



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

August 23, 2013

CNX GAS COMPANY LLC
ONE ENERGY DRIVE
JANE LEW, WV 26378

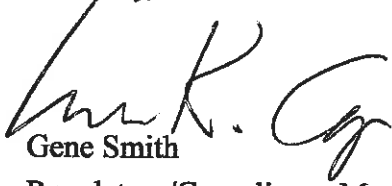
Re: Permit Modification Approval for API Number 9703847 , Well #: CENT3AHS
extended lateral

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

Promoting a healthy environment.

08/23/2013

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
W.VA. CODE §22-6A - WELL WORK PERMIT APPLICATION

1) Well Operator: CNX Gas Company LLC 494458046 Upshur Warren Century
Operator ID County District Quadrangle

2) Operator's Well Number: CENT3AHS Well Pad Name: CENT3HS

3 Elevation, current ground: 1534' Elevation, proposed post-construction: 1536'

4) Well Type: (a) Gas Oil
Other _____
(b) If Gas: Shallow _____ Deep
Horizontal

5) Existing Pad? Yes or No: No

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):
Formation - Marcellus, Depth - 7815', Thickness - 90', Pressure - 3000#

7) Proposed Total Vertical Depth: 8205'

8) Formation at Total Vertical Depth: Huntersville Chert

9) Proposed Total Measured Depth: 16875'

10) Approximate Fresh Water Strata Depths: 85', 852', 945'

11) Method to Determine Fresh Water Depth: Reference offset wells

12) Approximate Saltwater Depths: None Reported

13) Approximate Coal Seam Depths: 945'

14) Approximate Depth to Possible Void (coal mine, karst, other): None Anticipated

15) Does land contain coal seams tributary or adjacent to, active mine? No

16) Describe proposed well work: Drill and stimulate new horizontal Marcellus well. Well to be drilled to a TMD of 16875'. Well to be drilled to a TVD of 8205' for logging purposes, formation at TVD - Huntersville Chert. Well will be plugged back to an approximate depth of 7200' (approximate due to exact Kick of point being unknown). Plugging back will be done using the displacement method and Class A type cement, a solid cement plug will be set from TD to KOP. If an unexpected void is encountered, plan will be to set casing at a minimum of 30' past void and cement to surface with approved Class A type cement.

17) Describe fracturing/stimulating methods in detail:
The stimulation will be multiple stages divided over the lateral length of the well. Stage spacing is dependent upon engineering design. Slickwater fracturing technique will be utilized on each stage using sand, water, and chemicals.

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 12.46 Acres

19) Area to be disturbed for well pad only, less access road (acres): 9.74 Acres

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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 | 20" | N | L.S. | 81.3# | 180' ^{BN} | 180' ^{BN} | Grout to Surface |
| Fresh Water | 13 3/8" | N | J-55 | 54.5# | 1000' | 1000' | CTS w/ Approved Class A Type Cement |
| Coal | | | | | | | |
| Intermediate | 9 5/8" | N | J-55 | 36# | 2500' | 2500' | CTS w/ Approved Class A Type Cement |
| Production | 5 1/2" | N | P-110 | 20# | 16875' | 16875' | 2400 cu. ft. W/ 50/50 POZ Lead & Class A Tail |
| Tubing | 2 3/8" | N | J-55 | 4.7# | 8405' | 8405' | |
| Liners | | | | | | | |

Bill Hoffell 8/14/2013

| TYPE | Size | Wellbore Diameter | Wall Thickness | Burst Pressure | Cement Type | Cement Yield |
|--------------|---------|-------------------|----------------|----------------|--------------|--------------|
| Conductor | 20" | 26" | 0.438 | 2110 | Class A Type | 1.18 |
| Fresh Water | 13 3/8" | 17 1/2" | 0.380 | 2730 | Class A Type | 1.39 |
| Coal | | | | | | |
| Intermediate | 9 5/8" | 12 3/8" | 0.352 | 3520 | Class A Type | 1.18 |
| Production | 5 1/2" | 8 3/4" & 8 1/2" | 0.361 | 12640 | Class A Type | 1.26 |
| Tubing | 2 3/8" | 8 3/4" & 8 1/2" | 0.190 | 7700 | ----- | ----- |
| Liners | | | | | | |

PACKERS

| | | | | |
|-------------|------|--|--|--|
| Kind: | None | | | |
| Sizes: | None | | | |
| Depths Set: | None | | | |

