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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

Jim Justice , Governor  
Austin Caperton , Cabinet Secretary  
www.dep.wv.gov

Tuesday, October 17, 2017  
WELL WORK PERMIT  
Coal Bed Methane Well / Plugging

CONSOLIDATION COAL COMPANY  
1 BRIDGE STREET

MONONGAH, WV 265540000

Re: Permit approval for MC 57  
47-051-01100-00-00

This well work permit is evidence of permission granted to perform the specified well work at the location described on the attached pages and located on the attached plat, subject to the provisions of Chapter 22 of the West Virginia Code of 1931, as amended, and all rules and regulations promulgated thereunder, and to any additional specific conditions and provisions outlined in the pages attached hereto. Notification shall be given by the operator to the Oil and Gas Inspector at least 24 hours prior to the construction of roads, locations, and/or pits for any permitted work. In addition, the well operator shall notify the same inspector 24 hours before any actual well work is commenced and prior to running and cementing casing. Spills or emergency discharges must be promptly reported by the operator to 1-800-642-3074 and to the Oil and Gas Inspector.

Please be advised that form WR-35, Well Operators Report of Well Work is to be submitted to this office within 90 days of completion of permitted well work, as should form WR-34 Discharge Monitoring Report within 30 days of discharge of pits, if applicable. Failure to abide by all statutory and regulatory provisions governing all duties and operations hereunder may result in suspension or revocation of this permit and, in addition, may result in civil and/or criminal penalties being imposed upon the operators.

Per 35 CSR 4-5.2.g this permit will expire in two (2) years from the issue date unless 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:  
Farm Name: MUELLER, JOHN  
U.S. WELL NUMBER: 47-051-01100-00-00  
Coal Bed Methane Well / Plugging  
Date Issued: 10/17/2017

Promoting a healthy environment.

10/20/2017

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4705101100CP

# PERMIT CONDITIONS

West Virginia Code §22-6-11 allows the Office of Oil and Gas to place specific conditions upon this permit. Permit conditions have the same effect as law. Failure to adhere to the specified permit conditions may result in enforcement action.

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## CONDITIONS

1. All pits must be lined with a minimum of 20 mil thickness synthetic liner.
2. In the event of an accident or explosion causing loss of life or serious personal injury in or about the well or while working on the well, the well operator or its contractor shall give notice, stating the particulars of the accident or explosion, to the oil and gas inspector and the Chief within twenty-four (24) hours.
3. Well work activities shall not constitute a hazard to the safety of persons.

4705101100CP

FORM WW-4(B)  
Rev. 2/01

1.) Date: July 23, 20 17  
2.) Operator's Well No. MC-57  
3.) API Well No. 47 - 51 - 01100  
State County Permit

STATE OF WEST VIRGINIA  
DIVISION OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL & GAS  
APPLICATION FOR A PERMIT TO PLUG & ABANDON

4.) WELL TYPE: Oil \_\_\_\_\_ / Gas X / Liquid injection \_\_\_\_\_ / Waste disposal \_\_\_\_\_ /  
(IF "Gas", Production \_\_\_\_\_ / Underground storage \_\_\_\_\_ / Deep \_\_\_\_\_ / Shallow X

5.) LOCATION: Elevation: 1313.72' Watershed: North Fork of Grave Creek

District: Cameron County: Marshall Quadrangle: Cameron, WV-PA 7.5'

6.) WELL OPERATOR Consolidation Coal Co.

7.) DESIGNATED AGENT Ronnie Harsh

Address 1 Bridge St.

Address 1 Bridge St.

Monongah, WV 26554

Monongah, WV 26554

8.) OIL & GAS INSPECTOR TO BE NOTIFIED

9.) PLUGGING CONTRACTOR

Name James Nicholson

Name \_\_\_\_\_

Address PO BOX 44

Address \_\_\_\_\_

Moundsville, WV 26041

10.) WORK ORDER: The work order for the manner of plugging this well is as follows:

SEE EXHIBIT NO. 1

MSHA 101C  
EXEMPTION

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OK

Notification must be given to the district oil and gas inspector 24 hours before permitted work can commence.

Work order approved by inspector Jim Nicholson by phone Date 10/16/17

JNM

10/20/2017

90001101207A

EXEMPTION  
MHA 101C

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Dr. Peterson  
10/11/17

## EXHIBIT NO. 1

The work order for the manner of plugging this well is as follows:

The wellbore will be cleaned out to the total depth of 1090'. An attempt to remove all casing shall be made by pulling a minimum of 150% of the casing string weight. From the total depth or attainable bottom to the surface, casing will be removed so that only a single string will be left in the wellbore, if it can be removed. Intact and uncemented casing as determined by electronic logging shall be perforated, ripped, or milled at no greater than 100 ft. intervals from total depth or attainable bottom, to the top of the casing. A borehole survey will be conducted to determine the top and bottom of any mineable coal seam. In addition, starting at a point 5 ft. below through 5 ft. above any mineable coal seam, any casing shall be ripped, cut, or perforated on no greater than 5 ft. intervals. Circulation will have been established using gelled water to the clean out depth. Expanding cement will be placed from the total depth or attainable bottom to 100 ft. above any mineable coal seam. From that point to the surface, expandable cement, or class A cement, shall be used to fill the wellbore. A monument with the API No. will be set on the wellbore at the surface. All plugging work shall comply with WV Code Chapter 22 Article 6.

THIS WELL HAS : 7" CEMENTED TO SURFACE FROM 1070.2'  
 9 5/8" CEMENTED TO SURFACE FROM 350.6'  
 13 3/8" SANDER IN FROM 42'

- o IF MSHA REQUIRES IT, PUMP CEMENT OR POLYMER GEL TO FILL 4 LATERAL LEGS OF WELLBORE. SEE ATTACHED SURVEY REPORT TO CALCULATE NECESSARY VOLUME.
- o IF 4 LATERAL LEGS OF WELLBORE ARE NOT FILLED WITH CEMENT OR POLYMER GEL, THEN OFFICE OF OIL & GAS REQUIRES THE 4 LEGS TO BE FILLED WITH A FRESH WATER BENTONITE GEL, MINIMUM OF 6% BENTONITE BY WEIGHT.
- o AN EXPANDING CEMENT PLUG MUST BE SET FROM 1090' TO 305'.
- o FROM 305' TO SURFACE SET A PLUG OF CLASS A CEMENT
- o SET A MONUMENT PER WV STATE CODE,

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## U.S. Department of Labor

Mine Safety and Health Administration  
1100 Wilson Boulevard  
Arlington, Virginia 22209-3939



MAY 12 2015  
In the matter of:  
McElroy Coal Company  
McElroy Mine  
I.D. No. 46-01437

MSHA IOIC  
EXEMPTION

Petition for Modification

Docket No. M-2014-020-C

U-113383

Proposed Decision and Order

On May 28, 2014, a petition was filed seeking a modification of the application of 30 C.F.R. § 75.1700 to Petitioner's McElroy Mine located in Marshall County, West Virginia. The Petitioner alleges that the proposed alternative method of compliance with the standard with respect to vertical coalbed methane degasification wells with horizontal laterals in the coal seam will at all times guarantee no less than the same measure of protection afforded by the standard. The petitioned standard, 30 C.F.R. § 75.1700, states:

*Each operator of a coal mine shall take reasonable measures to locate oil and gas wells penetrating coalbeds or any underground area of a coal mine. When located, such operator shall establish and maintain barriers around such oil and gas wells in accordance with State laws and regulations, except that such barriers shall not be less than 300 feet in diameter, unless the Secretary or his authorized representative permits a lesser barrier consistent with the applicable State laws and regulations where such lesser barrier will be adequate to protect against hazards from such wells to the miners in such mine, or unless the Secretary or his authorized representative requires a greater barrier where the depth of the mine, other geologic conditions, or other factors warrant such a greater barrier.*

The extraction of methane from coal seams and surrounding strata is a rapidly growing component of the domestic natural gas supply. Recent innovations in drilling techniques have resulted in development of several types of wells and production methods to extract coalbed methane (CBM) resources. Drill holes are deviated in both the horizontal and vertical planes using these techniques. These techniques differ from vertical gas wells and require different techniques in order to plug the wells. Procedures to address the potential hazards presented by CBM wells must be implemented to protect the coal miners who will be exposed to these wells. When coal mines intersect inadequately plugged CBM wells, methane inundations, ignitions and explosions are possible.

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The alternative method proposed by the Petitioner includes well plugging procedures, water infusion and ventilation methods, and procedures for mining through a CBM well with horizontal laterals.

MSHA personnel conducted an investigation of the petition and filed a report of their findings with the Administrator for Coal Mine Safety and Health. After a careful review of the entire record, including the petition and MSHA's investigative report and recommendation, this Proposed Decision and Order is issued.

