west virginia department of environmental protection

Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304
(304) 926-0450
(304) 926-0452 fax

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

PERMIT MODIFICATION APPROVAL

January 09, 2014

XTO ENERGY, INC.
810 HOUSTON STREET
FORT WORTH , TX 76102

Re: Permit Modification Approval for API Number 3305707 , Well #: ANDERSON UNIT A 1H
Corrected mine depth

Oil and Gas Operator:
The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely,

for Gene Smith
Regulatory/Compliance Manager
Office of Oil and Gas

01/10/2014

33-05707 MOD

XTO ENERGY

WV DEP
Office of Oil & Gas
Attn: Permitting
601 57th Street
Charleston, WV 25304

June 17, 2013

RE: Anderson Unit A 1H - Modification

To Whom It May Concern:

Enclosed is a revised WW-6B and revised plat for our Anderson Unit A 1H well, API 47-033-05707. The plat reflects a move of 10 feet for the surface hole. The WW-6B shows changes to the casing program and corrected information regarding the abandoned Williams coal mine depth. There was previously a misunderstanding regarding elevation vs. depth of the mine at this location.

Sincerely,

Tim Sands
Regulatory Compliance Technician
XTO Energy, Inc.
PO Box 1008
Jane Lew, WV 26378
Tim_Sands@xtoenergy.com
304-884-6036

33-05707MOD

WW - 6B
(3/13)

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

1) Well Operator:	XTO Energy, Inc.	494487940	Harrison	Eagle	Shinnston
		Operator ID	County	District	Quadrangle

2) Operator's Well Number: Anderson Unit A 1H Well Pad Name: Anderson Unit A

3 Elevation, current ground: 1,087' Elevation, proposed post-construction: 1,084'

4) Well Type: (a) Gas ■ Oil _____ Underground Storage _____

Other _____

(b) If Gas: Shallow ■ Deep _____

Horizontal ■

5) Existing Pad? Yes or No: _____

SDW 7/31/2013

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):

Target Formation: Marcellus, Depth 7055', Anticipated Thickness: 150', Associated pressure: 4,650 psi

7) Proposed Total Vertical Depth: 7,190'

8) Formation at Total Vertical Depth: Marcellus

9) Proposed Total Measured Depth: 14,000'

10) Approximate Fresh Water Strata Depths: 31' & 131'

11) Method to Determine Fresh Water Depth: Offsetting Reports

12) Approximate Saltwater Depths: 616'

13) Approximate Coal Seam Depths: 149', 245'

14) Approximate Depth to Possible Void (coal mine, karst, other): Possible Williams Coal Mine - 149'

15) Does proposed well location contain coal seams directly overlying or adjacent to an active mine? If so, indicate name and depth of mine: No

16) Describe proposed well work: Drill a new horizontal Marcellus well, utilizing synthetic mud and a closed loop system for both drilling and completion. Install new casing with centralizers.

17) Describe fracturing/stimulating methods in detail:

1. Acid Stage - Typically 1500 gallons of 7.5% hydrochloric acid to clear the perforation path in the wellbore. 1500 gals 15% HCl acid. 2. Sand / Proppant Stages - Several stages of pumping water combined with sand at a targeted 80 bpm rate. The sand size may vary from 100 mesh to30/50 mesh size. 12,500 bbls slick water with 220,000 lbs 40/70, 270,000 lbs 100 mesh sands and 2,200 gals FR 133, 1,500 gals Bioplex 301 and 1,500 gals Bioplex 301 and 1,190 gals antiscale 30. 3. Flush Stage - Slickwater water stage to fill the wellbore to flush the sand from the wellbore. Depending on the water quality, a biocide, friction reducer, iron control, and scale inhibitor may be injected during the completion as well.