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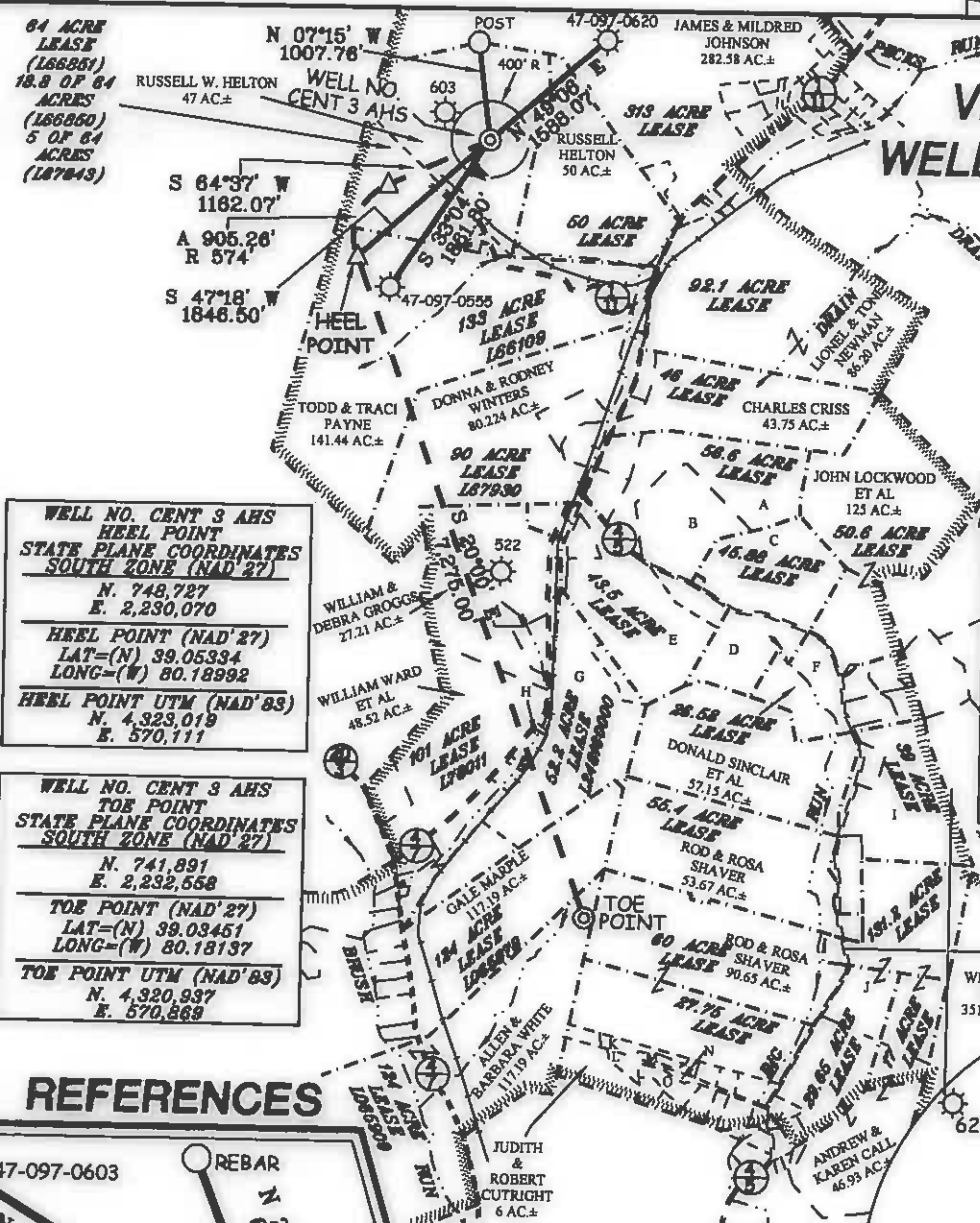
V. WHITE LEASE WELL NO. CENT 3 AHS

**WELL NO. CENT 3 AHS
STATE PLANE COORDINATES
SOUTH ZONE (NAD'87)**

N. 749,980
E. 2,231,427

**LAT=(N) 39.05675
LONG=(W) 80.18610**

UTM (NAD'83)
N. 4,323,401
E. 570,524



| | | |
|---|---------------------------------|-------------|
| A | MARCIE & RANDALL KIRCHBERG | 25.47 AC.± |
| B | MARCIE & RANDALL KIRCHBERG | 18.638 AC.± |
| C | KYLE & MARILYN LINGER | 31.62 AC.± |
| D | ROGER & BARBARA ZICKEFOOSE | 13.994 AC.± |
| E | LUETTA & WALTER V. SINCLAIR JR. | 35.57 AC.± |
| F | JAMELLA & JOHN LOCKWOOD | 15.14 AC.± |
| G | LUETTA & WALTER SINCLAIR | 53.773 AC.± |
| H | KELLY & RONALD AUSTIN | 0.9 AC.± |
| I | ROD & ROSA SHAVER | 29.998 AC.± |
| J | JOSEPH & MARY CARPINO | 47.54 AC.± |
| K | ERIC D. DENTON | 1.85 AC.± |
| L | PATRICIA & MARSHALL III TETRICK | 1.626 AC.± |
| M | RANDALL & MELISSA TOLLIVER | 0.57 AC.± |
| N | GARY WILSON | 1.12 AC.± |
| O | JOSHUA & TELENN BENDER | 2 AC.± |