### **Findings of Fact and Conclusions of Law**

The McElroy Mine opens into the Pittsburgh #8 coal seam by means of 12 shafts and two slope openings. The mine employs approximately 970 persons working three shifts per day, seven days per week. The mine has six advancing continuous mining working sections and two retreating longwall working sections. Average production is 58,000 raw tons of material per day. The Pittsburgh #8 coal seam ranges from 60 inches to 72 inches in height. The mine is ventilated by ten exhausting fans and liberates approximately 12 million cubic feet of methane per 24 hours.

The McElroy Mine plans to mine through coalbed methane wells. The wells are drilled from the surface using directional drilling technology to develop horizontal branches within the coal seam being mined. Drill holes may be deviated in both the horizontal and vertical planes using these techniques. Multiple horizontal branches may be developed from a single well and multiple seams may be developed from a single well. The drilling industry has trademarked several different proprietary names for these drilling processes. For purposes of this Order, these proprietary drilling processes will be referred to as generic "surface directional drilled" (SDD) wells.

Based on information gathered during the investigation, MSHA evaluated Petitioner's proposed alternative method and, as amended by the terms and conditions of MSHA, concluded that it would provide the same measure of protection afforded by 30 C.F.R. § 75.1700. This alternative method has been successfully used to prepare CBM wells for safe intersection by using one or more of the following methods: (1) Cement Plug, (2) Polymer Gel, (3) Bentonite Gel, (4) Active Pressure Management and Water Infusion, and (5) Remedial Work. The alternative method will prevent the CBM well methane from entering the underground mine.

Accordingly, after a review of the entire record, including the petition and MSHA's investigative report, McElroy Coal Company is granted a modification of the application of 30 C.F.R. § 75.1700 to its McElroy Mine, and this Proposed Decision and Order (PDO) is issued.

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**ORDER**

Wherefore, pursuant to the authority delegated by the Secretary of Labor to the Administrator for Coal Mine Safety and Health, and pursuant to Section 101(c) of the Federal Mine Safety and Health Act of 1977, 30 U.S.C. § 811(c), and 30 C.F.R. Part 44, a modification of the application of 30 C.F.R. § 75.1700 at the McElroy Mine is hereby:

**GRANTED**, to allow mining within or through the 300 foot barrier around SDD oil and gas wells, conditioned upon compliance with the following terms and conditions:

1. **DISTRICT MANAGER APPROVAL REQUIRED**

A minimum working barrier of 300 feet in diameter shall be maintained around all SDD wells until approval to proceed with mining has been obtained from the District Manager. This barrier extends around all vertical and horizontal branches drilled in the coal seam. This barrier also extends around all vertical and horizontal branches within overlying coal seams subject to caving or subsidence from the coal seam being mined when methane leakage through the subsidence zone is possible. The District Manager may choose to approve each branch intersection, each well, or a group of wells as applicable to the conditions. The District Manager may require a certified review of the proposed methods to prepare the SDD wells for intersection by a professional engineer in order to assess the applicability of the proposed system(s) to the mine-specific conditions.

2. **MANDATORY PROCEDURES FOR PREPARING, PLUGGING, AND REPLUGGING SDD WELLS**

a. **MANDATORY COMPUTATIONS AND ADMINISTRATIVE PROCEDURES PRIOR TO PLUGGING OR REPLUGGING**

1. **Probable Error of Location** - Directional drilling systems rely on sophisticated angular measurement systems and computer models to calculate the estimated location of the well bore. This estimated hole location is subject to cumulative measurement errors so that the distance between actual and estimated location of the well bore increases with the depth of the hole. Modern directional drilling systems are typically accurate within one or two degrees depending on the specific equipment and techniques. The probable error of location is defined by a cone described by the average accuracy of angular measurement around the length of the hole. For example: a hole that is drilled 500 vertical feet and deviated into a coal seam at a depth of 700 feet would have a probable error of location at a point that is 4,000 feet from the hole collar

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(about 2,986 ft. horizontally from the well collar) of 69.8 ft. (4,000 ft. x sine (1.0 degree)) if the average accuracy of angular measurement was one degree and 139.6 ft if the average accuracy of angular measurement was two degrees. In addition to the probable error of location, the true hole location is also affected by underground survey errors, surface survey errors, and random survey errors.

2. **Minimum Working Barrier Around Well** - For purposes of this Order, the minimum working barrier around any coalbed methane well or branches of a coalbed methane well in the coal seam is 50 feet plus the probable error of location. For example: for a hole that is drilled 500 vertical feet and deviated into a coal seam at a depth of 700 feet using drilling equipment that has an average accuracy of angular measurement of one degree, the probable error of location at a point that is 4,000 feet from the hole collar is 69.8 ft. Therefore, the minimum working barrier around this point of the well bore is 120 ft. (69.8 ft. plus 50 ft., rounded up to the nearest foot). The 50 additional feet is a reasonable separation between the probable location of the well and mining operations. When mining is within the minimum working barrier distance from a coalbed methane well or branch, the mine operator must comply with the provisions of this Order. Coalbed methane wells must be prepared in advance for safe intersection and specific procedures must be followed on the mining section in order to protect the miners when mining within this minimum working barrier around the well. The District Manager may require a greater minimum working barrier around coalbed methane wells where geologic conditions, historical location errors, or other factors warrant a greater barrier.
3. **Ventilation Plan Requirements** - The ventilation plan shall contain a description of all SDD coalbed methane wells drilled in the area to be mined. This description should include the well numbers, the date drilled, the diameter, the casing information, the coal seams developed, maximum depth of the wells, abandonment pressures, and any other information required by the District Manager. All or part of this information may be listed on the 30 C.F.R. § 75.372 map. The ventilation plan shall include the techniques that the mine operator plans to use to prepare the SDD wells for safe intersection, the specifications and steps necessary to implement these techniques, and the operational precautions that are required when mining within the minimum working barrier. In addition, the ventilation plan will contain any additional information or provisions related to the SDD wells required by the District Manager.

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4. Ventilation Map - The ventilation map specified in 30 C.F.R. § 75.372 shall contain the following information:

- i. The surface location of all coalbed methane wells in the active mining area and any projected mining area as specified in 30 C.F.R. § 75.372(b)(14);
- ii. Identifying information of coalbed methane wells (i.e. API hole number or equivalent);
- iii. The date that gas production began from the well;
- iv. The coal seam intersection of all coalbed methane wells;
- v. The horizontal extents in the coal seam of all coalbed methane wells and branches;
- vi. The outline of the probable error of location of all coalbed methane wells; and
- vii. The date of mine intersection and the distance between estimated and actual locations for all intersections of the coalbed methane well and branches.

b. MANDATORY PROCEDURES FOR PLUGGING OR REPLUGGING SDD WELLS

The mine operator shall include in the mine ventilation plan one or more of the following methods to prepare SDD wells for safe intersection. The methods approved in the ventilation plan must be completed on each SDD well before mining encroaches on the minimum working barrier around the well or branch of the well in the coal seam being mined. If methane leakage through subsidence cracks is a problem when retreat mining, the minimum working barrier must be maintained around wells and branches in overlying coal seams or the wells and branches must be prepared for safe intersection as specified in the mine ventilation plan.

1. Cement Plug - Cement may be used to fill the entire SDD hole system. Squeeze cementing techniques are necessary for SDD plugging due to the lack of tubing in the hole. Cement should fill void spaces and eliminate methane leakage along the hole. Once the cement has cured, the SDD system may be intersected multiple times without further hole preparation. Gas cutting occurs if the placement pressure of the cement is less than the methane pressure in the coal seam. Under these conditions, gas will bubble out of the coal seam and into the unset cement creating a pressurized void or series of interconnected

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pressurized voids. Water cutting occurs when formation water and standing water in the hole invades or displaces the unset cement. Standing water has to be bailed out of the hole or driven into the formation with compressed gas to minimize water cutting. The cement pressure must be maintained higher than the formation pressure until the cement sets to minimize both gas and water cutting. The cementing program in the ventilation plan must address both gas and water cutting.

Due to the large volume to be cemented and potential problems with cement setting prior to filling the entire SDD system, adequately sized pumping units with back-up capacity must be used. Various additives such as retarders, lightweight extenders, viscosity modifiers, thixotropic modifiers, and fly ash may be used in the cement mix. The volume of cement pumped should exceed the estimated hole volume to ensure the complete filling of all voids. The complete cementing program, including hole dewatering, cement, additives, pressures, pumping times and equipment must be specified in the ventilation plan. The material safety data sheets (MSDS) for all cements, additives and components and any personal protective equipment and techniques to protect workers from the potentially harmful effects of the cement and cement components should be included in the ventilation plan. Records of cement mixes, cement quantities, pump pressures, and flow rates and times should be retained for each hole plugged.

SDD holes may be plugged with cement years in advance of mining. However, the District Manager shall require suitable documentation of the cement plugging in order to approve mining within the minimum working barrier around coalbed methane wells.

2. Polymer Gel - Polymer gels start out as low viscosity, water-based mixtures of organic polymers that are crosslinked using time-delayed activators to form a water-insoluble, high-viscosity gel after being pumped into the SDD system. Although polymer gel systems never solidify, the activated gel should develop sufficient strength to resist gas flow. A gel that is suitable for treating SDD wells for mine intersection will reliably fill the SDD system and prevent gas-filled voids. Any gel chemistry used for plugging SDD wells should be resistant to bacterial and chemical degradation and remain stable for the duration of mining through a SDD system.

