



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. Huffinan, Cabinet Secretary
www.dep.wv.gov

PERMIT MODIFICATION APPROVAL

March 06, 2015

CNX GAS COMPANY LLC
POST OFFICE BOX 1248
JANE LEW, WV 26378

Re: Permit Modification Approval for API Number 9703857 , Well #: CENT 19 AHS
Extend 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,

Gene Smith
Assistant Chief of Permitting
Office of Oil and Gas



47 0 9 7 0 3 8 5 7 MOD

Carolinda Flanagan
Permitting Analyst
P.O. Box 1248
Jane Lew, WV 26378
(304) 884-2057



February 26, 2015

West Virginia Department of Environmental Protection
Office of Oil & Gas
Attn: Laura Adkins
601 57th Street, SE
Charleston, WV 25304-2345

RE: CENT19AHS - API# 47-097-03857 (Lateral Extension – extending 5381.18' more)
CENT19BHS - API# 47-097-03848 (Lateral Extension – extending 4551.42 more)
CENT19CHS - API# 47-097-03849 (Lateral Extension – extending 4519.26' more)
CENT19DHS - API# 47-097-03850 (Lateral Extension – extending 1031.66 more)
CENT19EHS - API# 47-097-03851 (Lateral Extension – extending 2765.22' more)

Dear Laura,

Enclosed, please find modifications for the CENT19AHS – CENT19EHS to extend the laterals due to additional leasing being obtained. I have attached an updated casing plans, mylar plats, and lease breakdowns.

Should you need any further information, please contact me at (304) 884-2057 or by email at carolindaflanagan@consolenergy.com. Thank you!

Sincerely,


Carolinda Flanagan

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WW-6B
(10/14)

4709703857 MCA

API NO. 47-097 - 03857

OPERATOR WELL NO. CENT19AHS

Well Pad Name: CENT19HS

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
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: CENT19AHS Well Pad Name: CENT19HS

3) Farm Name/Surface Owner: William Rohr Public Road Access: County Route 13

4) Elevation, current ground: 1582' Elevation, proposed post-construction: 1585'

5) Well Type (a) Gas Oil _____ Underground Storage _____

Other _____

(b) If Gas Shallow Deep _____

Horizontal _____

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Target - Marcellus, Depth - 7410' (Top), Thickness - 90', Pressure - 5000#

8) Proposed Total Vertical Depth: 7600'

9) Formation at Total Vertical Depth: Onondaga

10) Proposed Total Measured Depth: 18033'

11) Proposed Horizontal Leg Length: 9246'

12) Approximate Fresh Water Strata Depths: 130', 550'

13) Method to Determine Fresh Water Depths: Offset Well Information

14) Approximate Saltwater Depths: None Anticipated

15) Approximate Coal Seam Depths: 105', 550'

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

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes _____ No

(a) If Yes, provide Mine Info: Name: _____

Depth: _____

Seam: _____

Owner: _____

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18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	20	N	J-55	94	80	80	90.3/ CTS
Fresh Water	13.375	N	J-55	54.5	650	600	312.5/ CTS
Coal							
Intermediate	9.675	N	J-55	36	2050	2000	469.7/ CTS
Production	5.5	N	P-110	20	18033	17983	3074.6
Tubing	2.375	N	J-55	4.7		7500	
Liners							

U/S 3/15/15

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Max. Associated Surface Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	20	26	0.438	2110	0	Class A	1.18
Fresh Water	13.375	17.5	0.380	2730	0	Class A	1.39
Coal							
Intermediate	9.675	12.25	0.352	3520	1724.8	Class A	1.18
Production	5.5	8.75	0.361	14360	6290.3	Class A	1.26
Tubing	2.375	5.5 csg	0.190	7700			
Liners							

PACKERS

Kind:	None			
Sizes:	None			
Depths Set:	None			

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WW-6B
(10/14)

4709703857 MOD
API NO. 47-097 - 03857

OPERATOR WELL NO. CENT19AHS

Well Pad Name: CENT19HS

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

Drill and stimulate new horizontal Marcellus well. Well to be drilled to a TMD of 18033'. Well to be drilled to a TVD of 7600', formation at TVD - Onondaga. Well will be plugged back to an approximate depth of 6800' (approximate due to exact kick off 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. There will not be any production, perforation, or stimulation of any formations below the target formation.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

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.
Max Pressure - 9500 psi. Max Rate - 100 bbl/min.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 25

22) Area to be disturbed for well pad only, less access road (acres): 16

23) Describe centralizer placement for each casing string:

Conductor - No centralizers used.
Surface - Rigid Bow spring centralizers on first joint then every third joint to surface.
Intermediate - Rigid Bow spring centralizers one on the first two joints and every third joint to surface.
Production - Rigid bow spring centralizer on first joint then every casing joint (free floating) through the lateral and every other joint in the curve. (Note: cementing the 5 1/2" casing completely in open hole lateral and curve.)

