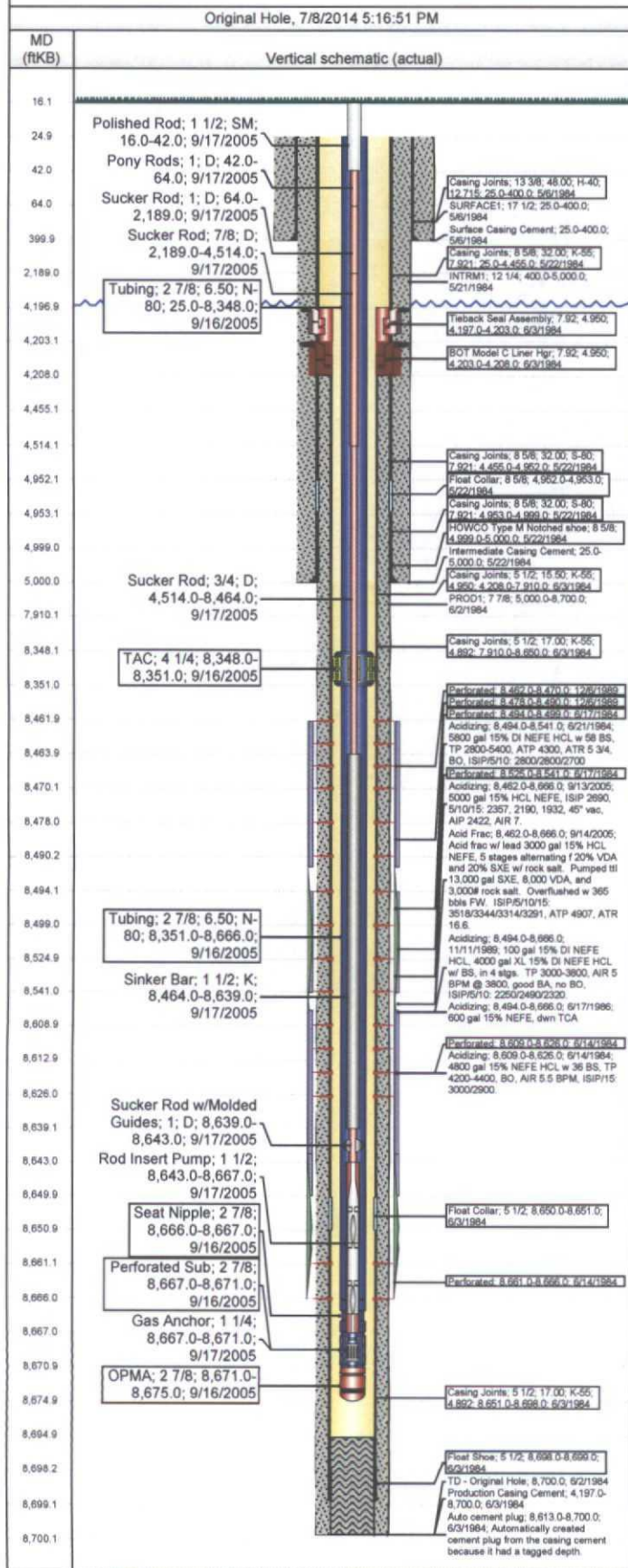
Cement Stages				
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment
Surface Casing Cement	25.0	400.0	Cement Returns	400 sx Class C + 2% CaCl ₂ , 1/4 pps FC, circ. 70 sx, 24% washout est.

#241

Tubing - Production set at 8,675.0ftKB on 9/16/2005 00:00

Schematic & History

#241



Item Des	OD (in)	Wt (lb/ft)	Grade	Len (ft)	Jts	Top (ftKB)	Btm (ftKB)
Tubing	2 7/8	6.50	N-80	8,323.00	264	25.0	8,348.0
TAC	4 1/4			3.00	1	8,348.0	8,351.0
Tubing	2 7/8	6.50	N-80	315.00	10	8,351.0	8,666.0
Seat Nipple	2 7/8			1.00	1	8,666.0	8,667.0
Perforated Sub	2 7/8			4.00	1	8,667.0	8,671.0
OPMA	2 7/8			4.00	1	8,671.0	8,675.0

Rod String on 9/17/2005 00:00

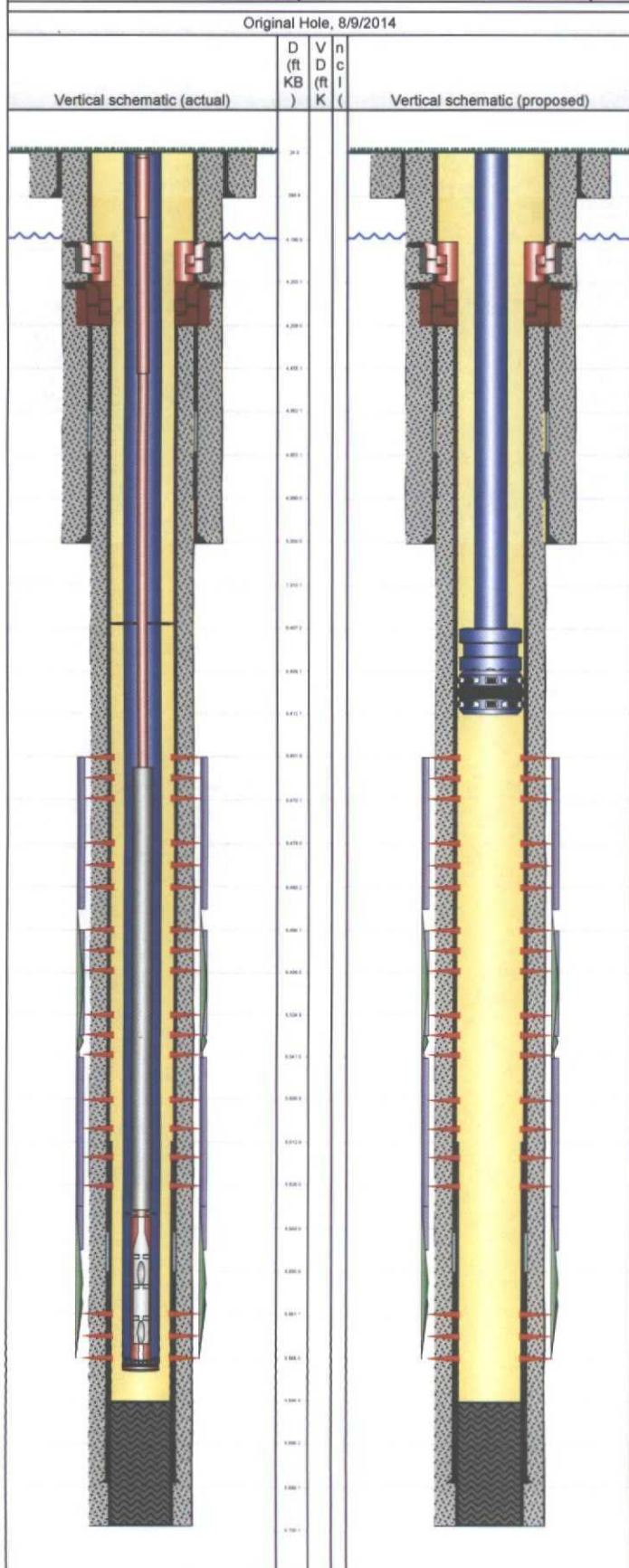
Rod Description Rod String

Item Des	OD (in)	Grade	Jts	Len (ft)
Polished Rod	1 1/2	SM	1	26.00
Pony Rods	1	D	4	22.00
Sucker Rod	1	D	85	2,125.00
Sucker Rod	7/8	D	93	2,325.00
Sucker Rod	3/4	D	158	3,950.00
Sinker Bar	1 1/2	K	7	175.00
Sucker Rod w/Molded Guides	1	D	1	4.00
Rod Insert Pump	1 1/2		1	24.00
Gas Anchor	1 1/4		1	4.00

Existing Perfs

Proposed Schematic & Details

Well Name NORTH VACUUM ABO UNIT 241		API/UWI 3002528601		County Lea		State/Province New Mexico		Field Name VACUUM N	
Location 1882 FSL & 2001 FWL		Township 17S	Range 34E	Section 26	Latitude ("") 32° 34' 41.775" N		Longitude ("") 103° 31' 58.44" W		
Section	Survey	Block			Township		Abstract		
Original KB Elevation (ft) 4,040.00		Ground/Corrected Ground Elevation (ft) 4,025.00		KB-Ground Distance (ft) 15.00		Spud Date			



Jobs

Convert To Injection, <dtmstart>

Type Convert To Injection	Planned Start Date 8/9/2014	Objective LD production equip, verify csg integrity, (stimulation not required), install injection requirement, perform MIT, turn to injection.
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Wellbore Sections

Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date
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Cement Stages

Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment
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Perforations

Top (ftKB)	Btm (ftKB)	Shot Dens (shot s/ft)	Date	Zone	Calculated Shot Total
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Stim/Treat Stages

Type	Start Date	Top (ftKB)	Btm (ftKB)	Com
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Other In Hole

Des	Com	OD (in)	Run Date	Top (ftKB)	Btm (ftKB)
-----	-----	---------	----------	------------	------------

Tubing - Injection set at 8,412.0ftKB on 8/9/2014 00:00

Set Depth (ftKB)	Comment			Run Date		Pull Date	
8,412.0				8/9/2014			
Item Des	OD (in)	Wt (lb/ft)	Grade	Len (ft)	Jts	Top (ftKB)	Btm (ftKB)
Tubing, bare steel	2 3/8	4.70	J-55	8,382.00	262	25.0	8,407.0
On-Off Tool	4.51 6			2.00	1	8,407.0	8,409.0
Packer - Arrowset 1X IPC	4 5/8			3.00	1	8,409.0	8,412.0

<des> on <dtmrun>

Rod Description

Item Des	OD (in)	Grade	Jts	Len (ft)
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perf'd (two events)
8462' @
8478 to 8466'

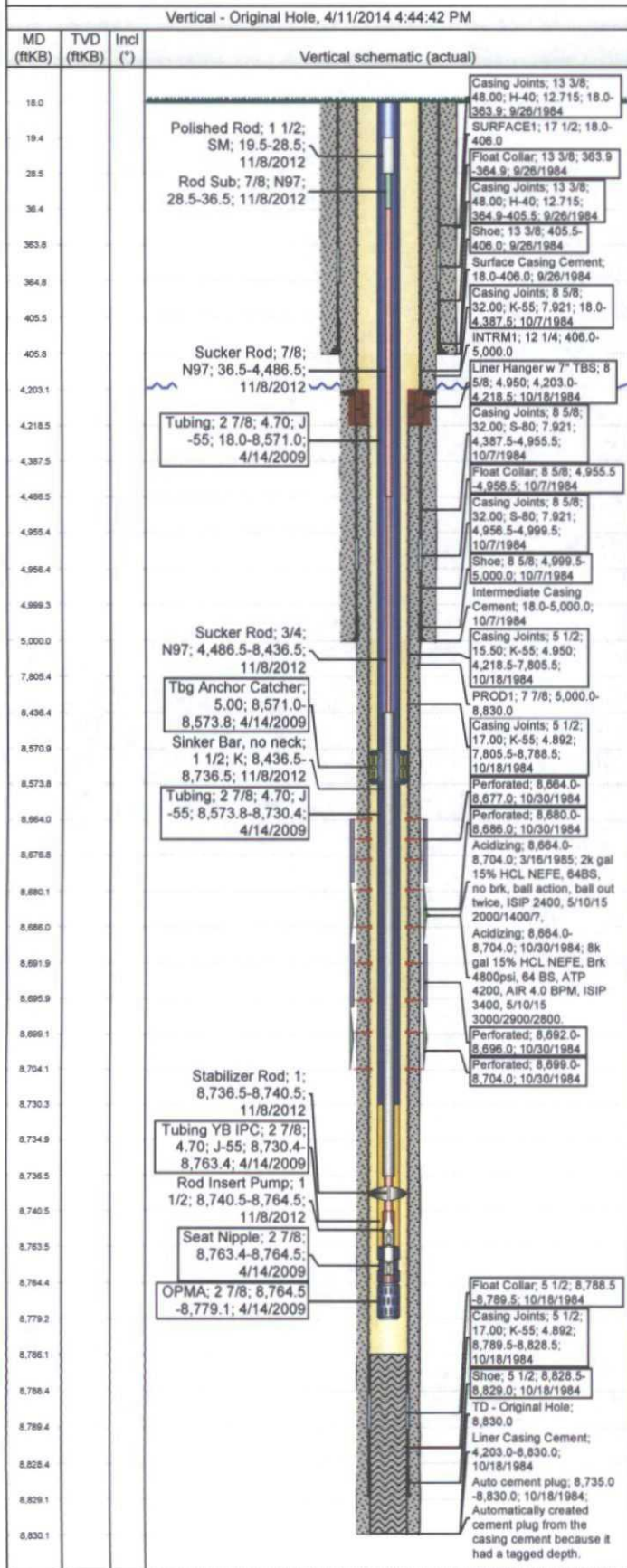
8412'

Well Name NORTH VACUUM ABO UNIT 269		API/UWI 3002528919		County Lea		State/Province New Mexico		Field Name VACUUM N	
Location 660 FNL & 660 FEL				Township 17S	Range 34E	Section 15	Latitude ("")		Longitude ("") 103° 32' 29.76" W
Section	Survey					Block	Township		Abstract
Original KB Elevation (ft) 4,066.00		Ground/Corrected Ground Elevation (ft) 4,048.00		KB-Ground Distance (ft) 18.00		Spud Date			

Vertical - Original Hole, 4/11/2014 4:44:41 PM			Jobs		
MD (RKB)	TVD (RKB)	Incl (°)	Type	Start Date	Summary
Vertical schematic (actual)			Drilling Original	9/25/1984	D&C Abo, perf & acidize, POP.
18.0			Rod Part	3/15/1985	Fish rd prt, pull tbg, RIH pkr (why?), pull pkr, RIH prod tbg, RIH pmp/rds, pmp prt, att fish, tight spot 10 rds down, pull tbg/pmp, RIH TP&R, RTP.
19.4			Rod Part	7/9/1985	Body brk 40 RFS, fish & hang.
28.5			Pump Exchange	9/9/1985	Chg pmp & rds
36.4			Rod Part	9/18/1985	Body brk 340 RFS, fish & chg pmp.
363.8			Rod Part	9/27/1985	Body brk 192 RFS, fish & chg pmp.
364.8			Rod Part	11/23/1985	Body brk 340 RFS, fish & chg pmp.
405.5			Pump Exchange	5/3/1986	Chg pmp
405.8			Pump Repair	10/2/1986	Pull rd prt, chg pump.
4,203.1			Pump Repair	1/29/1988	Pull rd prt, fish, chg pmp.
4,218.5			Rod Part	3/5/1988	Box brk 35 RFS, fish & hang.
4,387.5			Rod Part	4/1/1988	Pin backed off 334 RFS, fish & chg pmp.
4,387.5			Rod Part	5/7/1988	Rod box failure due to electrolysis??? (rod on tbg wear?) 339 RFS, fish, chg pmp.
4,486.5			Rod Part	6/20/1988	pin prt 337 RFS, fish & chg pmp.
4,955.4			Pump Exchange	7/21/1988	Pmp chg
4,956.4			Rod Part	8/27/1988	Body brk 322 RFS due to wear, fish & chg pmp.
4,999.3			Rod Part	9/20/1988	Body brk 333 RFS, due to wear
5,000.0			Rod Part	1/5/1989	Pin prt 114 RFS, fish & hang
7,805.4			Rod Part	4/8/1989	Box brk 3 RFS, due to wear, fish & hang.
8,436.4			Rod Part	6/19/1989	Pin brk 94 RFS, fish & hang.
8,570.9			Rod Part	8/3/1989	Pin brk 78 RFS, fish & hang
8,573.8			Rod Part	9/26/1989	First part 100 RFS, second part 12 RFS, replaced entire rod string & pmp.
8,864.0			Pump Repair	1/6/1990	Pull rod prt, fish pmp, chk TAC, RTP.
8,876.8			Pump Exchange	1/23/1990	Pull pmp, left cups in tbg, pull tbg, retrieve cups, chg pmp, RTP.
8,880.1			Pump Exchange	2/18/1990	LS, pull pmp, RTP
8,880.0			Pump Exchange	5/7/1994	Unknown job, based on pump report from 9/7/1996, pump was installed on 5/7/1994.
8,891.9			Pump Repair	9/7/1996	Pull rds, pull rd prt, fish pmp, pull tbg, RTP.
8,895.9			Rod Part	7/14/1997	Pin prt 199 RFS, chg pmp, RTP.
8,899.1			Pump Exchange	2/8/2001	Pull rds & pmp, chg pmp, RTP.
8,704.1			Pump Exchange	7/12/2002	Pull rds & pmp, chg pmp, RTP.
8,730.3			Pump Exchange	12/16/2002	Jar on rds, pull pmp, LD k-bars, rplc pmp & k-bars, RTP.
8,734.9			Pump Exchange	6/6/2003	Pull pmp & rds, drop SV, tst tbg, pull tbg, RBIH tstg tbg, no failed jts, RTP.
8,736.5			Rod Part	7/10/2003	Well running over, pl 4' sub, sub was backed off, att fish, screw on to fish, POOH. Chg pmp, RTP.
8,740.5			Rod Part	6/2/2005	Box brk 321 RFS, fish, chg pmp, RTP.
8,763.5			Rod Part	7/18/2006	Box brk 199 RFS, fish, chg pmp, RTP.
8,764.4			Rod Part	11/13/2007	Box brk 218 RFS, fish, chg pmp, RTP.
8,779.2			Rod Part	5/7/2008	Box brk 186 RFS, fish, chg pmp, RTP.
8,786.1			Rod Part	2/24/2009	Box brk 338 RFS, fish, drop SV, tst tbg, good, chg pmp, RTP.
8,788.4			Pump Exchange	4/9/2009	Pl pmp & rds, pl tbg, RBIH tstg tbg, chg pmp, RTP.
8,789.4			Lift Optimization	6/15/2009	Speed up from 6.8 to 9.1 SPM
8,829.1			Repr Pump Failure	12/21/2009	ptd pull rod on pmp
8,830.1					

Schematic & History

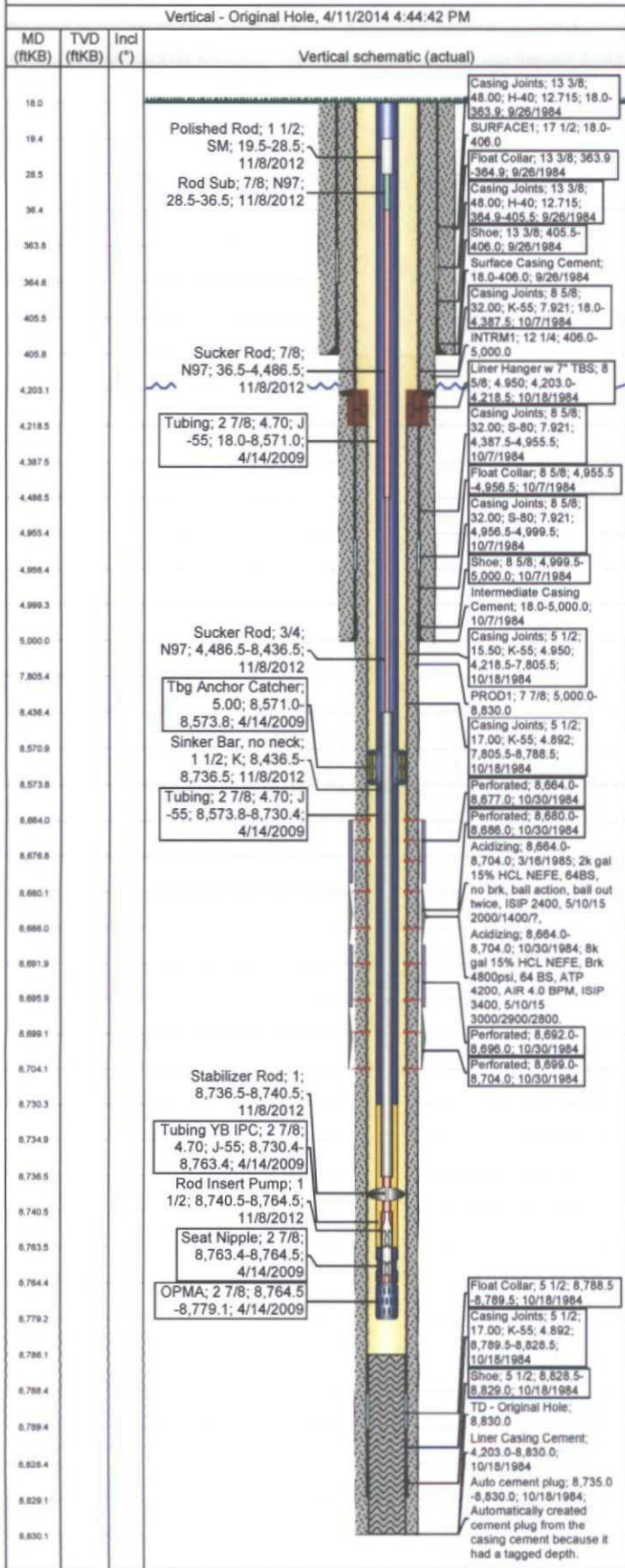
#269



Jobs						
Type		Start Date	Summary			
Repr Rod Failure		5/5/2010	pin brk, 1" 20 RFS; LD entire rd strg, rpic rod strg w N97, RTP.			
Repair Parted Rods		11/8/2012	pin brk 7/8" N97, 63 RFS, chg pump, RIH, pin brk on 7/8" N97 171 RFS, chg pump, RTP.			
Change Rod Pump		3/12/2014	LS pmp, pl pmp, chg, RTP.			
Wellbore Sections						
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date	
SURFACE1	Original Hole	17 1/2	18.0	406.0		
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date	
INTRM1	Original Hole	12 1/4	406.0	5,000.0		
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date	
PROD1	Original Hole	7 7/8	5,000.0	8,830.0		
Surface 406.0 ftKB 9/26/1984						
Comment						
OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Item Des
13 3/8	48.00	H-40	18.0	363.9	345.90	Casing Joints
13 3/8			363.9	364.9	1.00	Float Collar
13 3/8	48.00	H-40	364.9	405.5	40.60	Casing Joints
13 3/8			405.5	406.0	0.50	Shoe
Intermediate 5,000.0 ftKB 10/7/1984						
Comment						
OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Item Des
8 5/8	32.00	K-55	18.0	4,387.5	4,369.50	Casing Joints
8 5/8	32.00	S-80	4,387.5	4,955.5	568.00	Casing Joints
8 5/8			4,955.5	4,956.5	1.00	Float Collar
8 5/8	32.00	S-80	4,956.5	4,999.5	43.00	Casing Joints
8 5/8			4,999.5	5,000.0	0.50	Shoe
Liner 8,829.0 ftKB 10/18/1984						
Comment						
OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Item Des
8 5/8			4,203.0	4,218.5	15.50	Liner Hanger w 7" TBS
5 1/2	15.50	K-55	4,218.5	7,805.5	3,587.00	Casing Joints
5 1/2	17.00	K-55	7,805.5	8,788.5	983.00	Casing Joints
5 1/2			8,788.5	8,789.5	1.00	Float Collar
5 1/2	17.00	K-55	8,789.5	8,828.5	39.00	Casing Joints
5 1/2			8,828.5	8,829.0	0.50	Shoe
Cement Stages						
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Surface Casing Cement	18.0	406.0	Cement Returns	500 sx Class C + 2% CaCl, 1/4 pps Flo-cele, circ 150 sk		
Description Intermediate Casing Cement	Top (ftKB) 18.0	Btm (ftKB) 5,000.0	Top Meas Meth Cement Returns	Comment Lead: 2600 sx Class C + 4% gel, 15 pps salt, 5 pps Gilsonite, 1/4 pps FC; Tail: 300 sx Class C + 2% CaCl2, 1/4 pps FC, circ 300 sx		
Description Liner Casing Cement	Top (ftKB) 4,203.0	Btm (ftKB) 8,830.0	Top Meas Meth Bit Tag	Comment Lead: 650 sx Class H + 4% gel, 0.3 pps HA9, 1/4 pps FC; Tail: 300 sx Class H+ 0.3 pps HA9, 1/4 pps FC.		