Water may dilute the gel mixture to the point where it will not set to the required strength. Water in the holes should be removed before

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injecting the gel mixture. Water removal can be accomplished by conventional bailing and then injecting compressed gas to squeeze the water that accumulates in low spots back into the formation. Gas pressurization should be continued until the hole is dry. Another potential problem with gels is that dissolved salts in the formation waters may interfere with the cross-linking reactions. Any proposed gel mixtures must be tested with actual formation waters.

Equipment to mix and pump gels should have adequate capacity to fill the hole before the gel sets. Back-up units should be available in case something breaks while pumping. The volume of gel pumped should exceed the estimated hole volume to ensure the complete filling of all voids and allow for gel to infiltrate the joints in the coal seam surrounding the hole. Gel injection and setting pressures should be specified in the ventilation plan. To reduce the potential for an inundation of gel, the final level of gel should be close to the level of the coal seam and the remainder of the hole should remain open to the atmosphere until mining in the vicinity of the SDD system is completed. Packers may be used to isolate portions of the SDD system.

The complete polymer gel program, including advance testing of the gel with formation water, dewatering systems, gel specifications, gel quantities, gel placement, pressures, and pumping equipment must be specified in the ventilation plan. The MSDS for all gel components and any personal protective equipment and techniques to protect workers from the potentially harmful effects of the gel and gel components should be included in the ventilation plan. A record of the calculated hole volume, gel quantities, gel formulation, pump pressures, and flow rates and times should be retained for each hole that is treated with gel. Other gel chemistries other than organic polymers may be included in the ventilation plan with appropriate methods, parameters, and safety precautions.

3. Bentonite Gel - High-pressure injection of bentonite gel into the SDD system will infiltrate the cleat and butt joints of the coal seam near the well bore and effectively seal these conduits against the flow of methane. Bentonite gel is a thixotropic fluid that sets when it stops moving. Bentonite gel has a significantly lower setting viscosity than polymer gel. While the polymer gel fills and seals the borehole, the lower strength bentonite gel must penetrate the fractures and jointing in the coal seam in order to be effective in reducing formation permeability around the hole. The use of bentonite gel is restricted to depleted CBM applications that have low abandonment pressures and limited recharge potential. In

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general, these applications will be mature CBM fields with long production histories.

A slug of water should be injected prior to the bentonite gel in order to minimize moisture-loss bridging near the well bore. The volume of gel pumped should exceed the estimated hole volume to ensure that the gel infiltrates the joints in the coal seam for several feet surrounding the hole. Due to the large gel volume and potential problems with premature thixotropic setting, adequately sized pumping units with back-up capacity are required. Additives to the gel may be required to modify viscosity, reduce filtrates, reduce surface tension, and promote sealing of the cracks and joints around the hole. To reduce the potential for an inundation of bentonite gel, the final level of gel should be approximately the elevation of the coal seam and the remainder of the hole should remain open to the atmosphere until mining in the vicinity of the SDD system is completed. If a water column is used to pressurize the gel, it must be bailed down to the coal seam elevation prior to intersection.

The complete bentonite gel program, including formation infiltration and permeability reduction data, hole pretreatment, gel specifications, additives, gel quantities flow rates, injection pressures and infiltration times, must be specified in the ventilation plan. The ventilation plan should list the equipment used to prepare and pump the gel. The MSDS for all gel components and any personal protective equipment and techniques to protect workers from the potentially harmful effects of the gel and additives should be included in the ventilation plan. A record of hole preparation, gel quantities, gel formulation, pump pressures, and flow rates and times should be retained for each hole that is treated with bentonite gel.

4. Active Pressure Management and Water Infusion - Reducing the pressure in the hole to less than atmospheric pressure by operating a vacuum blower connected to the wellhead may facilitate safe intersection of the hole by a coal mine. The negative pressure in the hole will limit the quantity of methane released into the higher pressure mine atmosphere. If the mine intersection is near the end of a horizontal branch of the SDD system, air will flow from the mine into the upstream side of the hole and be exhausted through the blower on the surface. On the downstream side of the intersection, if the open hole length is short, the methane emitted from this side of the hole may be diluted to safe levels with ventilation air. Conversely, safely intersecting this system near the bottom of the vertical hole may not be possible because the

methane emissions from the multiple downstream branches may be too great to dilute with ventilation air. The methane emission rate is directly proportional to the length of the open hole. Successful application of vacuum systems may be limited by caving of the hole or water collected in dips in the SDD system. Another important factor in the success of vacuum systems is the methane liberation rate of the coal formation around the well – older, more depleted wells that have lower methane emission rates are more amenable to this technique. The remaining methane content and the formation permeability should be addressed in the ventilation plan.

Packers may be used to reduce methane inflow into the coal mine after intersection. All packers on the downstream side of the hole must be equipped with a center pipe so that the inby methane pressure may be measured or so that water may be injected. Subsequent intersections should not take place if pressure in a packer-sealed hole is excessive. Alternatively, methane produced by the downstream hole may be piped to an in-mine degas system to safely transport the methane out of the mine or may be piped to the return air course for dilution. In-mine methane piping should be protected as stipulated in "Piping Methane in Underground Coal Mines," MSHA IR 1094, (1978). Protected methane diffusion zones may be established in return air courses if needed. Detailed sketches and safety precautions for methane collection, piping and diffusion systems must be included in the ventilation plan (30 C.F.R. § 75.371(ee)).

Water infusion prior to intersecting the well will temporarily limit methane flow. Water infusion may also help control coal dust levels during mining. High water infusion pressures may be obtained prior to the initial intersection by the hydraulic head resulting from the hole depth or by pumping. Water infusion pressures for subsequent intersections are limited by leakage around in-mine packers and limitations of the mine water distribution system. If water infused prior to the initial intersection, the water level in the hole must be lowered to the coal seam elevation before the intersection.

The complete pressure management strategy including negative pressure application, wellhead equipment, and use of packers, in-mine piping, methane dilution, and water infusion must be specified in the ventilation plan. Procedures for controlling methane in the downstream hole must be specified in the ventilation plan. The remaining methane content and formation permeability should be addressed in the ventilation plan. The potential for the coal seam to cave into the well

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should be addressed in the ventilation plan. Dewatering methods should be included in the ventilation plan. A record of the negative pressures applied to the system, methane liberation, use of packers and any water infusion pressures and application time should be retained for each intersection.

5. Remedial work – If problems are encountered in preparing the holes for safe intersection, then remedial measures must be taken to protect the miners. For example: if only one-half of the calculated hole volume of cement could be placed into a SDD well due to hole blockage, holes should be drilled near each branch that will be intersected and squeeze cemented using pressures sufficient to fracture into the potentially empty SDD holes. The District Manager will approve remedial work in the ventilation plan on a case-by-case basis.

3. **MANDATORY PROCEDURES AFTER APPROVAL HAS BEEN GRANTED BY THE DISTRICT MANAGER TO MINE WITHIN THE MINIMUM WORKING BARRIER AROUND THE WELL OR BRANCH OF THE WELL**

- a. The mine operator, the District Manager, the miners' representative, or the State may request a conference prior to any intersection or after any intersection to discuss issues or concerns. Upon receipt of any such request, the District Manager shall schedule a conference. The party requesting the conference shall notify all other parties listed above within a reasonable time prior to the conference to provide opportunity for participation.
- b. The mine operator must notify the District Manager, the State and the miners' representative at least 48 hours prior to the intended intersection of any coalbed methane well.
- c. The initial intersection of a well or branch of a well typically has a higher risk than subsequent intersections. The initial intersection typically indicates if the well preparation is sufficient to prevent the inundation of methane. For the initial intersection of a well or branch, the following procedures are mandatory:
  1. When mining advances within the minimum barrier distance of the well or branches of the well, the entries that will intersect the well or branches must be posted with a readily visible marking. For longwalls, both the head and tailgate entries must be so marked. Marks must be advanced to within 100 feet of the working face as mining progresses. Marks will be removed after well or branches are intersected in each

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entry or after mining has exited the minimum barrier distance of the well.

