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west virginia department of environmental protection

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Office of Oil and Gas  
601 57<sup>th</sup> Street, S.E.  
Charleston, WV 25304  
(304) 926-0450  
fax: (304) 926-0452

Austin Caperton, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

Monday, July 9, 2018  
PERMIT MODIFICATION APPROVAL  
Horizontal 6A / New Drill

SWN PRODUCTION COMPANY, LLC  
POST OFFICE BOX 12359

SPRING, TX 773914954

Re: Permit Modification Approval for RAYLE COAL OHI 401H  
47-069-00246-00-00

**Change to casing program**

SWN PRODUCTION COMPANY, LLC

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.

If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin  
Chief

A handwritten signature in blue ink, appearing to read 'James A. Martin', is written over the typed name and title.

Operator's Well Number: RAYLE COAL OHI 401H  
Farm Name: SHORT CREEK COAL COMPANY  
U.S. WELL NUMBER: 47-069-00246-00-00  
Horizontal 6A New Drill  
Date Modification Issued: July 9, 2018

Promoting a healthy environment.

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 069-Ohio 5- Richla 641- Tiltonsville  
Operator ID County District Quadrangle
- 2) Operator's Well Number: Rayle Coal OHI 401H Well Pad Name: Rayle Coal OHI PAD
- 3) Farm Name/Surface Owner: Short Creek Coal Company Public Road Access: Girtys Point Road
- 4) Elevation, current ground: 1065' Elevation, proposed post-construction: 1065'
- 5) Well Type (a) Gas  Oil \_\_\_\_\_ Underground Storage \_\_\_\_\_  
Other \_\_\_\_\_  
(b) If Gas Shallow  Deep \_\_\_\_\_  
Horizontal
- 6) Existing Pad: Yes or No Yes *C. MP 6-0-18*
- 7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):  
Target Formation- Marcellus, Target Top TVD- 5794', Target Base TVD- 5834', Anticipated Thickness- 40', Associated Pressure- 3475
- 8) Proposed Total Vertical Depth: 5791'
- 9) Formation at Total Vertical Depth: Marcellus
- 10) Proposed Total Measured Depth: 15773'
- 11) Proposed Horizontal Leg Length: 8873.33'
- 12) Approximate Fresh Water Strata Depths: 306'
- 13) Method to Determine Fresh Water Depths: Offset wells; WR-35
- 14) Approximate Saltwater Depths: 1110'
- 15) Approximate Coal Seam Depths: 237'
- 16) Approximate Depth to Possible Void (coal mine, karst, other): None that we are aware of.
- 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: \_\_\_\_\_

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	H-40	48#	356'	356'	354 sx/CTS
Coal							
Intermediate	9 5/8"	New	J-55	36#	1730'	1730'	535 sx/CTS
Production	5 1/2"	New	HCP-110	20#	15773'	15773'	
Tubing							
Liners							

*C. J. D. 6.25.18*

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal 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							
Intermediate	9 5/8"	12 1/4"	0.395	3950	1768	Class A	1.19/50% Excess
Production	5 1/2"	8 3/4"	0.361	12360	9500	Class A	1.20/50% Excess
Tubing							
Liners							