Schematic & History

#269



Perforations						
Top (ftKB)	Btm (ftKB)	Shot Dens (shot s/ft)	Date	Zone		Calculated Shot Total
8,664.0	8,677.0	1.0	10/30/1984	ABO, <idrecwellbore>		14
8,680.0	8,686.0	1.0	10/30/1984	ABO, <idrecwellbore>		7
8,692.0	8,696.0	1.0	10/30/1984	ABO, <idrecwellbore>		5
8,699.0	8,704.0	1.0	10/30/1984	ABO, <idrecwellbore>		6

Stim/Treat Stages					
Type	Start Date	Top (ftKB)	Btm (ftKB)	Com	
Acidizing	10/30/1984	8,664.0	8,704.0	8k gal 15% HCL NEFE, Brk 4800psi, 64 BS, ATP 4200, AIR 4.0 BPM, ISIP 3400, 5/10/15 3000/2900/2800.	
Acidizing	3/16/1985	8,664.0	8,704.0	2k gal 15% HCL NEFE, 64BS, no brk, ball action, ball out twice, ISIP 2400, 5/10/15 2000/1400/?	

Other in Hole					
Des	Com	OD (in)	Run Date	Top (ftKB)	Btm (ftKB)

Tubing - Production set at 8,779.1ftKB on 4/14/2009 00:00					
Set Depth (ftKB)	Comment	Run Date	Pull Date		
8,779.1		4/14/2009			

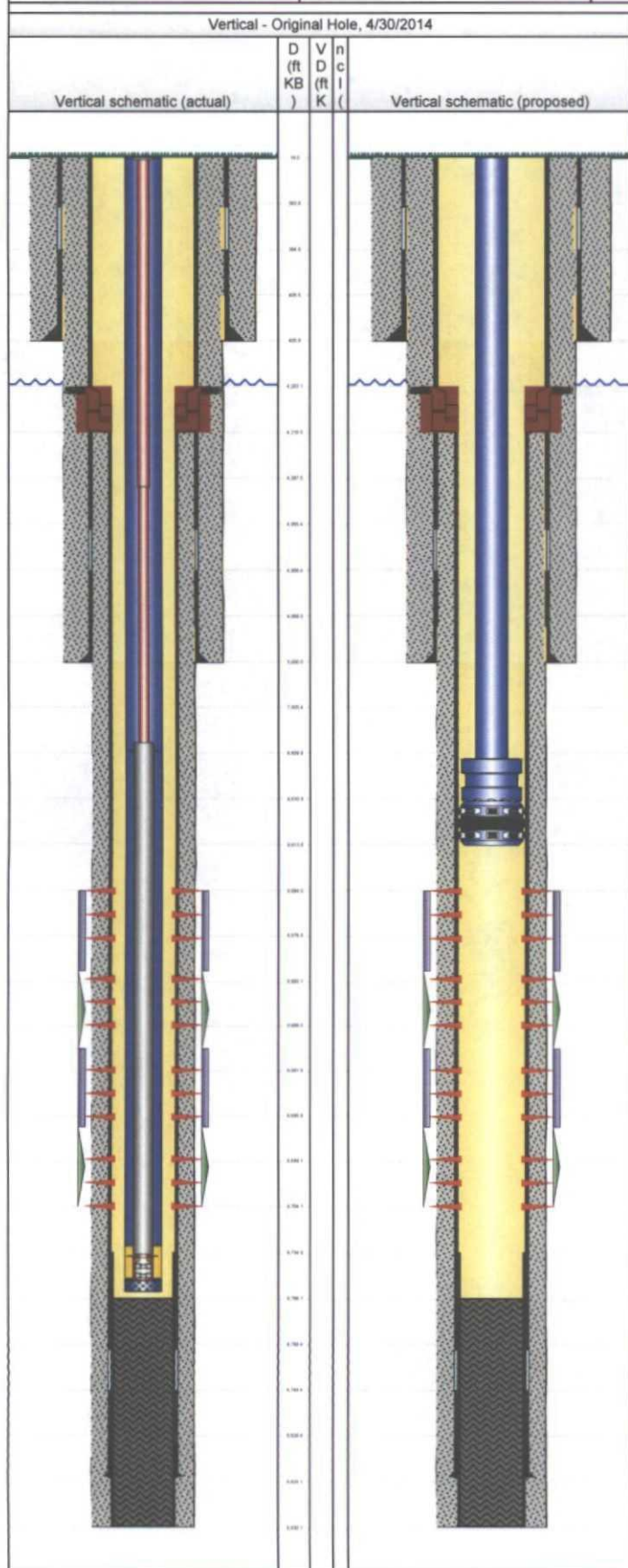
Item Des	OD (in)	Wt (lb/ft)	Grade	Len (ft)	Jts	Top (ftKB)	Btm (ftKB)
Tubing	2 7/8	4.70	J-55	8,553.00	273	18.0	8,571.0
Tbg Anchor Catcher	4.99			2.80	1	8,571.0	8,573.8
Tubing	2 7/8	4.70	J-55	156.64	5	8,573.8	8,730.4
Tubing YB IPC	2 7/8	4.70	J-55	33.00	1	8,730.4	8,763.4
Seat Nipple	2 7/8			1.10	1	8,763.4	8,764.5
OPMA	2 7/8			14.60	1	8,764.5	8,779.1

Rod String on 11/8/2012 00:00					
Rod Description					
Rod String					
Item Des	OD (in)	Grade	Jts	Len (ft)	
Polished Rod	1 1/2	SM	1	9.00	
Rod Sub	7/8	N97	1	8.00	
Sucker Rod	7/8	N97	178	4,450.00	
Sucker Rod	3/4	N97	158	3,950.00	
Sinker Bar, no neck	1 1/2	K	12	300.00	
Stabilizer Rod	1		1	4.00	
Rod Insert Pump	1 1/2		1	24.00	

perfed
8664' to 8704'

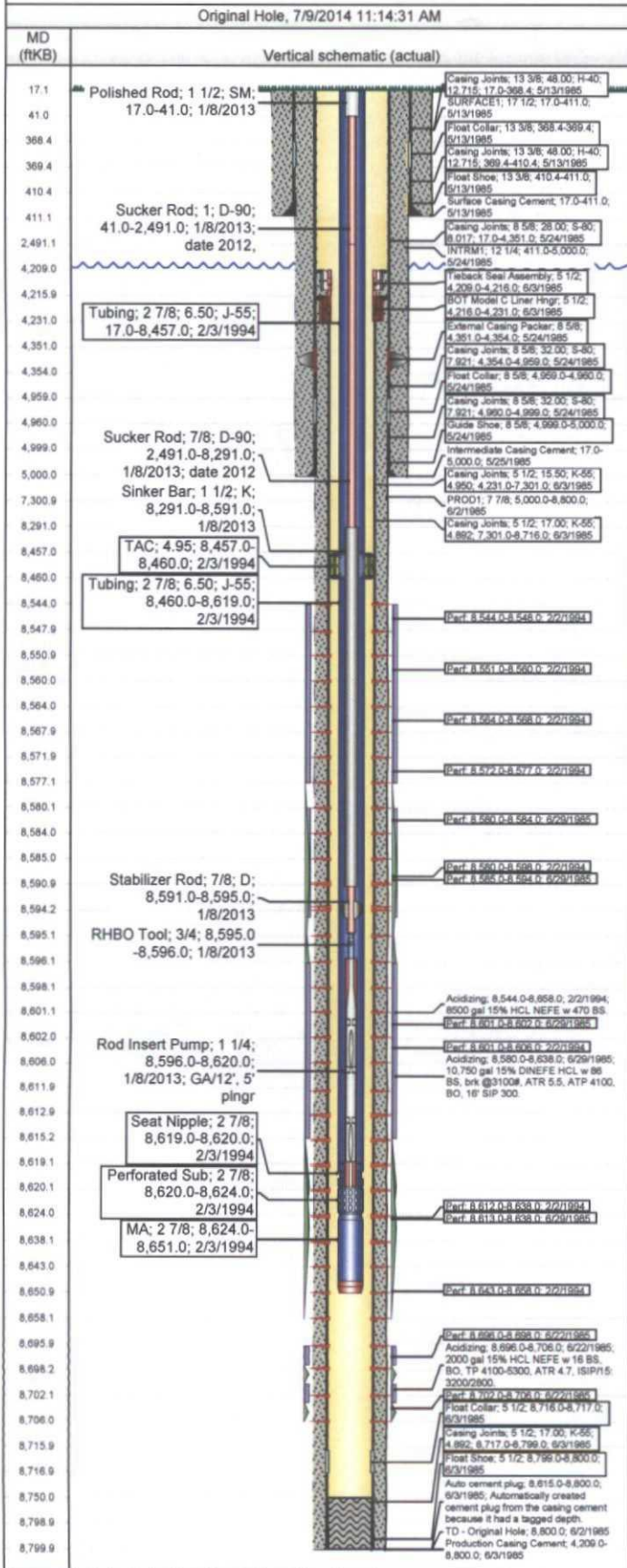
Proposed Schematic & Details

Well Name NORTH VACUUM ABO UNIT 269		API/UWI 3002528919		County Lea		State/Province New Mexico		Field Name VACUUM N	
Location 660 FNL & 660 FEL				Township 17S	Range 34E	Section 15	Latitude (")		Longitude (") 103° 32' 29.76" W
Section		Survey		Block		Township		Abstract	
Original KB Elevation (ft) 4,066.00		Ground/Corrected Ground Elevation (ft) 4,048.00		KB-Ground Distance (ft) 18.00		Spud Date			



Schematic & History

Well Name NORTH VACUUM ABO UNIT 276	API/UWI 3002529233	County Lea	State/Province New Mexico	Field Name VACUUM N
Location 2050 FSL & 652 FEL	Township 17S	Range 34E	Section 27	Latitude (") 32° 50' 53.664" N
Section Survey	Block	Township	Abstract	Longitude (") 103° 32' 29.508" W
Original KB Elevation (ft) 4,054.00	Ground/Corrected Ground Elevation (ft) 4,037.00	KB-Ground Distance (ft) 17.00	Spud Date	



Type	Start Date	Summary
Drilling Original & Initial Completion	5/12/1985	Drill & complete Abo producer. While drlg int. hole lost BHA @4775', recover fish, resume drlg. Perf & acidize Abo, swab, perform BU tst, sqz scale inhib, perf Abo, acidize, swab, perform BU tst, sqz SI, POP.
Pump Repair	12/10/1985	Pull rod prtd, fished, then prtd 345 RFS, fish, rplc pump, RTP.
Rod Part	4/23/1986	Pin brk 6500' fr surf. Chg pump, RTP.
Pump Exchange	3/11/1988	Two pump chgs
Pump Exchange	10/5/1988	pump chg
Rod Part	11/8/1988	Started as pump chg, rods prtd while RIH, rplc rod strg & pump, RTP.
Pump Exchange	4/27/1990	Pump chg
Open Additional Pay - OAP	2/1/1994	Pull rods & pump, drop SV, tst tbg, pull tbg, perf Abo, acidize, RPT.
Rod Part	9/10/2002	Pin brk 253 RFS, chg pump, RTP.
Pump Exchange	10/1/2004	Pump chg
Pump Exchange	12/4/2004	Pump chg
Pump Exchange	5/31/2005	Pump chg
Repair?	6/16/2006	PULL rods & pump (incomplete morning report in well file)
Repair Parted Rods	5/14/2010	Box brk 138 RFS, rplc pump.
Repair Parted Rods	10/30/2012	Pin brk 225 RFS, chg pump, RTP.
Repair Parted Rods	1/7/2013	Box brk 235 RFS, LD entire rod strg, rplc rods, chg pump, RTP.
Repair Polished Rod	9/9/2013	Fish, HO, rplc pump, RTP.
Repair Rod Part	11/6/2013	Pump prt, (rplc 3/4" taper?), rplc pump, RTP.

Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date
SURFACE1	Original Hole	17 1/2	17.0	411.0	5/12/1985
INTRM1	Original Hole	12 1/4	411.0	5,000.0	5/14/1985
PROD1	Original Hole	7 7/8	5,000.0	8,800.0	5/26/1985

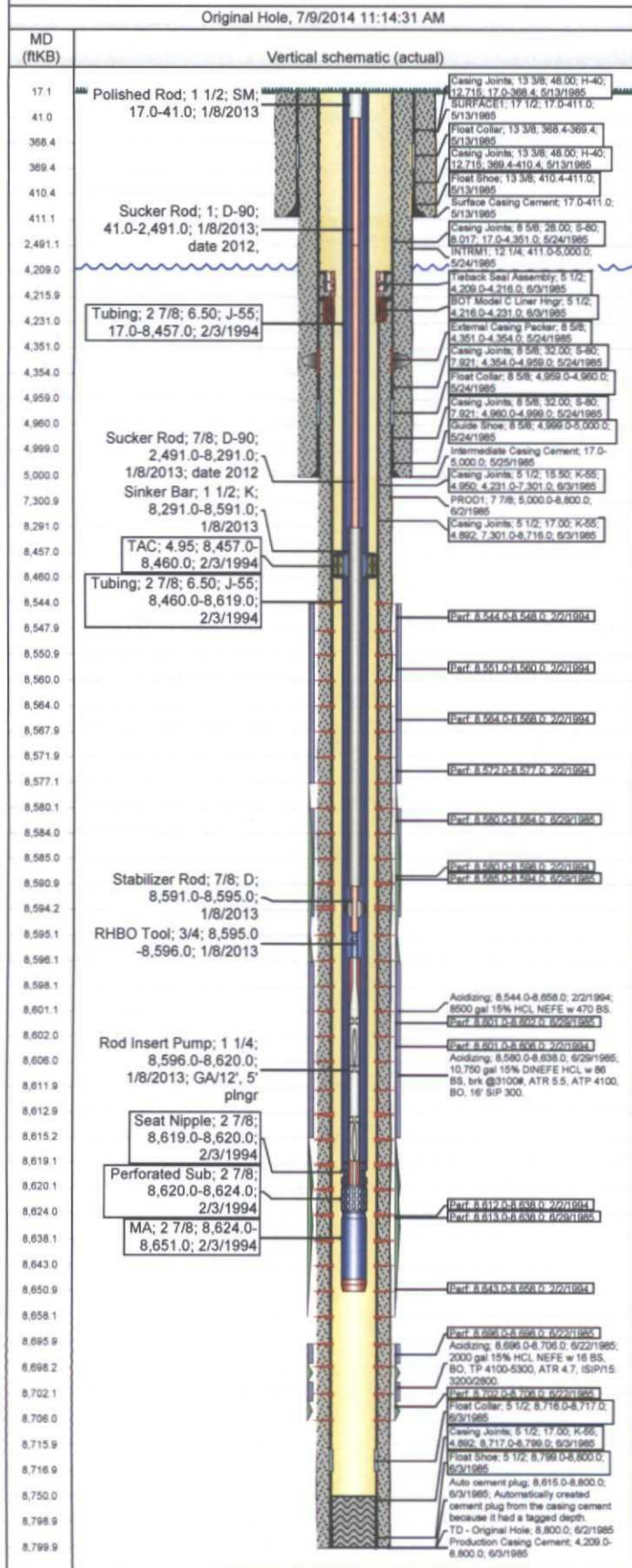
OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Item Des
13 3/8	48.00	H-40	17.0	368.4	351.40	Casing Joints
13 3/8			368.4	369.4	1.00	Float Collar
13 3/8	48.00	H-40	369.4	410.4	41.00	Casing Joints
13 3/8			410.4	411.0	0.60	Float Shoe

OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Item Des
8 5/8	28.00	S-80	17.0	4,351.0	4,334.00	Casing Joints
8 5/8			4,351.0	4,354.0	3.00	External Casing Packer
8 5/8	32.00	S-80	4,354.0	4,959.0	605.00	Casing Joints
8 5/8			4,959.0	4,960.0	1.00	Float Collar
8 5/8	32.00	S-80	4,960.0	4,999.0	39.00	Casing Joints
8 5/8			4,999.0	5,000.0	1.00	Guide Shoe

OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Item Des
8 5/8	28.00	S-80	17.0	4,351.0	4,334.00	Casing Joints
8 5/8			4,351.0	4,354.0	3.00	External Casing Packer
8 5/8	32.00	S-80	4,354.0	4,959.0	605.00	Casing Joints
8 5/8			4,959.0	4,960.0	1.00	Float Collar
8 5/8	32.00	S-80	4,960.0	4,999.0	39.00	Casing Joints
8 5/8			4,999.0	5,000.0	1.00	Guide Shoe

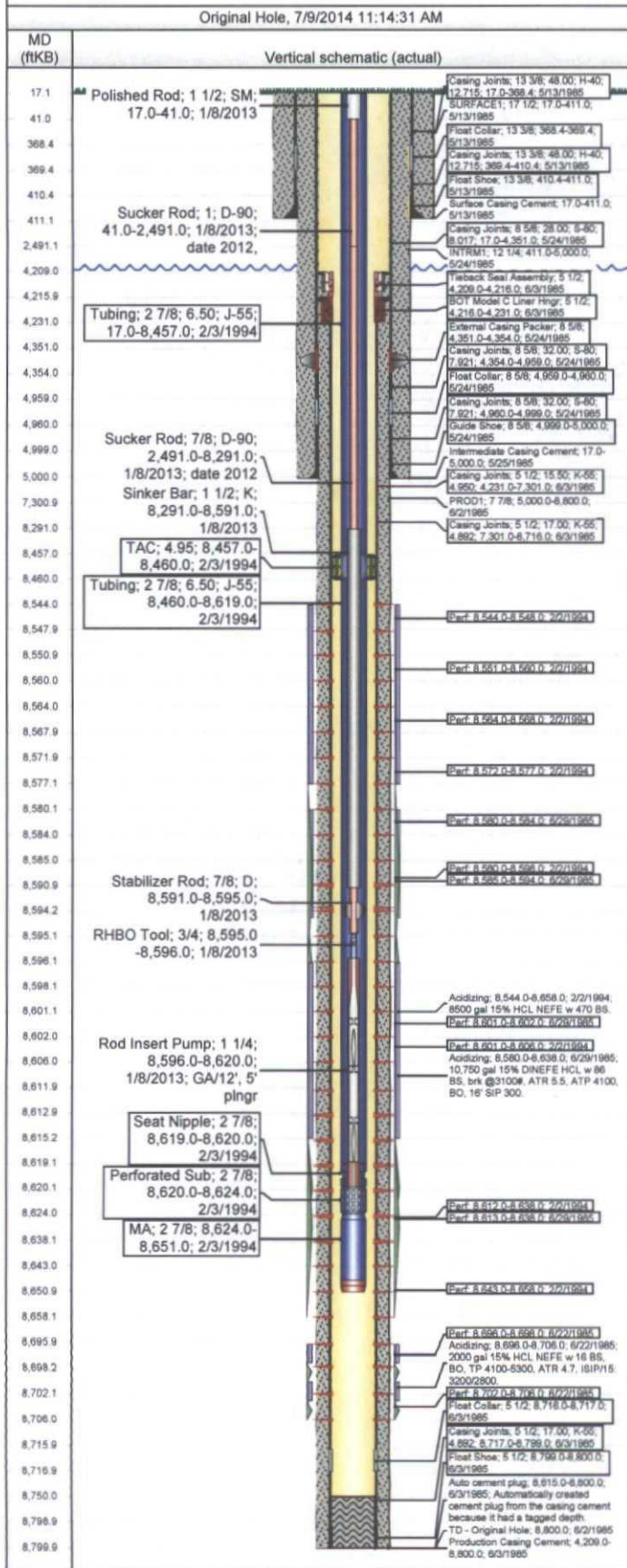
Schematic & History

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Schematic & History

#276



Item Des	OD (in)	Wt (lb/ft)	Grade	Len (ft)	Jts	Top (ftKB)	Btm (ftKB)
Tubing	2 7/8	6.50	J-55	8,440.00	273	17.0	8,457.0
TAC	4.95			3.00	1	8,457.0	8,460.0
Tubing	2 7/8	6.50	J-55	159.00	5	8,460.0	8,619.0
Seat Nipple	2 7/8			1.00	1	8,619.0	8,620.0
Perforated Sub	2 7/8			4.00	1	8,620.0	8,624.0
MA	2 7/8			27.00	1	8,624.0	8,651.0