2. Entries that will intersect vertical segments of a well shall be marked with drivage sights in the last open crosscut when mining is within 100 feet of the well. When a vertical segment of a well will be intersected by a longwall, drivage sights shall be installed on 10-foot centers starting 50 feet in advance of the anticipated intersection. Drivage sights shall be installed in both the headgate and tailgate entries of the longwall.
3. The operator shall ensure that fire-fighting equipment, including fire extinguishers, rock dust, and sufficient fire hose to reach the working face area of the mine-through (when either the conventional or the continuous mining method is used) is available and operable during all well mine-throughs. The fire hose shall be located in the last open crosscut of the entry or room. The operator shall maintain the water line to the belt conveyor tailpiece along with a sufficient amount of fire hose to reach the farthest point of penetration on the section. When the longwall mining method is used, a hose to the longwall water supply is sufficient. All fire hoses shall be connected and ready for use, but do not have to be charged with water, during the cut-through.
4. The operator shall ensure that sufficient supplies of roof support and ventilation materials are available at the working section. In addition, emergency plugs, packers, and setting tools to seal both sides of the well or branch shall be available in the immediate area of the cut-through.
5. When mining advances within the minimum working barrier distance from the well or branch of the well, the operator shall service all equipment and check for permissibility at least once daily. Daily permissibility examinations must continue until the well or branch is intersected or until mining exits the minimum working barrier around the well or branch.
6. When mining advances within the minimum working barrier distance from the well or branch of the well, the operator shall calibrate the methane monitor(s) on the longwall, continuous mining machine, or cutting machine and loading machine at least once daily. Daily methane monitor calibration must continue until the well or branch is intersected or until mining exits the minimum working barrier around the well or branch.

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7. When mining is in progress, the operator shall perform tests for methane with a handheld methane detector at least every 10 minutes from the time that mining with the continuous mining machine or longwall face is within the minimum working barrier around the well or branch. During the cutting process, no individual shall be allowed on the return side until the mine-through has been completed and the area has been examined and declared safe. The shearer must be idle when any miners are inby the tail drum.
8. When using continuous or conventional mining methods, the working place shall be free from accumulations of coal dust and coal spillages, and rock dust shall be placed on the roof, rib, and floor within 20 feet of the face when mining through the well or branch. On longwall sections, rock dust shall be applied on the roof, rib, and floor up to both the headgate and tailgate pillared area.
9. Immediately after the well or branch is intersected, the operator shall de-energize all equipment, and the certified person shall thoroughly examine and determine the working place safe before mining is resumed.
10. After a well or branch has been intersected and the working place determined safe, mining shall continue inby the well a sufficient distance to permit adequate ventilation around the area of the well or branch.
11. No open flame shall be permitted in the area until adequate ventilation has been established around the well bore or branch. Any casing, tubing or stuck tools will be removed using the methods approved in the ventilation plan.
12. No person shall be permitted in the area of the mine-through operation inby the last open crosscut during active mining except those actually engaged in the operation, including company personnel, representatives of the miners, personnel from MSHA, and personnel from the appropriate State agency.
13. The operator shall warn all personnel in the mine of the planned intersection of the well or branch prior to their going underground if the planned intersection is to occur during their shift. This warning shall be repeated for all shifts until the well or branch has been intersected.

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14. The mine-through operation shall be under the direct supervision of a certified person. Instructions concerning the mine-through operation shall be issued only by the certified person in charge.
  15. All miners shall be in known locations and in constant two-way communications with the responsible person under 30 C.F.R. § 75.1501 when active mining occurs within the minimum working barrier of the well or branch.
  16. The responsible person required under 30 C.F.R. § 75.1501 is responsible for well intersection emergencies. The well intersection procedures must be reviewed by the responsible person prior to any planned intersection.
  17. A copy of this Order shall be maintained at the mine and be available to the miners.
  18. The provisions of this Order do not impair the authority of representatives of MSHA to interrupt or halt the mine-through operation and to issue a withdrawal order when they deem it necessary for the safety of the miners. MSHA may order an interruption or cessation of the mine-through operation and/or a withdrawal of personnel by issuing either a verbal or a written order to that effect to a representative of the operator, which order shall include the basis for the order. Operations in the affected area of the mine may not resume until a representative of MSHA permits resumption of mine-through operations. The mine operator and miners shall comply with verbal or written MSHA orders immediately. All verbal orders shall be committed to writing within a reasonable time as conditions permit.
- d. For subsequent intersections of branches of a well, appropriate procedures to protect the miners shall be specified in the ventilation plan.

### **3. MANDATORY PROCEDURES AFTER SDD INTERSECTIONS**

- a. All intersections with SDD wells and branches that are in intake air courses shall be examined as part of the pre-shift examinations required under 30 C.F.R. § 75.360.
- b. All other intersections with SDD wells and branches shall be examined as part of the weekly examinations required under 30 C.F.R. § 75.364.

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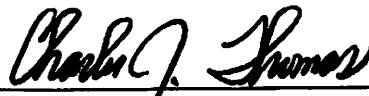
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**4. OTHER REQUIREMENTS**

- a. Within 30 days after this Order becomes final, the operator shall submit proposed revisions for its approved 30 C.F.R. Part 48 training plan to the District Manager. These proposed revisions shall include initial and refresher training regarding compliance with the terms and conditions stated in this Order. The operator shall provide all miners involved in the mine-through of a well or branch with training regarding the requirements of this Order prior to mining within the minimum working barrier of the next well or branch intended to be mined through.
- b. Within 30 days after this Order becomes final, the operator shall submit proposed revisions for its approved mine emergency evacuation and firefighting program of instruction required by 30 C.F.R § 75.1502. The operator shall revise the program to include the hazards and evacuation procedures to be used for well intersections. All underground miners shall be trained in this revised program within 30 days of the approval of the revised mine emergency evacuation and firefighting program of instruction.

Any party to this action desiring a hearing on this matter must file in accordance with 30 C.F.R. § 44.14, within 30 days. The request for hearing must be filed with the Administrator for Coal Mine Safety and Health, 1100 Wilson Boulevard, Arlington, Virginia 22209-3939.

If a hearing is requested, the request shall contain a concise summary of position on the issues of fact or law desired to be raised by the party requesting the hearing, including specific objections to the proposed decision. A party other than Petitioner who has requested a hearing may also comment upon all issues of fact or law presented in the petition, and any party to this action requesting a hearing may indicate a desired hearing site. If no request for a hearing is filed within 30 days after service thereof, the Proposed Decision and Order will become final and must be posted by the operator on the mine bulletin board at the mine.



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Charles J. Thomas  
Deputy Administrator for  
Coal Mine Safety and Health

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Certificate of Service

I hereby certify that a copy of this proposed decision was served personally or mailed, postage prepaid, or provided by other electronic means this 12th day of May, 2015, to:

Eric S. Grimm, General Superintendent  
McElroy Coal Company  
57 Goshorn Woods Road  
Cameron, WV 26033

  
\_\_\_\_\_  
Don Braenovich

cc: Eugene White, Director, West Virginia Office of Miners' Health Safety & Training

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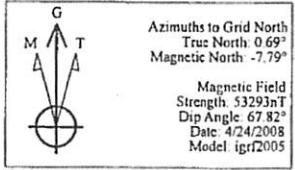
**CNX Gas Company, LLC**

Field: MARSHALL COUNTY, WV  
 Site: MC 57 WELL LOCATION  
 Well: ACCESS MC-57  
 Wellpath: WEST LEG



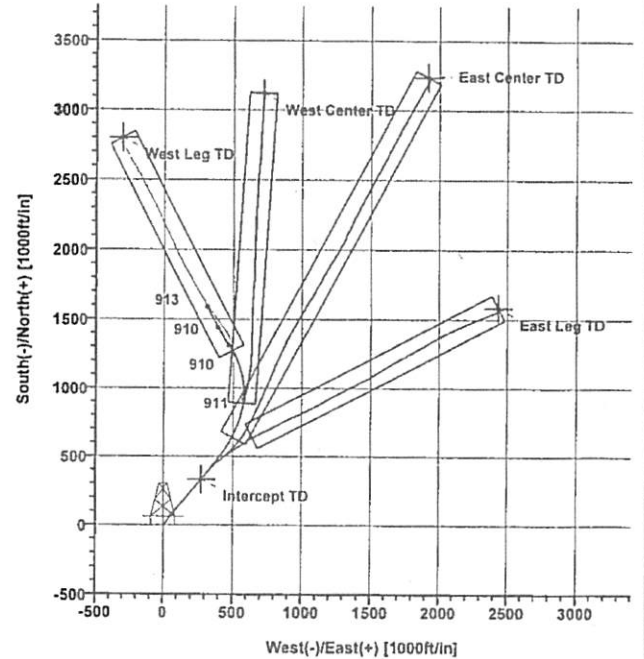
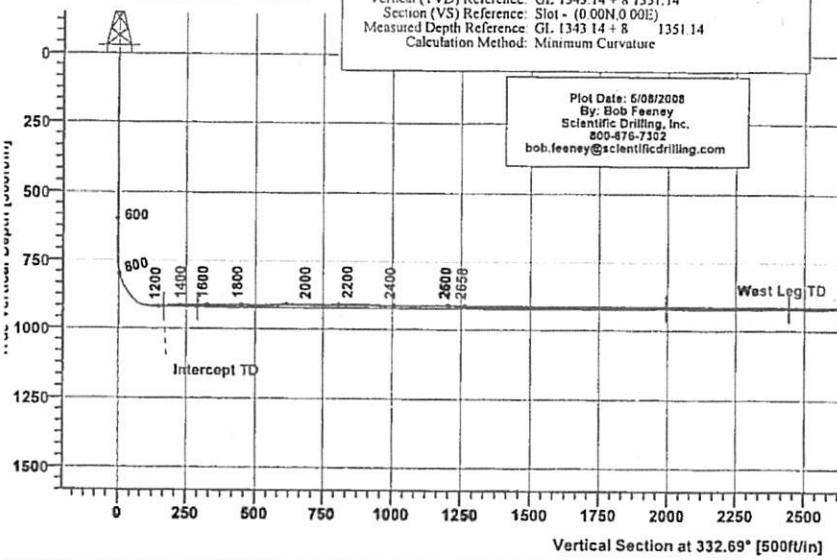
TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
Intercept TD	917.00	330.10	275.62	495151.88	1698149.89	Circle (Radius: 1)
West Leg TD	917.00	2802.34	-306.43	497624.12	1697567.84	Rectangle (1727x200)
East Leg TD	917.00	1595.50	2435.23	496407.28	1700309.50	Rectangle (2029x200)
East Center TD	917.00	3236.97	1919.48	498058.75	1699793.75	Rectangle (2962x200)
West Center TD	917.00	3121.91	718.95	497943.69	1698593.22	Rectangle (2237x200)

