



west virginia department of environmental protection

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

Austin Caperton, Cabinet Secretary
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 201H
47-069-00263-00-00

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

Operator's Well Number: RAYLE COAL OHI 201H
Farm Name: RAYLE COAL COMPANY
U.S. WELL NUMBER: 47-069-00263-00-00
Horizontal 6A New Drill
Date Modification Issued: July 9, 2018

Promoting a healthy environment.

07/13/2018

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- Richland 641- Tiltonville
Operator ID County District Quadrangle
- 2) Operator's Well Number: Rayle Coal OHI 201H 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: 1064' Elevation, proposed post-construction: 1064'
- 5) Well Type (a) Gas Oil _____ Underground Storage _____
Other _____
(b) If Gas Shallow Deep _____
Horizontal
- 6) Existing Pad: Yes or No Yes *[Signature] 6-25-18*
- 7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Target Formation- Marcellus, Target Top TVD- 5792', Target Base TVD- 5832', Anticipated Thickness- 40', Associated Pressure- 3478
- 8) Proposed Total Vertical Depth: 5796'
- 9) Formation at Total Vertical Depth: Marcellus
- 10) Proposed Total Measured Depth: 14986'
- 11) Proposed Horizontal Leg Length: 8221.88'
- 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): 237' possible void
- 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"	New	H-40	94#	100'	100'	CTS
Fresh Water	13 3/8"	New	J-55	54.5#	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#	14986'	14986'	11224 TOL 1224 11224 11224 11224
Tubing							
Liners							

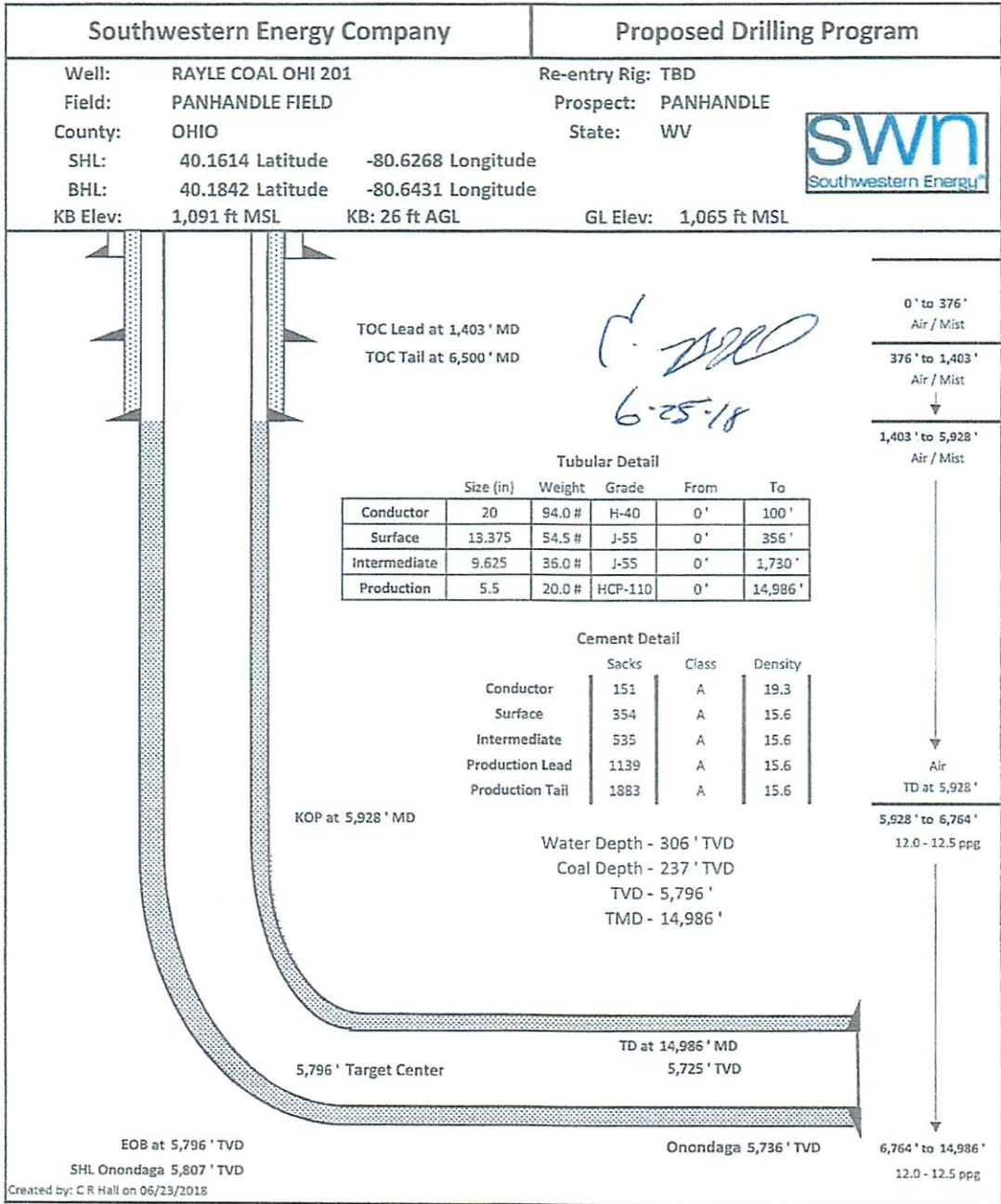
Handwritten signature and date: 6-25-18

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:				

