



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

September 17, 2015

SWN PRODUCTION COMPANY, LLC
POST OFFICE BOX 12359
SPRING, TX 773914954

Re: Permit Modification Approval for API Number 900162, Well #: OV ROYALTY TRUST
LLC BRK 1H
6B - Revised saltwater 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,

A handwritten signature in black ink that reads "Gene Smith For".

Gene Smith
Assistant Chief of Permitting
Office of Oil and Gas

Promoting a healthy environment.

9/18/2015

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

1) Well Operator: SWN Production Co., LLC 494512924 009-Brooke 002-Cross 620- Stuebenville
Operator ID County District Quadrangle

2) Operator's Well Number: OV Royalty Trust LLC BRK 1H Well Pad Name: OV Royalty Trust LLC PAD

3) Farm Name/Surface Owner: The Trust of Gene Valentine Public Road Access: Rabbit Hill Road

4) Elevation, current ground: 1181' Elevation, proposed post-construction: 1181'

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

Other _____

(b) If Gas Shallow Deep _____

Horizontal _____

6) Existing Pad: Yes or No yes

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Associated Pressure(s):
Target Formation- Marcellus, Target Top TVD- 5747', Target Base TVD- 5790' Anticipated Thickness- 43', Associated Pressure- 3750

4700900162 Mod

8) Proposed Total Vertical Depth: 5770'

9) Formation at Total Vertical Depth: Marcellus

10) Proposed Total Measured Depth: 14,511'

11) Proposed Horizontal Leg Length: 7739'

12) Approximate Fresh Water Strata Depths: 53'

13) Method to Determine Fresh Water Depths: from nearby water wells

14) Approximate Saltwater Depths: 1145'

15) Approximate Coal Seam Depths: 230'-245'

16) Approximate Depth to Possible Void (coal mine, karst, other): Void Expected from 230'-245'

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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SEP 17 2015

API NO. 47- 09

OPERATOR WELL NO. OV Royalty Trust LLC DRX 11

Well Pad Name: OV Royalty Trust LLC PAD

WV Department of
Environmental Protection

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" | New | H-40 | 94# | 100' | 100' | CTS |
| Fresh Water | 13 3/8" | New | J-55 | 54.5# | 345' | 345' | 287 sx/CTS |
| Coal | 9 5/8" | New | J-55 | 40# | 1549' | 1549' | 599 sx/CTS |
| Intermediate | 7" | New | J-55 | 20# | If Needed | If Needed | If Needed/As Needed |
| Production | 5 1/2" | New | HCP-110 | 20# | 14,511' | 14,511' | <small>Lead 1033 or 101 1818 or 1007 inside</small> |
| Tubing | 2 3/8" | New | P-110 | 4.7# | Approx. 5770' | Approx. 5770' | |
| Liners | | | | | | | |