**SITE DETAILS**  
**MC 57 WELL LOCATION**  
 Marshall Co., WV  
 Site Centre Northing: 494821.78  
 Easting: 1697874.27  
 Ground Level: 1343.14  
 Positional Uncertainty: 0.00  
 Convergence: -0.69



**REFERENCE INFORMATION**  
 Co-ordinate (N/E) Reference: Well Centre: ACCESS MC-57, Grid North  
 Vertical (TVD) Reference: GL 1343.14 + 8 1351.14  
 Section (VS) Reference: Slot - (0.00N,0.00E)  
 Measured Depth Reference: GL 1343.14 + 8 1351.14  
 Calculation Method: Minimum Curvature

Plot Date: 5/08/2008  
 By: Bob Feeney  
 Scientific Drilling, Inc.  
 800-476-7302  
 bob.feeney@scientificdrilling.com



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# Scientific Drilling Survey Report

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<b>Company:</b> CNX Gas Company, LLC		<b>Date:</b> 5/8/2008	<b>Time:</b> 12:51:59	<b>Page:</b> 1						
<b>Field:</b> MARSHALL COUNTY, WV		<b>Co-ordinate(NE) Reference:</b>	<b>Well:</b> ACCESS MC-57, Grid North							
<b>Site:</b> MC 57 WELL LOCATION		<b>Vertical (TVD) Reference:</b>	GL 1343.14 + 8 1351.1							
<b>Well:</b> ACCESS MC-57		<b>Section (VS) Reference:</b>	Well (0.00N,0.00E,332.69Az)							
<b>Wellpath:</b> WEST LEG		<b>Survey Calculation Method:</b>	Minimum Curvature	<b>Db:</b> Sybase						
<b>Field:</b> MARSHALL COUNTY, WV Northern West Virginia and Pennsylvania Operations U.S.A.										
<b>Map System:</b> US State Plane Coordinate System 1927		<b>Map Zone:</b>	West Virginia, Northern Zone							
<b>Geo Datum:</b> NAD27 (Clarke 1866)		<b>Coordinate System:</b>	Well Centre							
<b>Sys Datum:</b> Mean Sea Level		<b>Geomagnetic Model:</b>	lgrf2005							
<b>Site:</b> MC 57 WELL LOCATION										
Marshall Co., WV										
<b>Site Position:</b>	<b>From:</b> Map	<b>Northing:</b> 494821.78 ft	<b>Latitude:</b> 39 51 12.929 N							
<b>Position Uncertainty:</b> 0.00 ft		<b>Easting:</b> 1697874.27 ft	<b>Longitude:</b> 80 34 34.143 W							
<b>Ground Level:</b> 1343.14 ft			<b>North Reference:</b> Grid							
			<b>Grid Convergence:</b> -0.69 deg							
<b>Well:</b> ACCESS MC-57										
<b>Slot Name:</b>										
<b>Well Position:</b>	<b>+N-S</b> 0.00 ft	<b>Northing:</b> 494821.78 ft	<b>Latitude:</b> 39 51 12.929 N							
	<b>+E-W</b> 0.00 ft	<b>Easting:</b> 1697874.27 ft	<b>Longitude:</b> 80 34 34.143 W							
<b>Position Uncertainty:</b> 0.00 ft										
<b>Wellpath:</b> WEST LEG										
<b>Current Datum:</b> GL 1343.14 + 8	<b>Height</b> 1351.14 ft	<b>Drilled From:</b> Surface								
<b>Magnetic Data:</b> 4/24/2008		<b>Tie-on Depth:</b> 0.00 ft								
<b>Field Strength:</b> 53293 uT		<b>Above System Datum:</b> Mean Sea Level								
<b>Vertical Section:</b> Depth From (TVD)	<b>+N-S</b> ft	<b>Declination:</b> -8.48 deg								
		<b>Mag Dip Angle:</b> 67.82 deg								
		<b>+E-W</b> ft	<b>Direction</b> deg							
1351.14	0.00	0.00	332.69							
<b>Survey Program for Definitive Wellpath</b>										
<b>Date:</b> 5/7/2008	<b>Validated:</b> No	<b>Version:</b> 3								
<b>Actual From</b> ft	<b>To</b> ft	<b>Survey</b>	<b>Toolcode</b>	<b>Tool Name</b>						
50.00	646.00	Survey #1	Drop Gyro-SYS	Drop Gyro Systematic						
646.00	2658.00	Survey #2	MWD-SDI-SYS	Scientific MWD Systematic						
<b>Survey</b>										
MD ft	Incl deg	Azim deg	TVD ft	+N-S ft	+E-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
0.00	0.48	226.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
100.00	0.17	274.10	100.00	-0.22	-0.32	-0.05	0.39	-0.31	47.90	Drop Gyro-SYS
200.00	0.23	200.30	200.00	-0.36	-0.55	-0.06	0.24	0.06	-73.80	Drop Gyro-SYS
300.00	0.42	151.50	300.00	-0.89	-0.43	-0.59	0.32	0.19	-48.80	Drop Gyro-SYS
400.00	0.32	170.30	399.99	-1.56	-0.19	-1.30	0.16	-0.10	18.80	Drop Gyro-SYS
500.00	0.48	126.10	499.99	-2.03	0.15	-1.87	0.34	0.16	-44.20	Drop Gyro-SYS
600.00	0.34	140.00	599.99	-2.48	0.71	-2.53	0.17	-0.14	13.90	Drop Gyro-SYS
700.00	0.64	166.50	699.99	-3.34	0.71	-3.29	0.37	0.30	26.50	MWD-SDI-SYS
800.00	27.74	35.36	797.25	10.16	11.24	3.87	28.17	27.09	-131.14	MWD-SDI-SYS
900.00	59.11	39.60	866.49	65.96	54.04	33.82	31.50	31.38	4.24	MWD-SDI-SYS
1000.00	75.58	38.99	904.82	137.36	112.19	70.58	16.48	16.47	-0.61	MWD-SDI-SYS
1100.00	86.34	39.04	916.13	213.75	175.48	109.42	10.75	10.75	0.05	MWD-SDI-SYS
1200.00	89.19	39.46	918.78	281.42	238.40	149.56	2.88	2.85	0.42	MWD-SDI-SYS
1300.00	90.65	40.17	918.56	367.37	303.44	187.20	1.62	1.46	0.71	MWD-SDI-SYS
1400.00	81.82	36.60	916.16	445.65	365.59	228.24	3.75	1.17	-3.57	MWD-SDI-SYS
1500.00	90.92	34.45	913.23	526.46	424.42	273.05	2.34	-0.90	-2.16	MWD-SDI-SYS
1600.00	89.42	30.27	913.01	611.23	477.41	324.07	4.43	-1.49	-4.18	MWD-SDI-SYS
1700.00	91.61	23.82	913.49	700.58	522.15	382.92	6.81	2.18	-6.45	MWD-SDI-SYS
1800.00	89.71	15.22	911.29	794.63	555.75	451.08	8.80	-1.90	-8.60	MWD-SDI-SYS
1900.00	92.17	7.44	911.62	892.54	575.65	528.95	8.16	2.46	-7.78	MWD-SDI-SYS
2000.00	91.50	357.29	907.56	992.25	579.54	615.76	10.17	-0.67	-10.15	MWD-SDI-SYS
2100.00	87.97	347.96	908.91	1091.18	566.06	709.85	9.97	-3.54	-9.32	MWD-SDI-SYS

## Scientific Drilling Survey Report

<b>Company:</b> CNX Gas Company, LLC	<b>Date:</b> 5/8/2008	<b>Time:</b> 12:51:59	<b>Page:</b> 2
<b>Field:</b> MARSHALL COUNTY, WV	<b>Co-ordinate(NE) Reference:</b>	<b>Well:</b> ACCESS MC-57, Grid North	
<b>Site:</b> MC 57 WELL LOCATION	<b>Vertical (TVD) Reference:</b>	GL 1343.14 + 8 1351.1	
<b>Well:</b> ACCESS MC-57	<b>Section (VS) Reference:</b>	Well (0.00N,0.00E,332.69Azi)	
<b>Wellpath:</b> WEST LEG	<b>Survey Calculation Method:</b>	Minimum Curvature	<b>Db:</b> Sybase