24) Describe all cement additives associated with each cement type:

Conductor - 2% CaCl₂.
Surface - 3% CaCl₂ & 1#/sk Celloflake LCM.
Intermediate - 3% CaCl₂ & 0.5#/sk Celloflake LCM.
Production - 2.6% Cement extender, 0.7% Fluid loss additive, 0.5% High Temperature Retarder, 0.2% Friction Reducer

25) Proposed borehole conditioning procedures:

Conductor - The hole is auger drilled w/ air and casing ran in air.
Surface - The hole is drilled w/ air and casing is ran in air. Once casing is on bottom, the casing string will be circulated w/ fresh water prior to cementing.
Intermediate - The hole is drilled w/ air and casing is ran in air. (Note: Drilling soap may be utilized if the hole gets wet/damp during the drilling of all air holes with the exception of the conductor).
Production - The hole will be drilled with synthetic oil base mud. At TD the hole is circulated at optimum pump rate until shale shaker deem the hole is clean. Once casing is ran the hole is circulated for a minimum of one hole volume prior to pumping cement.

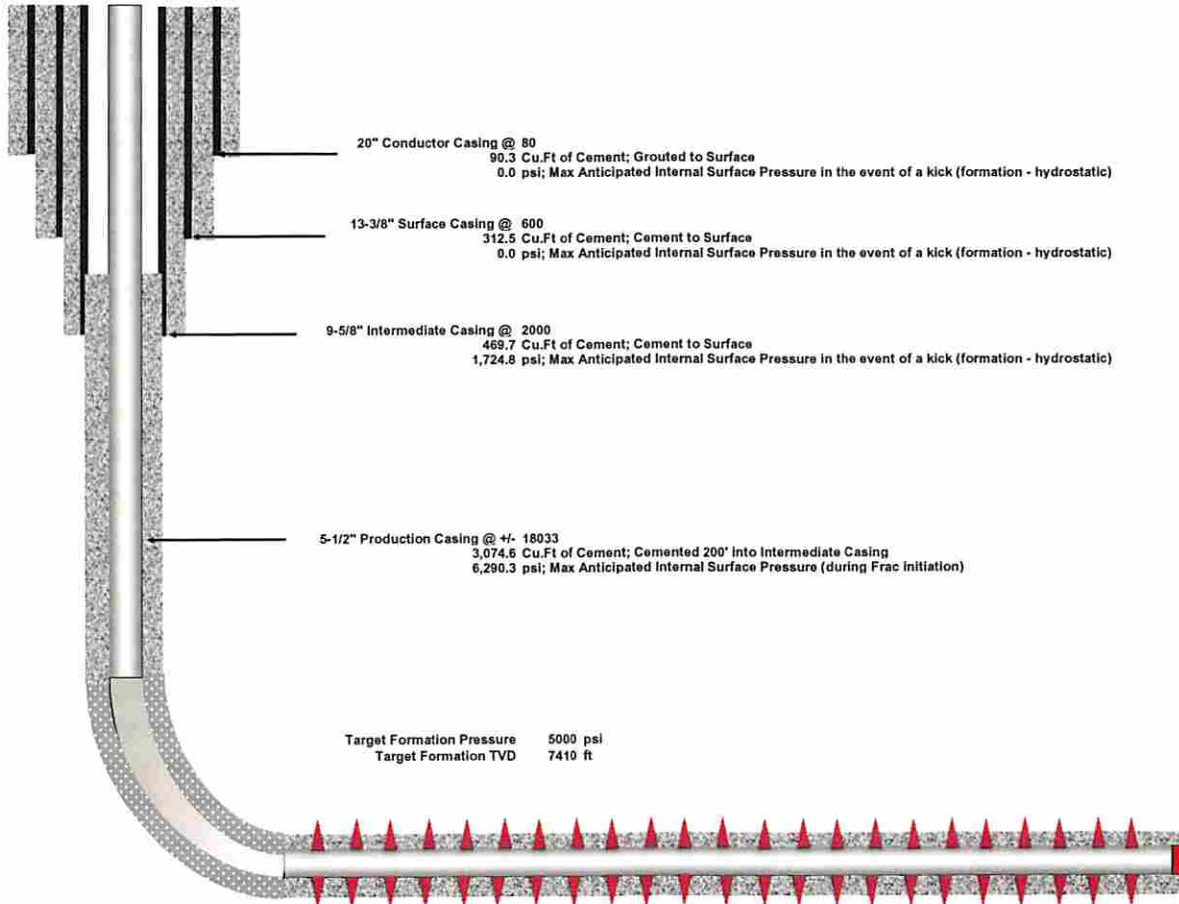
*Note: Attach additional sheets as needed.



