

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

David R. Catanach, Division Director
Oil Conservation Division



July 28, 2015

Mr. Robbie Grigg
Cross Timbers Energy, LLC
400 West 17th Street
Fort Worth, TX 76102

RE: Packer Setting Depth Exception

Injection Authority: Administrative Order WFX-557

Pool: North Vacuum Abo Pool (Pool code 61760)

North Vacuum Abo Unit No. 230

API 30-025-22344

Unit J, Sec 13, T17S, R34E, NMPM, Lea County, New Mexico

Mr. Grigg:

Reference is made to your request on behalf of Cross Timbers Energy, LLC (OGRID 298299; "Cross Timbers") received by the Division on July 1, 2015, for the above named well. Cross Timbers applied for exception for setting the packer within 100 feet of the top perforation in the injection interval.

It is our understanding that Cross Timbers has maintained the current packer setting depth based on prior setting depths used by the previous operator of the injection well. Cross Timbers has also stated in their application the poor quality of the casing's interior surface above the top perforation and the effects on obtaining a proper seal for the tubing packer in this portion of the casing. As a result, Cross Timbers requests an exception for the current packer depth at 8219 feet below surface. This location of the packer is approximately 309 feet above the shallowest perforation at 8528 feet, and is below the upper contact of the Abo formation at 8107 feet below surface.

For the reasons stated in the application and because it appears that correlative rights are protected, waste will not occur and this modification will not endanger any fresh water aquifer or the environment, the exception is granted. The packer location within this well shall not be set higher than 309 feet above the approved injection interval unless the operator receives written approval from the Division Director.

The Division Director may rescind this exception if it becomes apparent that the injected fluid is not being confined to the permitted interval or is endangering any fresh water aquifer.

Sincerely,



DAVID R. CATANACH
Director

DRC/prg

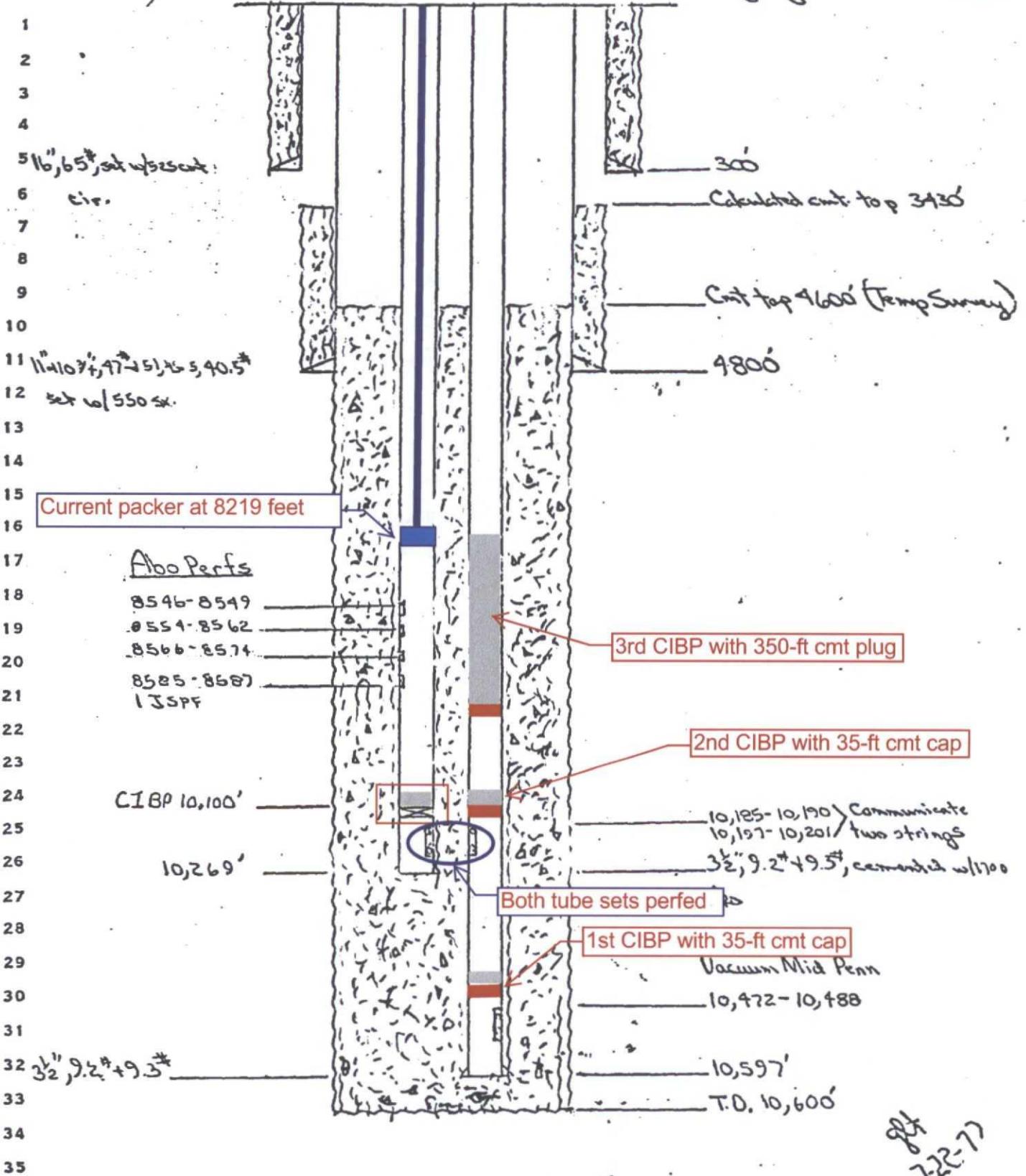
cc: Oil Conservation Division – Hobbs District Office
WFX-557
Well File API 30-025-22344