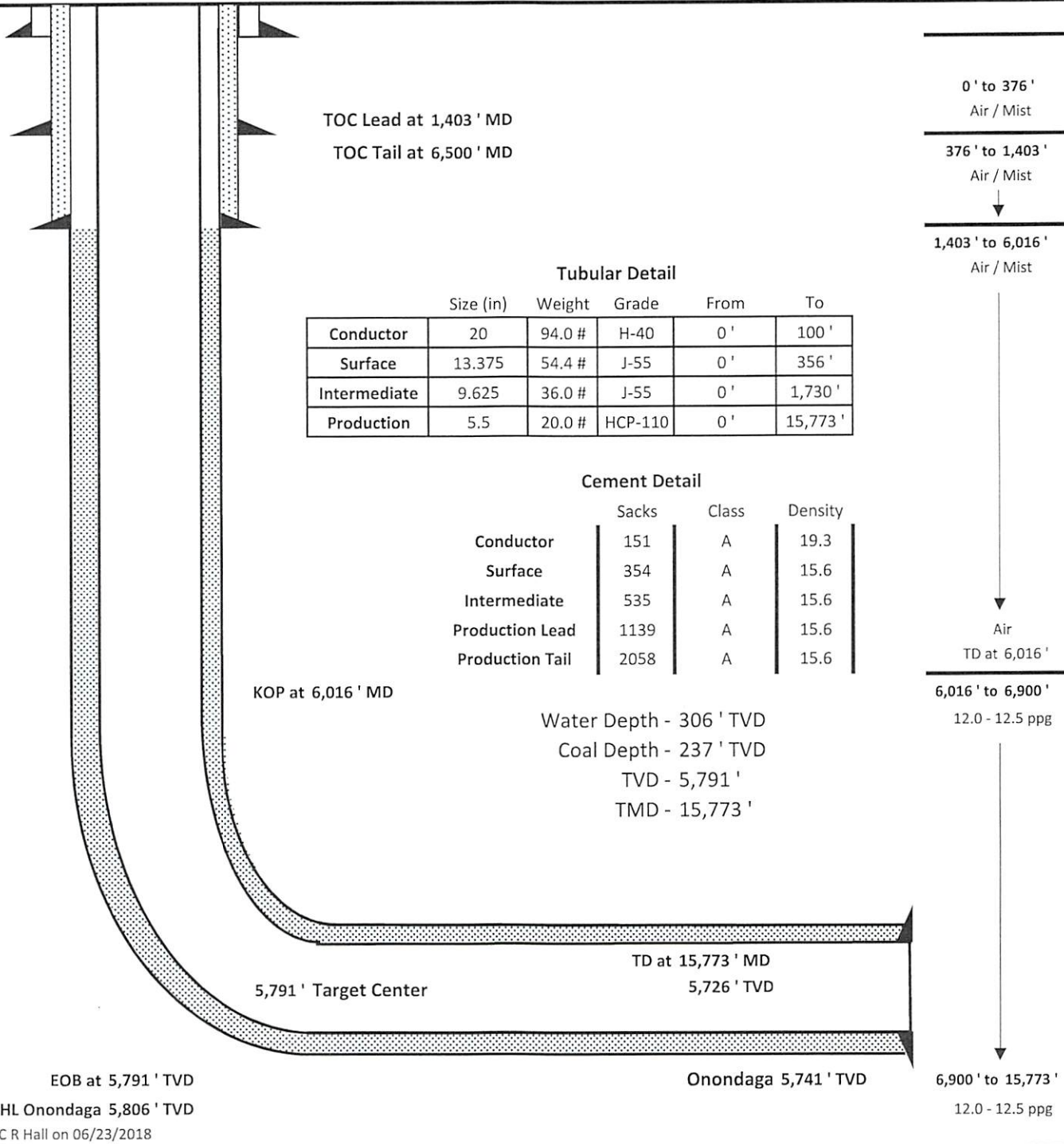
PACKERS

Kind:				
Sizes:				
Depths Set:				

