



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

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

PERMIT MODIFICATION APPROVAL
Horizontal 6A / Horizontal 6A Well - 1

MOUNTAINEER KEYSTONE, LLC
6031 WALLACE RD EXT, STE 300

WEXFORD , PA 15090

Re: Permit Modification Approval for 212
47-033-05870-00-00

Extend Lateral

MOUNTAINEER KEYSTONE, 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: 212
Farm Name: LYNCH FARM, LLC
U.S. WELL NUMBER: 47-033-05870-00-00
Horizontal 6A / Horizontal 6A Well - 1
Date Issued: 12/5/2016

Promoting a healthy environment.

12/09/2016

18)

CASING AND TUBING PROGRAM

TYPE	<u>Size (in)</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft. (lb/ft)</u>	<u>FOOTAGE: For Drilling (ft)</u>	<u>INTERVALS: Left in Well (ft)</u>	<u>CEMENT: Fill-up (Cu. Ft.)/CTS</u>
Conductor	24"	New	H-40	94#	80'	80'	Grout
Fresh Water	13.375"	New	J-55	54.5#	350'	350'	CTS
Coal							
Intermediate	9.625"	New	J-55	40#	2400'	2400'	CTS
Production	5.5"	New	P-110	20#	16360'	16360'	CTS
Tubing							
Liners							

TYPE	<u>Size (in)</u>	<u>Wellbore Diameter (in)</u>	<u>Wall Thickness (in)</u>	<u>Burst Pressure (psi)</u>	<u>Anticipated Max. Internal Pressure (psi)</u>	<u>Cement Type</u>	<u>Cement Yield (cu. ft./k)</u>
Conductor	24"	36"			0	None	None
Fresh Water	13.375"	17.5"	0.38"	2730psi	0	Class A, 3% CaC12	1.20
Coal							
Intermediate	9.625"	12.25"	0.395"	3950 psi	0	Class A, 2% CaC12	1.29
Production	5.5"	8.5-8.75	0.361"	12640psi	9500	Type 1	1.64/1.32
Tubing					5000		
Liners					N/A		

NOT

PACKERS

Kind:				
Sizes:				
Depths Set:				



Purpose

The purpose of this pad-specific Hydraulic Fracturing Monitoring Plan is to identify and notify conventional well operators near Mountaineer Keystone hydraulic fracturing in Harrison County, WV prior to hydraulic fracturing at the following MK wells on the Tony's Bridge 212 Pad.

Due to the apparent presence of unique geological conditions, the potential for communication between deep geologic zones exists in this area. This potential communication, via natural gas, water, or both, may occur between hydraulically fractured wells in the Marcellus formation (approximately 7,200' TVD) and existing conventional natural gas wells in the partially-depleted, relatively high permeability Fifth Sand formation (approximately 2,300' TVD).

The plan is being implemented as an additional safety measure to be utilized in conjunction with best management practices and emergency action plans for this site. These additional measures include pre-notification of conventional well operators of the timing and location of the hydraulic fracturing, establishment of measures conventional well operators should implement, and assurance that the Division of Oil and Gas is notified of the timeline, as well as any issues that may arise during fracturing.

1. Communications with Conventional Operators.

MK, using available data (WV Geological Survey, WVDEP Website, and IHS data service), has identified all known conventional wells and well operators within 500 feet of this pad and the lateral sections. A map showing these wells along with a list of the wells and operators is included in Attachment A.

Upon approval of this plan, MK will notify these operators, via letter, of the hydraulic fracturing schedule for these wells. A copy of this letter is included in Attachment B. The letter provides recommendations to these conventional operators to 1) increase their monitoring of their wells during that time period, 2) ensure that their well head equipment is sound, and 3) provide immediate notification to MK and the OOG in the event of any changes in their well conditions.

Specifically, the letter recommends that conventional well operators conduct the following activities during and after fracturing operations:

1. Inspect their surface equipment prior to fracturing to establish integrity and establish pre-frac well conditions.
2. Observe wells closely during and after fracturing and monitor for abnormal increases in water, gas or pressure.
3. Inspect or install master valves rated to 3,000 psi or other necessary equipment for wellhead integrity.
4. Notify the OOG and MK if any changes in water, gas production, pressure or other anomalies are identified.