CALCULATION AND DATA SHEET

CO. 227.11

UNIT North Vac in Abo
FOR North Vacuum Abo
LOCATION J-13-11-534E, Lea County, New Mex
SUBJECT North Vacuum Abo Unit # 230

FILE NO. _____
JOB OR AUTH. NO. _____
PAGE _____
DATE 7-22-77
BY aguy timberman



Current packer at 8219 feet

Abo Perfs
8546-8549
8554-8562
8566-8574
8585-8587
1 JSPF

3rd CIBP with 350-ft cmt plug

2nd CIBP with 35-ft cmt cap

CIBP 10,100'
10,269'

10,185-10,190 } Communicate
10,197-10,201 } two strings
3 1/2", 9.2# + 9.5#, cemented w/1700

Both tube sets perforated

1st CIBP with 35-ft cmt cap

Vacuum Mid Penn
10,472-10,488

3 1/2", 9.2# + 9.5#

10,597'
T.D. 10,600'

804
7-22-77

**North Vacuum Abo Unit No. 230 (API 30-025-22344)
(New Mexico W State NCT-1 Well No. 3)**

Summary of Historical Packer Information from Well File

Compiled by P. Goetze, Engineering and Geological Sciences Bureau, OCD (11/05/2014)

1. Spud December 3, 1967; completed with double production casing string cemented in single borehole; production commenced November 26, 1967.
2. **04/1970 Workover:** perfed from 10,185' to 10,201' (*Pennsylvanian/long string perfed 10,185 feet to 10,189 feet*); Abo/short sting install CIBP at 10,106 feet with 20-foot cement cap; Abo sting returned to production.
3. **02/24 to 03/7/1987 Workover:** tagged bottom of Abo/short string with GR tool at 8650 feet; run a mill bit through soft fill (8650' to 8663'), hard fill (8663' to 8688'), and a **CIBP below 8688'**; **perfs added, now 8528 feet to 8781 feet**; (*Pennsylvanian/long string is P&A'd with three CIBPs: first at 10,400 feet with a 35-foot cement cap, the second CIBP is at 10,100 feet with a 35-foot cement cap, and the third at 8687 feet with 350-foot cement cap (TOC tagged at 8346 feet) after perfining Abo string*); Abo/short sting packer set at 8482 feet.
4. **02/1988 Workover:** packer at 8482 feet – test and lost pressure; move packer to 8475 feet – test and lost pressure; stuck packer, but mill out; Abo/short sting final packer at 8436 feet following successful MIT.
5. **01/1989 Workover:** get permission to set packer above "*junked pkr. @ 8400*"; two additional re-seatings and failed tests (at 8393 feet and 8364 feet); SI well. *Possible packer set at 8436 feet nearly a year earlier (?). Based on this sundry, the well has a packer stuck at 8436 feet or 8430 feet.*
6. **03/1989 Workover:** *sundry not clear on packer location but based on your attachment to the proposed workover plan either 8244 feet or 8184 feet; well online.*
7. **05/1989 Workover:** (leak in packer gasket) set Abo/short sting packer at 8287 feet; well online.
8. **04/2001 Sundry:** MIT with Abo/short sting packer at 8214 feet.
9. **06/2009 Workover:** tubing replacement; packer at 8219 feet; well online; *sundry notes injection profile log and approval of OCD for this location of packer.*
10. **09/2009 Injection Survey:** notes junked packer at 8492 feet and comment "*channel check @ 8480' indicates 100% fluid moving below*"; profile results inconclusive due to survey tool unable to advance past junked packer.
11. **04/2014 Sundry:** MIT; Abo/short sting packer at 8219 feet.(309 feet above top perf).