Insert Pump on 1/8/2013 00:00

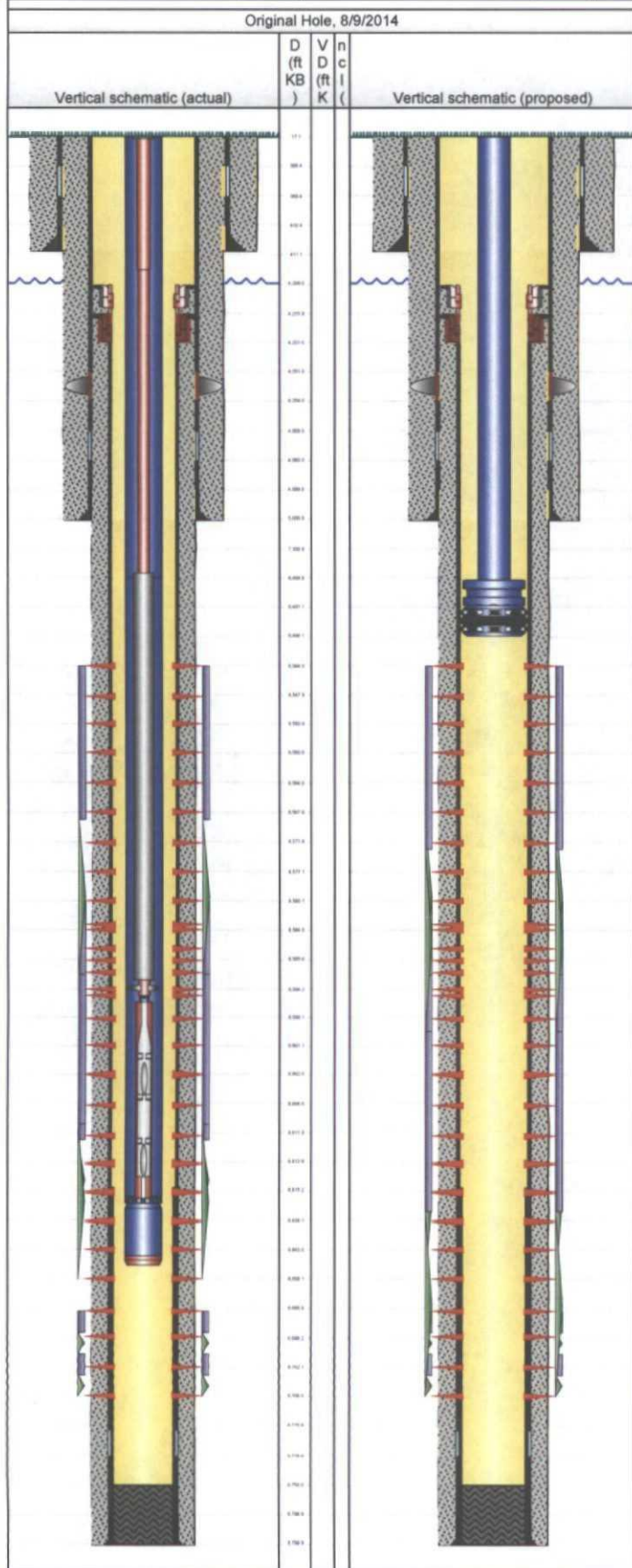
Rod Description

Insert Pump

Item Des	OD (in)	Grade	Jts	Len (ft)
Polished Rod	1 1/2	SM	1	24.00
Sucker Rod	1	D-90	98	2,450.00
Sucker Rod	7/8	D-90	232	5,800.00
Sinker Bar	1 1/2	K	12	300.00
Stabilizer Rod	7/8	D	1	4.00
RHBO Tool	3/4		1	1.00
Rod Insert Pump	1 1/4		1	24.00

Proposed Schematic & Details

Well Name NORTH VACUUM ABO UNIT 276		API/UWI 3002529233		County Lea		State/Province New Mexico		Field Name VACUUM N	
Location 2050 FSL & 652 FEL				Township 17S	Range 34E	Section 27	Latitude (") 32° 50' 53.664" N	Longitude (") 103° 32' 29.508" W	
Section		Survey		Block		Township		Abstract	
Original KB Elevation (ft) 4,054.00		Ground/Corrected Ground Elevation (ft) 4,037.00		KB-Ground Distance (ft) 17.00		Spud Date			



Jobs							
Convert To Injection, <dtmstart>							
Type Convert To Injection	Planned Start Date 8/9/2014	Objective LD production equip. verify csg integrity, stimulate existing perms, install injection equip. perform MIT, turn to injection.					
Wellbore Sections							
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date		
Cement Stages							
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment			
Perforations							
Top (ftKB)	Btm (ftKB)	Shot Dens (shot/s/ft)	Date	Zone	Calculated Shot Total		
Stim/Treat Stages							
Type	Start Date	Top (ftKB)	Btm (ftKB)	Com			
Acidizing	8/9/2014	8,544.0	8,706.0	5,000 gal 20% HCL NEFE w 3500# rock salt, pumped in three stages.			
Other In Hole							
Des	Com	OD (in)	Run Date	Top (ftKB)	Btm (ftKB)		
Tubing - Injection set at 8,494.0ftKB on 8/9/2014 00:00							
Set Depth (ftKB)	Comment	Run Date	Pull Date				
8,494.0		8/9/2014					
Item Des	OD (in)	Wt (lb/ft)	Grade	Len (ft)	Jts	Top (ftKB)	Btm (ftKB)
Tubing, bare steel	2 3/8	4.70	J-55	8,472.00	264	17.0	8,489.0
On-Off Tool	4.51			2.00	1	8,489.0	8,491.0
Packer - Arrowset 1X IPC	4 5/8			3.00	1	8,491.0	8,494.0
<des> on <dtmrun>							
Rod Description							
Item Des	OD (in)	Grade	Jts	Len (ft)			

Existing Perfs
8544' to 8706'

Schematic & History

Well Name NORTH VACUUM ABO UNIT 281		API/UWI 3002529238	County Lea		State/Province New Mexico		Field Name VACUUM N	
Location 800 FNL & 550 FEL			Township 17S	Range 34E	Section 23	Latitude (") 32° 33' 23.726" N		Longitude (") 103° 31' 26.328" W
Section	Survey				Block	Township		Abstract
Original KB Elevation (ft) 4,034.00		Ground/Corrected Ground Elevation (ft) 4,018.00		KB-Ground Distance (ft) 16.00		Spud Date 5/15/1985		

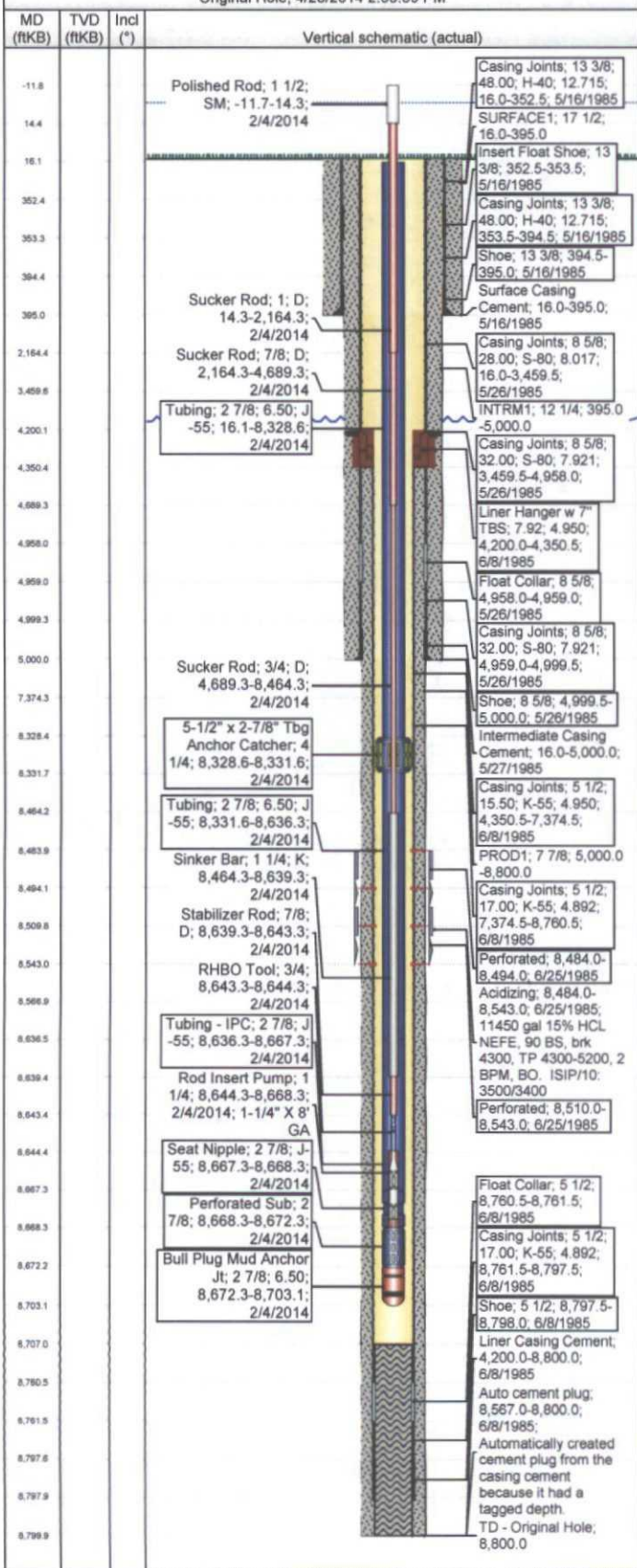
Original Hole, 4/28/2014 2:55:39 PM		
MD (ftKB)	TVD (ftKB)	Incl (")
Vertical schematic (actual)		
-11.8		Polished Rod; 1 1/2; SM; -11.7-14.3; 2/4/2014
14.4		
16.1		
352.4		
353.3		
394.4		
395.0		
2,164.4		
3,459.8		
4,200.1		
4,350.4		
4,589.3		
4,958.0		
4,959.0		
4,999.3		
5,000.0		
7,374.3		
8,328.4		
8,331.7		
8,464.2		
8,483.9		
8,484.1		
8,508.8		
8,543.0		
8,566.9		
8,636.5		
8,639.4		
8,643.4		
8,644.4		
8,667.3		
8,668.3		
8,672.2		
8,703.1		
8,707.0		
8,760.5		
8,761.5		
8,797.6		
8,797.9		
8,799.9		

Jobs						
Type		Start Date	Summary			
Workover		1/1/1900	NO HISTORICAL PULL DATA IN FW NOR BKE WELL FILES.			
Drilling Original & Initial Completion		5/15/1985	D&C Abo, perf, acidize, swb & fl 133 BO, 46 BW 11 hrs, SITP 650 psi, flow to 60 psi, perform PBU tst, 72 hr BHPBU 1135-2982 psi. Sqz scale inhib. FI 3 days, POP.			
Repr Tbg Failure		2/3/2014	Pl rds, HO rds, pull tbg, RIH tstg tbg, jt abv SN burst, RIh exch pmp & rds. RTP.			
Wellbore Sections						
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date	
SURFACE1	Original Hole	17 1/2	16.0	395.0	5/15/1985	
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date	
INTRM1	Original Hole	12 1/4	395.0	5,000.0	5/17/1985	
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date	
PROD1	Original Hole	7 7/8	5,000.0	8,800.0	5/28/1985	
Surface 395.0 ftKB 5/16/1985						
Comment						
OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Item Des
13 3/8	48.00	H-40	16.0	352.5	336.50	Casing Joints
13 3/8			352.5	353.5	1.00	Insert Float Shoe
13 3/8	48.00	H-40	353.5	394.5	41.00	Casing Joints
13 3/8			394.5	395.0	0.50	Shoe
Intermediate 5,000.0 ftKB 5/26/1985						
Comment						
OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Item Des
8 5/8	28.00	S-80	16.0	3,459.5	3,443.50	Casing Joints
8 5/8	32.00	S-80	3,459.5	4,958.0	1,498.50	Casing Joints
8 5/8			4,958.0	4,959.0	1.00	Float Collar
8 5/8	32.00	S-80	4,959.0	4,999.5	40.50	Casing Joints
8 5/8			4,999.5	5,000.0	0.50	Shoe
Liner 8,798.0 ftKB 6/8/1985						
Comment						
OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Item Des
7.921			4,200.0	4,350.5	150.50	Liner Hanger w 7" TBS
5 1/2	15.50	K-55	4,350.5	7,374.5	3,024.00	Casing Joints
5 1/2	17.00	K-55	7,374.5	8,760.5	1,386.00	Casing Joints
5 1/2			8,760.5	8,761.5	1.00	Float Collar
5 1/2	17.00	K-55	8,761.5	8,797.5	36.00	Casing Joints
5 1/2			8,797.5	8,798.0	0.50	Shoe
Cement Stages						
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Surface Casing Cement	16.0	395.0	Cement Returns	500 sx Class C + 2% CaCl2, 1/4 pps FC, circ 140 sx, est 33% washout.		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Intermediate Casing Cement	16.0	5,000.0	Cement Returns	Lead: 3150 sx Class C neat + 100 scf/bbl N2; Tail: 385 sx Class C + 2% CaCl, 100 scf/bbl N2, plg dwn, pmp 100 sx Class C neat + 2% CaCl bt 8-5/8x13-3/8 annulus, displ 2 bbls FW, circ 330 sx, 98% washout est.		

Schematic & History

#281

Original Hole, 4/28/2014 2:55:39 PM



Cement Stages

Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment
Liner Casing Cement	4,200.0	8,800.0	Bit Tag	680 sx Class H +0.3% HA-9, 4% gel, 1/4 pps FC, 14.5 ppg, 1.39 cuft/sk.

Perforations

Top (ftKB)	Btm (ftKB)	Shot Dens (shot s/ft)	Date	Zone	Calculated Shot Total
8,484.0	8,494.0	1.0	6/25/1985	Abo, Original Hole	11
8,510.0	8,543.0	1.0	6/25/1985	Abo, Original Hole	34

Stim/Treat Stages

Type	Start Date	Top (ftKB)	Btm (ftKB)	Com
Acidizing	6/25/1985	8,484.0	8,543.0	11450 gal 15% HCL NEFE, 90 BS, brk 4300, TP 4300-5200, 2 BPM, BO. ISIP/10: 3500/3400

Other In Hole

Des	Com	OD (in)	Run Date	Top (ftKB)	Btm (ftKB)

Tubing - Production set at 8,703.1ftKB on 2/4/2014 00:00

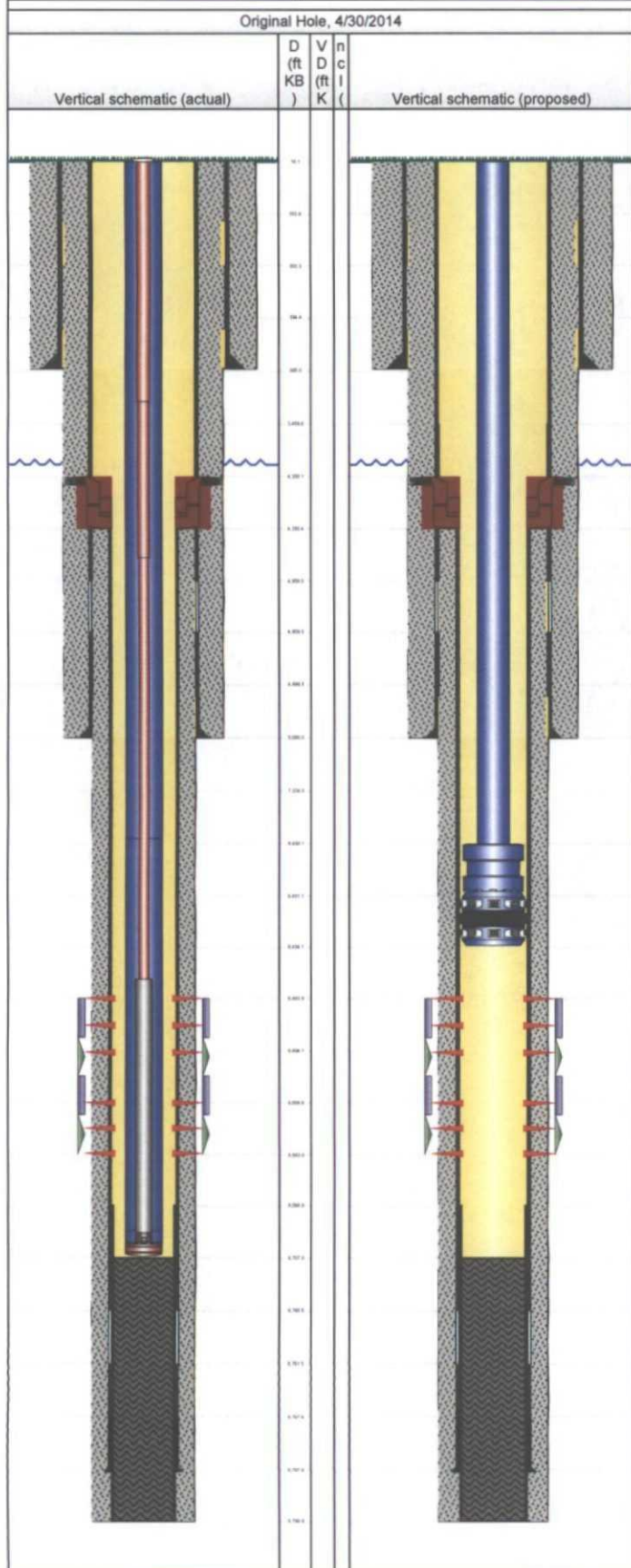
Set Depth (ftKB)		Comment		Run Date		Pull Date	
8,703.1				2/4/2014		4/30/2014	
Item Des	OD (in)	Wt (lb/ft)	Grade	Len (ft)	Jts	Top (ftKB)	Btm (ftKB)
Tubing	2 7/8	6.50	J-55	8,312.47	270	16.1	8,328.6
5-1/2" x 2-7/8" Tbg Anchor Catcher	4 1/4			3.00	1	8,328.6	8,331.6
Tubing	2 7/8	6.50	J-55	304.76	10	8,331.6	8,636.3
Tubing - IPC	2 7/8		J-55	31.00	1	8,636.3	8,667.3
Seat Nipple	2 7/8		J-55	1.00	1	8,667.3	8,668.3
Perforated Sub	2 7/8			4.00	1	8,668.3	8,672.3
Bull Plug Mud Anchor Jt	2 7/8	6.50		30.78	1	8,672.3	8,703.1

Rod String on 2/4/2014 01:00

Rod Description	Item Des	OD (in)	Grade	Jts	Len (ft)
Rod String					
	Polished Rod	1 1/2	SM	1	26.00
	Sucker Rod		1 D	86	2,150.00
	Sucker Rod		7/8 D	101	2,525.00
	Sucker Rod		3/4 D	151	3,775.00
	Sinker Bar	1 1/4 K		7	175.00
	Stabilizer Rod		7/8 D	1	4.00
	RHBO Tool		3/4	1	1.00
	Rod Insert Pump		1 1/4	1	24.00

Proposed Schematic & Details

Well Name NORTH VACUUM ABO UNIT 281		API/UWI 3002529238		County Lea		State/Province New Mexico		Field Name VACUUM N	
Location 800 FNL & 550 FEL				Township 17S	Range 34E	Section 23	Latitude (") 32° 33' 23.726" N		Longitude (") 103° 31' 26.328" W
Section		Survey			Block		Township		Abstract
Original KB Elevation (ft) 4,034.00		Ground/Corrected Ground Elevation (ft) 4,018.00		KB-Ground Distance (ft) 16.00		Spud Date 5/15/1985			