CENT19AHS

Casing Schematic

SCHEMATIC NOT TO SCALE



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WELL NO. CENT19AHS

(S.P.C. SOUTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'27 S.P.C.(FT) N. 741,480 E. 2,236,931
NAD'27 GEO. LAT-(N) 39.03328 LONG-(W) 80.16599
NAD'83 UTM (M) N. 4,320,811 E. 572,202

LANDING POINT

NAD'27 S.P.C.(FT) N. 740,510 E. 2,236,366
NAD'27 GEO. LAT-(N) 39.03063 LONG-(W) 80.16801
NAD'83 UTM (M) N. 4,320,516 E. 572,030

BOTTOM HOLE

NAD'27 S.P.C.(FT) N. 731,821 E. 2,239,527
NAD'27 GEO. LAT-(N) 39.00670 LONG-(W) 80.15716
NAD'83 UTM (M) N. 4,317,869 E. 572,993

SURFACE OWNERS	
A	EARL HOLLEY JR. ET AL 0.828 AC±
B	UPSHUR COUNTY COMMISSION 1.28 AC±
C	WILLIAM B. PAMELA BRANSON 5 AC±
D	TRACY & DAVID FITZGERALD 5 AC±
E	WILLIAM P. ROHR 338.82 AC±
F	ERVIN & MADELINE SKINNER 124.41 AC±
G	T & B VENTURES LLC BKHN RIVER PROPS. LP 314.25 AC±
H	TIMOTHY G. HUNTER 50.16 AC±
I	HOWARD G. BLUM 113.65 AC±

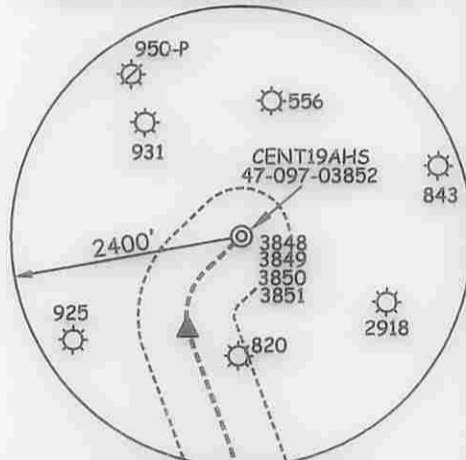
ROYALTY OWNERS		
TRACT 1	HARRIET M. JARVIS ET AL 485 AC±	LEASE NO. 132520000
TRACT 2	VIRGINIA M. P. MEIER ET AL 86.80 AC±	LEASE NO. 132557000
TRACT 5	ERVIN SKINNER 45.30 AC±	LEASE NO. 255579001
TRACT 7	NELL RADABAUGH 132 AC±	LEASE NO. 132597000
TRACT 8	JACK W. HUNTER ET AL 50.16 AC±	LEASE NO. 263783000
TRACT 10	HILL & AMYE STUMP ET AL 50 AC±	LEASE NO. 132597000
TRACT 11	HILL & AMYE STUMP ET AL 9.75 AC±	LEASE NO. 132597000
TRACT 12	MABEL & RAYMOND STEEL 113.12 AC±	LEASE NO. 251768001
	ANDREW & CAROLYN BRINKLEY	LEASE NO. 251768002
	PORTER & ROSA BRINKLEY	LEASE NO. 267299000
	MABEL & RAYMOND STEEL	LEASE NO. 251768001
TRACT 13	ANDREW & CAROLYN BRINKLEY 5 AC±	LEASE NO. 251768002
	PORTER & ROSA BRINKLEY	LEASE NO. 267299000
	MABEL & RAYMOND STEEL	LEASE NO. 251768001
TRACT 16	ANDREW & CAROLYN BRINKLEY 5 AC±	LEASE NO. 251768002
	PORTER & ROSA BRINKLEY	LEASE NO. 267299000
	MABEL & RAYMOND STEEL	LEASE NO. 251768001
TRACT 17	ANDREW & CAROLYN BRINKLEY 5 AC±	LEASE NO. 251768002
	PORTER & ROSA BRINKLEY	LEASE NO. 267299000
	MABEL & RAYMOND STEEL	LEASE NO. 251768001
TRACT 18	ANDREW & CAROLYN BRINKLEY 5 AC±	LEASE NO. 251768002
	PORTER & ROSA BRINKLEY	LEASE NO. 267299000