CROSS TIMBERS
ENERGY, LLC

RECEIVED OCD

2015 JUL 13 P 2:39

July 1, 2015

Phillip Goetz
New Mexico EMNRD
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Re. Request for variance of packer setting depth
NVAU #230
API No. 30-025-22344
Pool No. 61760 Vacuum; Abo, North
Lea County, New Mexico

Cross Timbers Energy, LLC respectfully requests either 1) continuation of the variance for packer setting depth allegedly granted to Mobil circa 1988-1989; or 2) a new variance for packer setting depth. Either under the condition that a routine injection profile survey confirms that injection water is staying in the Abo formation.

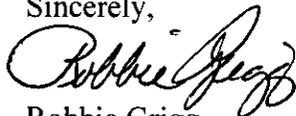
A 1988 CCL log and subsequent attempts to perform a MIT's indicates the casing to be in poor condition below 8,219'. The top perf is 8,548' and the top of the Abo formation is 8,107'.

Attached are

8528' 2/24/87

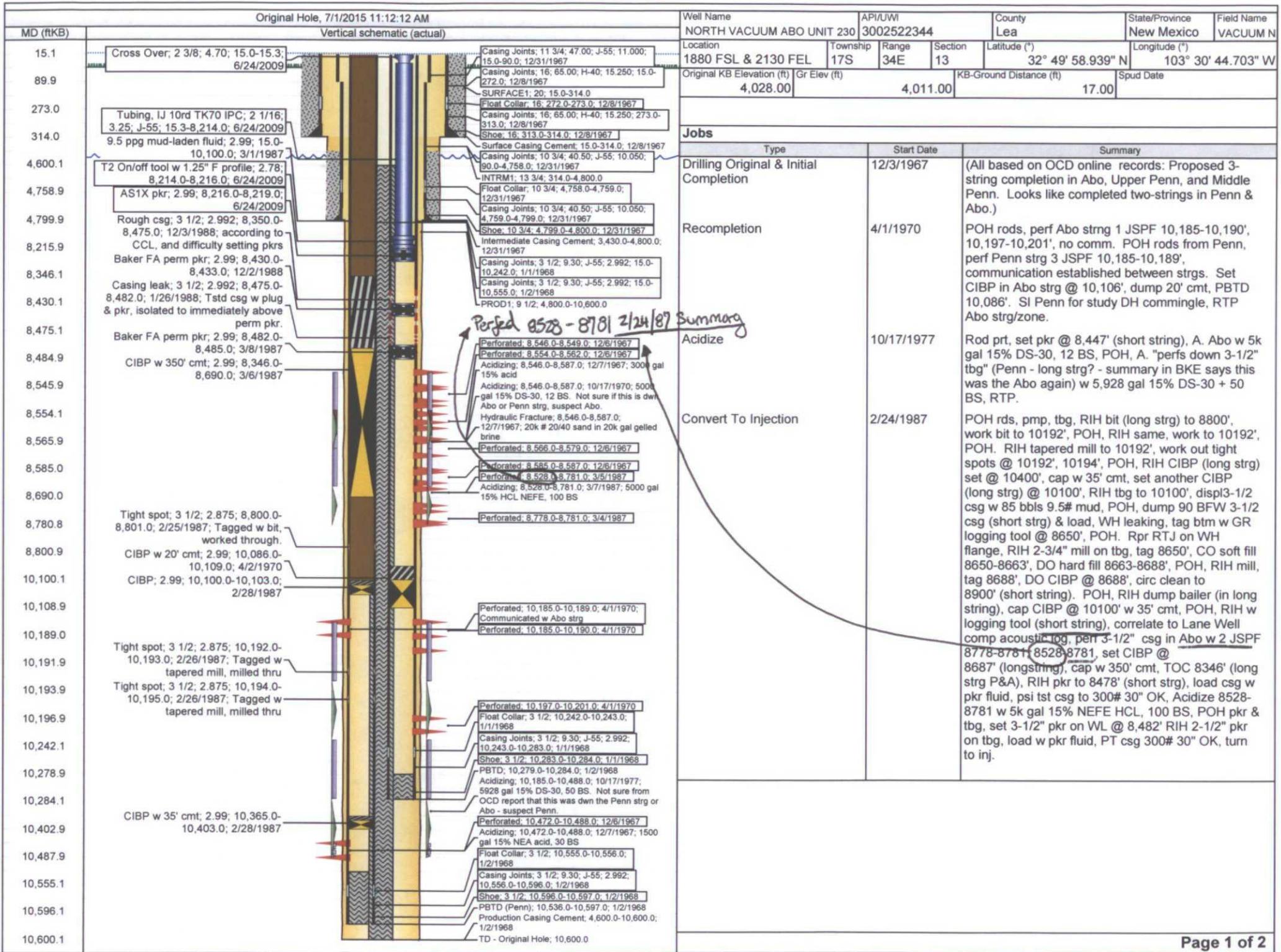
- the current wellbore schematic (the pdf format is a detailed schematic, the ppt format is a simplified format),
- a Mobil "well work recommendation" letter from the well file indicating the agreement between the NMOCD and Mobil regarding the granted variance and stipulation,
- the successful MIT on April 16, 2014, and
- the most recent braden head test.