**Survey**

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
2200.00	91.66	338.25	909.41	1186.85	537.42	807.99	10.39	3.70	-9.71	MWD-SDI-SYS
2300.00	88.10	328.36	908.08	1275.33	491.21	907.81	10.51	-3.56	-9.89	MWD-SDI-SYS
2400.00	89.43	327.87	910.76	1359.83	437.83	1007.39	1.41	1.33	-0.49	MWD-SDI-SYS
2500.00	91.88	331.71	910.14	1446.25	387.60	1107.22	4.55	2.44	3.84	MWD-SDI-SYS
2600.00	86.91	333.46	910.20	1534.92	341.50	1207.15	5.26	-4.96	1.75	MWD-SDI-SYS
2658.00	86.91	333.46	913.32	1586.73	315.63	1265.06	0.00	0.00	0.00	MWD-SDI-SYS

**Targets**

Name	Description	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude →		← Longitude →					
							Deg	Min	Sec	Deg	Min	Sec		
Intercept TD		917.00	330.10	275.62	495151.88	1698149.89	39	51	16.224	N	80	34	30.660	W
-Circle (Radius: 1)														
West Leg TD		917.00	2802.34	-306.43	497624.12	1697567.84	39	51	40.587	N	80	34	38.503	W
-Rectangle (1727x200)														

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# Scientific Drilling Survey Report - Geographic

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Environmental Protection

<b>Company:</b> CNX Gas Company, LLC	<b>Date:</b> 5/8/2008	<b>Time:</b> 12:54:03	<b>Page:</b> 1
<b>Field:</b> MARSHALL COUNTY, WV	<b>Co-ordinate(NE) Reference:</b> Well: ACCESS MC-57, Grid North		
<b>Site:</b> MC 57 WELL LOCATION	<b>Vertical (TVD) Reference:</b> GL 1343.14 + 8 1351.1		
<b>Well:</b> ACCESS MC-57	<b>Section (VS) Reference:</b> Well (0.00N,0.00E,332.69Azi)		
<b>Wellpath:</b> WEST LEG	<b>Survey Calculation Method:</b> Minimum Curvature	<b>Db:</b> Sybase	

<b>Field:</b> MARSHALL COUNTY, WV Northern West Virginia and Pennsylvania Operations U.S.A.	<b>Map System:</b> US State Plane Coordinate System 1927	<b>Map Zone:</b> West Virginia, Northern Zone
<b>Geo Datum:</b> NAD27 (Clarke 1866)	<b>Sys Datum:</b> Mean Sea Level	<b>Coordinate System:</b> Well Centre
		<b>Geomagnetic Model:</b> igrf2005

<b>Site:</b> MC 57 WELL LOCATION			
Marshall Co., WV			
<b>Site Position:</b>	<b>Northing:</b> 494821.78 ft	<b>Latitude:</b> 39 51 12.929 N	
<b>From: Map</b>	<b>Easting:</b> 1697874.27 ft	<b>Longitude:</b> 80 34 34.143 W	
<b>Position Uncertainty:</b> 0.00 ft		<b>North Reference:</b> Grid	
<b>Ground Level:</b> 1343.14 ft		<b>Grid Convergence:</b> -0.69 deg	

<b>Well:</b> ACCESS MC-57	<b>Slot Name:</b>
<b>Well Position:</b> +N-S 0.00 ft	<b>Latitude:</b> 39 51 12.929 N
+E-W 0.00 ft	<b>Longitude:</b> 80 34 34.143 W
<b>Position Uncertainty:</b> 0.00 ft	

<b>Wellpath:</b> WEST LEG	<b>Drilled From:</b> Surface
<b>Current Datum:</b> GL 1343.14 + 8	<b>Tie-on Depth:</b> 0.00 ft
<b>Magnetic Data:</b> 4/24/2008	<b>Above System Datum:</b> Mean Sea Level
<b>Field Strength:</b> 53293 nT	<b>Declination:</b> -8.48 deg
<b>Vertical Section:</b> Depth From (TVD)	<b>Mag Dip Angle:</b> 67.82 deg
ft	+N-S ft
	+E-W ft
	Direction deg
1351.14	0.00
	0.00
	332.69

<b>Survey Program for Definitive Wellpath</b>			<b>Version:</b> 3	
<b>Date:</b> 5/7/2008	<b>Validated:</b> No		<b>Toolcode</b>	<b>Tool Name</b>
<b>Actual From</b> ft	<b>To</b> ft	<b>Survey</b>		
50.00	646.00	Survey #1	Drop Gyro-SYS	Drop Gyro Systematic
646.00	2658.00	Survey #2	MWD-SDI-SYS	Scientific MWD Systematic

MD ft	Incl deg	Azim deg	TVD ft	+N-S ft	+E-W ft	Map Northing ft	Map Easting ft	← Latitude →		← Longitude →	
								Deg	Min	Sec	Deg
0.00	0.48	226.20	0.00	0.00	0.00	494821.78	1697874.27	39 51	12.929 N	80 34	34.143 W
100.00	0.17	274.10	100.00	-0.22	-0.32	494821.56	1697873.95	39 51	12.927 N	80 34	34.147 W
200.00	0.23	200.30	200.00	-0.36	-0.55	494821.42	1697873.72	39 51	12.925 N	80 34	34.150 W
300.00	0.42	151.50	300.00	-0.89	-0.43	494820.89	1697873.84	39 51	12.920 N	80 34	34.148 W
400.00	0.32	170.30	399.99	-1.56	-0.19	494820.22	1697874.08	39 51	12.913 N	80 34	34.145 W
500.00	0.48	126.10	499.99	-2.03	0.15	494819.75	1697874.42	39 51	12.909 N	80 34	34.141 W
600.00	0.34	140.00	599.99	-2.48	0.71	494819.30	1697874.98	39 51	12.904 N	80 34	34.133 W
700.00	0.64	166.50	699.99	-3.34	0.71	494818.44	1697874.98	39 51	12.896 N	80 34	34.133 W
800.00	27.74	35.36	797.25	10.16	11.24	494831.94	1697885.51	39 51	13.031 N	80 34	34.000 W
900.00	59.11	39.60	866.49	65.96	54.04	494887.74	1697928.31	39 51	13.587 N	80 34	33.460 W
1000.00	75.58	38.99	904.82	137.36	112.19	494959.14	1697986.46	39 51	14.300 N	80 34	32.726 W
1100.00	86.34	39.04	916.13	213.75	175.48	495035.53	1698049.75	39 51	15.052 N	80 34	31.926 W
1200.00	89.19	39.46	918.78	291.42	238.40	495113.20	1698112.67	39 51	15.837 N	80 34	31.131 W
1300.00	90.85	40.17	918.56	367.37	303.44	495189.15	1698177.71	39 51	16.595 N	80 34	30.309 W
1400.00	91.82	36.60	916.16	445.65	365.59	495267.43	1698239.86	39 51	17.376 N	80 34	29.524 W
1500.00	90.92	34.45	913.23	526.46	424.42	495348.24	1698298.69	39 51	18.182 N	80 34	28.782 W
1600.00	89.42	30.27	913.01	611.23	477.41	495433.01	1698351.68	39 51	19.026 N	80 34	28.115 W
1700.00	91.61	23.82	913.49	700.58	522.15	495522.36	1698396.42	39 51	19.914 N	80 34	27.555 W
1800.00	89.71	15.22	911.29	794.63	555.75	495616.41	1698430.02	39 51	20.848 N	80 34	27.139 W
1900.00	92.17	7.44	911.62	892.54	575.65	495714.32	1698449.92	39 51	21.817 N	80 34	26.899 W
2000.00	91.50	357.29	907.56	992.25	579.54	495814.03	1698453.81	39 51	22.803 N	80 34	26.864 W



## Scientific Drilling Survey Report - Geographic

<b>Company:</b> CNX Gas Company, LLC	<b>Date:</b> 5/8/2008	<b>Time:</b> 12:54:03	<b>Page:</b> 2
<b>Field:</b> MARSHALL COUNTY, WV	<b>Co-ordinate(NE) Reference:</b>	<b>Well:</b> ACCESS MC-57, Grid North	
<b>Site:</b> MC 57 WELL LOCATION	<b>Vertical (TVD) Reference:</b>	GL 1343.14 + 8 1351.1	
<b>Well:</b> ACCESS MC-57	<b>Section (VS) Reference:</b>	Well (0.00N,0.00E,332.69Azi)	
<b>Wellpath:</b> WEST LEG	<b>Survey Calculation Method:</b>	Minimum Curvature	<b>Db:</b> Sybase