LEGEND

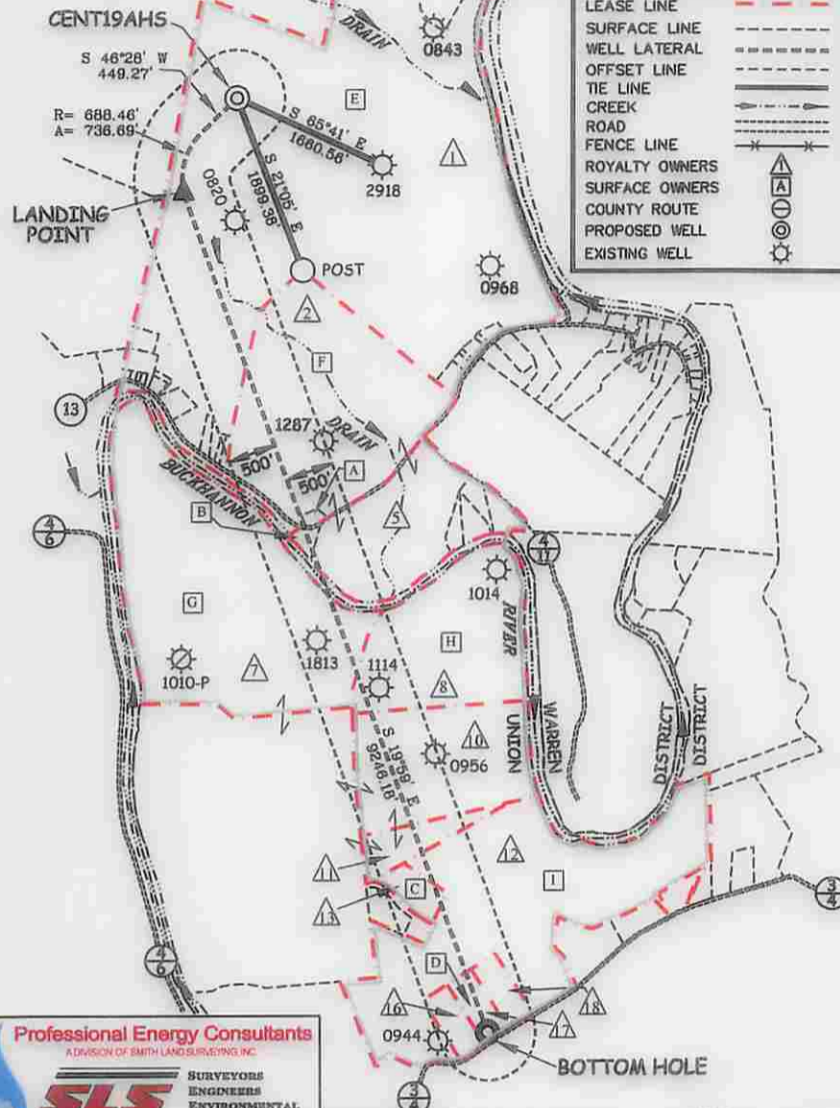
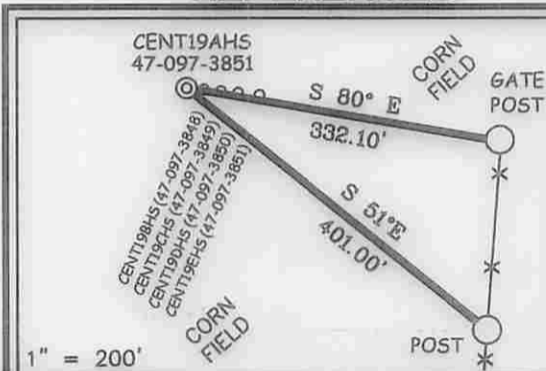
LEASE LINE	---
SURFACE LINE	---
WELL LATERAL	---
OFFSET LINE	---
TIE LINE	---
CREEK	---
ROAD	---
FENCE LINE	---
ROYALTY OWNERS	▲
SURFACE OWNERS	▲
COUNTY ROUTE	○
PROPOSED WELL	⊙
EXISTING WELL	⊙