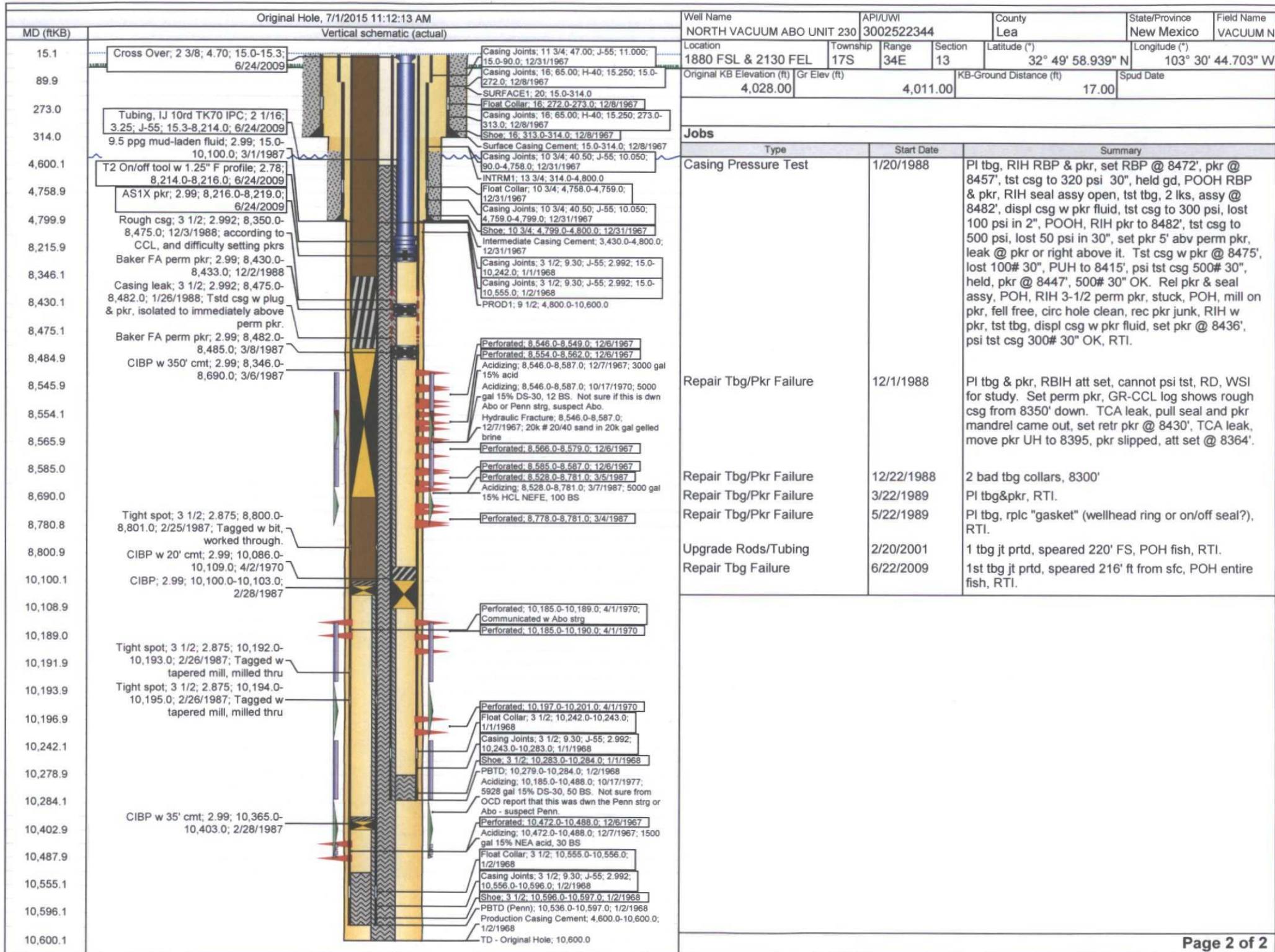
Sincerely,



Robbie Grigg
Cross Timbers Energy, LLC
817-334-7842
rgrigg@mspartners.com

X





CROSS TIMBERS ENERGY

NVAU 230W

API: 30-025-22344

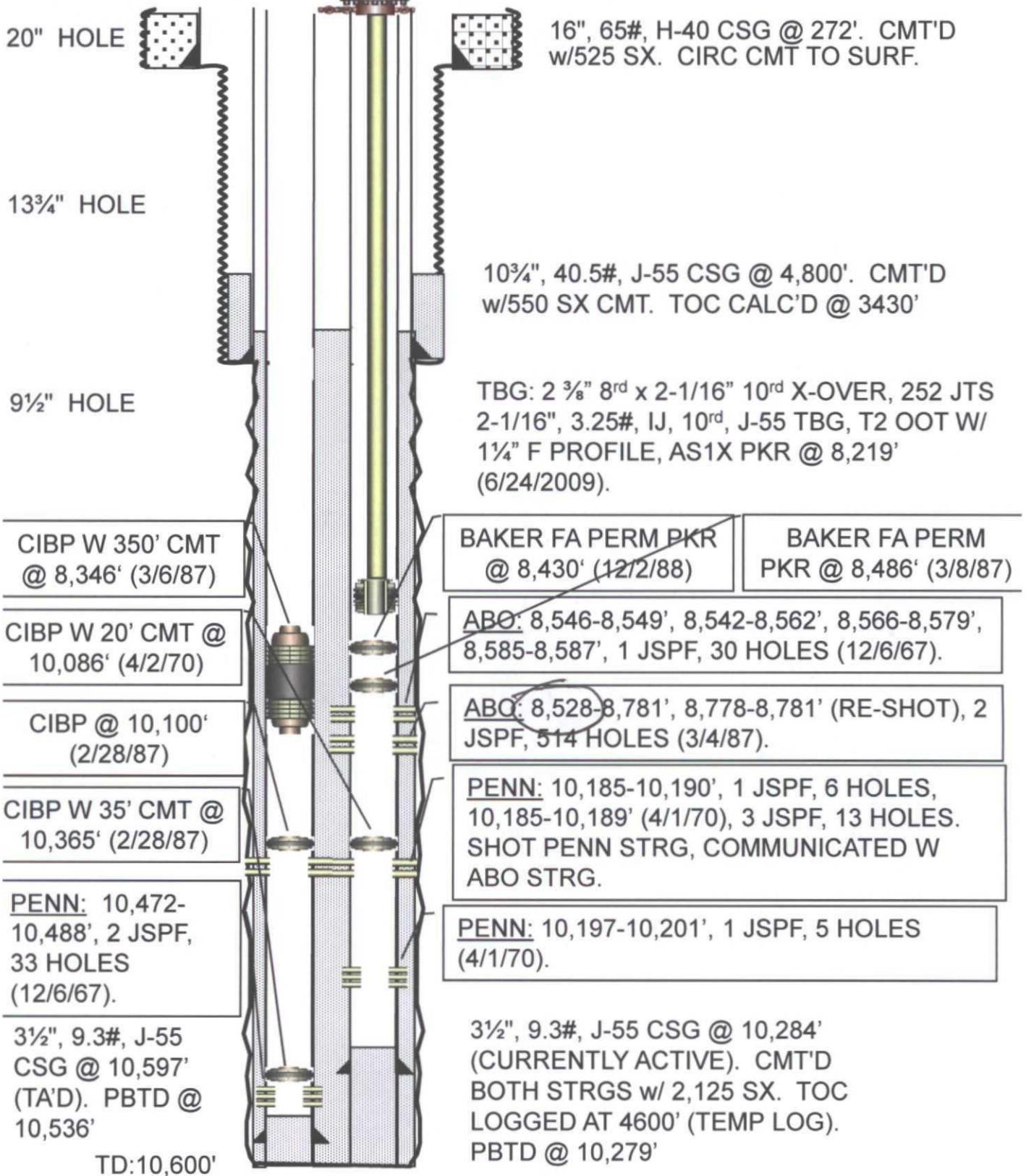
1880' FSL, 2130 FEL

T17S, R34E, SEC 13

ELEV: KB 4,028'

GL 4,011'

CORR 17'



**MOBIL EXPLORATION AND PRODUCING U. S.
WELL WORK RECOMMENDATION**

CO. GROSS 77.85% NET 68.09%

WELL HEADING

LEASE NVAU WELL NO. 230 TYPE WIW
FIELD Vacuum Abo North COUNTY Lea STATE N Mex

PERMITS REQUIRED

 REGULAR RULE 37 PI APPROVAL X YES NO
 DUAL X OTHER C-103

WELL PROBLEM & PROPOSED WORK

NVAU #230 WIW has had several tubing/pkr leaks in the past month. It is recommended to replace the 2 1/16" tubing and attempt to reset the pkr and resume injection.

JUSTIFICATION

Three tubing/pkr leaks occurred in NVAU #230 during December. Each time the well was pulled, several joints of tubing were junked. It is recommended to replace the 2 1/16" tubing.