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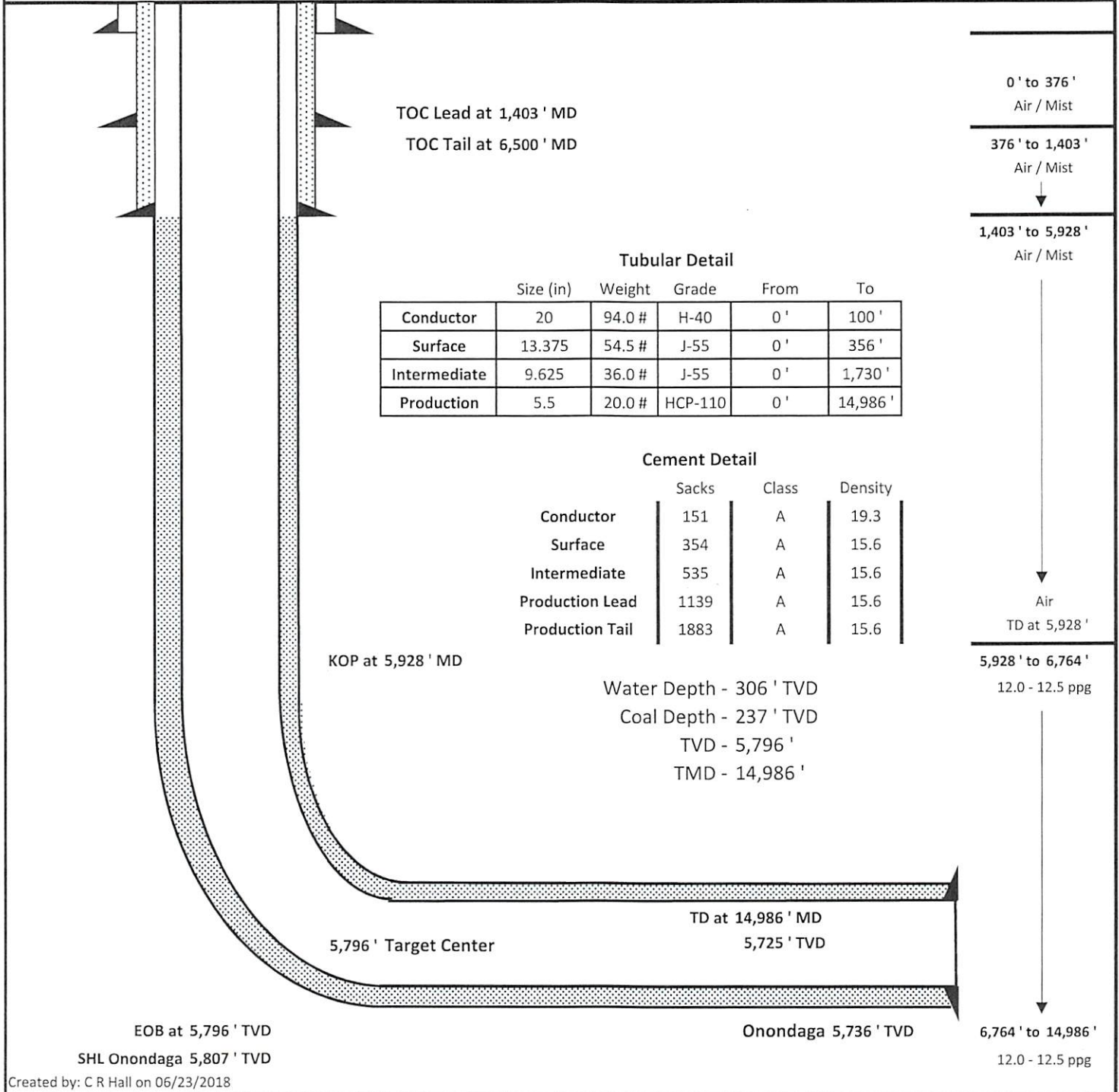
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Southwestern Energy Company

Proposed Drilling Program

Well: RAYLE COAL OHI 201
 Field: PANHANDLE FIELD
 County: OHIO
 SHL: 40.1614 Latitude -80.6268 Longitude
 BHL: 40.1842 Latitude -80.6431 Longitude
 KB Elev: 1,091 ft MSL KB: 26 ft AGL

Re-entry Rig: TBD
 Prospect: PANHANDLE
 State: WV
 GL Elev: 1,065 ft MSL



Tubular Detail

	Size (in)	Weight	Grade	From	To
Conductor	20	94.0 #	H-40	0'	100'
Surface	13.375	54.5 #	J-55	0'	356'
Intermediate	9.625	36.0 #	J-55	0'	1,730'
Production	5.5	20.0 #	HCP-110	0'	14,986'

Cement Detail

	Sacks	Class	Density
Conductor	151	A	19.3
Surface	354	A	15.6
Intermediate	535	A	15.6
Production Lead	1139	A	15.6
Production Tail	1883	A	15.6

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

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June 25, 2018

Ms. Laura Adkins
Office of Oil & Gas
601 57th 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

Brittany Woody
Regulatory Analyst
Southwestern Energy Production Company, LLC

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