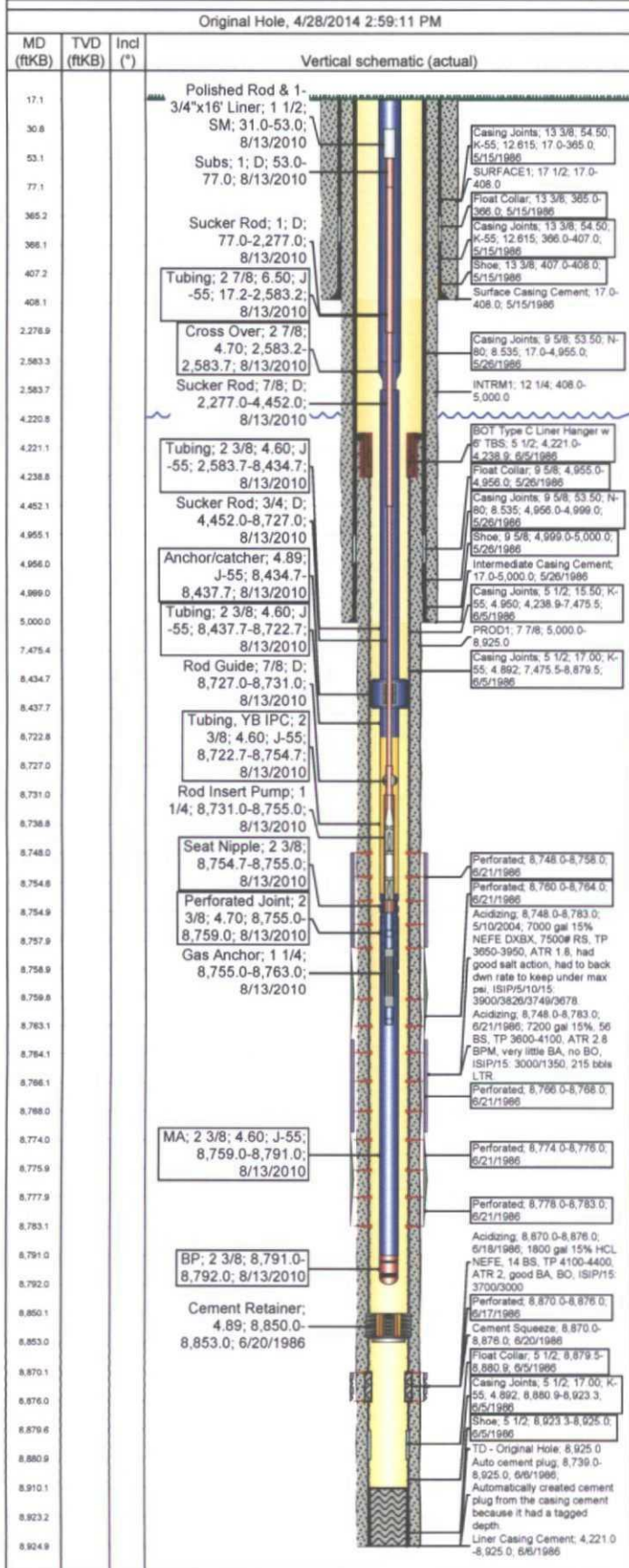


Jobs							
Convert To Injection, <dtmstart>							
Type Convert To Injection	Planned Start Date 4/30/2014	Objective Pull prod equip, verify wellbore integrity, stim, install inj equip, perform MIT, turn to injection.					
Wellbore Sections							
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date		
Cement Stages							
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment			
Perforations							
Top (ftKB)	Btm (ftKB)	Shot Dens (shot s/ft)	Date	Zone	Calculated Shot Total		
Stim/Treat Stages							
Type	Start Date	Top (ftKB)	Btm (ftKB)	Com			
Acidizing		8,484.0	8,543.0	2250 gal 15% HCL NEFE, diverted via straddle pkr assembly			
Other In Hole							
Des	Com	OD (in)	Run Date	Top (ftKB)	Btm (ftKB)		
Tubing - Injection (IPC) set at 8,434.0ftKB on 4/30/2014 00:00							
Set Depth (ftKB)	Comment	Run Date	Pull Date				
8,434.0		4/30/2014					
Item Des	OD (in)	Wt (lb/ft)	Grade	Len (ft)	Jts	Top (ftKB)	Btm (ftKB)
Tubing - IPC	2 3/8		J-55	8,414.00	263	16.0	8,430.0
On-Off Tool w X profile or equiv	4 1/2			1.00	1	8,430.0	8,431.0
AS1X or equiv	4 5/8			3.00	1	8,431.0	8,434.0
<des> on <dtmrun>							
Rod Description							
Item Des	OD (in)	Grade	Jts	Len (ft)			

some parts as producer
8484' to 8543'
 $8484' \times 0.2 = 1697 \text{ psi}$

Schematic & History

Well Name NORTH VACUUM ABO UNIT 300		API/UWI 3002529610	County Eddy			State/Province New Mexico		Field Name VACUUM N	
Location 1980 FSL & 1980 FWL			Township 17S	Range 34E	Section 10	Latitude (") 32° 35' 18.606" N		Longitude (") 103° 33' 0.936" W	
Section	Survey				Block		Township	Abstract	
Original KB Elevation (ft) 4,072.00		Ground/Corrected Ground Elevation (ft) 4,055.00		KB-Ground Distance (ft) 17.00		Spud Date			



Type	Start Date	Summary
Workover	1/1/1900	No pull records in FW nor BKE well files for 1986 to 2000
Drilling Original & Initial Completion	5/15/1986	D&C in Abo. Perf, acidize, swab 100% wtr, no gas, sqz perfs, add new perfs, acidize, swab, 90% OC, PTA w bombs, sqz scale inhibitor, POP.
Pump Repair	2/2/2000	PI rds, pl rd prt, attempt fish, pl tbq, chg pmp, RTP.
Acidize	5/4/2004	PI rds, pmp, & tbq, tbq clr prtd @ 5933', fishd, split clr, hydrotest tbq BIH w bit & DC, 5 bad jts, tag 8852', circ well, POOH, RIH w TP & pkr, tst bksd to 500 psi, good, set pkr @ 8503', acidize, RTP.
Rod Part	8/5/2004	PI rds, box brk?, rplc pmp, pl tbq, RTP.
Pump Exchange	4/19/2006	PI pmp, chg pmp, RTP.
Pump Exchange	4/19/2006	PI pmp, chg pmp, RTP.
Pump Exchange	11/6/2007	PI pmp, chg pmp, RTP.
Change Rod Pump	7/1/2010	
Change Rod Pump	8/11/2010	Attempt pl rds, BO, pl rds. Strip out, RIH tbq & rds, re-torquing every break, RTP.

Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date
SURFACE1	Original Hole	17 1/2	17.0	408.0	5/15/1986
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date
INTRM1	Original Hole	12 1/4	408.0	5,000.0	5/16/1986
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date
PROD1	Original Hole	7 7/8	5,000.0	8,925.0	5/28/1986

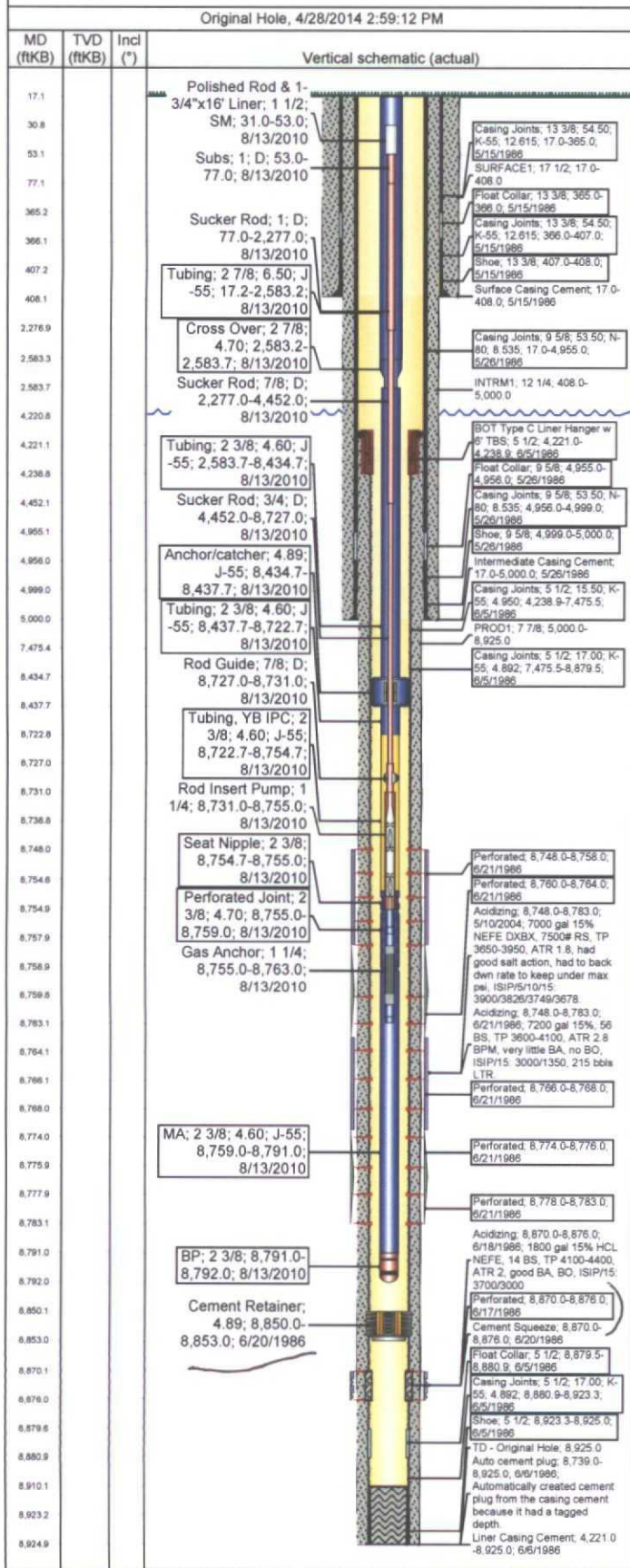
OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Item Des
13 3/8	54.50	K-55	17.0	365.0	348.00	Casing Joints
13 3/8			365.0	366.0	1.00	Float Collar
13 3/8	54.50	K-55	366.0	407.0	41.00	Casing Joints
13 3/8			407.0	408.0	1.00	Shoe

OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Item Des
9 5/8	53.50	N-80	17.0	4,955.0	4,938.00	Casing Joints
9 5/8			4,955.0	4,956.0	1.00	Float Collar
9 5/8	53.50	N-80	4,956.0	4,999.0	43.00	Casing Joints
9 5/8			4,999.0	5,000.0	1.00	Shoe

OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Item Des
5 1/2			4,221.0	4,238.9	17.96	BOT Type C Liner Hanger w 6' TBS
5 1/2	15.50	K-55	4,238.9	7,475.5	3,236.56	Casing Joints
5 1/2	17.00	K-55	7,475.5	8,879.5	1,404.04	Casing Joints
5 1/2			8,879.5	8,880.9	1.38	Float Collar
5 1/2	17.00	K-55	8,880.9	8,923.3	42.35	Casing Joints
5 1/2			8,923.3	8,925.0	1.75	Shoe

Schematic & History

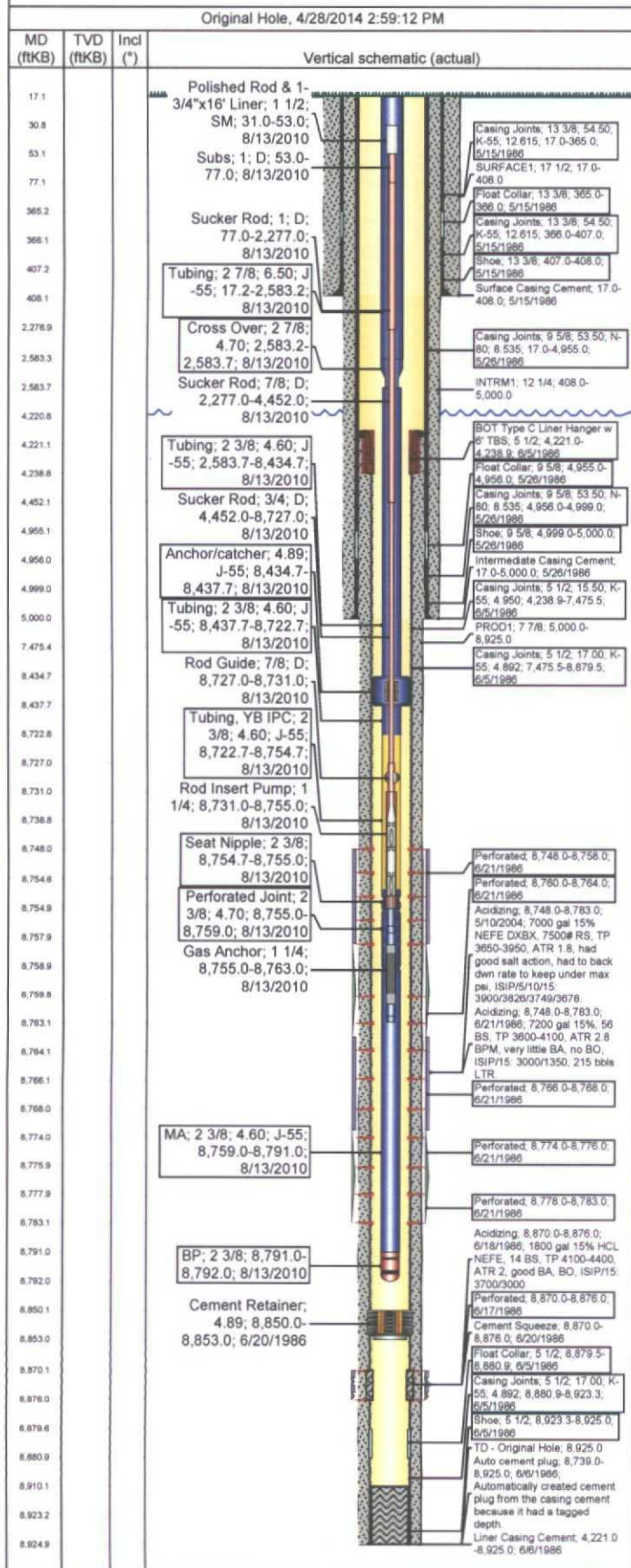
#300



Cement Stages			
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth
Surface Casing Cement	17.0	408.0	Cement Returns ✓
Intermediate Casing Cement	17.0	5,000.0	Cement Returns ✓
Liner Casing Cement	4,221.0	8,925.0	Bit Tag
Cement Squeeze	8,870.0	8,876.0	
Perforations			
Top (ftKB)	Btm (ftKB)	Shot (shot/sft)	Date
8,870.0	8,876.0	1.0	6/17/1986
8,748.0	8,758.0	1.0	6/21/1986
8,760.0	8,764.0	1.0	6/21/1986
8,766.0	8,768.0	1.0	6/21/1986
8,774.0	8,776.0	1.0	6/21/1986
8,778.0	8,783.0	1.0	6/21/1986
Stim/Treat Stages			
Type	Start Date	Top (ftKB)	Btm (ftKB)
Acidizing	6/18/1986	8,870.0	8,876.0
Acidizing	6/21/1986	8,748.0	8,783.0
Acidizing	5/10/2004	8,748.0	8,783.0
Other In Hole			
Des	Com	OD (in)	Run Date
Cement Retainer		4.892	6/20/1986
Tubing - Production set at 8,792.0ftKB on 8/13/2010 00:00			
Set Depth (ftKB)	Comment	Run Date	Pull Date
8,792.0		8/13/2010	4/30/2014
Item Des	OD (in)	Wt (lb/ft)	Grade
Tubing	2 7/8	6.50	J-55
Cross Over	2 7/8	4.70	

Schematic & History

#380



Item Des	OD (in)	Wt (lb/ft)	Grade	Len (ft)	Jts	Top (ftKB)	Btm (ftKB)
Tubing	2 3/8	4.60	J-55	5,851.00	186	2,583.7	8,434.7
Anchor/catcher	4.89		J-55	3.00	1	8,434.7	8,437.7
Tubing	2 3/8	4.60	J-55	285.00	7	8,437.7	8,722.7
Tubing, YB IPC	2 3/8	4.60	J-55	32.00	1	8,722.7	8,754.7
Seat Nipple	2 3/8			0.30	1	8,754.7	8,755.0
Perforated Joint	2 3/8	4.70		4.00	1	8,755.0	8,759.0
MA	2 3/8	4.60	J-55	32.00	1	8,759.0	8,791.0
BP	2 3/8			1.00	1	8,791.0	8,792.0

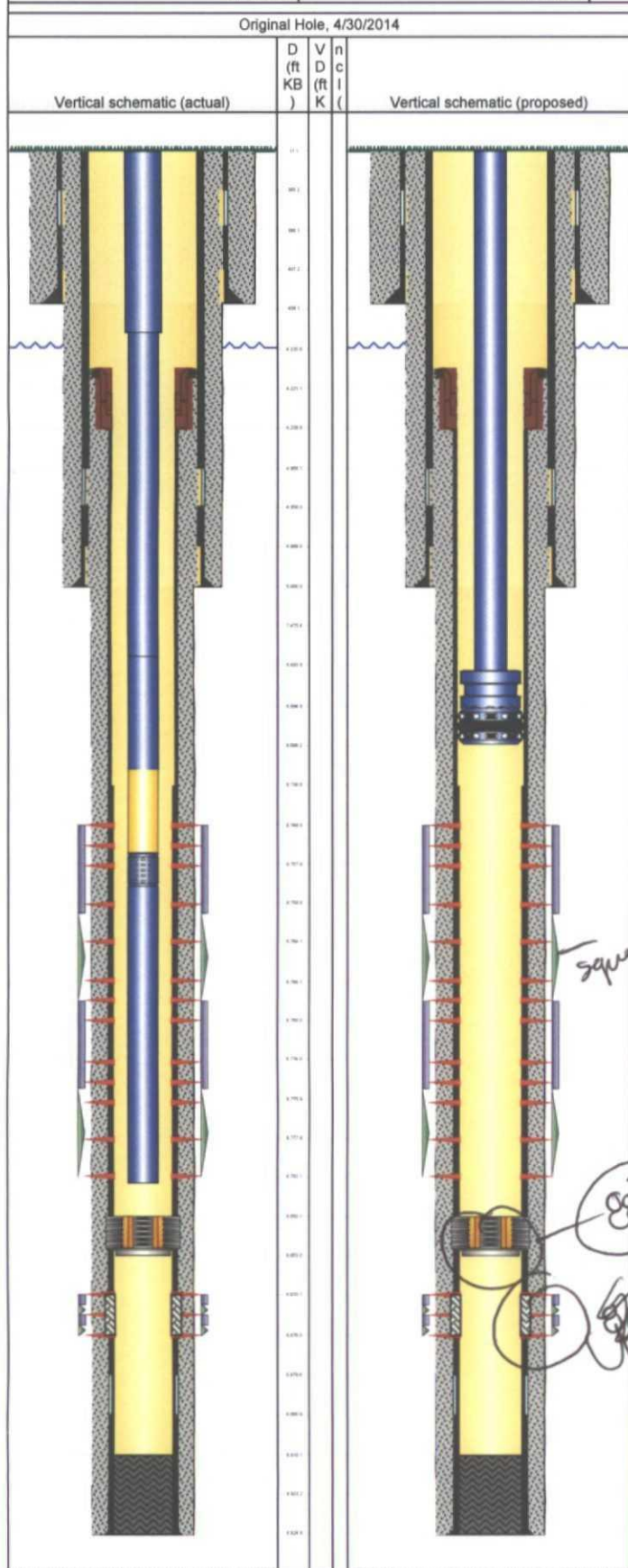
Insert Pump on 8/13/2010 00:00

Rod Description
Insert Pump

Item Des	OD (in)	Grade	Jts	Len (ft)
Polished Rod & 1-3/4"x16" Liner	1 1/2	SM	1	22.00
Subs	1	D	6	24.00
Sucker Rod	1	D	88	2,200.00
Sucker Rod	7/8	D	87	2,175.00
Sucker Rod	3/4	D	171	4,275.00
Rod Guide	7/8	D	1	4.00
Rod Insert Pump	1 1/4		1	24.00
Gas Anchor	1 1/4		1	8.00

Proposed Schematic & Details

Well Name NORTH VACUUM ABO UNIT 300		API/UWI 3002529610		County Eddy		State/Province New Mexico		Field Name VACUUM N	
Location 1980 FSL & 1980 FWL				Township 17S	Range 34E	Section 10	Latitude (") 32° 35' 18.606" N		Longitude (") 103° 33' 0.936" W
Section		Survey		Block		Township		Abstract	
Original KB Elevation (ft) 4,072.00		Ground/Corrected Ground Elevation (ft) 4,055.00		KB-Ground Distance (ft) 17.00		Spud Date			



Jobs

Convert To Injection, <dtmstart>

Type Convert To Injection	Planned Start Date 4/20/2014	Objective LD productgion equip, verify wellbore integrity, stimulate, install injection equipment, perform MIT, turn to injection.
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Wellbore Sections

Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date
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Cement Stages

Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment
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Perforations

Top (ftKB)	Btm (ftKB)	Shot Dens (shot s/ft)	Date	Zone	Calculated Shot Total
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Stim/Treat Stages

Type	Start Date	Top (ftKB)	Btm (ftKB)	Com
Acidizing	4/30/2014	8,748.0	8,783.0	1150 gal 20% HCL NEFE, pumped via straddle pkr.