MOP

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2. Reporting

MK will provide information relating to the hydraulic fracturing schedule, communication with conventional operators, and ongoing monitoring of the work upon request of OOG or immediately after any event of any noted abnormalities.

MSD

Area of Review Report - **Tonys Bridge** Pad, **212** Lateral, **Harrison** County, WV

Well Name	API Number	Operator Name / Address	Well Type	Latitude	Longitude	Total Depth	Perforated Formation(s)	Producing Zones not Perforated
H. Carter #7946	033-01519	Consol Gas Company	Existing	Unknown	Unknown	2333	Thirty-foot, Fifth	NA
Orvilla May Combs #3799	033-01390	Consol Gas Company	Plugged	39.230352	-80.360724	NA	NA	NA

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WV Department of
Environmental Protection

REV

Area of Review Report - Tonys Bridge Pad, 212 Lateral, Harrison County, WV

Well Name	API Number	Operator Name / Address	Well Type	Latitude	Longitude	Total Depth	Perforated Formation(s)	Producing Zones not Perforated
H. Carter #7946	033-01519	Consol Gas Company	Existing	unknown	unknown	2333	Thirty-foot, Fifth	NA
Orvilla May Combs #3799	033-01390	Consol Gas Company	Plugged	39.230352	-80.360724	NA	NA	NA

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DEC 04 2016
WV Department of
Environmental Protection

2010-12-04
New

**INFORMATION SUPPLIED UNDER WEST VIRGINIA CODE
Chapter 22, Article 6A, Section 5(a)(5)
IN LIEU OF FILING LEASE(S) AND OTHER CONTINUING CONTRACT(S)**

Under the oath required to make the verification on page 1 of this Notice and Application, I depose and say that I am the person who signed the Notice and Application for the Applicant, and that –

- (1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;
- (2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page
*see attached sheet				

M&D

**Acknowledgement of Possible Permitting/Approval
In Addition to the Office of Oil and Gas**

The permit applicant for the proposed well work addressed in this application hereby acknowledges the possibility of the need for permits and/or approvals from local, state, or federal entities in addition to the DEP, Office of Oil and Gas, including but not limited to the following:

- WV Division of Water and Waste Management
- WV Division of Natural Resources WV Division of Highways
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- County Floodplain Coordinator

The applicant further acknowledges that any Office of Oil and Gas permit in no way overrides, replaces, or nullifies the need for other permits/approvals that may be necessary and further affirms that all needed permits/approvals should be acquired from the appropriate authority before the affected activity is initiated.

Well Operator: Mountaineer Keystone, LLC
 By: Amy L. Miller *Amy L. Miller*
 Its: Regulatory Compliance Specialist, Office of Oil and Gas

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 DEC 01 2016
 Page 1 of _____
 WV Department of Environmental Protection
 12/09/2016