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 6.78 +/-

19) Area to be disturbed for well pad only, less access road (acres): 5.26 +/-

01/10/2014

33-05707 MOD

WW - 6B
(3/13)

20) **CASING AND TUBING PROGRAM**

TYPE	Size	New or Used	Grade	Weight per ft.	FOOTAGE: For Drilling	INTERVALS: Left in Well	CEMENT: Fill -up (Cu. Ft.)
Conductor	24"	New	Class B	94#	40'	40'	40 cuft - C.T.S.
Fresh Water	13 3/8"	New	MS-50	48#	300'	300'	270 cuft - C.T.S.
Coal							
Intermediate	9 5/8"	New	J-55	36#	2625'	2625'	Lead 980'/Tail 210' - C.T.S.
Production	5 1/2"	New	CYP-110	17#	14000'	14000'	3000 cuft
Tubing							
Liners							

JDW 7/31/2013

TYPE	Size	Wellbore Diameter	Wall Thickness	Burst Pressure	Cement Type	Cement Yield
Conductor	24"	28"	0.375"	n/a	Concrete	1.19
Fresh Water	13 3/8"	17.5"	0.33"	2,160	Type 1	1.19
Coal						
Intermediate	9 5/8"	12.25"	0.352"	3,520	Type 1	Lead 1.26/Tail 1.19
Production	5 1/2"	8.75" 8.5"/7.875"	0.304"	10,640	Type 1	1.32
Tubing						
Liners						

PACKERS

Kind:				
Sizes:				
Depths Set:				

01/10/2014

33-05707 MOD

WW - 6B
(3/13)

21) Describe centralizer placement for each casing string.

Conductor: none

Fresh Water: 1"-6" above float shoe, 1 at float collar, & 1 at every 4th joint to surface

Intermediate: 1"-6" above float shoe, 1 at float collar, & 1 at every 4th joint to surface

Production: 1 at every 4th joint from the kickoff point to 1000' above the kickoff point

22) Describe all cement additives associated with each cement type.

Conductor - Concrete - no additives

✓ Fresh Water - Tail - Type 1 - 2% Calcium Chloride, Super Flake

Intermediate - Lead - Type 1 - 2% Calcium Chloride, Super Flake

Tail - Type 1 - 2% Calcium Chloride, Super Flake

Production - Tail 50/50 POZ - Type 1 - Sodium Chloride, Bentonite, Super Flake, Air-Out, R-1, AG-350

23) Proposed borehole conditioning procedures.

See attached sheet

*Note: Attach additional sheets as needed.

33-05707 MOD

Anderson Unit A 1H – Void Encounter

We will set conductor at a minimum 40' from ground level to nipple up an annular diverter, with a 3" gate valve installed on the conductor pipe that would be used to divert flow.

We will set 13 3/8" casing around 300' if we do not encounter the mine.

If we do encounter the mine we will set 18" – 50' deeper than the void or in good solid rock (whichever is first). A cement basket will be run on the backside of the 18" casing and cement will be pumped down the inside of the pipe up to the void. A top out job on the annulus will be done from surface to the top of the void (cement basket).

After waiting on cement we'll continue forward with our planned design which is to set a string of 13 3/8 surface casing at 300' TVD.

Anderson Unit A 1H Detailed Casing and Cementing Program

Type	Hole Size	Casing Design/Program								Cementing Program			
		Size	Length	Top/Bottom of String	Grade	Weight (ppf)	Wall Thickness	Burst Pressure Rating	Centralizer Placement	Type	Yield (cu. ft/sk)	Additives (trade names are Superior Well Services)	Estimated Volume (cu. ft.)
Conductor	28"	24"	40'	0' / 40'	Class B	94	0.375	n/a	none	concrete	1.19	none	40
Coal	22"	18"	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Surface / Fresh Water	17.5"	13-3/8"	300'	0' / 300'	MS-50	48	0.33"	2160	1-6" above float shoe 1-at float collar 1-every 4th jt to surface	Tail -Type 1	1.19	Calcium chloride, Super Flake	270
Intermediate	12.25"	9-5/8"	2625	0' / 2625'	J-55	36	0.352"	3520	1-6" above float shoe 1-at float collar 1-every 4th jt to surface	Lead-Type 1	1.26	Calcium Chloride, Super Flake	980
										Tail -Type 1	1.19	Calcium chloride, Super Flake	210
Production	8.75" 8.5"/7.875"	5-1/2"	14,000	0' / 14000'	CYP-110	17	0.304	10640	Every 4th joint from 1000' above KOP to KOP	Tail-50/50 POZ:Type 1	1.32	Sodium chloride, bentonite, Super Flake, Air-Out, R-1, AG-350	3000
Tubing													
Liners													