Other In Hole

Des	Com	OD (in)	Run Date	Top (ftKB)	Btm (ftKB)
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Tubing - Injection (IPC) set at 8,698.0ftKB on 4/30/2014 00:00

Sealing Injection (SI) Set at 8,698.00 ft on 4/30/2014							
Set Depth (ftKB)	Comment			Run Date		Pull Date	
8,698.0				4/30/2014			
Item Des	OD (in)	Wt (lb/ft)	Grade	Len (ft)	Jts	Top (ftKB)	Btm (ftKB)
Tubing - IPC	2 3/8		J-55	8,677.00	271	17.0	8,694.0
On-Off Tool w X profile or equiv	4 1/2			1.00	1	8,694.0	8,695.0
AS1X or equiv	4 5/8			3.00	1	8,695.0	8,698.0

<des> on <dtmrun>

Item Des	OD (in)	Grade	Jts	Len (ft)
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Same perfs as producer
8748' to 8876' 8783
8748' x 0.2 = 1750 psi

8850

8870-8876

North Vacuum Abo Unit
Waterflood Expansion Wells within 1/2 mile radius area of review;
and penetrating the Abo formation

No. of Well Diagrams - only 3

Vacuum GB-5A
141

LEASE NAME & NUMBER	API	CURRENT OPERATOR	LOCATION	STATUS	SPUD DATE	COMPLETION DATE	TD	SURF CSG DEPTH (FT)	SURF CSG DIA	SURF CSG CMT (SX)	PROD CSG DEPTH (FT)	PROD CSG DIA	PROD CSG CMT (SX)	PERFORATIONS	COMMENTS
BRIDGES STATE 119	30025220010000	CROSS TIMBERS ENERGY LLC	1830' FWL & 2030' FNL, F, SEC 24, T17S, R34E	INJ	1/8/1967	3/30/1967	12,391	360	13-3/8"	375	10,425	7"	1,000	8412-8508	RENAMED NVAU 119
BRIDGES STATE 124	30025223860000	CROSS TIMBERS ENERGY LLC	460' FEL & 660' FSL, P, SEC 14, T17S, R34E	INJ	1/9/1968	3/21/1968	10,565	353	13-3/8"	325	10,565	7"	750	8495-8549	RENAMED NVAU 124
BRIDGES STATE 128	30025229420000	CROSS TIMBERS ENERGY LLC	535' FEL & 2005' FNL, H, SEC 23, T17S, R34E	INJ	1/6/1969	2/5/1969	8,580	1,616	8-5/8"	700	8,580	5-1/2"	1,200	8473-8515	RENAMED NVAU 128
BRIDGES STATE 130	30025232880000	CROSS TIMBERS ENERGY LLC	660' FEL & 1980' FNL, H, SEC 15, T17S, R34E	INJ	9/18/1969	12/8/1969	12,612	339	13-3/8"	495	12,200	7"	1,600	8654-8711	RENAMED NVAU 130
BRIDGES STATE 14	30025235610000	CROSS TIMBERS ENERGY LLC	860' FWL & 660' FNL, D, SEC 14, T17S, R34E	INJ	8/3/1970	9/3/1970	8,750	1,715	8-5/8"	1,200	8,750	5-1/2"	3,100	8571-8642	P&A'D, RE-ENTERED
BRIDGES STATE 153	30025236940000	CROSS TIMBERS ENERGY	610' FSL, 2130' FWL, N, SEC 26, T17S, R34E	OIL	2/6/2002	9/17/2002	8,700	1,600	8-5/8"	1,000	8,700	5-1/2"	3,100	4688-8614	
BRIDGES STATE 170	30025239800000	CROSS TIMBERS ENERGY LLC	740' FWL & 660' FNL, D, SEC 14, T17S, R34E	INJ	2/3/1972	2/29/1972	8,800	270	12-3/4"	450	8,800	5-1/2"	2,600	8579-8634	RENAMED NVAU 170
BRIDGES STATE 514	30025372410000	CROSS TIMBERS ENERGY LLC	990' FWL & 990' FSL, M, SEC 11, T17S, R34E	GAS	11/16/2005	2/17/2006	12,480	438	13-3/8"	425	12,480	5-1/2"	1,175	11860-12114	
BRIDGES STATE F 116	30025218080000	CROSS TIMBERS ENERGY LLC	510' FWL & 1880' FSL, L, SEC 24, T17S, R34E	INJ	7/1/1966	8/22/1966	10,436	372	13-3/8"	350	10,436	7"	365	8441-8488	RENAMED NVAU 116
KIRBY 26 STATE 1	30025360930000	FASKEN OIL AND RANCH LTD	1980' FNL, 1310' FWL, E, SEC 26, T17S, R34E	PA	7/18/2006	8/31/2006	11,964	520	13-3/8"	550	11,964	5-1/2"	2,100	10175-11835	
NORTH VACUUM (ABO) WEST UNIT 31	30025339880000	CHEVRON U S A INCORPORATED	1980' FWL & 660' FNL, C, SEC 15, T17S, R34E	OIL	7/23/1997	10/2/1997	10,780	1,660	8-5/8"	600	8,880	5-1/2"	1,400	8612-10780	
NORTH VACUUM ABO EAST UNIT 280	30025292370000	CROSS TIMBERS ENERGY LLC	1850' FEL & 2000' FNL, G, SEC 23, T17S, R34E	OIL	8/16/1985	10/8/1985	8,800	417	13-3/8"	500	8,800	5-1/2"	950	8506-8648	RENAMED NVAU 280
NORTH VACUUM ABO UN 201	30025237230000	CROSS TIMBERS ENERGY LLC	1980' FEL & 1980' FSL, J, SEC 10, T17S, R34E	INJ	3/11/1971	6/5/1971	12,740	354	13-3/8"	350	10,995	5-1/2"	1,875	8679-8729	P&A'D, RE-ENTERED
NORTH VACUUM ABO UN 202	30025236750000	CROSS TIMBERS ENERGY LLC	660' FEL & 460' FSL, P, SEC 10, T17S, R34E	INJ	1/13/1971	2/17/1971	8,900	1,676	8-5/8"	750	8,900	5-1/2"	1,600	8659-8679	
NORTH VACUUM ABO UNIT 118W1	30025235260000	CROSS TIMBERS ENERGY	1980' FNL, 1980' FWL, F, SEC 26, T17S, R34E	INJ	6/16/1970	7/15/1970	8,700	1,630	8-5/8"	1,300	8,676	5-1/2"	3,800	8484-8567	
NORTH VACUUM ABO UNIT 129	30025231000000	CROSS TIMBERS ENERGY LLC	1980' FEL & 860' FNL, B, SEC 23, T17S, R34E	INJ	4/14/1969	6/8/1969	8,600	1,641	8-5/8"	1,000	8,600	5-1/2"	2,300	8493-8538	
NORTH VACUUM ABO UNIT 138W1	30025235400000	CROSS TIMBERS ENERGY	1980' FSL, 860' FWL, L, SEC 26, T17S, R34E	INJ	7/11/1970	8/7/1970	8,700	1,615	8-5/8"	1,200	8,700	5-1/2"	3,100	8506-8646	
NORTH VACUUM ABO UNIT 145W1	30025235680000	CROSS TIMBERS ENERGY	660' FSL, 860' FEL, P, SEC 27, T17S, R34E	INJ	11/29/2010	12/3/2010	8,750	1,620	8-5/8"	1,000	8,750	5-1/2"	2,900	8575-8659	
NORTH VACUUM ABO UNIT 149W1	30025236480000	CROSS TIMBERS ENERGY	1980' FSL, 1780' FEL, J, SEC 27, T17S, R34E	INJ	1/31/1971	2/24/1971	8,750	1,630	8-5/8"	1,000	8,750	5-1/2"	3,100	8577-8681	
NORTH VACUUM ABO UNIT 157W1	30025237820000	CROSS TIMBERS ENERGY	2180' FNL, 660' FEL, H, SEC 27, T17S, R34E	INJ	5/25/1971	8/14/1971	12,500	350	13-3/8"	375	12,500	7"	2,100	8570-11908	
NORTH VACUUM ABO UNIT 164	30025238210000	CROSS TIMBERS ENERGY LLC	1980' FEL & 660' FNL, B, SEC 15, T17S, R34E	INJ	8/24/1971	9/21/1971	8,850	250	12-3/4"	400	8,850	5-1/2"	2,300	8677-8734	P&A'D, RE-ENTERED
NORTH VACUUM ABO UNIT 204	30025221060000	CROSS TIMBERS ENERGY LLC	860' FWL & 660' FNL, D, SEC 24, T17S, R34E	INJ	5/11/1967	7/6/1967	10,360	370	13-3/8"	350	10,360	7"	1,090	8484-8537	
NORTH VACUUM ABO UNIT 234	30025283140000	CROSS TIMBERS ENERGY LLC	545' FEL & 1980' FSL, I, SEC 23, T17S, R34E	OIL	11/17/1983	2/14/1984	8,700	400	13-3/8"	400	8,699	5-1/2"	1,325	8470-8622	
NORTH VACUUM ABO UNIT 235	30025283150000	CROSS TIMBERS ENERGY LLC	2000' FWL & 1880' FSL, K, SEC 24, T17S, R34E	OIL	11/9/1983	1/30/1984	8,675	404	13-3/8"	400	8,674	5-1/2"	1,250	8431-8610	
NORTH VACUUM ABO UNIT 236	30025283160000	CROSS TIMBERS ENERGY LLC	1980' FWL & 460' FNL, C, SEC 25, T17S, R34E	OIL	9/19/1983	11/14/1983	8,700	405	13-3/8"	425	8,700	5-1/2"	1,200	8400-8454	
NORTH VACUUM ABO UNIT 238Y	30025284660000	CROSS TIMBERS ENERGY LLC	780' FWL & 643' FSL, M, SEC 24, T17S, R34E	OIL	10/9/1983	12/27/1983	8,700	400	13-3/8"	400	8,700	5-1/2"	1,200	8459-8536	
NORTH VACUUM ABO UNIT 240	30025286000000	CROSS TIMBERS ENERGY	2131' FSL, 665' FEL, I, SEC 26, T17S, R34E	OIL	4/6/1984	5/30/1984	8,700	427	13-3/8"	400	8,699	5-1/2"	1,050	8362-8636	
NORTH VACUUM ABO UNIT 241	30025286010000	CROSS TIMBERS ENERGY	1882' FSL, 2001' FWL, K, SEC 26, T17S, R34E	OIL	5/5/1984	7/4/1984	8,700	400	13-3/8"	400	8,699	5-1/2"	1,050	8462-8666	
NORTH VACUUM ABO UNIT 242	30025286020000	CROSS TIMBERS ENERGY	1809' FNL, 1890' FEL, G, SEC 26, T17S, R34E	OIL	6/6/1984	8/8/1984	8,700	400	13-3/8"	400	8,699	5-1/2"	1,030	8433-8608	
NORTH VACUUM ABO UNIT 243	30025285860000	CROSS TIMBERS ENERGY	657' FNL, 1839' FWL, C, SEC 26, T17S, R34E	OIL	3/10/1984	5/11/1984	8,700	400	13-3/8"	400	8,699	5-1/2"	925	8494-8672	
NORTH VACUUM ABO UNIT 246	30025285870000	CROSS TIMBERS ENERGY LLC	1980' FEL & 660' FSL, O, SEC 24, T17S, R34E	OIL	2/21/1984	5/3/1984	8,700	410	13-3/8"	400	8,699	5-1/2"	1,100	8444-8499	
NORTH VACUUM ABO UNIT 247	30025286270000	CROSS TIMBERS ENERGY LLC	2094' FEL & 2081' FNL, G, SEC 24, T17S, R34E	OIL	3/25/1984	5/21/1984	8,710	415	13-3/8"	400	8,709	5-1/2"	1,100	8465-8696	
NORTH VACUUM ABO UNIT 248	30025286180000	CROSS TIMBERS ENERGY LLC	659' FWL & 2100' FNL, E, SEC 24, T17S, R34E	OIL	4/24/1984	6/12/1984	8,700	400	13-3/8"	400	8,696	5-1/2"	1,150	8485-8509	
NORTH VACUUM ABO UNIT 249	30025287220000	CROSS TIMBERS ENERGY	1850' FNL, 660' FWL, E, SEC 26, T17S, R34E	OIL	7/4/1984	8/28/1984	8,720	400	13-3/8"	400	8,719	5-1/2"	1,100	8490-8681	
NORTH VACUUM ABO UNIT 252	30025287350000	CROSS TIMBERS ENERGY LLC	790' FWL & 660' FSL, M, SEC 13, T17S, R34E	OIL	6/23/1984	8/19/1984	8,700	422	13-3/8"	420	8,699	5-1/2"	1,000	8489-8634	
NORTH VACUUM ABO UNIT 264	30025288310000	CROSS TIMBERS ENERGY LLC	610' FWL & 560' FSL, M, SEC 11, T17S, R34E	OIL	9/21/1984	11/20/1984	8,800	400	13-3/8"	400	8,799	5-1/2"	1,300	8608-8638	
NORTH VACUUM ABO UNIT 269	30025289190000	CROSS TIMBERS ENERGY LLC	660' FEL & 660' FNL, A, SEC 15, T17S, R34E	OIL	9/25/1984	11/14/1984	8,830	406	13-3/8"	500	8,829	5-1/2"	950	8664-8704	
NORTH VACUUM ABO UNIT 270	30025289360000	CROSS TIMBERS ENERGY LLC	1980' FEL & 540' FSL, O, SEC 10, T17S, R34E	OIL	10/21/1984	12/17/1984	8,800	432	13-3/8"	400	8,800	5-1/2"	950	8702-8737	
NORTH VACUUM ABO UNIT 271	30025289380000	CROSS TIMBERS ENERGY LLC	1980' FEL & 1980' FNL, G, SEC 10, T17S, R34E	OIL	11/1/1984	12/25/1984	8,800	422	13-3/8"	450	8,800	5-1/2"	100	8704-8730	
NORTH VACUUM ABO UNIT 276	30025292330000	CROSS TIMBERS ENERGY	2050' FSL, 652' FEL, I, SEC 27, T17S, R34E	OIL	5/12/1985	7/16/1985	8,800	411	13-3/8"	500	8,800	5-1/2"	1,050	8544-8706	
NORTH VACUUM ABO UNIT 277	30025292340000	CROSS TIMBERS ENERGY	790' FNL, 650' FEL, A, SEC 27, T17S, R34E	OIL	6/5/1985	7/23/1985	8,800	400	13-3/8"	500	8,800	5-1/2"	1,230	8548-8685	
NORTH VACUUM ABO UNIT 281	30025292380000	CROSS TIMBERS ENERGY LLC	550' FEL & 800' FNL, A, SEC 23, T17S, R34E	OIL	5/15/1985	7/8/1985	8,800	395	13-3/8"	500	8,800	5-1/2"	680	8484-8543	
NORTH VACUUM ABO UNIT 282	30025292390000	CROSS TIMBERS ENERGY LLC	2000' FEL & 550' FSL, O, SEC 14, T17S, R34E	OIL	6/11/1985	7/31/1985	8,800	400	13-3/8"	500	8,800	5-1/2"	1,235	8575-8604	
NORTH VACUUM ABO UNIT 283	30025292400000	CROSS TIMBERS ENERGY LLC	650' FWL & 1950' FNL, E, SEC 14, T17S, R34E	OIL	8/8/1985	10/3/1985	8,800	400	13-3/8"	500	8,800	5-1/2"	700	8614-8668	
NORTH VACUUM ABO UNIT 286	30025294300000	CROSS TIMBERS ENERGY	540' FSL, 1930' FEL, O, SEC 26, T17S, R34E	PA	1/8/2002	4/20/2002	8,700	400	13-3/8"	500	8,700	5-1/2"	1,050	6300-8640	
NORTH VACUUM ABO UNIT 287	30025294310000	XTO ENERGY, INC	660' FSL, 780' FWL, M, SEC 26, T17S, R34E	PA	10/25/1985	12/31/1985	8,803	415	13-3/8"	500	8,800	5-1/2"	1,100	8538-8598	
NORTH VACUUM ABO UNIT 288	30025294320000	CROSS TIMBERS ENERGY	545' FSL, 1880' FEL, O, SEC 27, T17S, R34E	OIL	11/11/1985	1/13/1986	8,850	400	13-3/8"	500	8,850	5-1/2"	1,075	8594-8826	
NORTH VACUUM ABO UNIT 289	30025294330000	CROSS TIMBERS ENERGY	1980' FNL, 1980' FEL, G, SEC 27, T17S, R34E	OIL	12/4/1985	1/22/1986	8,850	405	13-3/8"	500	8,850	5-1/2"	900	8614-8750	
NORTH VACUUM ABO UNIT 294	30025295600000	CROSS TIMBERS ENERGY LLC	2100' FWL & 800' FNL, C, SEC 23, T17S, R34E	OIL	2/26/1986	4/23/1986	8,808	400	13-3/8"	400	8,808	5-1/2"	1,050	8562-8617	
NORTH VACUUM ABO UNIT 298	30025296080000	CROSS TIMBERS ENERGY LLC	1900' FEL & 2050' FNL, G, SEC 15, T17S, R34E	OIL	4/20/1986	9/9/1986	8,900	402	13-3/8"	500	8,900	5-1/2"	1,000	8702-8751	
NORTH VACUUM ABO UNIT 299	30025296090000	CROSS TIMBERS ENERGY LLC	800' FWL & 600' FSL, M, SEC 10, T17S, R34E	OIL	4/25/1986	6/21/1986	8,950	408	13-3/8"	500	8,950	5-1/2"	1,150	8776-8828	
NORTH VACUUM ABO UNIT 300	30025296100000	CROSS TIMBERS ENERGY LLC	1980' FWL & 1980' FSL, K, SEC 10, T17S, R34E	OIL	5/14/1986	8/28/1986	8,925	408	13-3/8"	500	8,925	5-1/2"	1,000	8748-8783	
NORTH VACUUM ABO UNIT 305	30025379710000	CROSS TIMBERS ENERGY	2600' FSL, 2630' FEL, J, SEC 26, T17S, R34E	OIL	7/3/2006	10/18/2006	9,145	1,723	8-5/8"	950	9,145	5-1/2"	3,345	8428-9077	
NORTH VACUUM ABO UNIT 98	30025203200000	XTO ENERGY, INC	1980' FSL, 1780' FEL, J, SEC 26, T17S, R34E	PA	2/17/1968	10/17/1968	11,660	362	13-3/8"	350	10,217	4-1/2"	3,675	6056-11500	3 STRGS PROD CSG CMT'D
NORTH VACUUM ABO WEST UNIT 27	30025336380000	CHEVRON U S A INCORPORATED	2080' FSL, 2080' FWL, K, SEC 27, T17S, R34E	OIL	2/2/1997	5/5/1997	10,757	1,630	8-5/8"	650	8,850	5-1/2"	2,087	8688-8799	

3 string
second string
cmt
TS 2640 & cmt in bottom
Liner added

TS 2615

TS 2560

3 string
cmt 5000 cmt to surface

cmt - amt circulated to surface

North Vacuum - Abo Unit
 STATE AMT 229
 STATE 'N': 1
 STATE 'N': 3
 STATE 'N': 4
 STATE A 1
 STATE VH 3
 STATE-BRIDGES 109

North Vacuum Abo Unit
 Waterflood Expansion Wells within 1/2 mile radius area of review;
 and penetrating the Abo formation

30025240900000	CROSS TIMBERS ENERGY LLC	660' FWL & 2000' FSL, L, SEC 10, T17S, R34E	INJ	4/7/1972	5/11/1972	8,987	1,634	8-5/8"	1,100	8,987	5-1/2"	1,250	8745-8803	RENAMED NVAU 229
30025240170000	CROSS TIMBERS ENERGY LLC	1980' FWL & 1780' FNL, F, SEC 10, T17S, R34E	OIL	1/20/1972	2/24/1972	8,910	250	11-3/4"	350	8,910	5-1/2"	1,250	8702-8750	RENAMED NVAU 228
30025298010000	CROSS TIMBERS ENERGY LLC	2010' FWL & 800' FNL, C, SEC 10, T17S, R34E	OIL	12/22/1986	2/9/1987	8,950	400	13-3/8"	500	8,950	5-1/2"	925	8706-8752	RENAMED NVAU 211
30025298020000	CROSS TIMBERS ENERGY LLC	850' FWL & 1918' FNL, E, SEC 10, T17S, R34E	OIL	1/15/1987	3/25/1987	8,950	400	13-3/8"	500	8,950	5-1/2"	800	8737-8805	RENAMED NVAU 228
30025227120000	CROSS TIMBERS ENERGY LLC	2162' FEL & 2054' FSL, J, SEC 24, T17S, R34E	INJ	9/5/1968	12/7/1968	10,133	400	11-3/4"	400	9,386	5-1/2"	750	8475-8509	P&A'D, RE-ENTERED, RENAMED NVAU 109
30025239650000	CROSS TIMBERS ENERGY LLC	2000' FWL & 660' FSL, N, SEC 10, T17S, R34E	INJ	12/27/1970	2/5/1971	8,925	1,702	8-5/8"	800	8,924	5-1/2"	4,150	8718-8750	
30025216170000	CROSS TIMBERS ENERGY LLC	1830' FWL & 610' FSL, N, SEC 24, T17S, R34E	INJ	1/19/1966	5/2/1966	12,470	365	13-3/8"	350	10,366	7"	1,125	9568-9574	