**Southwestern Energy Company**

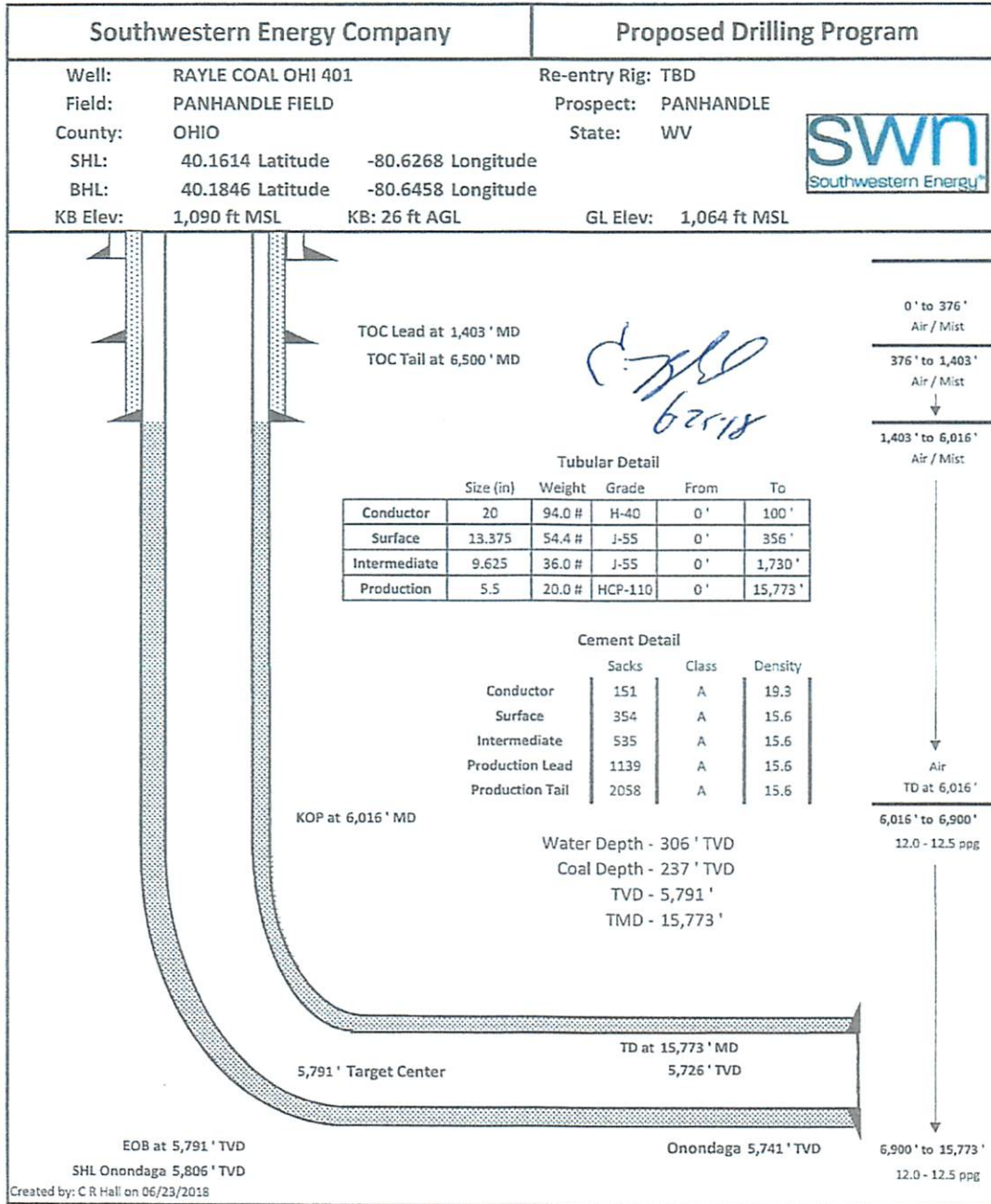
**Proposed Drilling Program**

Well: RAYLE COAL OHI 401 Re-entry Rig: TBD  
 Field: PANHANDLE FIELD Prospect: PANHANDLE  
 County: OHIO State: WV  
 SHL: 40.1614 Latitude -80.6268 Longitude  
 BHL: 40.1846 Latitude -80.6458 Longitude  
 KB Elev: 1,090 ft MSL KB: 26 ft AGL GL Elev: 1,064 ft MSL



Created by: C R Hall on 06/23/2018

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June 25, 2018

Ms. Laura Adkins  
Office of Oil & Gas  
601 57<sup>th</sup> Street  
Charleston, WV 25304

**RE:** Proposed Modification: Rayle Coal OHI 201H & Rayle Coal OHI 401H

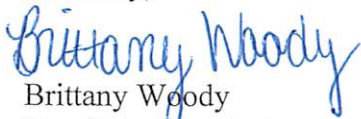
Dear Ms. Adkins

Enclosed please find the updated 6B & WBD the above captioned wells. We have modified the intermediate casing. These wells are situated on the Rayle Coal's property, in Ohio County, West Virginia.

If you have any questions or desire additional information, please me at 304-884-1614.

Thank you.

Sincerely,



Brittany Woody  
Regulatory Analyst  
Southwestern Energy Production Company, LLC

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Office of Oil and Gas

JUN 27 2018

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