Anderson Unit A 1H Proposed Directional Data

Hole Section	Hole Size	Drilling Fluid	Condition Procedures			
			Drilling	At TD	Running Casing	Prior to Cementing
Conductor	28	Air/Water	Hole will be circulated with high pressure air	Hole will be blown clean with air prior to pulling out of hole to run casing	Hole will be filled with fluid and circulated to surface if conditions require	Casing will be filled with fluid and returns taken at surface prior to pumping cement
Coal	22"	Air/Water	Hole will be circulated with high pressure air	Hole will be blown clean with air prior to pulling out of hole to run casing	Hole will be filled with fluid and circulated to surface if conditions require	Casing will be filled with fluid and returns taken at surface prior to pumping cement
Fresh Water	17.5	Air/Water	Hole will be circulated with high pressure air	Hole will be blown clean with air prior to pulling out of hole to run casing	Hole will be filled with fluid and circulated to surface if conditions require	Casing will be filled with fluid and returns taken at surface prior to pumping cement
Intermediate	12.25	Air/Water	Hole will be circulated with high pressure air	Hole will be blown clean with air prior to pulling out of hole to run casing	Hole will be filled with fluid and circulated to surface if conditions require	Casing will be filled with fluid and returns taken at surface prior to pumping cement
Production	8.75 8.5"/7.875"	Air / Non-aqueous based mud	cuttings out of the hole, MW will be approximately 11.5ppg-14.0ppg for stability and overbalance. As required, the hole will be circulated at high pump	The hole will be circulated at maximum possible pump rate and the drill string will be rotated at the maximum rpm.	Hole will be circulated as necessary while running casing.	Hole will be circulated at least one bottoms up prior to pumping cement.
Tubing						
Liners						

Anderson Unit A 1H Proposed Directional Data

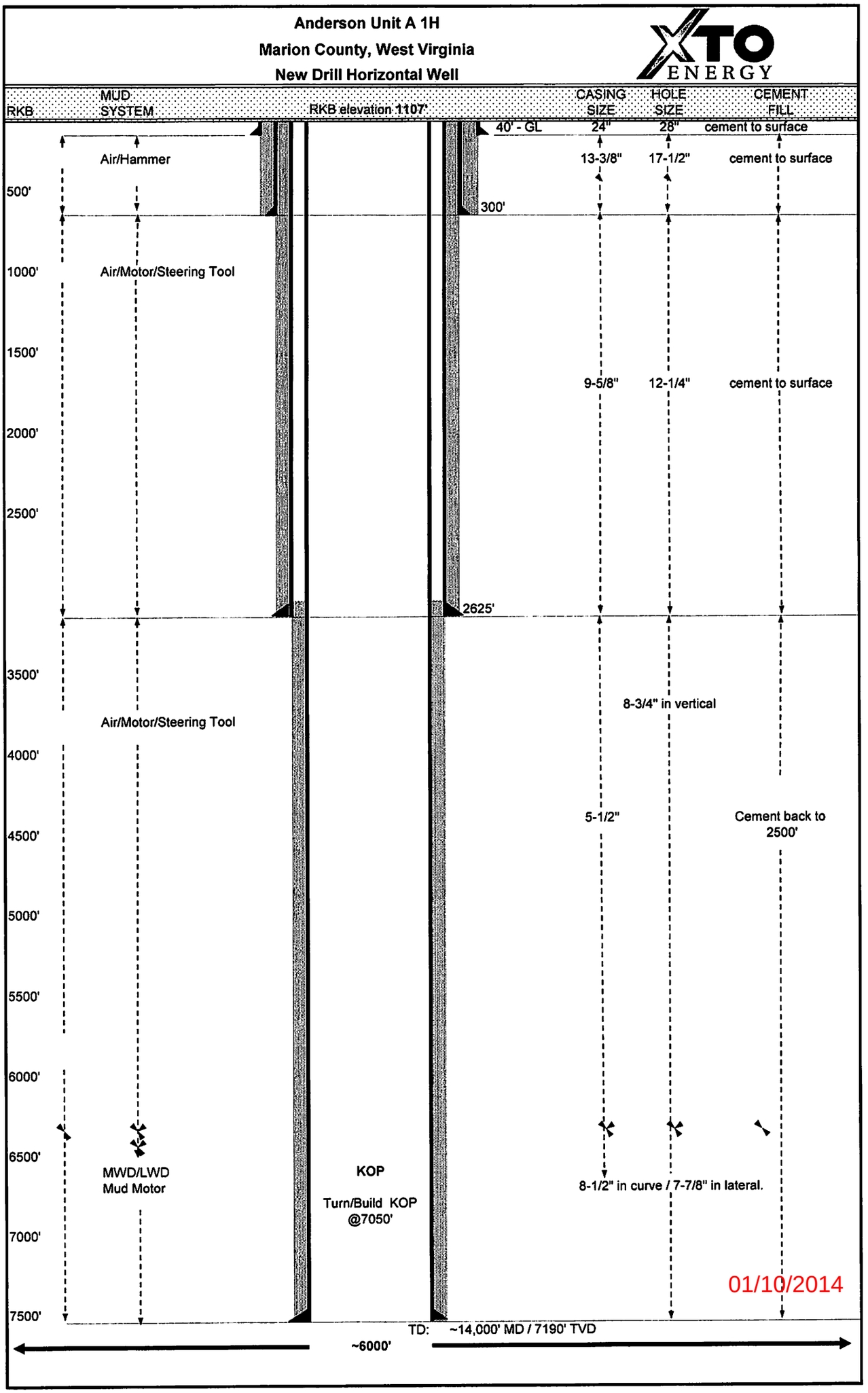
	Measured Depth	Inclination Angle	Azimuth Direction	
Proposed Angle/Direction of Well		90	158	*Lateral*
Angle and Direction of Non-vertical wellbore until target		10	192	*Curve/Throw*
Approx. Depth at which well deviates from vertical	1000	5	225	*Nudge*