**Survey**

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude →			← Longitude →				
								Deg	Min	Sec	Deg	Min	Sec		
2100.00	87.97	347.86	908.91	1091.18	566.06	495912.96	1698440.33	39	51	23.779	N	80	34	27.052	W
2200.00	91.66	338.25	909.41	1186.85	537.42	496008.63	1698411.69	39	51	24.721	N	80	34	27.434	W
2300.00	88.10	328.36	908.08	1275.33	491.21	496097.11	1698365.48	39	51	25.590	N	80	34	28.040	W
2400.00	89.43	327.87	910.76	1359.83	437.83	496181.61	1698312.10	39	51	26.419	N	80	34	28.738	W
2500.00	91.88	331.71	910.14	1446.25	387.60	496268.03	1698261.87	39	51	27.267	N	80	34	29.395	W
2600.00	86.91	333.46	910.20	1534.92	341.50	496356.70	1698215.77	39	51	28.138	N	80	34	30.000	W
2658.00	86.91	333.46	913.32	1586.73	315.63	496408.51	1698189.90	39	51	28.647	N	80	34	30.339	W

**Targets**

Name	Description	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude →			← Longitude →					
							Deg	Min	Sec	Deg	Min	Sec			
Intercept TD		917.00	330.10	275.62	495151.88	1698149.89	39	51	16.224	N	80	34	30.660	W	
-Circle (Radius: 1)															
West Leg TD		917.00	2802.34	-306.43	497624.12	1697567.84	39	51	40.587	N	80	34	38.503	W	
-Rectangle (1727x200)															

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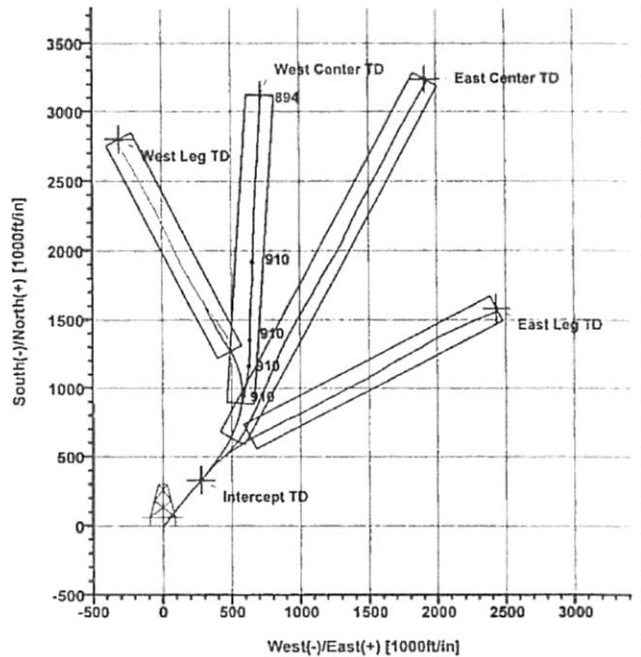


**CNX Gas Company, LLC**

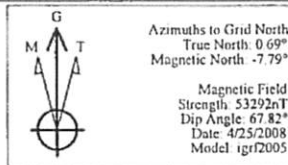
Field: MARSHALL COUNTY, WV  
 Site: MC 57 WELL LOCATION  
 Well: ACCESS MC-57  
 Wellpath: WEST CENTER



TARGET DETAILS						
Name	TVD	+N/S	+E/W	Northing	Easting	Shape
Intercept TD	917.00	330.10	275.62	495151.88	1698149.89	Circle (Radius: 1)
West Center TD	917.00	3121.91	718.95	497943.69	1698593.22	Rectangle (2237x200)
East Center TD	917.00	3236.97	1919.48	498058.75	1699793.75	Rectangle (2962x200)
East Leg TD	917.00	1585.50	2435.23	496407.28	1700309.50	Rectangle (2029x200)
West Leg TD	917.00	2802.34	-306.43	497624.12	1697567.84	Rectangle (1727x200)

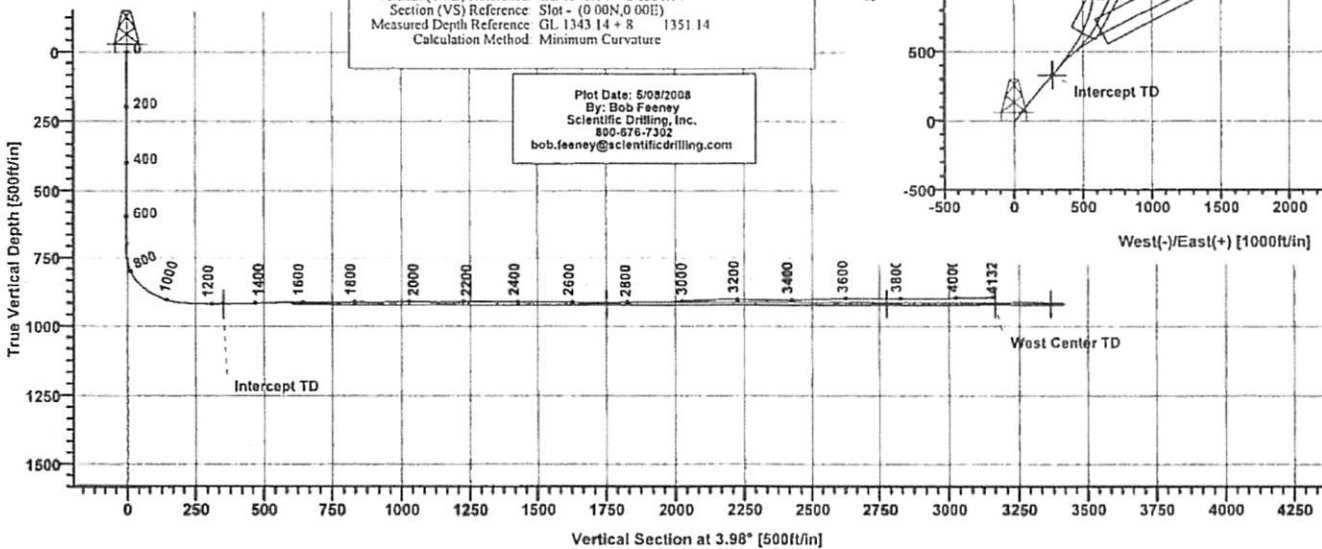


**SITE DETAILS**  
**MC 57 WELL LOCATION**  
 Marshall Co., WV  
 Site Centre Northing: 494821.78  
 Easting: 1697874.27  
 Ground Level: 1343.14  
 Positional Uncertainty: 0.00  
 Convergence: -0.69



**REFERENCE INFORMATION**  
 Co-ordinate (N/E) Reference: Well Centre: ACCESS MC-57, Grid North  
 Vertical (TVD) Reference: GL 1343.14 + 8 1351.14  
 Section (VS) Reference: Slot - (0.00N,0.00E)  
 Measured Depth Reference: GL 1343.14 + 8 1351.14  
 Calculation Method: Minimum Curvature

Plot Date: 5/08/2008  
 By: Bob Feeney  
 Scientific Drilling, Inc.  
 800-676-7302  
 bob.feeney@scientificdrilling.com



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 Environmental Protection

10/20/2017

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# Scientific Drilling Survey Report