Attachment to WW-6A1, Tony's Bridge 212

Designation on Plat	Grantor, Lessor, Assignor, etc.	Grantee, Lessee, Assignee, etc.	Royalty	Book/Page	Acreage
00006603 (WVL03130.001)	Almeta L. Dawson and Donald F. Dawson, her husband	Daniel E. Stalnaker, d/b/a CED Energy	0.12500000	1454/1457	100
	Daniel E. Stalnaker, d/b/a CED Energy	Antero Resources Appalachian Corporation		1462/545	
	Antero Resources Appalachian Corporation	PDC Mountaineer, LLC		1498/1315	
00006604 (WVL03130.002)	Patricia A. Kohler, widow	Daniel E. Stalnaker, d/b/a CED Energy	0.12500000	1454/165	100
	Daniel E. Stalnaker, d/b/a CED Energy	Antero Resources Appalachian Corporation		1462/545	
	Antero Resources Appalachian Corporation	PDC Mountaineer, LLC		1498/1315	
00006601 (WVL03128.000)	Paul S. Hornor, Wallace B. Gribble, and W. F. Dunkin, as Trustees,	Frank J. Maxwell	0.12500000	621/455	1300
	Frank J. Maxwell and Clara G. Maxwell, his wife	W. Brent Maxwell, Jr.		633/234	
	Frank J. Maxwell, widower, and W. Brent Maxwell, Jr. and Marguerite W. Maxwell, his wife	J. Robert Hornor		712/173	
	J. Robert Hornor and Mary Louise Hornor, his wife	Marguerite L. Baker and Helen Baker Billing		714/574	
	Marguerite L. Baker, single, and Helen Baker Bolling, single	J. Robert Hornor		743/423	
	J. Robert Hornor and Mary Louise Hornor, his wife	Marguerite L. Baker and Helen Baker Billing		757/51	
	Marguerite L. Baker, single, and Helen Baker Bolling, single	J. Robert Hornor		757/34	
	J. Robert Hornor and Mary Louise Hornor, his wife	F. S. Kelly, Jr. and H. Stanley Butterworth and Paul Leman		866/236	
	Frank S. Kelly, Jr.	Corinne Roy Kelly (Executrix)		75/1	
	H. Stanley Butterworth and Paul B. Lemann	Corinne Roy Kelly		959/3	
	Corinne Roy Kelly, widow, individually and as Executrix of Frank S. Kelly, Jr., deceased, and J. Robert Hornor, ancillary administrator c.t.a Frank S. Kelly, Jr., deceased	Dal-Ken Corporation		992/601	
	Dal-Ken Corporation	Jerry C. Olds		1050/232	

	Jerry C. Olds	J. Robert Hornor		Unrecorded	
	J. Robert Hornor	Stonewall Gas Company		1073/740	
	Jerry C. Olds	Petroleum Resources, Inc.		1334/17	
	Petroleum Resources, Inc.	MBM Interests, Inc.		1400/463	
	Jerry C. Olds and Constance J. Olds, his wife; MBM Investments, Inc., and Bowie, Inc.	Antero Resources Appalachian Corporation		1458/821	
	Antero Resources Appalachian Corporation	PDC Mountaineer, LLC		1458/1315	
00006614 (WVL03140.001)	Montaini, Inc.	J. L. Smith Enterprises, Inc.	0.12500000	1375/122	132
	J. L. Smith Enterprises, Inc., d/b/a West Virginia Energies	db Explorations, LLC		1389/247	
	db Explorations, LLC	William W. and Sharon L. Layhue		1415/565	
	db Explorations, LLC	Bobby Mitchell		1415/571	
	db Explorations, LLC	Donna Sharps		1415/567	
	Donna Sharps	db Explorations, LLC		1415/573	
	Bobby Mitchell	db Explorations, LLC		1415/569	
	db Explorations, LLC	Antero Resources Appalachian Corporation		1415/575	
	Antero Resources Appalachian Corporation	PDC Mountaineer, LLC		1500/184	
00006615 (WVL03140.002)	David J. Harmer and Melba Jo Harmer	J. L. Smith Enterprises, Inc., d/b/a West Virginia Energies	0.12500000	1500/179	
	J. L. Smith Enterprises, Inc., d/b/a West Virginia Energies	db Explorations, LLC		1458/804	
	db Explorations, LLC	William W. and Sharon L. Layhue		1500/458	
	db Explorations, LLC	Bobby Mitchell		1376/933	132
	db Explorations, LLC	Donna Sharps		1389/247	
	Donna Sharps	db Explorations, LLC		1415/565	
	Bobby Mitchell	db Explorations, LLC		1415/571	
	db Explorations, LLC	Antero Resources Appalachian Corporation		1415/567	
	Antero Resources Appalachian Corporation	PDC Mountaineer, LLC		1415/573	
				1415/569	
				1415/575	
				1500/184	
				1500/179	
				1458/804	
				1500/458	