Each time the well was pulled in December, several attempts were required for the packer to set. A CCL was run to pick csg collars. The log was difficult to interpret since the recording showed rough casing, as might be seen when logging over perforations. The well has 3 1/2" casing. The NMOCD and UIC have granted permission to set the packer more than 100' above the top perf. In granting the exception, both groups have requested that injection profile logs be run every 3 years to check for packer leaks. Since there are 2 junk permanent packers in the wellbore, the NMOCD has agreed to profile logging down to the top of these packers (8430'). Once the packer is set, a letter will be drafted to the NMOCD and UIC notifying of the final packer set depth.

---Continued on Attached Sheet---

<u>COST:</u>	TOTAL <u>\$ 59 M</u>	TANGIBLE <u>\$ 38 M</u>	INTANGIBLE <u>\$ 21 M</u>
	MOBIL <u>\$ 46 M</u>	<u>\$ 30 M</u>	<u>\$ 16 M</u>

RESERVES

 X PROVED PREPARED BY D. G. Elwood DATE 1-12-89
 PROSPECTIVE APPROVED BY *J.P. H...* DATE 2-1-89

WELL WORK RECOMMENDATION
NVAU #230 WIW

Should problems be encountered in this casing string, there is another 3 1/2" casing string in the wellbore. This string is TA'd with 350 ft of cement and a bridge plug. The estimated cost to re-enter this string and return to injection is \$ 26 M, excluding new tubing. The cost to plug and abandon the original string is estimated at \$ 20 M.

Presently, OJI is consulting with Texaco on the rights to the other casing string. Should work on the original casing string prove uneconomic, another AFE will be prepared to plug and abandon the original string and re-enter the second string for Abo injection.