Other directional data

KOP	3000
LP	8000
TD	13500

approx. TD 14000 (rounded up)

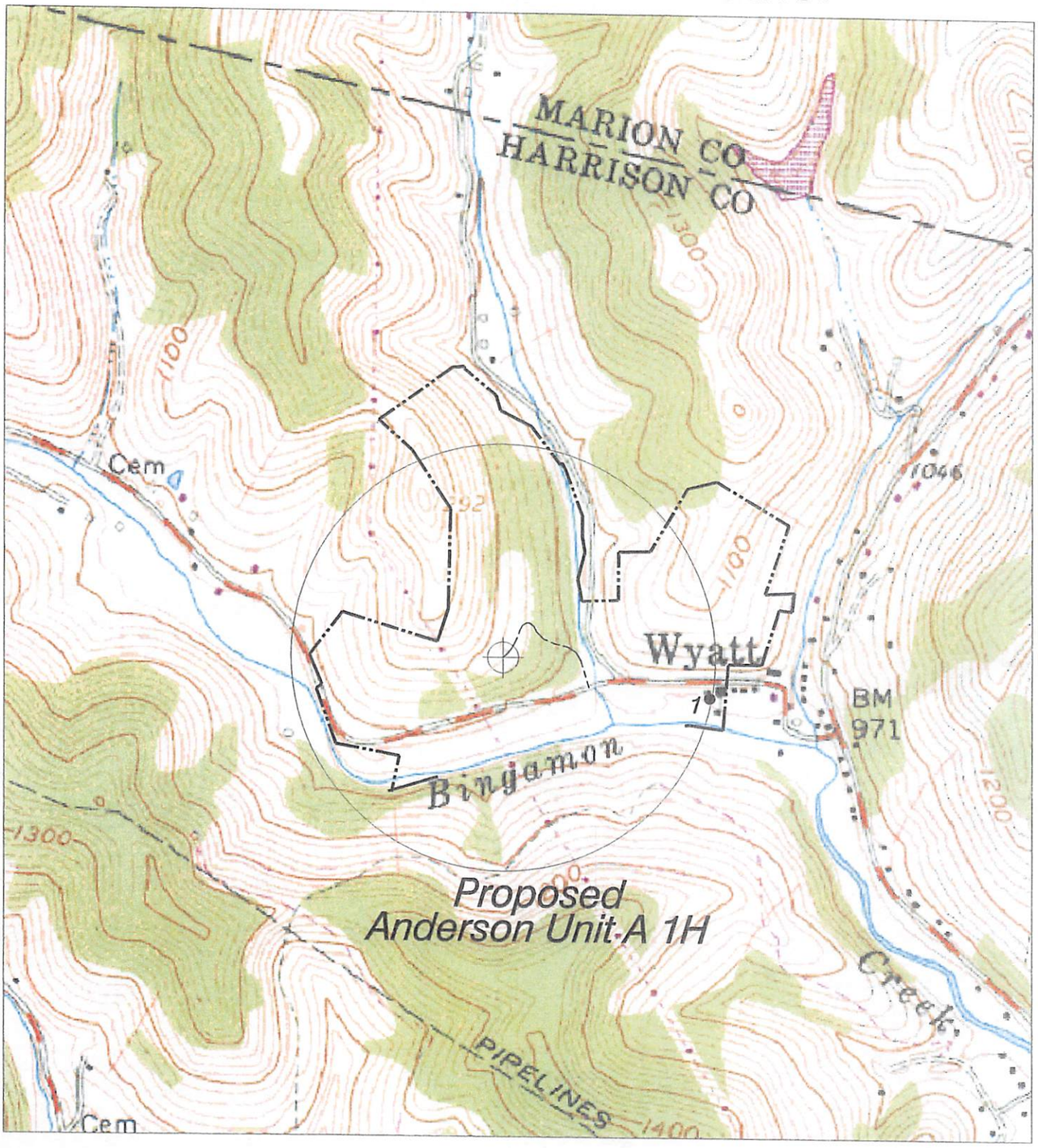
33-05707 MOD


Anderson Unit A 1H
Marion County, West Virginia
New Drill Horizontal Well
XTO ENERGY
RKB
MUD SYSTEM
RKB elevation 1107'
CASING SIZE
HOLE SIZE
CEMENT FILL
40' - GL
24"
28"
cement to surface
Air/Hammer
13-3/8"
17-1/2"
cement to surface
500'
300'
1000'
Air/Motor/Steering Tool
1500'
9-5/8"
12-1/4"
cement to surface
2000'
2500'
2625'
3500'
8-3/4" in vertical
Air/Motor/Steering Tool
4000'
5-1/2"
Cement back to 2500'
4500'
5000'
5500'
6000'
6500'
MWD/LWD
Mud Motor
KOP
Turn/Build KOP @7050'
8-1/2" in curve / 7-7/8" in lateral.
7000'
01/10/2014
7500'
TD: ~14,000' MD / 7190' TVD
~6000'