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00006616 (WVL03140.003)	James A. Harmer and Betty R. Harmer, his wife	J. L. Smith Enterprises, Inc., d/b/a West Virginia Energies	0.12500000	1376/1154	132
	J. L. Smith Enterprises, Inc., d/b/a West Virginia Energies	db Explorations, LLC		1389/247	
	db Explorations, LLC	William W. and Sharon L. Layhue		1415/565 1415/571	
	db Explorations, LLC	Bobby Mitchell		1415/567 1415/573	
	db Explorations, LLC	Donna Sharps		1415/569 1415/575	
	Donna Sharps	db Explorations, LLC		1500/184	
	Bobby Mitchell	db Explorations, LLC		1500/179	
	db Explorations, LLC	Antero Resources Appalachian Corporation		1458/804	
	Antero Resources Appalachian Corporation	PDC Mountaineer, LLC		1500/458	
00006617 (WVL03140.004)	Nelson W. Spengler, Jr. and Margaret H. Spengler, co-Executors to the Estate of Nelson W. Spengler, Sr.	J. L. Smith Enterprises, Inc., d/b/a West Virginia Energies	0.12500000	1388/1178	132
	J. L. Smith Enterprises, Inc., d/b/a West Virginia Energies	db Explorations, LLC		1389/247	
	db Explorations, LLC	William W. and Sharon L. Layhue		1415/565 1415/571	
	db Explorations, LLC	Bobby Mitchell		1415/567 1415/573	
	db Explorations, LLC	Donna Sharps		1415/569 1415/575	
	Donna Sharps	db Explorations, LLC		1500/184	
	Bobby Mitchell	db Explorations, LLC		1500/179	
	db Explorations, LLC	Antero Resources Appalachian Corporation		1458/804	
	Antero Resources Appalachian Corporation	PDC Mountaineer, LLC		1500/458	

100

Agreement to Drill, Complete and Operate Oil & Gas Wells

This Agreement to Drill, Complete and Operate Oil & Gas Wells (this "Agreement"), by and among Mountaineer Keystone LLC, a West Virginia limited liability company ("Mountaineer Keystone"), PDC Mountaineer, LLC, a Delaware limited liability company ("PDC"), and PDC Mountaineer Holdings, LLC, a Delaware limited liability company ("PDC Holdings"), is effective as of **October 15, 2014**. (the "Effective Date") and sets forth the terms pursuant to which Mountaineer Keystone will drill, complete and operate the Wells (as defined below) on behalf of PDC and PDC Holdings. Mountaineer Keystone, PDC, and PDC Holdings are each a "Party" and are collectively the "Parties". In consideration of the foregoing and the respective agreements hereinafter set forth and the mutual benefits to be derived therefrom, the Parties, intending to be legally bound, hereby agree as follows:

1. **Term:** This Agreement is effective from the Effective Date until terminated by Mountaineer Keystone on the one hand or PDC and PDC Holdings on the other hand with 30 days' written notice to the other Party or Parties, as applicable (the "Term").
2. **Authorization to Operate:** PDC and PDC Holdings authorize Mountaineer Keystone to undertake and perform, on PDC and PDC Holdings behalf, all operations, including without limitation permit applications, well pad preparation, drilling and completing wells, and marketing gas, oil and other hydrocarbons therefrom with respect to all oil and gas wells to be drilled on oil and gas leasehold acreage held by PDC or PDC Holdings. PDC, PDC Holdings and Mountaineer Keystone are affiliates with a common parent. Mountaineer Keystone was formed to operate oil and gas leasehold acreage held by PDC, PDC Holdings and certain other affiliates. Mountaineer Keystone agrees that it shall, in a good and workmanlike manner and in accordance with industry standards as they prevail in the area, drill, complete and operate oil and gas wells on leasehold acreage owned by PDC or PDC Holdings from time to time as directed by PDC or PDC Holdings (collectively, the "Wells").
3. **No Third Party Beneficiary:** This Agreement is for the benefit of the Parties and is not for the benefit of any third party.
4. **Counterparts:** This Agreement may be simultaneously executed in several counterparts and via facsimile or similar electronic transmittal, each of which shall be deemed to be an original and taken together shall constitute one and the same instrument.