WELL DATA

LEASE NVAU WELL NO. 230 WIW
INITIAL COMPLETION DATE 12-8-67 TD 10299' PBDT 10086'
CURRENT COMPLETION DATE 12-8-67 CURRENT PBDT 10086'
CURRENT PRODUCING INTERVALS Abo: 8528 - 8781'

CURRENT TESTS

DATE	<u>12-88</u>	<u>11-88</u>	<u>10-88</u>
METHOD	<u>Injection</u>	<u>Injection</u>	<u>Injection</u>
INJ BHPD	<u>Shut In</u>	<u>175 BHPD</u>	<u>124 BHPD</u>
TBG PRESS		<u>4000 psi</u>	<u>3600 psi</u>

OFFSET WELL TESTS IN ZONE OF INTEREST

COMPANY	<u>Mobil</u>	<u>Mobil</u>	<u>Mobil</u>
LEASE/WELL	<u>NVAU #254</u>	<u>NVAU #258</u>	<u>NVAU #253</u>
DATE	<u>12-88</u>	<u>12-88</u>	<u>12-88</u>
METHOD	<u>Rod Pump</u>	<u>Rod Pump</u>	<u>Rod Pump</u>
BOPD/BHPD	<u>63/28</u>	<u>51/29</u>	<u>24/74</u>
MCFPD	<u>20</u>	<u>28</u>	<u>2</u>

WELL HISTORY

-----See attached sheet-----

RECOMMENDED WORKOVER PROCEDURE

WELL: NVAU #230 WIW
FLUIDS IN WELL: Fresh wtr

STATUS: Shut in
LAST TEST: 120 BWPD @
3323 psi
(12-88)

Notify engr prior to MIRU.

Production MIRU

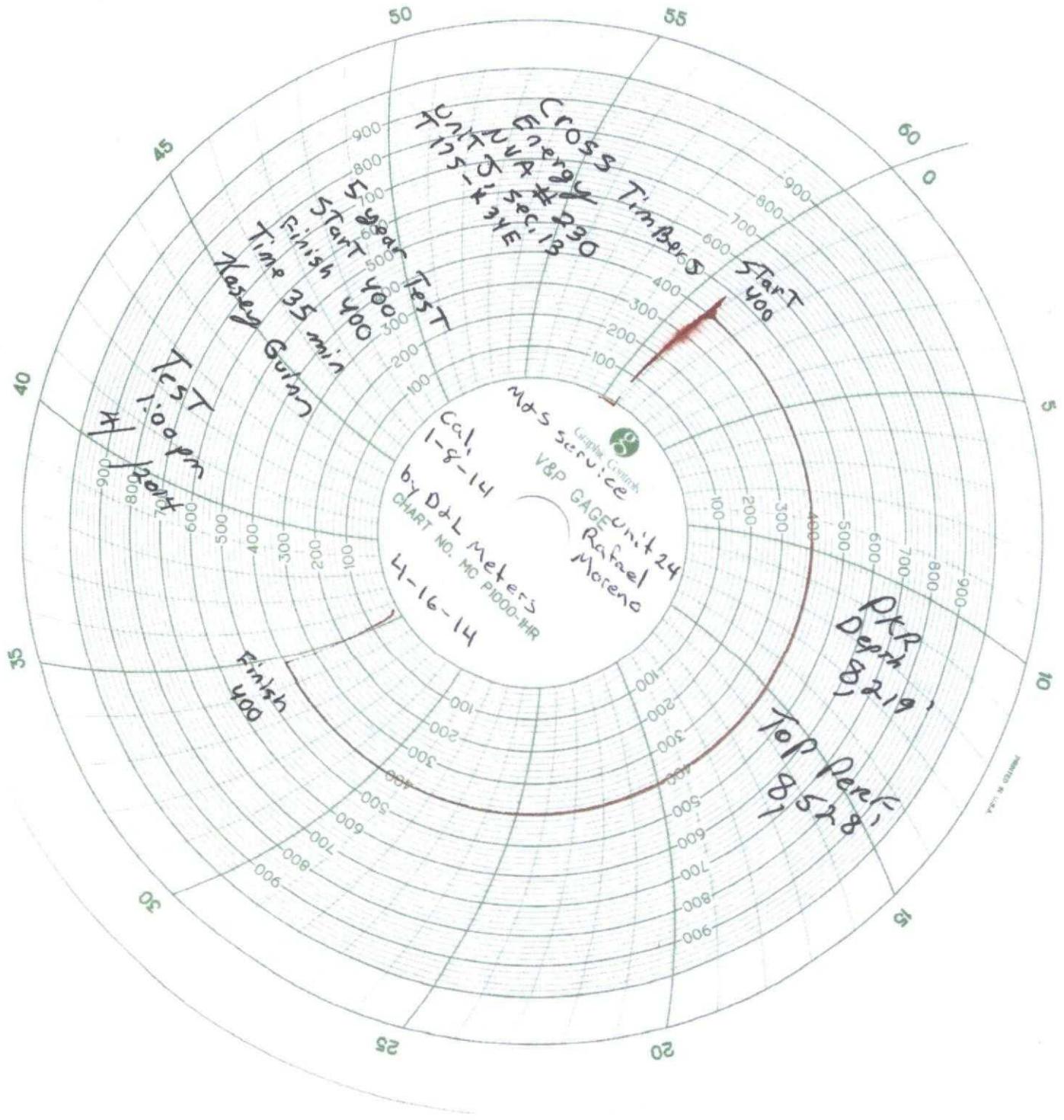
1. MIRU workover unit. NU BOP, test.
2. Release pkr @ 8364'. Pull up 2 jts, set pkr @ + 8304', + 8244'. Test annulus to 300 psi, 30 min each time.
3. If pkr holds @ either depth, release pkr, POOH w/pkr + tbg. Lay down old inj tbg. RIH w/new 2 1/16" tbg, redressed pkr. Set pkr @ last set depth. Test annulus to 300 psi, 30 min. Hang tbg, put on injection.
4. If pkr fails @ both depths, POOH w/pkr + tbg. Lay down old inj tbg. Go to step 7.