**WELL NO. CENT 3 AHS
HEEL POINT
STATE PLANE COORDINATES
SOUTH ZONE (NAD'87)**

N. 748,727
E. 2,230,070

HEEL POINT (NAD'87)
LAT=(N) 39.05334
LONG=(W) 80.18992

HEEL POINT UTM (NAD'83)
N. 4,323,019
E. 570,111

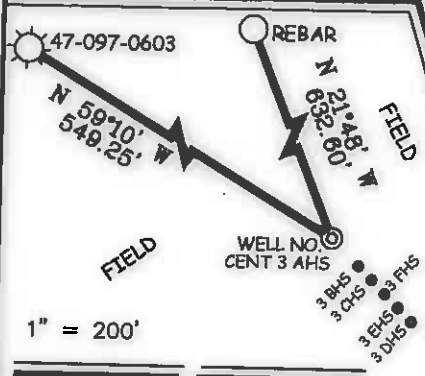
**WELL NO. CENT 3 AHS
TOE POINT
STATE PLANE COORDINATES
SOUTH ZONE (NAD'87)**

N. 741,891
E. 2,232,558

TOE POINT (NAD'87)
LAT=(N) 39.03451
LONG=(W) 80.18137

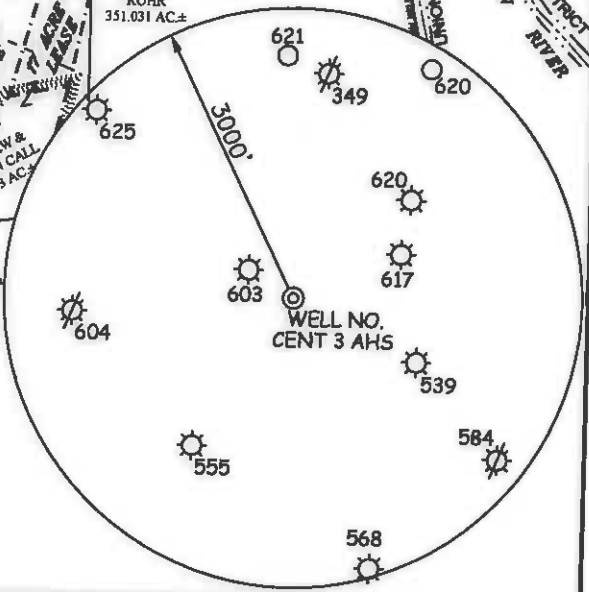
TOE POINT UTM (NAD'83)
N. 4,320,937
E. 570,869

REFERENCES



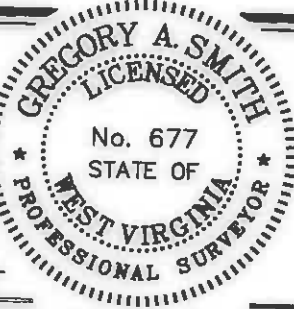
NOTES ON SURVEY

1. TIES TO WELLS, REFERENCES, AND CORNERS ARE BASED ON GRID SOUTH FOR THE WV STATE PLANE COORDINATE SYSTEM SOUTH ZONE NAD '87.
2. LEASE BOUNDARY SHOWN HEREON TAKEN FROM A DEED BOOK 37 PAGE 342 AND ADJOINING DEEDS AND WELL PLATS.
3. SURFACE OWNER AND ADJONER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF UPSHUR COUNTY IN JULY, 2012.
4. WELL LAT./LONG. (NAD'87) ESTABLISHED BY DGPS(SURVEY GRADE).
5. THIS PROPOSED WELL DOES MEET THE STATE REQUIREMENT FOR A DEEP WELL TO BE 400' FROM THE LEASE AND/OR UNIT BOUNDARY.



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. 677 *Gregory A. Smith*



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

DATE AUGUST 9, 20 13

OPERATORS WELL NO. CENT 3 AHS

API WELL NO. 47-97-03847H6A MOD 03847H6A

STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. 7898P3AHSR7 (422-87)

PROVEN SOURCE OF ELEVATION DGPS (SURVEY GRADE) SCALE 1" = 2000'

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

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

LOCATION: ELEVATION 1534.2' WATERSHED PECKS RUN

DISTRICT WARREN COUNTY UPSHUR QUADRANGLE CENTURY 7.5'

SURFACE OWNER RUSSELL HELTON ACREAGE 47±

ROYALTY OWNER V. WHITE ET AL LEASE ACREAGE 64, 133, 90, 101, 52.2, 124, & 28±

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE 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 8,205' / TMD 16,998'

WELL OPERATOR CNX GAS COMPANY, LLC. DESIGNATED AGENT JEREMY JONES

ADDRESS P.O. BOX 1248 ADDRESS P.O. BOX 1248

JANE LEW, WV 26378 JANE LEW, WV 26378

COUNTY NAME PERMIT

08/23/2013