229 - TOC 600'/15
 [250 to 600']
 250' cont

No wells common - Previous Review WFX-557 application

62 wells

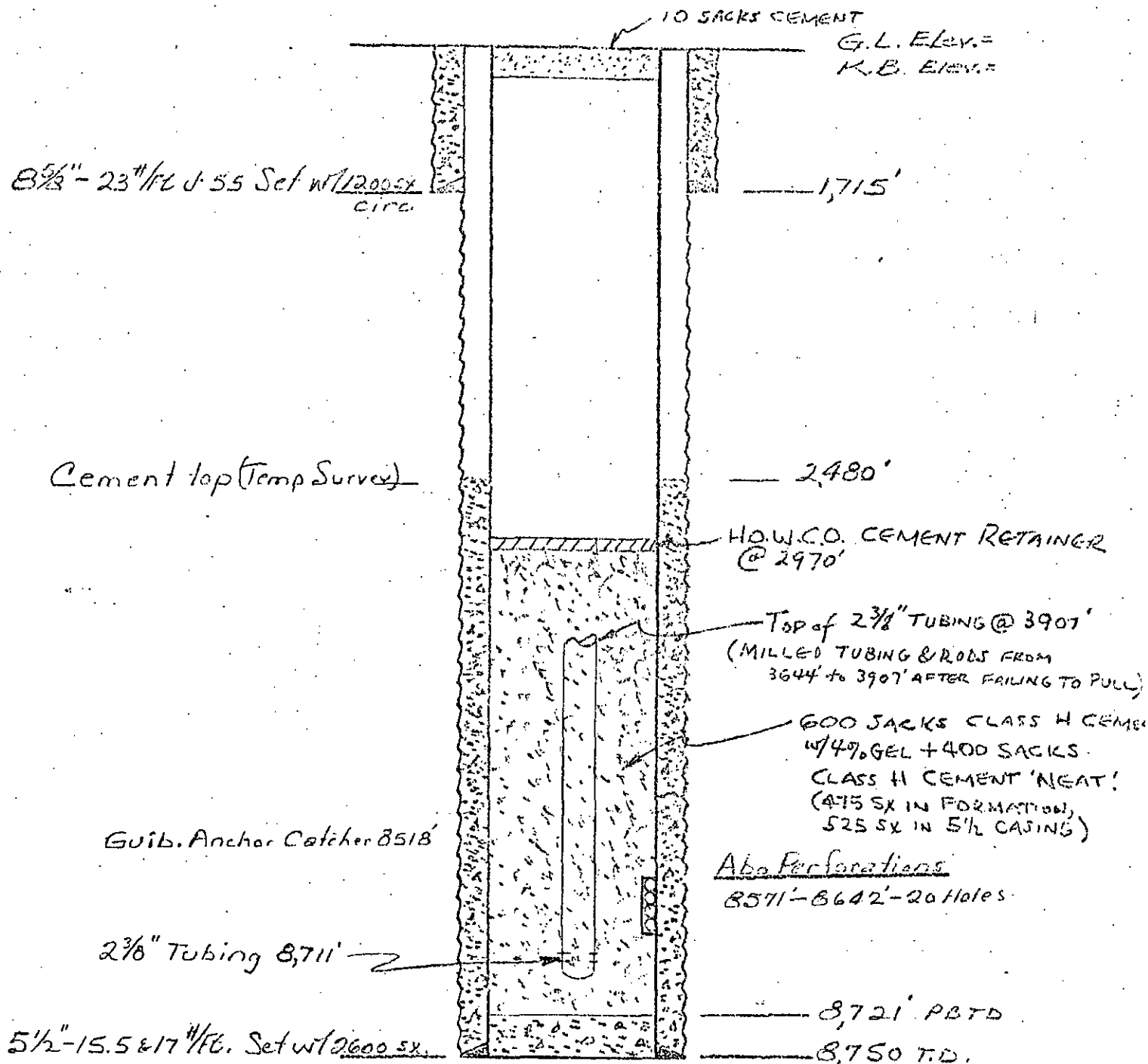
58 Active | 4 P&A

20 injector

38 producers

2099

DL DRAMMATIC WELL SITE
 BRIDGES STATE WELL NO. 141
 VACUNA ABO POOL
 LEA COUNTY, NEW MEXICO

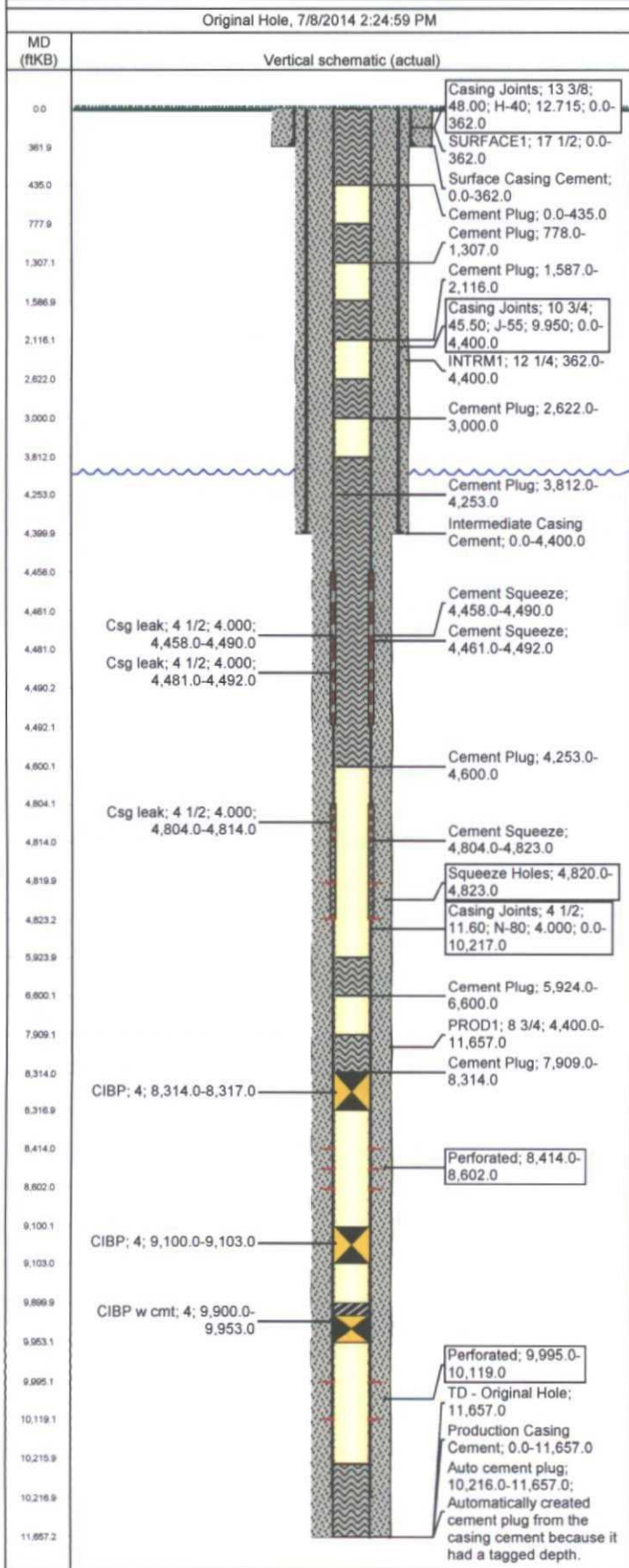


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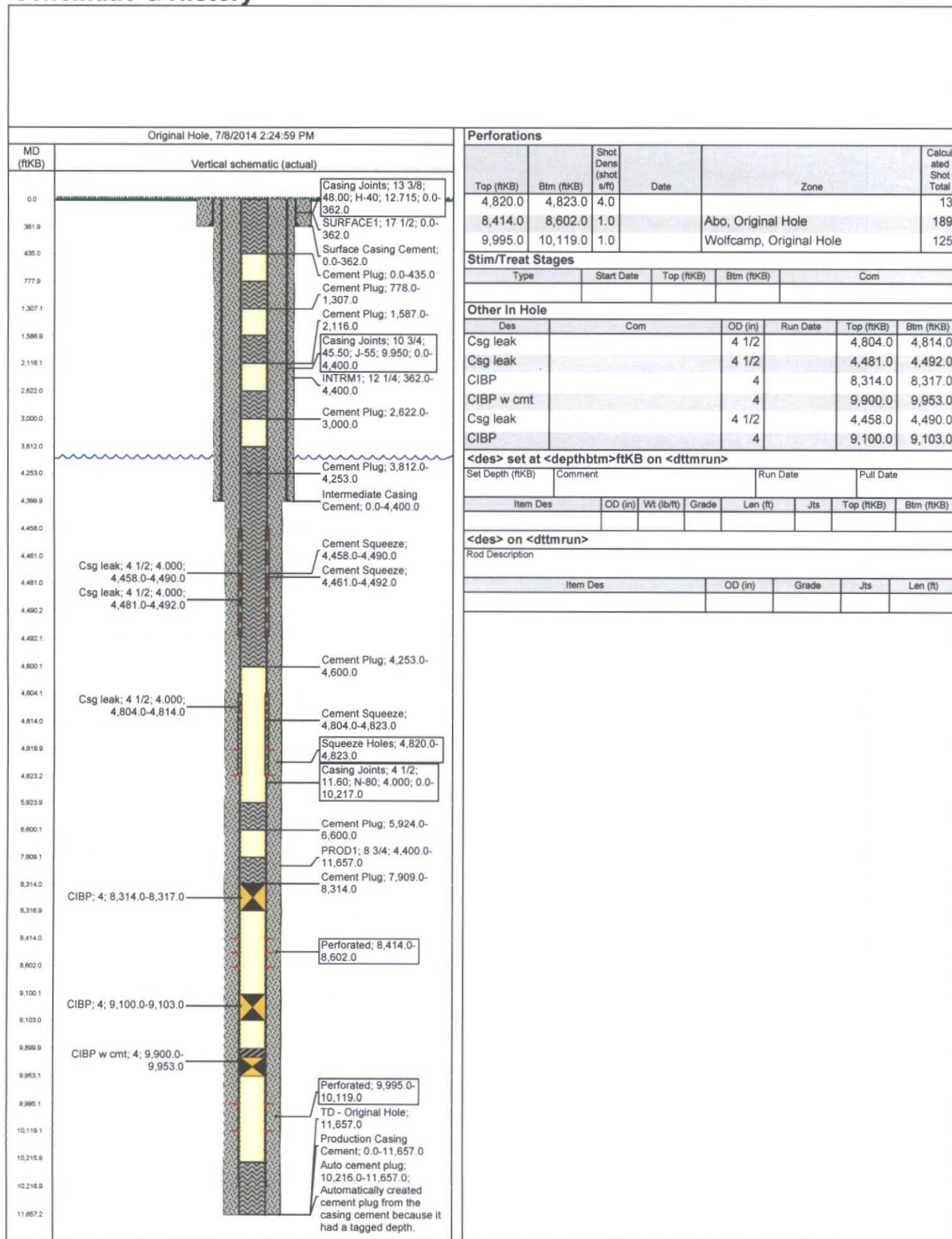
Schematic & History

Well Name NORTH VACUUM ABO UNIT 098		API/UWI 3002520320		County Lea		State/Province New Mexico		Field Name VACUUM N	
Location 1980 FSL & 1780 FEL				Township 17S	Range 34E	Section 26	Latitude (") 32° 49' 6.636" N		Longitude (") 103° 31' 40.548" W
Section	Survey					Block	Township		Abstract
Original KB Elevation (ft) 4,033.00		Ground/Corrected Ground Elevation (ft) 4,015.00		KB-Ground Distance (ft) 18.00		Spud Date			



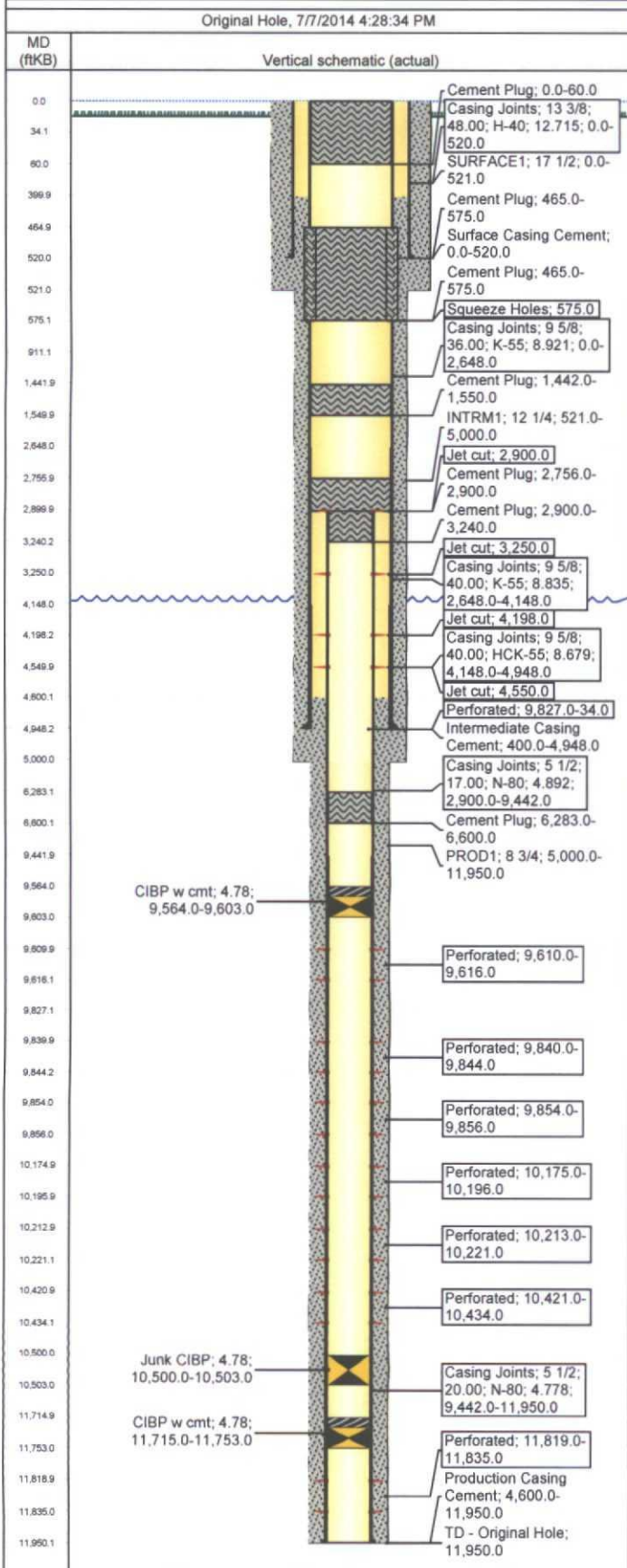
Jobs						
Type		Start Date		Summary		
ABANDONMENT P&A		7/29/2010				
Wellbore Sections						
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date	
SURFACE1	Original Hole	17 1/2	0.0	362.0		
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date	
INTRM1	Original Hole	12 1/4	362.0	4,400.0		
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date	
PROD1	Original Hole	8 3/4	4,400.0	11,657.0		
Surface 362.0 ftKB <Run Date?>						
Comment						
OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Item Des
13 3/8	48.00	H-40	0.0	362.0	362.00	Casing Joints
Intermediate 4,400.0 ftKB <Run Date?>						
Comment						
OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Item Des
10 3/4	45.50	J-55	0.0	4,400.0	4,400.00	Casing Joints
Production 3 10,217.0 ftKB <Run Date?>						
Comment						
OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Item Des
4 1/2	11.60	N-80	0.0	10,217.0	10,217.00	Casing Joints
Cement Stages						
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Production Casing Cement	0.0	11,657.0	Cement Returns	2-7/8" cmt: 825 Howco Trinity Inferno neat, dwn both 2-7/8" csg strgs; 4-1/2 cmt: Lead: 2850 sx Howco Trinity Litewater; Tail: 600 sx Trinity Inferno neat. Circ. 900 sx		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Intermediate Casing Cement	0.0	4,400.0	Cement Returns	Lead: 152 sx Howco Trinity Litewater + 1/4 pps FloSeal, 1480 sx Incor + 6% gel; Tail: 100 sx Incor neat. Circ. cmt.		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Surface Casing Cement	0.0	362.0	Cement Returns	350 sx Incor + 2@ HA-5, 1/4 pps FloSeal, circ. cmt.		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Cement Squeeze	4,458.0	4,490.0		2 sqzs: 100 sx		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Cement Squeeze	4,804.0	4,823.0		100 sx premium		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Cement Squeeze	4,461.0	4,492.0		Spot 25 sx balanced plug		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Cement Plug	7,909.0	8,314.0		30 sx Class H		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Cement Plug	5,924.0	6,600.0		50 sx Class H		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Cement Plug	4,253.0	4,600.0		20 sx Class C + 2% CaCl		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Cement Plug	3,812.0	4,253.0		35 sx Class C + 2% CaCl		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Cement Plug	2,622.0	3,000.0		25 sx Class C + 2% CaCl		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Cement Plug	1,587.0	2,116.0		35 sx Class C + 2% CaCl		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Cement Plug	778.0	1,307.0		35 sx Class C + 2% CaCl		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Cement Plug	0.0	435.0		55 sx Class C + 2% CaCl		

Schematic & History



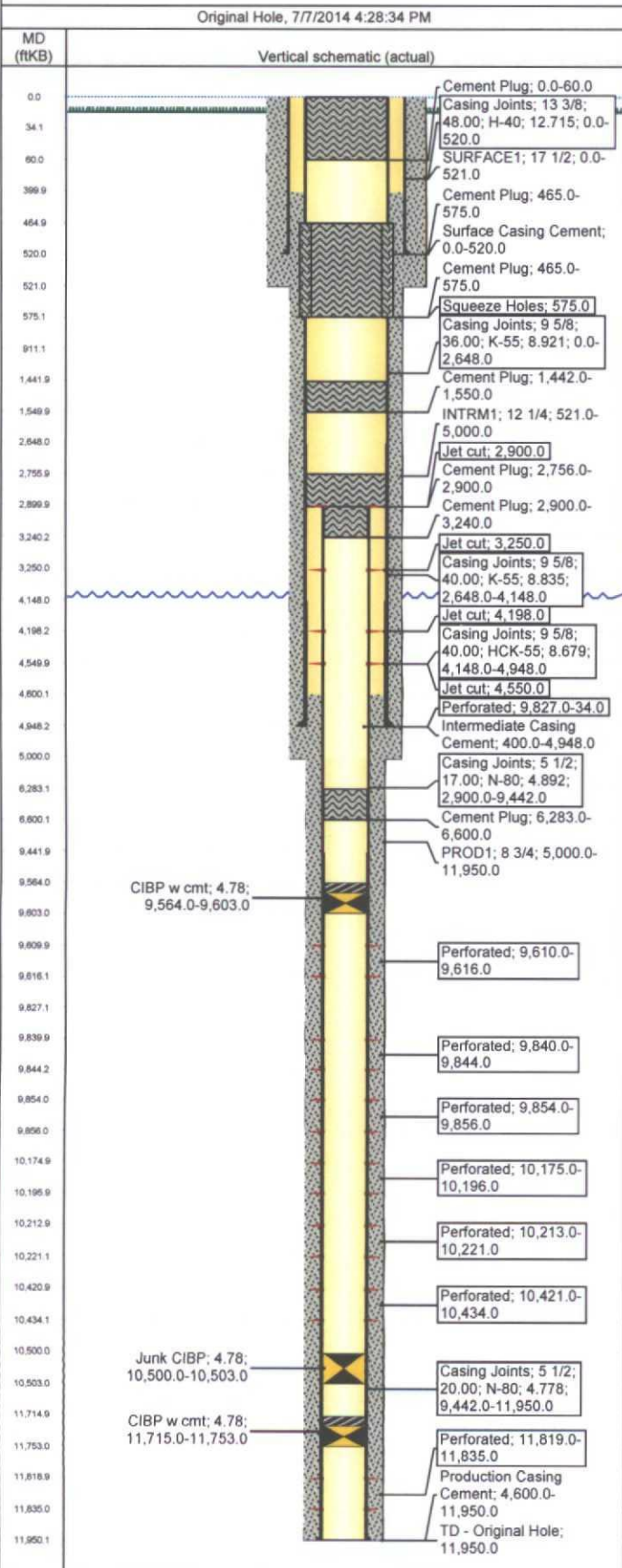
Schematic & History

Well Name KIRBY 26 STATE 1		API/UWI 3002536093	County Lea		State/Province NM		Field Name VACUUM N	
Location 1980 FNL, 1310 FWL			Township 17S	Range 34E	Section 26	Latitude (")		Longitude (")
Section	Survey				Block		Township	Abstract
Original KB Elevation (ft) 4,049.00		Ground/Corrected Ground Elevation (ft) 4,032.00		KB-Ground Distance (ft) 17.00		Spud Date 1/17/2003		



Jobs						
Type		Start Date	Summary			
Wellbore Sections						
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date	
SURFACE1	Original Hole	17 1/2	0.0	521.0		
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date	
INTRM1	Original Hole	12 1/4	521.0	5,000.0		
Section Des	Wellbore Name	Size (in)	Act Top (ftKB)	Act Btm (ftKB)	Start Date	
PROD1	Original Hole	8 3/4	5,000.0	11,950.0		
Surface 520.0 ftKB <Run Date?>						
Comment						
OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Item Des
13 3/8	48.00	H-40	0.0	520.0	520.00	Casing Joints
Intermediate 4,948.0 ftKB <Run Date?>						
Comment						
OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Item Des
9 5/8	36.00	K-55	0.0	2,648.0	2,648.00	Casing Joints
9 5/8	40.00	K-55	2,648.0	4,148.0	1,500.00	Casing Joints
9 5/8	40.00	HCK-55	4,148.0	4,948.0	800.00	Casing Joints
Production 11,950.0 ftKB <Run Date?>						
Comment						
OD (in)	Wt (lb/ft)	Grade	Top (ftKB)	Btm (ftKB)	Len (ft)	Item Des
5 1/2	20.00	N-80	0.0	911.0	911.00	Casing Joints
5 1/2	17.00	N-80	911.0	9,442.0	8,531.00	Casing Joints
5 1/2	20.00	N-80	9,442.0	11,950.0	2,508.00	Casing Joints
Cement Stages						
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Surface Casing Cement	0.0	520.0	Cement Returns	550 sx Class C + 2% CaCl, circ 197 sx		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Intermediate Casing Cement	400.0	4,948.0	Temperature Survey	Lead: 1050 sx Hal Interfill C + 8 pps CaCl; Tail: 200sx Class C neat.		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Production Casing Cement	4,600.0	11,950.0	Temperature Survey	Stg 1 (DV tool): 800 sx Hal Super H, circ. 235 sx thru DV tool. Stg 2: 1100 sx Hal Lite C		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Cement Plug	6,283.0	6,600.0		35 sx Class H		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Cement Plug	2,900.0	3,240.0		100 sx Class C		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Cement Plug	2,756.0	2,900.0		100 sx Class C		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Cement Plug	1,442.0	1,550.0		35 sx Class C + 2% CaCl		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Cement Plug	465.0	575.0		50 sx Class C + 3% CaCl sqz		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Cement Plug	465.0	575.0		50 sx Class C + 3% CaCl sqz		
Description	Top (ftKB)	Btm (ftKB)	Top Meas Meth	Comment		
Cement Plug	0.0	60.0		20 sx Class C		
Perforations						
Top (ftKB)	Btm (ftKB)	Shot Dens (shot s/ft)	Date	Zone	Calculated Shot Total	
575.0	575.0	4.0			1	
2,900.0	2,900.0				1	
3,250.0	3,250.0				1	
4,198.0	4,198.0				1	