NOTES ON SURVEY

1. NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.



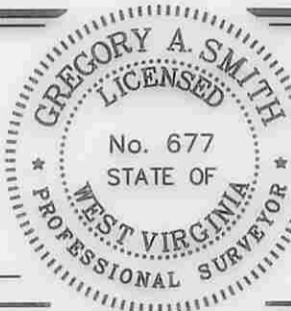
REFERENCES



Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING, INC.
SLS
SURVEYORS
ENGINEERS
ENVIRONMENTAL
PROJECT MGMT.
(304) 492-5834 WWW.SLSURVEYS.COM

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAN 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 APRIL 08 , 20 13
REVISED FEBRUARY 10 , 20 15
OPERATORS WELL NO. CENT19AHS
API WELL NO. 47-97-03857
STATE MD COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 2500 FILE NO. 7830P19AHSr8
SCALE 1" = 2000'
HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE)

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: GROUND PROPOSED
ELEVATION 1582.0' 1585.0' WATERSHED BUCKHANNON RIVER
DISTRICT WARREN COUNTY UPSHUR QUADRANGLE CENTURY 7.5'

SURFACE OWNER WILLIAM P. ROHR ACREAGE 338.82±
ROYALTY OWNER HARRIET M. JARVIS ET AL ACREAGE 485± LEASE NO. 132520000

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 7,600' / TMD 18,033'

WELL OPERATOR CNX GAS COMPANY, LLC. DESIGNATED AGENT MATTHEW IMRICH
ADDRESS P.O. BOX 1248 ADDRESS P.O. BOX 1248
JANE LEW, WV 26378 JANE LEW, WV 26378

03/06/2015

COUNTY NAME PERMIT

Attachment - Form WW-6A1 for CENT19AHS:

<u>Tract #</u>	<u>Grantor, Lessor, etc</u>	<u>Grantee, Lessee, etc</u>	<u>Royalty</u>	<u>Book/Page</u>
✓ 1	Harriet M. Jarvis et al Hope Natural Gas Company Consolidated Gas Supply Corp. Consolidate Gas Transmissino Corp. CNG Transmission Corp Dominion Transmission, Inc. Consol Energy Holdings, LLC, XVI Consol Gas Company	Hope Natural Gas Company Consolidated Gas Supply Corp. Consolidated Gas Transmission Corp. CNG Transmission Corp Dominion Transmission, Inc. Consol Energy Holdings, LLC, XVI Consol Gas Company CNX Gas Company LLC	1/8 Merger/Name Change Merger/Name Change Merger/Name Change Merger/Name Change Merger/Name Change Merger/Name Change Merger/Name Change	37/513 53/261 99/481 51/795 58/362 151/423 16/577 17/1
✓ 2	Virginia P. Meier Trust/ WV Wesleyan College Consolidated Gas Supply Corp. Consolidated Gas Transmission Corp. CNG Transmission Corp Dominion Transmission, Inc. Consol Energy Holdings, LLC, XVI Consol Gas Company	Consolidated Gas Supply Corp. Consolidated Gas Transmission Corp. CNG Transmission Corp Dominion Transmission, Inc. Consol Energy Holdings, LLC, XVI Consol Gas Company CNX Gas Company LLC	1/8 Merger/Name Change Merger/Name Change Merger/Name Change Merger/Name Change Merger/Name Change Merger/Name Change	47/97 20/342 51/795 58/362 151/423 16/577 17/1
✓ 5	Ervin Skinner	CNX Gas Company LLC	12.50%	99/682
✓ 7	Nell Radabaugh, single Hope Natural Gas Company Consolidated Gas Supply Corporation Consolidated Gas Transmisison Corporation CNG Transmission Corporation Dominion Transmission, Inc. CONSOL Energy Holdings LLC XVI CONSOL Gas Company	Hope Natural Gas Company Consolidated Gas Supply Corporation Consolidated Gas Transmission Corporation CNG Transmission Corporation Dominion Transmission, Inc. CONSOL Energy Holdings LLC XVI CONSOL Gas Company CNX Gas Company LLC	12.50% Assignment Assignment Merger/Name Change Merger/Name Change Assignment Merger Merger	O&G 42/29 DB 185/646 AB 20/342 AOI 20/531 AOI 20/538 AB 51/285 AOI 20/435 AOI 20/435
✓ 8	Jack W. Hunter et al J & J Enterprises Marvin E. Wilhite and Francis M. McGahee White Shield Oil and Gas Corporation Partnership Properties Co. PLR, Inc. Petro-Lewis Corporation Petro-Lewis Funs, Inc. Partnership Properties Co. Eastern American Energy Corporation Energy Corporation of America	J & J Enterprise Marvin E. Wilhite and Francis M. McGahee White Shield Oil and Gas Corporation Partnership Properties Co. PLR, Inc. Petro-Lewis Corporation Petro-Lewis Funds, Inc. Partnership Properties, Co. Eastern American Energy Corporation Energy Corporation of America CNX Gas Company LLC	12.50% Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment Assignment	O&G 46/595 AB 8/215 AB 10/48 AB 12/562 AB 13/185 AB 13/557 AB 13/532 AB 13/582 AB 18/410 DB 487/705 164/551
✓ 10, 11	Hill Stump and Amye Stump et al C. L. Elson Central Developers, Inc. Sunset International Petroleum Corporation SIPCO, Inc. Sunset International Petroleum Corporation Marth Oil Co. Crown Central Petroleum Corporation Johnson Energy Co. Glenn H. Johnson Mountain V Oil & Gas, Inc. North Coast Energy Eastern, Inc. EXCO - North Coast Energy Eastern, Inc. EXCO Resources, Inc.	C. L. Elson Central Developers, Inc. Sunset International Petroleum Corporation SIPCO, Inc. Sunset International Petroleum Corporation Marth Oil Co. Crown Central Petroleum Corporation Johnson Energy Co. Glenn H. Johnson Mountain V Oil & Gas, Inc. North Coast Energy Eastern, Inc. EXCO - North Coast Energy Eastern, Inc. EXCO Resources, Inc. CNX Gas Company LLC	12.50% Assignment Assignment Merger/Name Change Merger/Name Change Assignment Assignment Assignment Assignment Assignment Assignment Merger/Name Change Assignment Assignment	O&G 42/489 AB 6/278 AB 7/415 AOI 4/149 AOI 4/166 DB 221/228 DB 221/228 AB 21/203 AB 32/274 AB 33/551 AB 45/54 AOI 20/269 RB 149/1 56/285

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Attachment - Form WW-6A1 for CENT19AHS:

<u>Tract #</u>	<u>Grantor, Lessor, etc</u>	<u>Grantee, Lessee, etc</u>	<u>Royalty</u>	<u>Book/Page</u>
✓ 12, 13, 17	Mabel & Raymond Steel, Andrew & Carolyn Brinkley, and Porter & Rosa Brinkley	C.L. Eleson	12.50%	LB 46/430
	C.L. Eleson	Sunset International Petroleum Corporation	Assignment	AB 8/165
	Sunset International Petroleum Corporation	SIPCO, Inc.	Merger/Name Change	AOI 4/149
	SIPCO, Inc.	Sunset International Petroleum Corporation	Merger/Name Change	AOI 4/164
	Sunset International Petroleum Corporation	Marth Oil Co.	Assignment	DB 221/228
	Marth Oil Co.	Crown Central Petroleum Corporation	Assignment	DB 221/228
	Crown Central Petroleum Corporation	Johnson Energy Co.	Assignment	AB 21/203
	Johnson Energy Co.	Glenn H. Johnson	Assignment	AB 32/274
	Glenn H. Johnson	Mountain V Oil & Gas, Inc.	Assignment	AB 33/551
	Mountain V Oil & Gas, Inc.	North Coast Energy Eastern, Inc.	Assignment	AB 46/54
	North Coast Energy Eastern, Inc.	EXCO - North Coast Energy Eastern, Inc.	Merger/Name Change	AOI 20/269
	EXCO - North Coast Energy Eastern, Inc.	EXCO Resources, Inc.	Assignment	RB 149/1
	EXCO Resources, Inc.	CNX Gas Company LLC	Assignment	56/285

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