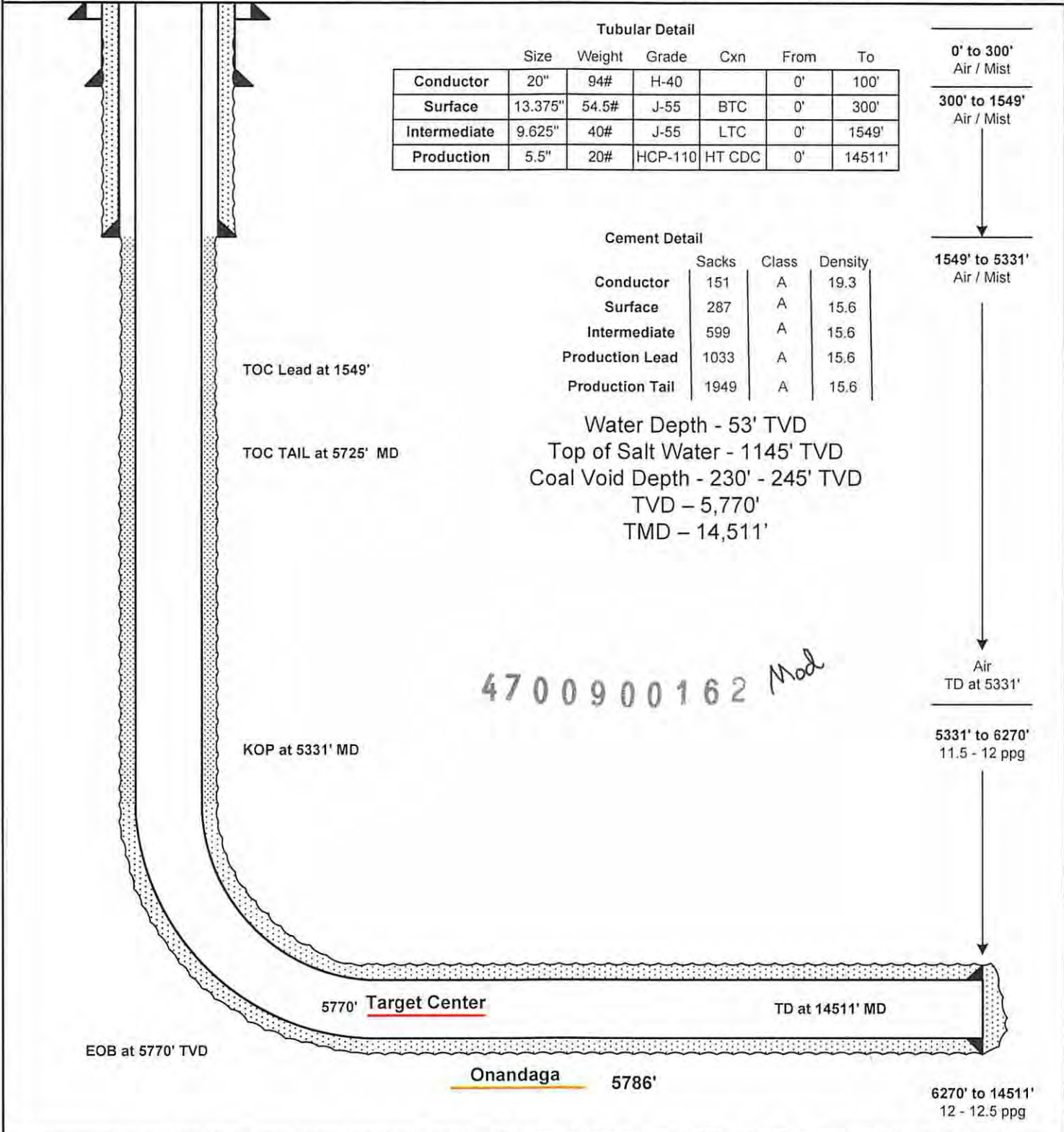
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| TYPE | Size (in) | Wellbore Diameter (in) | Wall Thickness (in) | Burst Pressure (psi) | Max. Associated Surface Pressure (psi) | Cement Type | Cement Yield (cu. ft./k) |
|--------------|-----------|------------------------|---------------------|----------------------|--|-------------|--------------------------|
| Conductor | 20" | 30" | 0.25 | 2120 | 81 | Class A | 1.19/50% Excess |
| Fresh Water | 13 3/8" | 17.5" | 0.380 | 2740 | 633 | Class A | 1.19/50% Excess |
| Coal | 9 5/8" | 12 1/4" | 0.395 | 3950 | 1768 | Class A | 1.19/50% Excess |
| Intermediate | 7" | 8 3/4" | 0.317 | 4360 | 3250 | Class A | 1.20/15% Excess |
| Production | 5 1/2" | 8 3/4" | 0.361 | 12360 | 9500 | Class A | 1.20/15% Excess |
| Tubing | 2 3/8" | 4.778" | 0.190 | | | | |
| Liners | | | | | | | |

PACKERS

| | | | | |
|-------------|--------------------|--|--|--|
| Kind: | 10K Arrowset AS1-X | | | |
| Sizes: | 5 1/2" | | | |
| Depths Set: | | | | |

Well : OV ROYALTY TRUST LLC BRK 1 Re-entry Rig : TBD
 Field : PANHANDLE FIELD Prospect : PANHANDLE
 County : BROOKE State : WV
 SHL : 40.28577299 Latitude -80.58436 Longitude
 BHL : 40.30592487 Latitude -80.5976482 Longitude
 KB Elev : 1203 ft MSL KB : 26 ft AGL GL Elev : 1177 ft MSL



NOTE: This drawing was created for the Reentry Rig. The depths and lengths shown in the plat are referenced to Reentry Rig RKB.