Schematic & History



Perforations

Top (ftKB)	Btm (ftKB)	Shot Dens (shot s/ft)	Date	Zone	Calcul ated Shot Total
4,550.0	4,550.0				1
9,610.0	9,616.0	1.0		Wolfcamp, Original Hole	7
9,827.0	34.0	1.0		Wolfcamp, Original Hole	-
					9,79
					2
9,840.0	9,844.0	1.0		Wolfcamp, Original Hole	5
9,854.0	9,856.0	1.0		Wolfcamp, Original Hole	3
10,175.0	10,196.0	1.0		Wolfcamp, Original Hole	22
10,213.0	10,221.0	1.0		Wolfcamp, Original Hole	9
10,421.0	10,434.0	1.0		Wolfcamp, Original Hole	14
11,819.0	11,835.0			Atoka/Morrow, Original Hole	1

Stim/Treat Stages

Type	Start Date	Top (ftKB)	Btm (ftKB)	Com

Other In Hole

Des	Com	OD (in)	Run Date	Top (ftKB)	Btm (ftKB)
CIBP w cmt		4.778		9,564.0	9,603.0
CIBP w cmt		4.778		11,715.0	11,753.0
Junk CIBP		4.778		10,500.0	10,503.0

<des> set at <depth>ftKB on <dtmrun>

Set Depth (ftKB)	Comment	Run Date	Pull Date

Item Des	OD (in)	Wt (lb/ft)	Grade	Len (ft)	Jts	Top (ftKB)	Btm (ftKB)

<des> on <dtmrun>

Rod Description

Item Des	OD (in)	Grade	Jts	Len (ft)

Water Analysis Report

Production Company: **Crosstimbers**Well Name: **North WS**Sample Point: **Pump**Sample Date: **10/31/2013**Sample ID: **WA-257561**Sales Rep: **Bruce Kelly**Lab Tech: **LaTasha Cornish**Scaling potential predicted using ScaleSoftPitzer from
Brine Chemistry Consortium (Rice University)

Sample Specifics		Analysis @ Properties in Sample Specifics			
Test Date:	11/8/2013	Cations	mg/L	Anions	mg/L
System Temperature 1 (°F):	75	Sodium (Na):	640.43	Chloride (Cl):	1000.00
System Pressure 1 (psig):	100	Potassium (K):	19.06	Sulfate (SO ₄):	40.00
System Temperature 2 (°F):	75	Magnesium (Mg):	15.41	Bicarbonate (HCO ₃):	231.80
System Pressure 2 (psig):	100	Calcium (Ca):	64.22	Carbonate (CO ₃):	
Calculated Density (g/ml):	0.999	Strontium (Sr):	0.76	Acetic Acid (CH ₃ COO)	
pH:	7.50	Barium (Ba):	0.03	Propionic Acid (C ₂ H ₅ COO)	
Calculated TDS (mg/L):	2011.90	Iron (Fe):	0.04	Butanoic Acid (C ₃ H ₇ COO)	
CO ₂ in Gas (%):		Zinc (Zn):	0.00	Isobutyric Acid ((CH ₃) ₂ CHCOO)	
Dissolved CO ₂ (mg/L):	50.00	Lead (Pb):	0.15	Fluoride (F):	
H ₂ S in Gas (%):		Ammonia NH ₃ :		Bromine (Br):	
H ₂ S in Water (mg/L):	0.00	Manganese (Mn):	0.01	Silica (SiO ₂):	

Notes:

(PTB = Pounds per Thousand Barrels)

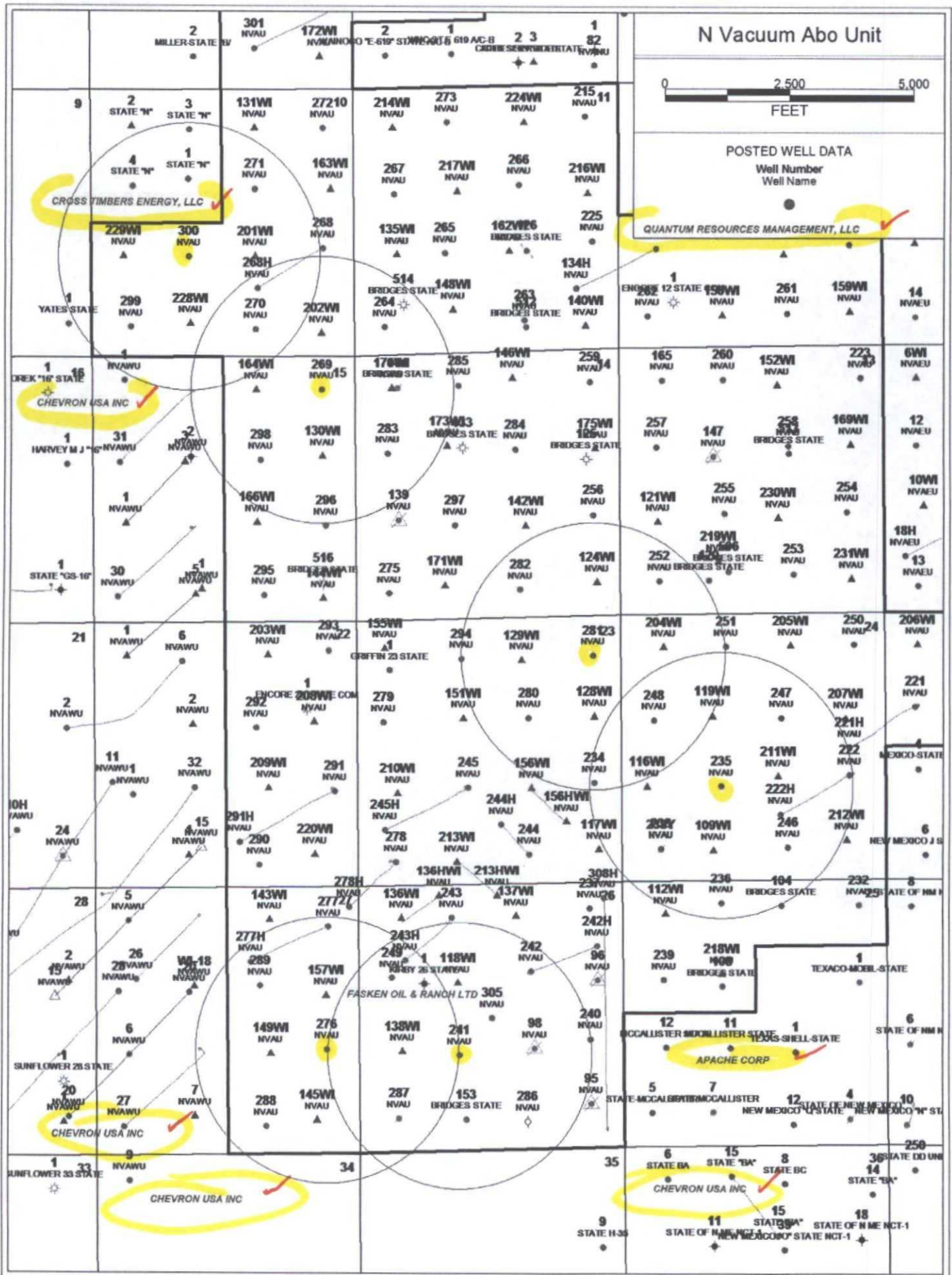
		Calcium Carbonate		Barium Sulfate		Iron Sulfide		Iron Carbonate		Gypsum CaSO ₄ 2H ₂ O		Celestite SrSO ₄		Halite NaCl		Zinc Sulfide	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
75.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

		Hemihydrate CaSO ₄ 0.5H ₂ O		Anhydrate CaSO ₄		Calcium Fluoride		Zinc Carbonate		Lead Sulfide		Mg Silicate		Ca Mg Silicate		Fe Silicate	
Temp (°F)	PSI	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB	SI	PTB
75.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Water Analysis Report

These scales have positive scaling potential under initial temperature and pressure:

These scales have positive scaling potential under final temperature and pressure:



USPS Certified Mail Number	Name	Mail Service	Status	Postal Facility	ZIP	Date	Time	Electronic Delivery Confirmation	Return Receipt Electroni Signature
9402610200883253024704									
Chris Tomlinson									
Certified with Electronic Delivery Confirmation									
	Sheridan Production Co, LLC	ELECTRONIC SHIPPING INFO RECEIVED	FORT WORTH,TX	76102	6/23/2014	2:20AM			
9402610200883253018727									
Mike Pippin									
Certified with Electronic Delivery Confirmation									
	Lime Rock Resources II-A, L.P.	ELECTRONIC SHIPPING INFO RECEIVED	FORT WORTH,TX	76102	6/23/2014	2:20AM			
9402610200883252996385									
Denise Pinkerton									
Certified with Electronic Delivery Confirmation									
	Chevron USA Inc (4326)	ELECTRONIC SHIPPING INFO RECEIVED	FORT WORTH,TX	76102	6/23/2014	2:20AM			

Cross Timbers Energy, LLC
400 W. 7th Street
FORT WORTH TX 76102-4701

US POSTAGE AND FEES PAID

PRIORITY MAIL

Jun 23 2014

Mailed from ZIP 76102

1 lb Priority Mail Rate
Zone 3



CommercialBasePrice

071S00777793

USPS CERTIFIED MAIL



9402 6102 0088 3253 0247 04

Sheridan Production Co, LLC
Chris Tomlinson
Suite 1300
9 Greenway Plaza
HOUSTON TX 77046-0922



FOLD ALONG THIS LINE

Duplicate - Copy

Cross Timbers Energy, LLC
400 W. 7th Street
FORT WORTH TX 76102-4701

USPS CERTIFIED MAIL



9402 6102 0088 3253 0187 27

Lime Rock Resources II-A, L.P.
Mike Pippin
3104 North Sullivan
FARMINGTON NM 87401-2017



US POSTAGE AND FEES PAID

PRIORITY MAIL

Jun 23 2014

Mailed from ZIP 76102

1 lb Priority Mail Rate

Zone 4

CommercialBasePrice



endicia.com

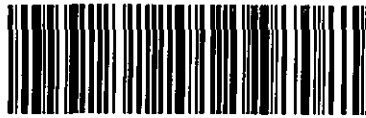
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FOLD ALONG THIS LINE

Duplicate - copy

Cross Timbers Energy, LLC
400 W. 7th Street
FORT WORTH TX 76102-4701

USPS CERTIFIED MAIL



9402 6102 0088 3252 9963 85

Chevron USA Inc (4326)
Denise Pinkerton
15 Smith Road
MIDLAND TX 79705-5423



US POSTAGE AND FEES PAID

PRIORITY MAIL

Jun 23 2014

Mailed from ZIP 76102

1 lb Priority Mail Rate
Zone 3

CommercialBasePrice



endicla.com

071S00777793

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Affidavit of Publication

State of New Mexico,
County of Lea.

I, DANIEL RUSSELL
PUBLISHER

of the Hobbs News-Sun, a
newspaper published at Hobbs, New
Mexico, do solemnly swear that the
clipping attached hereto was
published in the regular and entire
issue of said newspaper, and not a
supplement thereof for a period

of 1 issue(s).

Beginning with the issue dated
July 10, 2014

and ending with the issue dated
July 10, 2014


PUBLISHER

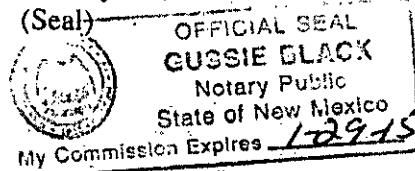
Sworn and subscribed to before me
this 10th day of
July, 2014



Notary Public

My commission expires
January 29, 2015

(Seal)



This newspaper is duly qualified to
publish legal notices or
advertisements within the meaning of
Section 3, Chapter 167, Laws of
1937 and payment of fees for said
publication has been made.

LEGAL NOTICE July 10, 2014

Gross Timbers Energy, LLC,
400 W 7th Street,
Fort Worth, TX 76102
(817) 334-7842 (Robbie Grigg) is

heraby giving notice of intent to inject Ogallala water for the
purpose of secondary recovery into the North Vacuum Abo
formation at an expected rate of 250 BWPD and 4350 psig
in the following wells:

NVAU #235 located 1880 FSL & 2000 FWL (Unit K)
Sec 24, T17S, R34E at a depth of 8470' to 8622'

NVAU #241 located 1862 FSL & 2001 FWL (Unit K)
Sec 26, T17S, R34E at a depth of 8462' to 8668'

NVAU #269 located 860 FNL & 660 FEL (Unit A)
Sec 15, T17S, R34E at a depth of 8608' to 8638'

NVAU #276 located 2050 FWL & 652 FEL (Unit I)
Sec 27, T17S, R34E at a depth of 8544' to 8706'

NVAU #281 located 800 FNL & 550 FEL (Unit A)
Sec 23, T17S, R34E at a depth of 8702' to 8737'

NVAU #300 located 1980 FSL & 1980 FWL (Unit K)
Sec 10, T17S, R34E at a depth of 8702' to 8751'

Interested persons objecting to this application must file a
request for hearing with the Oil Conservation Division, 1220
South Francis Dr., Santa Fe, NM 87505 within 15 days of
this notice.
#29202

67111631

00139913

ROBBIE GRIGG
CROSS TIMBERS ENERGY
400 W. 7TH ST
FORT WORTH, TX 76102

CROSS TIMBERS ENERGY, LLC

September 3, 2014

State of New Mexico
Energy, Minerals & Natural Resources Department
Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

RE: North Vacuum ABO Unit
Waterflood Expansion – R4430
Lea County, New Mexico

As a representative of Cross Timbers Energy, LLC, I have examined all available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.



Ian Peterson
Operations Engineer
Cross Timbers Energy, LLC
Phone: 817-334-7702
Email: ipeterson@mspartners.com

X



C-108 Review Checklist:

Received: 7/22/14 & Previous 8/14/14 Add. Request: 12/6/14 & 1/5/14 Reply Date: 11/7/14 Suspended: [] [Ver 15]

ORDER TYPE: WFX (PMX) SWD Number: 273 Permit Date: Legacy Permits/Orders: R-4430

Well No. 235 Well Name(s): North Vacuum Abo Unit [1 of 6 wells] -amended + PMX(s) / IPI(s) and 1 WFX

API: 30-025-28315 Spud Date: 11/9/1983 New or Old: New (UIC Class II Primacy 03/07/1982)

Footages 1880 FSL / 2000 FWL Lot — or Unit K Sec 24 Tsp 17S Rge 34E County Lea

General Location: In general area of Buckeye - 2 mi West Pool: Vacuum, Abo, North Pool No.: 61760

BLM 100K Map: Hobbs Operator: Cross Timbers Energy, LLC OGRID: 298299 Contact: Robbie Grigg

COMPLIANCE RULE 5.9: Total Wells: 567 Inactive: 2 Fincl Assur: Yes Compl. Order? No IS 5.9 OK? Yes Date: 11/7/14

WELL FILE REVIEWED ☒ Current Status: Producer in AboWELL DIAGRAMS: NEW: Proposed ☐ or RE-ENTER: Before Conv. ☒ After Conv. ☒ Logs in Imaging: DSN / Acoustic

Planned Rehab Work to Well: Existing well completion - add tubing / packer

Well Construction Details		Sizes (in)	Setting	Cement	Cement Top and
		Borehole / Pipe	Depths (ft)	Sx or Cl	Determination Method
Planned ☐ or Existing ☒	Surface	17 1/2 / 13 3/8	0 to 404	400	Cir. to surface
Planned ☐ or Existing ☒	Interm/Prod	12 1/4 / 8 5/8	0 to 5000	3900	Cir. to surface
Planned ☐ or Existing ☒	Interm/Prod	7 7/8 / 5 1/2	4192 to 8674	1250	TOL / Cak
Planned ☐ or Existing ☐	Prod/Liner	—	—	—	—
Planned ☐ or Existing ☐	Liner	—	—	—	—
Planned ☐ or Existing ☒	OH / REEF	5 1/2	8431 to 8610	Inj Length	Completion/Operation Details:
Injection Lithostratigraphic Units:		Depths (ft)	Injection or Confining Units	Tops	
Adjacent Unit: Litho. Struc. Por.			Glorita	5935	Drilled TD 8675 PBTD 8660
Confining Unit: Litho. Struc. Por.			Tubb	7358	NEW TD NA NEW PBTD NA
Proposed Inj Interval TOP:	8431	Abo	8038		NEW Open Hole No or NEW Perfs No
Proposed Inj Interval BOTTOM:	8610				Tubing Size 2 3/8 in. Inter Coated? Yes
Confining Unit: Litho. Struc. Por.		Wolfcamp			Proposed Packer Depth ft
Adjacent Unit: Litho. Struc. Por.					Min. Packer Depth 8374 (100-ft limit)
					Proposed Max. Surface Press. 4200 psi
					Admin. Inj. Press. 1695 (0.2 psi per ft)
AOR: Hydrologic and Geologic Information					
POTASH: R-111-P	Noticed? NA	BLM Sec Ord	NA	WIPP	Noticed? NA
SALT/SALADO T: —		B: —		CLIFF HOUSE NA	
FRESH WATER: Aquifer	Ogallala	Max Depth	<250'	HYDRO AFFIRM STATEMENT By Qualified Person ☒	
NMOSE Basin:	Lea	CAPITAN REEF: thru	ad ☒ NA ☒	No. Wells within 1-Mile Radius? NA ☒ FW Analysis NA ☒	
Disposal Fluid: Formation Source(s)	Ogallala water	Analysis?	Yes	On Lease	☒ Operator Only ☐ or Commercial ☐
Disposal Int: Inject Rate (Avg/Max BWPD):	Variable	Protectable Waters?	No	Source:	Historical System: Closed ☒ or Open ☐
HC Potential: Producing Interval?	Yes	Formerly Producing?	Yes	Method: Logs/DST/P&A/Other	NA 2-Mile Radius Pool Map NA
AOR Wells: 1/2-M. Radius Map?	Yes	Well List?	Yes	Total No. Wells Penetrating Interval:	62 Horizontals? ☒
Penetrating Wells: No. Active Wells	58	Num Repairs?	0	on which well(s)?	* Abo Producers in NVAUR diagrams? NO
Penetrating Wells: No. P&A Wells	4	Num Repairs?	0	on which well(s)?	Diagrams? Yes
NOTICE: Newspaper Date 07/10/14 Mineral Owner State Surface Owner State N. Date 11/7/14					
RULE 26.7(A): Identified Tracts? Yes Affected Persons: Chevron/Quantum/Apache/Federal outside of 1/2 mile Date 11/7/14					

Order Conditions: Issues: None identified - pressures requested above admin. gradient

Add Order Cond: No Special Requirements



C-108 Review Checklist: Area Order

Supplemental Checklist for Multiple Well Application

ORDER TYPE: WFX (PMX) Number: 273 SUPPLEMENTAL PAGE 1 of 3

Relevant Hearing Order(s): R-4430 as amended

MULTIPLE WELL APPLICATION: 2 of 6 Well No. 241 Well Name(s): North Vacuum Abo Unit

API: 30-025-28601 Spud Date: 5/5/84 New or Old: New (UIC Class II Primacy 03/07/1982)

Footages 1882 FSL/2001 FWL Lot — or Unit K Sec 26 Tsp 17S Rge 34E County Lea

WELL FILE REVIEWED ☒ Current Status: Active producer - Abo

WELL DIAGRAMS: NEW: Proposed ☐ or RE-ENTER: Before Conv. ☒ After Conv. ☒ Logs in Imaging: CD/DBN/Acoustic/GR

Planned Rehab Work to Well: None - use existing construction - add tubing/packer

Well Construction Details	Sizes (in) Borehole / Pipe	Setting Depths (ft)	Cement Sx or Cf	Cement Top and Determination Method
Planned ☐ or Existing ☒ Surface	<u>17 1/2 / 13 3/8</u>	<u>0 to 400</u>	<u>400</u>	<u>Cir to surface</u>
Planned ☐ or Existing ☒ Interm/Prod	<u>12 1/4 / 8 5/8</u>	<u>0 to 5000</u>	<u>None</u>	<u>Cir to surface</u>
Planned ☐ or Existing ☒ Interm/Prod	<u>7 7/8 / 5 1/2</u>	<u>4197 to 8699</u>	<u>None</u>	<u>top of line / drilling records</u>
Planned ☐ or Existing ☐ Prod/Liner	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
Planned ☐ or Existing ☐ Liner	<u>—</u>	<u>8462</u>	<u>—</u>	<u>—</u>
Planned ☐ or Existing ☒ OH / PERP	<u>5 1/2</u>	<u>8494 to 8666 - 1981</u>	<u>Inj Length</u>	<u>Hydrologic Information and AOR Well Summary on Coversheet</u>

Completion/Operation Details: Drilled TD 8700' PBDT 8695' NEW TD NA NEW PBDT NA

NEW Open Hole ☒ or NEW Perfs ☒ Tubing Size 2 3/8 in. Coated? Y Prop. Packer Depth 8409 ft Min. Depth 8362 (100-ft limit)

Proposed Max. Surface Press. 4300 psi Admin. Inj. Press. 1693 (0.2 psi per ft) ANY AREA IPI APPROVAL: NO

Specific Requirement(s) for Well: None

MULTIPLE WELL APPLICATION: 3 of 6 Well No. 269 Well Name(s): North Vacuum Abo Unit

API: 30-025-28919 Spud Date: 09/25/04 New or Old: New (UIC Class II Primacy 03/07/1982)

Footages 660 FNL/660 FEL Lot — or Unit A Sec 15 Tsp 17S Rge 34E County Lea

WELL FILE REVIEWED ☒ Current Status: Active producer - Abo

WELL DIAGRAMS: NEW: Proposed ☐ or RE-ENTER: Before Conv. ☒ After Conv. ☒ Logs in Imaging: CDN/Dual IN/ML/Acoustic