Drilling MIRU

7. RIH w/new 2 1/16" inj tbg + redressed 3 1/2" Huskie pkr. Pull up 2 jts, attempt set pkr @ + 8184', + 8124', + 8064'. Test annulus to 300 psi, 30 min each time.
8. If pkr holds @ any setting, hang tbg, RD, put on inj.
9. If pkr test fails @ all 3 depths, discuss w/engr. Will consider use of another pkr.

DSE 2-1-89

FJK 2-1-89



50

55

60
0

45

Cross Timbers
Energy # 230
Start 400
Finish 400
Time 35 min
Kasey Guinn
TEST

TEST
1:00 pm
PORT

Graphic Controls
M&S service
V&P GAGE unit 24
Rafael Moreno
CAL 1-8-14
by D&L Meters
CHART NO. MC P1000-IHR
4-16-14

PKP
Depth
182.19

Top perf.
185.28

Finish
400

40

35

30

25

20

15

5

10

MADE IN U.S.A.

MAR 17 2015

State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division Hobbs District Office
BRADENHEAD TEST REPORT

RECEIVED

Operator Name Cross Timber Energy, LLC	API Number 30-025-22344
Property Name North Vacuum ABO Unit	Well No. 230

2. Surface Location

UL - Lot J	Section 13	Township 17S	Range 34E	Feet from 1880	N/S Line FSL	Feet From 2130	E/W Line FEL	County Lea
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Well Status

Well Status	SHUT-IN	PRODUCING IN	DATE 3-4-15
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OPEN BRADENHEAD AND INTERMEDIATE TO ATMOSPHERE INDIVIDUALLY FOR 15 MINUTES EACH

OBSERVED DATA

If bradenhead flowed water, check all of the descriptions that apply:

	(A)Surf-Interm	(B)Interm(1)-Interm(2)	(C)Interm-Prod	(D)Prod Csgng	(E)Tubing
Pressure	0 psi	0 psi		0 psi	4250 psi
Flow Characteristics					
Puff	Y/N	Y/N	Y/N	Y/N	
Steady Flow	Y/N	Y/N	Y/N	Y/N	
Surges	Y/N	Y/N	Y/N	Y/N	
Down to nothing	Y/N	Y/N	Y/N	Y/N	
Gas or Oil	Y/N	Y/N	Y/N	Y/N	
Water	Y/N	Y/N	Y/N	Y/N	

If bradenhead flowed water, check all of the descriptions that apply:

CLEAR	FRESH	SALTY	SULFUR	BLACK
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Remarks: INJECTING AT THIS TIME WTR, GAS, CO2

BB 3/20/2015

Signature:	OIL CONSERVATION DIVISION
Printed name: Kevin Bennett	Entered into RBDMS:
Title: Lease Operator	Re-test
E-mail Address: kbennett@ct-fieldsvcs.com	
Date: 3-4-15	Phone: 575-513-8156
Witness:	

MAR 20 2015

h.