[Signature Page Follows]

MST

IN WITNESS WHEREOF, Mountaineer Keystone, PDC, and PDC Holdings have caused their duly authorized representatives to execute this Agreement as of the Effective Date.


MOUNTAINEER KEYSTONE LLC

By: 
Name: Robert Kozel
Title: CEO

PDC MOUNTAINEER, LLC

By: 
Name: Robert Kozel
Title: CEO

PDC MOUNTAINEER HOLDINGS, LLC

By: 
Name: Robert Kozel
Title: CEO

NOT

**MOUNTAINEER KEYSTONE, LLC
WELL NO. 212 - TONY'S BRIDGE**

LATITUDE: 39°15'00"

BOTTOM HOLE
WELL NO. 212

NOTES ON SURVEY

- NO OCCUPIED DWELLINGS OR BUILDINGS 2500 SQUARE FEET OR LARGER USED TO HOUSE OR SHELTER DAIRY CATTLE OR POULTRY HUSBANDRY WITHIN 625 FEET OF THE CENTER OF THE WELL PAD WERE OBSERVED.
- NO WATER WELLS OR DEVELOPED SPRINGS USED FOR HUMAN OR DOMESTIC ANIMAL CONSUMPTION WERE FOUND WITHIN 250 FEET OF THE WELL PAD.
- NO RAILROADS ARE CROSSED BY THE PROPOSED TONY'S BRIDGE 212 LATERAL. SURFACE OWNERSHIP TAKEN FROM THE HARRISON COUNTY TAX ASSESSOR AND COUNTY CLERK OFFICES IN FEBRUARY, 2015.
- WELL LATITUDE AND LONGITUDE FROM SURVEY GRADE OPUS SOLUTION DERIVED ON FEBRUARY 20, 2015.
- TIES TO CORNERS AND REFERENCES BASED ON WV STATE PLANE COORDINATE SYSTEM, NAD '83 NORTH ZONE UNLESS OTHERWISE NOTED.
- LEASE INFORMATION PROVIDED BY MOUNTAINEER KEYSTONE, LLC.

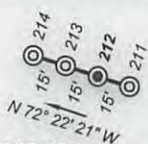
MOUNTAINEER KEYSTONE, LLC WELL NO. 212		
LEASE NO.	LESSOR	LEASE AC.
WV03130.001-002	ALMETA L. DAWSON, ET AL	100
WV03128.000	FRANK J. MAXWELL	748
WV03140.001-004	MONTANI, INC. ET AL	132

SYMBOL	DESCRIPTION
—	LEASE BOUNDARY
—	OUTER LEASE BOUNDARY
—	SURFACE BOUNDARY
—	CREEK/STREAM
—	ROADS
—	PROPOSED LATERAL
—	500' LATERAL OFFSET
⊙	EXISTING GAS WELL (active)
⊙	EXISTING GAS WELL (plugged)
⊙	EXISTING GAS WELL (never permitted)
⊙	FOUND MONUMENT (as noted)
⊙	TAX MAP AND PARCEL NO.
⊙	WHITE OAK FOUND

ID	BEARING	DISTANCE
L1	N 34°23' W	1511.16'
L2	N 67°44' W	1702.03'
L3	S 08°12' W	1938.48'
L4	N 19°04' W	8432.62'
L5	S 74°31' E	581.08'
L6	S 46°35' E	803.05'

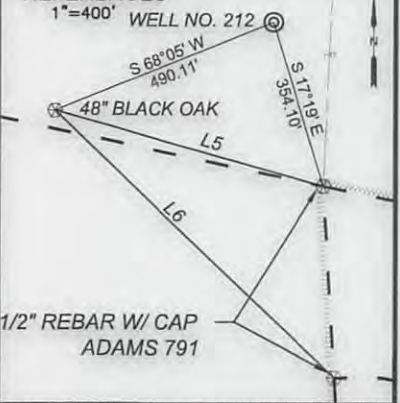
(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