Planned Rehab Work to Well: None - use existing construction - add tubing/packer

Well Construction Details	Sizes (in) Borehole / Pipe	Setting Depths (ft)	Cement Sx or Cf	Cement Top and Determination Method
Planned ☐ or Existing ☒ Surface	<u>17 1/2 / 13 5/8</u>	<u>0 to 406</u>	<u>400</u>	<u>Cir. to surface</u>
Planned ☐ or Existing ☒ Interm/Prod	<u>12 1/2 / 8 5/8</u>	<u>0 to 5000</u>	<u>None</u>	<u>Cir. to surface</u>
Planned ☐ or Existing ☒ Interm/Prod	<u>7 7/8 / 5 1/2</u>	<u>4204 to 8829</u>	<u>None</u>	<u>cmt drilled out prior tagged at 4204'</u>
Planned ☐ or Existing ☐ Prod/Liner	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
Planned ☐ or Existing ☐ Liner	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
Planned ☐ or Existing ☒ OH / PERP	<u>5 1/2</u>	<u>8664' to 8704'</u>	<u>Inj Length</u>	<u>Hydrologic Information and AOR Well Summary on Coversheet</u>

Completion/Operation Details: Drilled TD 8830 PBDT 8786 NEW TD NA NEW PBDT NA

NEW Open Hole ☒ or NEW Perfs ☒ Tubing Size 2 3/8 in. Coated? Y Prop. Packer Depth 8611 ft Min. Depth 8564 (100-ft limit)

Proposed Max. Surface Press. 4300 psi Admin. Inj. Press. 1733 (0.2 psi per ft) ANY AREA IPI APPROVAL: NO

Specific Requirement(s) for Well: None



C-108 Review Checklist: Area Order

Supplemental Checklist for Multiple Well Application

ORDER TYPE: WFX / PMX Number: 273 SUPPLEMENTAL PAGE 2 of 3

Relevant Hearing Order(s): R-4430 as amended

MULTIPLE WELL APPLICATION: 4 of 6 Well No: 276 Well Name(s): North Vacuum Abo Unit

API: 30-0 25-29233 Spud Date: 5/12/1985 New or Old: New (UIC Class II Primacy 03/07/1982)

Footages 2050 FNL / 652 FNL Lot — or Unit I Sec 27 Tsp 17S Rge 34E County Lea

WELL FILE REVIEWED ☒ Current Status: Producer in Abo

WELL DIAGRAMS: NEW: Proposed ☐ or RE-ENTER: Before Conv. ☒ After Conv. ☒ Logs in Imaging: DLL / MLL / ND / Acoustic

Planned Rehab Work to Well: Existing Completion - add tubing / packer

Well Construction Details	Sizes (in) Borehole / Pipe	Setting Depths (ft)	Cement Sx or Cf	Cement Top and Determination Method
Planned ☐ or Existing ☒ Surface	<u>17 1/2 / 13 5/8</u>	<u>0 to 411</u>	<u>500</u>	<u>Cir. to surface</u>
Planned ☐ or Existing ☒ Interm/Prod	<u>12 1/4 / 8 5/8</u>	<u>0 to 5000</u>	<u>3535</u>	<u>Cir. to surface</u>
Planned ☐ or Existing ☒ Interm/Prod	<u>7 7/8 / 5 1/2</u>	<u>0 to 8800</u>	<u>1050</u>	<u>Cir. to surface</u>
Planned ☐ or Existing ☐ Prod/Liner	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
Planned ☐ or Existing ☐ Liner	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
Planned ☐ or Existing ☒ OH / PERP	<u>5 1/2</u>	<u>8580 to 8706</u>	<u>Inj Length</u>	<u>Hydrologic Information and AOR Well Summary on Coversheet</u>

Completion/Operation Details: Drilled TD 8800 PBTD 8150 NEW TD NA NEW PBTD NA

NEW Open Hole ☒ or NEW Perfs ☒ Tubing Size 2 3/8 in. Coated? Y Prop. Packer Depth 8491 ft Min. Depth 8444 (100-ft limit)

Proposed Max. Surface Press. 4300 psi Admin. Inj. Press. 1709 (0.2 psi per ft) ANY AREA IPI APPROVAL: No

Specific Requirement(s) for Well: None

MULTIPLE WELL APPLICATION: 5 of 6 Well No: 281 Well Name(s): North Vacuum Abo Unit

API: 30-0 25-29238 Spud Date: 5/15/1985 New or Old: New (UIC Class II Primacy 03/07/1982)

Footages 800 FNL / 550 FEL Lot — or Unit A Sec 23 Tsp 17S Rge 34E County Lea

WELL FILE REVIEWED ☒ Current Status: Producer in Abo

WELL DIAGRAMS: NEW: Proposed ☐ or RE-ENTER: Before Conv. ☒ After Conv. ☒ Logs in Imaging: DLL / MLL / ND / Acoustic

Planned Rehab Work to Well: Existing Completion - add tubing / packer

Well Construction Details	Sizes (in) Borehole / Pipe	Setting Depths (ft)	Cement Sx or Cf	Cement Top and Determination Method
Planned ☐ or Existing ☒ Surface	<u>17 1/2</u>	<u>0 to 395</u>	<u>500</u>	<u>Cir. to surface</u>
Planned ☐ or Existing ☒ Interm/Prod	<u>12 1/4 / 8 5/8</u>	<u>0 to 5000</u>	<u>3535</u>	<u>Cir. to surface</u>
Planned ☐ or Existing ☒ Interm/Prod	<u>7 7/8 / 5 1/2</u>	<u>4200 to 8800</u>	<u>1680</u>	<u>TOL - calc.</u>
Planned ☐ or Existing ☐ Prod/Liner	<u>—</u>	<u>—</u>	<u>—</u>	<u>—</u>
Planned ☐ or Existing ☐ Liner	<u>—</u>	<u>8484 = added 85</u>	<u>—</u>	<u>—</u>
Planned ☐ or Existing ☒ OH / PERP	<u>5 1/2</u>	<u>8510 to 8543</u>	<u>Inj Length</u>	<u>Hydrologic Information and AOR Well Summary on Coversheet</u>

Completion/Operation Details: Drilled TD 8800 PBTD 8707 NEW TD NA NEW PBTD NA

NEW Open Hole ☒ or NEW Perfs ☒ Tubing Size 2 3/8 in. Coated? Y Prop. Packer Depth 8431 ft Min. Depth 8384 (100-ft limit)

Proposed Max. Surface Press. 4300 psi Admin. Inj. Press. 1697 (0.2 psi per ft) ANY AREA IPI APPROVAL: No

Specific Requirement(s) for Well: None



C-108 Review Checklist: Area Order

Supplemental Checklist for Multiple Well Application

ORDER TYPE: WFX / PMX Number: 273 SUPPLEMENTAL PAGE 3 of 3

Relevant Hearing Order(s): R-4430

MULTIPLE WELL APPLICATION: 6 of 6 Well No: 300 Well Name(s): North Vacuum Abo Unit

API: 30-0 25-29610 Spud Date: 05/14/86 New or Old: New (UIC Class II Primacy 03/07/1982)

Footages 1980 FSL / 1980 FWL Lot - or Unit K Sec 10 Tsp 175 Rge 34E County Lea

WELL FILE REVIEWED ☒ Current Status: Producer in Abo

WELL DIAGRAMS: NEW: Proposed ☐ or RE-ENTER: Before Conv. ☒ After Conv. ☒ Logs in Imaging: CN/CO - DPL / MLL / GR BHC

Planned Rehab Work to Well: Existing Perfs - add tubing/packer Acoustical

Well Construction Details	Sizes (in) Borehole / Pipe	Setting Depths (ft)	Cement Sx or Cf	Cement Top and Determination Method
Planned ☐ or Existing ☒ Surface	<u>17 1/2 / 13 3/8</u>	<u>0 to 408</u>	<u>500</u>	<u>Circulated to Surf</u>
Planned ☐ or Existing ☒ Intern/Prod	<u>12 1/4 / 9 5/8</u>	<u>0 to 5000</u>	<u>2200</u>	<u>Circulated to Surf</u>
Planned ☐ or Existing ☒ Intern/Prod	<u>7 7/8 / 55</u>	<u>4221 to 8925</u>	<u>1000</u>	<u>Calc. Top of liner</u>
Planned ☐ or Existing ☐ Prod/Liner	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Planned ☐ or Existing ☐ Liner	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Planned ☐ or Existing ☒ OH / PERF	<u>-</u>	<u>8748' to 8876'</u>	<u>Inj Length 128'</u>	<u>Hydrologic Information and AOR Well Summary on Coversheet</u>

Completion/Operation Details: Drilled TD 8925 PBTD 8910 NEW TD NA NEW PBTD NA

NEW Open Hole ☒ or NEW Perfs ☒ Tubing Size 2 3/8 in. Coated? Yes Prop. Packer Depth 8695 ft Min. Depth 8648 (100-ft limit)

Proposed Max. Surface Press. 4200 psi Admin. Inj. Press. 1750 (0.2 psi per ft) ANY AREA IPI APPROVAL: None for well

Specific Requirement(s) for Well: None

MULTIPLE WELL APPLICATION: - of - Well No: - Well Name(s): -

API: 30-0 - Spud Date: - New or Old: - (UIC Class II Primacy 03/07/1982)

Footages - Lot - or Unit - Sec - Tsp - Rge - County -

WELL FILE REVIEWED ☐ Current Status: -

WELL DIAGRAMS: NEW: Proposed ☐ or RE-ENTER: Before Conv. ☐ After Conv. ☐ Logs in Imaging: -

Planned Rehab Work to Well: -

Well Construction Details	Sizes (in) Borehole / Pipe	Setting Depths (ft)	Cement Sx or Cf	Cement Top and Determination Method
Planned ☐ or Existing ☐ Surface	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Planned ☐ or Existing ☐ Intern/Prod	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Planned ☐ or Existing ☐ Intern/Prod	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Planned ☐ or Existing ☐ Prod/Liner	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Planned ☐ or Existing ☐ Liner	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>
Planned ☐ or Existing ☐ OH / PERF	<u>-</u>	<u>-</u>	<u>Inj Length</u>	<u>Hydrologic Information and AOR Well Summary on Coversheet</u>

Completion/Operation Details: Drilled TD - PBTD - NEW TD - NEW PBTD -

NEW Open Hole ☐ or NEW Perfs ☐ Tubing Size - in. Coated? - Prop. Packer Depth - ft Min. Depth - (100-ft limit)

Proposed Max. Surface Press. - psi Admin. Inj. Press. - (0.2 psi per ft) ANY AREA IPI APPROVAL: -

Specific Requirement(s) for Well: -

Goetze, Phillip, EMNRD

From: Robbie Grigg <rgrigg@mspartners.com>
Sent: Friday, November 07, 2014 9:44 AM
To: Goetze, Phillip, EMNRD
Cc: Dickey, Sylvia, EMNRD; Ian Petersen
Subject: FW: R-4430 EXPANSION

From: Martinez, Pete [mailto:PMartinez@slo.state.nm.us]
Sent: Friday, November 07, 2014 10:31 AM
To: Robbie Grigg
Subject: RE: R-4430 EXPANSION

Thank you,

We have no further problems with your notice.

Pete Martinez

Unitizations
New Mexico State Land Office
Oil, Gas & Minerals Division
Suite 217
310 Old Santa Fe Trail

Mailing Address:
P. O. Box 1148
Santa Fe, NM 87504-1148

Office: 505-827-5791
Fax: 505-827-4739
Email: pmartinez@slo.state.nm.us

Web Site:
www.nmstatelands.org



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-- Thanks --

From: Robbie Grigg [<mailto:rgrigg@mspartners.com>]
Sent: Friday, November 07, 2014 9:21 AM
To: Martinez, Pete
Cc: Ian Petersen; Warnell, Terry
Subject: FW: R-4430 EXPANSION

Pete, See Ian's response to your question as to why we are injecting fresh water. Please let us know if you have any other questions or concerns.

Thank you!

Robbie Grigg
Cross Timber Energy, LLC
MorningStar Partners
400 West Seventh Street
Fort Worth, TX 76102
Office: 817-334-7842
Cell: 817-917-5341
rgrigg@mspartners.com

From: Ian Petersen
Sent: Thursday, November 06, 2014 4:38 PM
To: Robbie Grigg
Subject: RE: R-4430 EXPANSION

Certainly!

We use fresh water because the field-wide injection pressure is so high that when the tubing or packer fails, the injection pressure will burst the surface casing and tubing head. To avoid that, we open the casing valve.

But then when the tubing/packer fails, what would normally be produced water, runs out on the ground, which is toxic to the grass and shrubs.

So we inject freshwater, so that when the tubing/packer fails, only freshwater runs on the ground.

Ian

From: Robbie Grigg
Sent: Thursday, November 06, 2014 4:24 PM
To: Ian Petersen
Subject: FW: R-4430 EXPANSION

Ian, Can you answer Pete's question below regarding fresh water?

Thanks,
Robbie

From: Martinez, Pete [<mailto:PMartinez@slo.state.nm.us>]
Sent: Thursday, November 06, 2014 4:05 PM
To: Robbie Grigg

Cc: Warnell, Terry
Subject: RE: R-4430 EXPANSION

Mr. Grigg,

Please be advised that your application giving notice of intent to inject Ogalalla water for the purpose of secondary recovery into the North Vacuum Abo formation has been received. Will you be injecting fresh water? If so why is fresh water being used for injection?

Pete Martinez

Unitizations
New Mexico State Land Office
Oil, Gas & Minerals Division
Suite 217
310 Old Santa Fe Trail

Mailing Address:
P. O. Box 1148
Santa Fe, NM 87504-1148

Office: 505-827-5791
Fax: 505-827-4739
Email: pmartinez@slo.state.nm.us

Web Site:
www.nmstatelands.org



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-- Thanks --

From: Warnell, Terry
Sent: Thursday, November 06, 2014 2:16 PM
To: Martinez, Pete
Cc: Keelin, Sue R
Subject: FW: R-4430 EXPANSION

Hi Pete,

Would you please look at this C-108 from Morningstar and give Robbie a courtesy call letting him know it was received
Thanks,
Terry

From: Robbie Grigg [mailto:rgrigg@mspartners.com]
Sent: Wednesday, November 05, 2014 2:54 PM
To: Warnell, Terry
Subject: R-4430 EXPANSION

Robbie Grigg
MorningStar Partners
400 West Seventh Street
Fort Worth, TX 76102
Office: 817-334-7842
Cell: 817-917-5341
rgrigg@mspartners.com

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Goetze, Phillip, EMNRD

From: Robbie Grigg <rgrigg@mspartners.com>
Sent: Monday, September 08, 2014 3:06 PM
To: Goetze, Phillip, EMNRD
Cc: McMillan, Michael, EMNRD
Subject: RE: Application for North Vacuum Abo Unit - Request for Additional Information
Attachments: NVAU WTRFLD EXP.pdf; AFF STMT.pdf; N VACUUM ABO UNIT MAP_OFFSET OPERATORS.pdf; N VACUUM ABO UNIT OFFSET OP LIST.docx; WaterColumn Lea Co NM.xls

Phillip, See attached documents. I'm sorry for the delay in providing the additional information. I've notified our engineering staff as far as the 0.2 psi. If you need me to submit a new request, showing the gradient of 0.2 psi/ft to top of perforations, I will be glad to do so. Please call or email if you need anything further.

Thank you!

Robbie Grigg
Cross Timbers Energy, LLC
MorningStar Partners
400 West Seventh Street
Fort Worth, TX 76102
Office: 817-334-7842
Cell: 817-917-5341
rgrigg@mspartners.com

From: Goetze, Phillip, EMNRD [<mailto:Phillip.Goetze@state.nm.us>]
Sent: Tuesday, August 26, 2014 5:37 PM
To: Robbie Grigg
Cc: McMillan, Michael, EMNRD
Subject: Application for North Vacuum Abo Unit - Request for Additional Information

RE: NVAU Wells No. 235, No.269, No. 281 and No. 300

Robbie:

I am completing the review of this application, several items need to be addressed before issuance of an order:

1. Notification (Part XIII. - Proof of Notice): there is the requirement for the affidavit of publication in a local newspaper appropriate to the location of the project. I could not find a copy of the published notice or affidavit.
2. Affirmation statement (Part XII.): I'll need a name and qualification (geologist, engineer, geoscientist, etc.) that made this statement. No conclusion can be made as who reviewed and assessed the information to make an affirmative statement and "Cross Timbers Energy LLC" cannot qualify as a responsible entity (i.e. witness).
3. Lease map (Part V.): a little additional info on where the "affected persons" are located (even colored pencils) on either map provided in the application would greatly assist in the review of the notification requirement.
4. Fresh water wells (Part XI.): review of a one-mile radius for each of the wells finds fresh water/shallow wells that are not identified in the application. Example – for Well No. 235, there are three shallow wells (POD No. 3846, 5022, and 6087) within Section 24 and are still available. Please reassess the determination of fresh water wells

within one-mile of each well and provide a summary. As far as a fresh water sample, please be advised that Go-Tech at NM Tech has a data base that might address this question.

Additionally, the application has provided maximum surface operating pressures for the four wells with a gradient of 0.5 psi/ft to top of perforations. At this time, the administrative order can only approve a gradient of 0.2 psi/ft to top of perforations. Cross Timbers may apply for an increase in pressure with the completion of step-rate test for the wells.

Please review and provide (by e-mail) the information requested to complete the application. If you have any questions, please contact me at your convenience. PRG

Phillip R. Goetze, P.G.

Engineering and Geological Services Bureau, Oil Conservation Division

1220 South St. Francis Drive, Santa Fe, NM 87505

O: 505.476.3466 F: 505.476.3462

phillip.goetze@state.nm.us

Goetze, Phillip, EMNRD

From: Robbie Grigg <rgrigg@mspartners.com>
Sent: Monday, November 03, 2014 4:21 PM
To: Goetze, Phillip, EMNRD
Subject: RE: Certified Mail Electronic Delivery Confirmation

Their notice was for the six wells, per our land department personel.

From: Goetze, Phillip, EMNRD [mailto:Phillip.Goetze@state.nm.us]
Sent: Monday, November 03, 2014 4:09 PM
To: Robbie Grigg
Subject: RE: Certified Mail Electronic Delivery Confirmation

Yes this is fine; however, for which application was this notification – the June (four wells in application) or the July (six wells in application)? PRG

Phillip R. Goetze, P.G.
Engineering and Geological Services Bureau, Oil Conservation Division
1220 South St. Francis Drive, Santa Fe, NM 87505
O: 505.476.3466 F: 505.476.3462
phillip.goetze@state.nm.us

From: Robbie Grigg [mailto:rgrigg@mspartners.com]
Sent: Monday, November 03, 2014 2:01 PM
To: Goetze, Phillip, EMNRD
Subject: FW: Certified Mail Electronic Delivery Confirmation

Phillp, Will something like this work for your mail confirmation?

From: Connie Blaylock
Sent: Friday, June 27, 2014 10:11 AM
To: Robbie Grigg
Subject: FW: Certified Mail Electronic Delivery Confirmation

One down...
Connie

From: no-reply@certifiedmaillabels.com [mailto:no-reply@certifiedmaillabels.com]
Sent: Friday, June 27, 2014 6:01 AM
To: Pam Graham
Subject: Certified Mail Electronic Delivery Confirmation



This is an Electronic Delivery Confirmation to inform you that a USPS Certified Mail item has been delivered.

USPS Certified Mail Number: 9402610200883252996385

Addressed To:

**Chevron USA Inc (4326)
Denise Pinkerton
15 Smith Road
Chevron USA Inc (4326)
Midland, TX 79705-**

Your Reference: **RGrigg**

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NVAU WATERFLOOD EXPANSION PROJECT															
LEA COUNTY, NM															
FRESH WATER WELLS															
	POD Number	Code <i>Total</i> <i>Pressure</i>	POD Subbasin	County	q64	q16	q4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
NVAU #300	L 03241	<i>well to drilling</i> <i>No domestic</i> <i>3ac ft</i>	L	LE		2	2	10	17S	34E	636425	3636145	122	92	30
	L 06752		L	LE	4	4	4	10	17S	34E	636542	3634836	170	55	115
	L 06894		L	LE	1	4	1	10	17S	34E	635524	3635825	175	103	72
	L 06932		L	LE	3	4	3	10	17S	34E	635536	3634820	180	101	79
NVAU #269	L 09987		L	LE			4	15	17S	34E	636266	3633520	205	60	145
NVAU #281	n/a							23	17S	34E					
NVAU #235	L 03846	<i>Drilling Co.</i>	L	LE		2	4	24	17S	34E	639705	3632184	225		
	L 05022		L	LE		3	4	24	17S	34E	639310	3631773	140	80	60
	L 06087		L	LE		4	1	24	17S	34E	638896	3632571	147	84	63
NVAU #241	L 04899	<i>Drilling Co.</i>	L	LE	2	4	4	26	17S	34E	638226	3630235	135	85	50
	L 04949		L	LE		4	2	26	17S	34E	638115	3630942	158	102	56
	L 05008		L	LE		4	2	26	17S	34E	638115	3630942	160	89	71
	L 05032		L	LE		4	1	26	17S	34E	637310	3630926	140	80	60
	L 06698		L	LE	1	4	3	26	17S	34E	637221	3630219	160	100	60
NVAU #276 <i>Industrial</i>	L 02724	<i>Same POD</i> <i>Drilling Co.</i>	L	LE	2	2	3	27	17S	34E	635804	3630593	245	108	137
	L 02724		L	LE	2	2	3	27	17S	34E	635804	3630593	245	108	137
	L 02724 S2		L	LE	4	4	4	27	17S	34E	636615	3630005	234	108	126
	L 07226	<i>Drilling Co.</i>	L	LE		4	4	27	17S	34E	636516	3630106	130		
	L 07227		L	LE		4	4	27	17S	34E	636516	3630106	125		

1956 well/3ac-ft