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west virginia department of environmental protection

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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

May 18, 2015

CHEVRON APPALACHIA, LLC  
POST OFFICE BOX 611  
MOON TOWN, PA 15108

Re: Permit Modification Approval for API Number 5101726, Well #: BERGER 7H

**Change Intermediate 1 & 2 Casing**

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 blue ink, appearing to read 'Gene Smith', is written over the word 'Sincerely,'.

Gene Smith  
Assistant Chief of Permitting  
Office of Oil and Gas

Promoting a healthy environment.

05/22/2015

4705101726



**Kristen Brooks**  
Permit Coordinator

Appalachian/Michigan  
Strategic Business Unit  
Chevron North America  
Exploration and Production  
A Division of Chevron U.S.A. Inc.  
800 Mountain View Drive  
Smithfield, PA 15478  
Tel 724-564-3700  
Fax 724-564-2365  
kristenbrooks@chevron.com

April 27, 2015

West Virginia D.E.P.  
Office of Oil & Gas  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304-2345

RE: Berger 3H, 5H, 7H, and 9H  
Casing Modification Change

Dear Ms. Hankins,

Please accept this as our formal request for a modification to the Intermediate & Coal Casing of the Berger 3H, 5H, 7H, and 9H drill permits. An updated Page 2 of the WW-6B and updated schematics are attached. If you have any questions, please contact me at (724) 564-3781 or kristenbrooks@chevron.com.

Sincerely,

A handwritten signature in cursive script that reads "Kristen Brooks".

Kristen Brooks  
Permit Coordinator  
Chevron Appalachia, LLC

Enclosure

RECEIVED  
Office of Oil and Gas  
APR 28 2015  
WV Department of  
Environmental Protection

05/22/2015

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	30"	New	Line		40'	40'	CTS
Fresh Water	20"	New	J-55	94#	300'	300'	CTS
Intermediate 1	13-3/8"	New	N-80	72#	2,665'	2,665'	CTS
Intermediate 2	9-5/8"	New	P-110	40#	8,650'	8,650'	CTS
Production	5-1/2"	New	P-110	23#	17,718'	17,718'	CTS
Tubing							
Liners							

*du 4/25/15*

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	30"	36"	0.375"				
Fresh Water	20"	26"	0.438"	2,110	200 psi	Class A	1.18
Intermediate 1	13-3/8"	17-1/2"	0.514"	5,380	2050 psi	Class A	1.18
Intermediate 2	9-5/8"	12-1/4"	0.545"	8,990	2426 psi	Class G	1.18
Production	5-1/2"	8-1/2"	0.545"	13,580	6252 psi	Class G	2.2
Tubing							
Liners							

**PACKERS**

**Received**

Kind:				APR 28 2015
Sizes:				
Depths Set:				Office of Oil and Gas WV Dept. of Environmental Protection

# Berger 7H

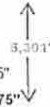
Marshall, WV  
26 Sept, 2013

## Casing & Cementing Details

Ground Level Elevation: 1292 ft  
Depths measured from (0) 0 ft

AZM	Casing Formation	DEPTH		Inclination	HOLE SIZE	CASING SPECS	CEMENT INFO	GENERAL INFO
		MD	TVD					
	30" Conductor	40'			36"	Conductor	Cement to Surface	
	20" Casing	300'	500'	0°	21"	Water String 20" 94# J-55 BTC ID 19.12"	Cement to surface	
Place (1) one Basket 15 - 20 ft above the top of Coal Seam.	Estimated Basket Depth	805'	805'	0°	17-1/2"	1st Intermediate 13 3/8" 72# N-80 BTC Burst = 5380 psi	Cement to surface	
	Pittsburgh Coal	825'	825'					
	Red Bed	880'	880'					
	Red Beds	1,185'	1,185'					
	Berea (Possibel Water)	2,565'	2,565'					
	13 3/8" Casing	2,665'	2,665'	0°	17-1/2"	2nd Intermediate 9-5/8" 40# P-110 BTC Burst = 8,990 psi	Cement to surface	
	Gordan )	2,835'	2,835'	0°	12.25"	Production Casing, 5-1/2" 23# P-110 Vasuperior	Cement to surface	
	Onondaga	6,563'	6,563'					
	Huntersville Chet	6,569'	6,569'					
	Oriskany SS	6,724'	6,724'					
	Salina Group	7,287'	7,287'					
	Lockport Limestone	8,247'	8,247'	0°	12.25"	Production Casing, 5-1/2" 23# P-110 Vasuperior	Cement to surface	
	9-5/8" Casing	8,550'	8,650'					
	KOP	9,500'	9,500'	0°				
	Utica		10,951'	90°	7.875"			
130°	Point Pleasant		11,079'					
133°	Land Curve	11,417'	11,169'					
	Lexington		11,169'					
	Trenton		11,209'					
133°	5-1/2" Casing	17,718'	11,169'	90°	7.875"			

MASP = 8723 psi test



*Mu 4/25/15*

Received

APR 28 2015

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WV Dept. of Environmental Protection

05/22/2015