**TONY'S BRIDGE
PAD LAYOUT**



NOT TO SCALE

REFERENCES

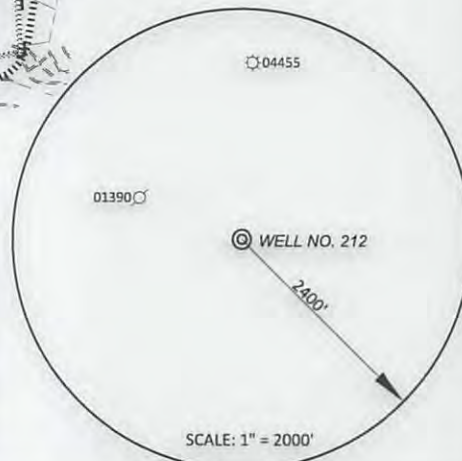


1/2" REBAR W/ CAP
ADAMS 791



**MOUNTAINEER KEYSTONE, LLC
WELL NO. 212**

TOP HOLE (T.H.)	LANDING POINT (L.P.)	BOTTOM HOLE (B.H.)
LAT. / LON. (WGS 84): LAT. 39°13'45.25" LON. -80°21'24.33"	LAT. / LON. (WGS 84): LAT. 39°13'33.17" LON. -80°21'30.16"	LAT. / LON. (WGS 84): LAT. 39°14'51.68" LON. -80°22'06.13"
UTM ZONE 17 (NAD 83 METERS): N. 4342412.86 E. 555519.44	UTM ZONE 17 (NAD 83 METERS): N. 4342039.41 E. 555382.38	UTM ZONE 17 (NAD 83 METERS): N. 4344453.66 E. 554502.97



SCALE: 1" = 2000'

600 Marketplace Ave. Suite 200
Bridgeport, WV 26330
Toll Free 855-488-9539
Fax 304-933-3327



Civil & Environmental Consultants, Inc.

DATE NOVEMBER 29, 2016

SCALE 1" = 2,000' ACCURACY 1:200

OPERATORS
WELL No. 212

47 - 033 - 5870 46A
API No.

TYPE OF WELL:

GAS:
Production Storage *Deep *Shallow

PROPOSED WORK ON LOCATION:

Drill Drill Deeper Redrill Convert
Fracture/ Stimulate *Plug off to Formation
Perforate New Formation Plug and Abandon
Clean/ Replug Other Than Above
If "Other" Please see Details below—
DETAILS OF PROPOSED WORK _____

*TARGET FORMATION MARCELLUS
ESTIMATED DEPTH TVD: ~7,197', TMD: ~16,360'

WELL OPERATOR MOUNTAINEER KEYSTONE, LLC
ADDRESS 6031 WALLACE RD. EXT. SUITE 300
WEXFORD, PA 15090



I, the undersigned, hereby certify that this plat is correct to the best of my knowledge and belief and shows all the information required by law and the rules issued and prescribed by the Division of Environmental Protection.

Dennis E. Miller

**STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS**



WELL AREA & LOCATION INFORMATION:

ELEVATION SOURCE DGPS (OPUS)
ELEVATION 1139.7' (GROUND), 1140.5' (PROPOSED)
WATERSHED BROWN'S CREEK OF WEST FORK RIVER DISTRICT GRANT
COUNTY HARRISON TOPO QUAD MOUNT CLARE
SURFACE OWNER LYNCH FARM, LLC
ACREAGE P/O 662.80 AC±
ROYALTY OWNER ALMETA L. DAWSON & PATRICIA ANN VORE KOHLER
LEASE ACREAGE 748, 132, 100 ±

DESIGNATED AGENT NATHAN SKEEN
ADDRESS 45 PROFESSIONAL PLACE
BRIDGEPORT, WV 26330

LONGITUDE: 80°20'00" 7,563' 842'
BOTTOM HOLE SURVEYED LONGITUDE 80°21'24.33" SURFACE HOLE SURVEYED LONGITUDE 80°21'24.33" SURFACE HOLE SURVEYED LATITUDE 39°13'45.25" SURFACE HOLE SURVEYED LATITUDE 39°14'51.68"

12/09/2016