



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

August 14, 2013

RAVEN RIDGE ENERGY
3230 PENNSYLVANIA AVENUE
CHARLESTON, WV 25302

Re: Permit Modification Approval for API Number 3906349 , Well #: CRUM 1A
MODIFY CASING TO FRACTURE

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 that reads "Gene Smith".

Gene Smith *gsm*
Regulatory/Compliance Manager
Office of Oil and Gas

I
8/14/2013

WW - 2B
(Rev. 8/10)

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

1) Well Operator: RAVEN RIDGE ENERGY, LLC
Operator ID: 494485865 County: KANAWHA - 39 District: BIG SANDY - 1 Quadrangle: CLENDENIN - 299

2) Operator's Well Number: CRUM 1A 3) Elevation: 1,089'

4) Well Type: (a) Oil or Gas
(b) If Gas: Production / Underground Storage _____
Deep _____ / Shallow

5) Proposed Target Formation(s): WEIR Proposed Target Depth: 2,300'
6) Proposed Total Depth: 2,500' Feet Formation at Proposed Total Depth: 2,200' - 2,300'
7) Approximate fresh water strata depths: 200'
8) Approximate salt water depths: 1,300' - 1,800'

9) Approximate coal seam depths: NO COAL LISTED IN TITLE

10) Approximate void depths,(coal, Karst, other): NONE

11) Does land contain coal seams tributary to active mine? NO

12) Describe proposed well work and fracturing methods in detail (attach additional sheets if needed)
DRILL, STIMULATE AND FRAC (ACID & WATER) A PREVIOUSLY SHOT WELL. THE WELL HAS BEEN PRODUCED HOWEVER WE ARE NOT HAPPY WITH THE RESULT, THEREFORE WE WOULD ASK TO RUN 4 1/2" CASING AND PERFORM AN ACID AND WATER FRAC ON THIS WELL. WE PROPOSE TO FRAC THIS WELL IN THE SAME FORMATION PREVIOUSLY PRODUCED.

13) CASING AND TUBING PROGRAM

	TYPE	SPECIFICATIONS		FOOTAGE	INTERVALS	CEMENT	
		Size	Grade	Weight per ft	For Drilling	Left in Well	Fill -up (Cu Ft.)
Conductor							
Fresh Water		9 5/8"	LS	17LBS	350'	350'	CTS
Coal							
Intermediate		7"	J55	23LBS	1,850'	1,850'	CTS
Production		4 1/2"	J55	10.5LBS	2250'	2250'	150 Sacks Cmt.
Tubing							
Liners							

Received
AUG 16 2013
Office of Oil and Gas
WV Dept. of Environmental Protection

Packers: Kind: _____
Sizes: _____
Depths Set: _____
Well is Drilled - Running Casing to Stimulate

Nottingham, Justin E

From: Danielle Boggs <dani.bays@cunninghamenergy.com>
Sent: Tuesday, August 06, 2013 1:44 PM
To: Nottingham, Justin E
Cc: Smith, Gene C; Urban, Terry W; ryan.cunningham@cunninghamenergy.com
Subject: Modifications
Attachments: SKMBT_C35130806130900.pdf

Hey Justin –

Please see attached modified WW-2B forms for the following wells:

White 1A – API 47-3906354
White 2A – API 47-3906351
Osborne 1A – API 47-3906347
Osborne 2A – API 47-3906350
Crum 1A – API 47-3906349

We wish to modify these permits to show that we wish to stimulate these wells rather than shoot them as we had first requested.

Thank you,
Danielle N. Boggs
Cunningham Energy
3230 Pennsylvania Ave
Charleston, WV 25302
Direct: (304) 344-9291
Cell: (304) 553-5850
Fax: (304) 344-9290
www.cunninghamenergy.com



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