33-05707

Form W-9

XTO ENERGY INC.
Anderson Unit A 1H Water

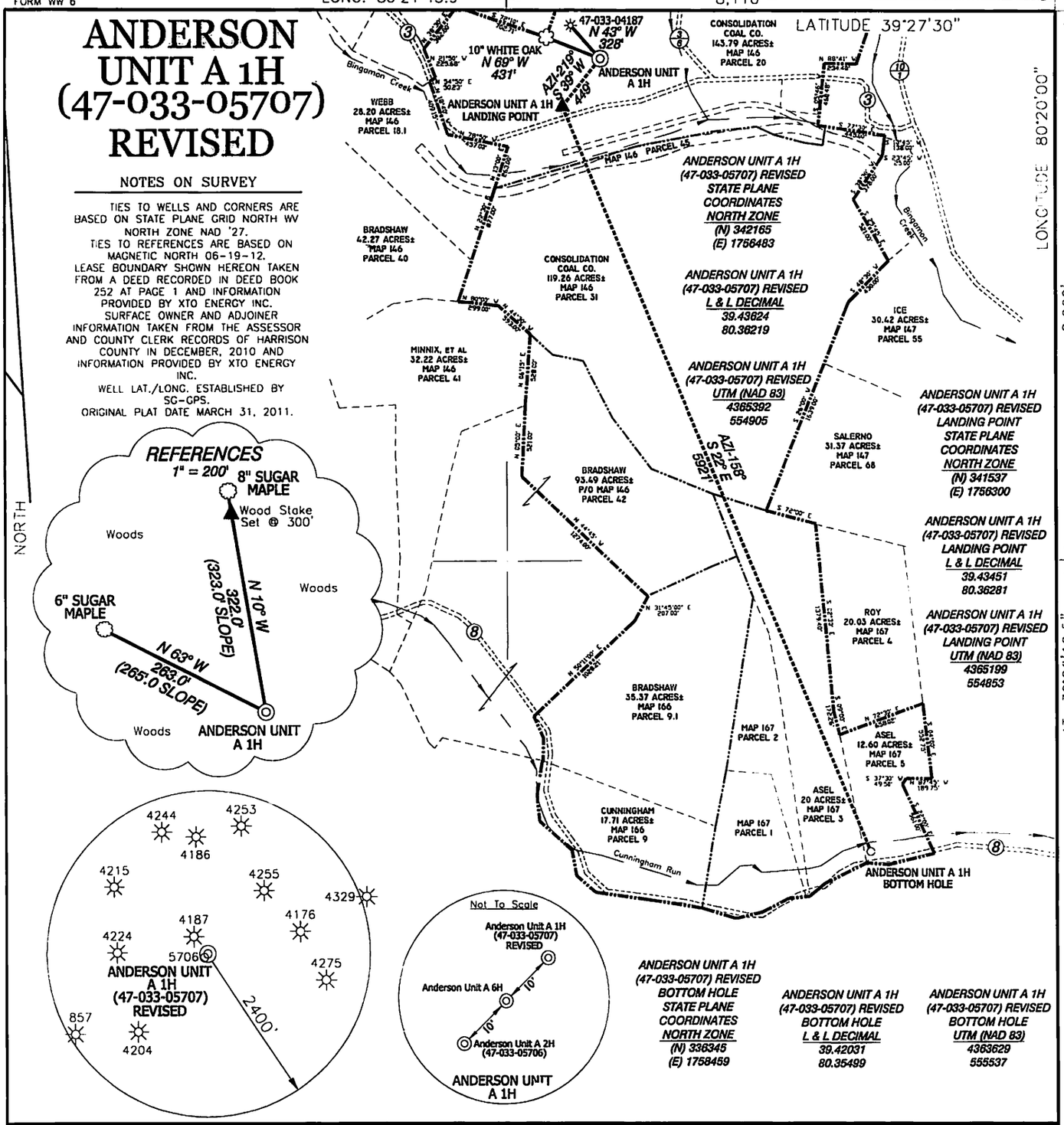


HUPP Surveying & Mapping P.O. BOX 647 GRANTSVILLE, WV 26147 PH: (304)354-7035 E-MAIL: hupp@frontiernet.net	1" = 1000' Shinnston Quad	XTO Energy Inc. 810 HOUSTON STREET Fort Worth, TX 76102

01/10/2014

FORM WW 6

ANDERSON UNIT A 1H (47-033-05707) REVISED



NOTES ON SURVEY

TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD '27. TIES TO REFERENCES ARE BASED ON MAGNETIC NORTH 06-19-12. LEASE BOUNDARY SHOWN HEREON TAKEN FROM A DEED RECORDED IN DEED BOOK 252 AT PAGE 1 AND INFORMATION PROVIDED BY XTO ENERGY INC. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF HARRISON COUNTY IN DECEMBER, 2010 AND INFORMATION PROVIDED BY XTO ENERGY INC. WELL LAT./LONG. ESTABLISHED BY SG-GPS. ORIGINAL PLAT DATE MARCH 31, 2011.

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 834

HUPP Surveying & Mapping
P.O. Box 647 Grantsville, WV 26147
(304) 354-7035 EMAIL: hupp@frontiernet.net

DOYLE HUPP JR. LICENSED No. 834 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE JANUARY 16, 20 13

OPERATORS WELL NO. ANDERSON UNIT A 1H REVISED MOD

API WELL NO. 47 – 033 – 05707 H6A
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/2500

PROVEN SOURCE OF ELEVATION SG-GPS

FILE NO. W1810 (BK47-57)

SCALE 1" = 1000'

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL TYPE : OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___ IF "GAS" PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X

LOCATION :
ELEVATION 1,087' WATERSHED BINGAMON CREEK
DISTRICT EAGLE COUNTY HARRISON QUADRANGLE SHINNSTON 7.5'
SURFACE OWNER CONSOLIDATION COAL COMPANY ACREAGE 143.79±
ROYALTY OWNER JOHN ANDERSON, et al LEASE ACREAGE 303.21± 01/10/2014
PROPOSED WORK : LEASE NO. ___
DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___
PHYSICAL CHANGE IN WELL (SPECIFY) ___ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH TVD- 7,200' MD- 14,500'

COUNTY PERMIT

WELL OPERATOR XTO ENERGY INC. DESIGNATED AGENT GARY BEALL
ADDRESS 810 HOUSTON STREET FORT WORTH, TX 76102 ADDRESS P.O. BOX 1008 JANE LEW, WV 26378