West Virginia Department of  
Environmental Protection

<b>Company:</b> CNX Gas Company, LLC <b>Field:</b> MARSHALL COUNTY, WV <b>Site:</b> MC 57 WELL LOCATION <b>Well:</b> ACCESS MC-57 <b>Wellpath:</b> WEST CENTER		<b>Date:</b> 5/8/2008 <b>Co-ordinate(NE) Reference:</b> Well: ACCESS MC-57, Grid North <b>Vertical (TVD) Reference:</b> GL 1343.14 + 8 1351.1 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,3.98Azi) <b>Survey Calculation Method:</b> Minimum Curvature		<b>Time:</b> 13:17:55 <b>Page:</b> 1 <b>Db:</b> Sybase						
<b>Field:</b> MARSHALL COUNTY, WV Northern West Virginia and Pennsylvania Operations U.S.A. <b>Map System:</b> US State Plane Coordinate System 1927 <b>Geo Datum:</b> NAD27 (Clarke 1866) <b>Sys Datum:</b> Mean Sea Level						<b>Map Zone:</b> West Virginia, Northern Zone <b>Coordinate System:</b> Well Centre <b>Geomagnetic Model:</b> igr12005				
<b>Site:</b> MC 57 WELL LOCATION Marshall Co., WV <b>Site Position:</b>						<b>Northing:</b> 494821.78 ft <b>Latitude:</b> 39 51 12.929 N <b>Longitude:</b> 80 34 34.143 W <b>North Reference:</b> Grid <b>Grid Convergence:</b> -0.69 deg				
<b>From: Map</b> <b>Position Uncertainty:</b> 0.00 ft <b>Ground Level:</b> 1343.14 ft										
<b>Well:</b> ACCESS MC-57 <b>Well Position:</b>						<b>Slot Name:</b> <b>Latitude:</b> 39 51 12.929 N <b>Longitude:</b> 80 34 34.143 W				
<b>Position Uncertainty:</b> 0.00 ft <b>Northing:</b> 494821.78 ft <b>Easting:</b> 1697874.27 ft										
<b>Wellpath:</b> WEST CENTER <b>Current Datum:</b> GL 1343.14 + 8 <b>Magnetic Data:</b> 4/25/2008 <b>Field Strength:</b> 53292 nT <b>Vertical Section:</b>						<b>Drilled From:</b> WEST LEG <b>Tie-on Depth:</b> 1890.00 ft <b>Above System Datum:</b> Mean Sea Level <b>Declination:</b> -8.48 deg <b>Mag Dip Angle:</b> 67.82 deg <b>Direction:</b> deg				
<b>Depth From (TVD) ft</b>						<b>+N-S ft</b> <b>+E-W ft</b>				
0.00						0.00				
0.00						0.00				
0.00						3.98				
<b>Survey Program for Definitive Wellpath</b> <b>Date:</b> 5/4/2008 <b>Actual From ft</b>						<b>Validated:</b> No <b>Version:</b> 0 <b>Toolcode</b>				
<b>To Survey</b>						<b>Tool Name</b>				
50.00						Drop Gyro-SYS				
646.00						MWD-SDI-SYS				
1890.00						MWD-SDI-SYS				
<b>Survey #1 (0)</b> <b>Survey #2 (0)</b> <b>Survey #1</b>						<b>Drop Gyro Systematic</b> <b>Scientific MWD Systematic</b> <b>Scientific MWD Systematic</b>				
<b>Survey</b>										
MD ft	Incl deg	Azim deg	TVD ft	+N-S ft	+E-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
0.00	0.48	226.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
100.00	0.17	274.10	100.00	-0.22	-0.32	-0.24	0.39	-0.31	47.90	Drop Gyro-SYS
200.00	0.23	200.30	200.00	-0.36	-0.55	-0.39	0.24	0.06	-73.80	Drop Gyro-SYS
300.00	0.42	151.50	300.00	-0.89	-0.43	-0.92	0.32	0.19	-48.80	Drop Gyro-SYS
400.00	0.32	170.30	389.99	-1.56	-0.19	-1.57	0.16	-0.10	18.80	Drop Gyro-SYS
500.00	0.48	126.10	499.99	-2.03	0.15	-2.02	0.34	0.16	-44.20	Drop Gyro-SYS
600.00	0.34	140.00	599.99	-2.48	0.71	-2.43	0.17	-0.14	13.90	Drop Gyro-SYS
700.00	0.64	166.50	699.99	-3.34	0.71	-3.28	0.37	0.30	26.50	MWD-SDI-SYS
800.00	27.74	35.36	797.25	10.16	11.24	10.92	28.17	27.09	-131.14	MWD-SDI-SYS
800.00	59.11	39.60	866.49	65.96	54.04	69.56	31.50	31.38	4.24	MWD-SDI-SYS
1000.00	75.58	38.99	904.82	137.36	112.19	144.82	16.48	16.47	-0.61	MWD-SDI-SYS
1100.00	86.34	39.04	916.13	213.75	175.48	225.42	10.75	10.75	0.05	MWD-SDI-SYS
1200.00	89.19	39.46	918.78	291.42	238.40	307.26	2.88	2.85	0.42	MWD-SDI-SYS
1300.00	90.65	40.17	918.56	367.37	303.44	387.54	1.62	1.46	0.71	MWD-SDI-SYS
1400.00	91.82	36.60	918.16	445.65	365.59	469.95	3.75	1.17	-3.57	MWD-SDI-SYS
1500.00	90.92	34.45	913.23	526.46	424.42	554.65	2.34	-0.90	-2.16	MWD-SDI-SYS
1600.00	89.42	30.27	913.01	611.23	477.41	642.89	4.43	-1.49	-4.18	MWD-SDI-SYS
1700.00	91.61	23.82	913.49	700.58	522.15	735.13	6.81	2.18	-6.45	MWD-SDI-SYS
1800.00	89.71	15.22	911.29	794.63	555.75	831.29	8.80	-1.90	-8.60	MWD-SDI-SYS
1900.00	91.61	10.10	911.67	892.51	575.88	930.32	5.47	1.91	-5.13	MWD-SDI-SYS
2000.00	91.37	12.93	908.77	989.46	600.06	1028.72	2.84	-0.25	2.83	MWD-SDI-SYS

## Scientific Drilling Survey Report

WV Department of  
Environmental Protection

<b>Company:</b> CNX Gas Company, LLC	<b>Date:</b> 5/8/2008	<b>Time:</b> 13:17:55	<b>Page:</b> 2
<b>Field:</b> MARSHALL COUNTY, WV	<b>Co-ordinate(NE) Reference:</b>	<b>Well:</b> ACCESS MC-57, Grid North	
<b>Site:</b> MC 57 WELL LOCATION	<b>Vertical (TVD) Reference:</b>	GL 1343.14 + 8 1351.1	
<b>Well:</b> ACCESS MC-57	<b>Section (VS) Reference:</b>	Well (0.00N,0.00E,3.98Azi)	
<b>Wellpath:</b> WEST CENTER	<b>Survey Calculation Method:</b>	Minimum Curvature	<b>Db:</b> Sybase

### Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
2100.00	88.20	7.68	911.15	1087.67	618.37	1127.97	6.13	-3.17	-5.25	MWD-SDI-SYS
2200.00	92.25	4.37	909.32	1186.86	630.68	1227.77	5.23	4.05	-3.31	MWD-SDI-SYS
2300.00	88.33	0.64	908.47	1286.76	633.81	1327.65	5.41	-3.92	-3.72	MWD-SDI-SYS
2400.00	88.88	1.36	910.73	1386.69	636.75	1427.54	0.90	0.56	0.71	MWD-SDI-SYS
2500.00	90.57	1.57	911.36	1486.66	638.59	1527.40	1.70	1.68	0.21	MWD-SDI-SYS
2600.00	87.80	3.03	911.67	1586.55	643.02	1627.35	3.13	-2.77	1.46	MWD-SDI-SYS
2700.00	90.24	4.03	915.37	1686.29	648.89	1727.26	2.64	2.45	1.00	MWD-SDI-SYS
2800.00	92.63	2.40	910.81	1785.86	656.67	1827.13	2.89	2.39	-1.63	MWD-SDI-SYS
2900.00	89.80	1.01	910.68	1885.81	659.03	1927.01	3.16	-2.83	-1.39	MWD-SDI-SYS
3000.00	92.16	1.80	906.79	1985.70	661.20	2026.81	2.49	2.36	0.79	MWD-SDI-SYS
3100.00	91.44	2.71	903.25	2085.56	664.86	2126.68	1.17	-0.72	0.92	MWD-SDI-SYS
3200.00	88.51	0.85	902.22	2185.45	668.28	2226.57	3.47	-2.93	-1.86	MWD-SDI-SYS
3300.00	89.67	3.10	903.43	2285.39	671.17	2326.47	2.53	1.16	2.25	MWD-SDI-SYS
3400.00	90.00	3.71	903.54	2385.23	676.94	2426.46	0.69	0.33	0.61	MWD-SDI-SYS
3500.00	92.22	3.41	901.34	2485.01	683.10	2526.43	2.24	2.22	-0.30	MWD-SDI-SYS
3600.00	91.27	4.89	898.71	2584.73	690.01	2626.38	1.76	-0.95	1.48	MWD-SDI-SYS
3700.00	88.31	3.70	898.50	2684.39	697.70	2726.35	3.19	-2.96	-1.18	MWD-SDI-SYS
3800.00	89.96	2.92	899.66	2784.22	703.42	2826.33	1.83	1.65	-0.78	MWD-SDI-SYS
3900.00	90.27	2.81	899.83	2884.11	708.09	2926.30	0.33	0.31	-0.10	MWD-SDI-SYS
4000.00	92.11	2.87	896.62	2983.86	714.19	3026.23	1.84	1.84	0.06	MWD-SDI-SYS
4100.00	91.58	3.05	894.81	3083.73	718.84	3126.19	0.56	-0.53	0.18	MWD-SDI-SYS
4132.00	92.78	3.44	893.59	3115.65	720.65	3158.16	3.93	3.74	1.21	MWD-SDI-SYS

### Targets

Name	Description	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude →			← Longitude →				
							Deg	Min	Sec	Deg	Min	Sec		
Intercept TD	-Circle (Radius: 1)	917.00	330.10	275.62	495151.88	1698149.89	39	51	16.224	N	80	34	30.660	W
West Center TD	-Rectangle (2237x200)	917.00	3121.91	718.95	497943.69	1698593.22	39	51	43.866	N	80	34	25.403	W

# Scientific Drilling Survey Report - Geographic

WV Department of  
Environmental Protection

<b>Company:</b> CNX Gas Company, LLC	<b>Date:</b> 5/8/2008	<b>Time:</b> 13:18:51	<b>Page:</b> 1
<b>Field:</b> MARSHALL COUNTY, WV	<b>Co-ordinate(NE) Reference:</b>	<b>Well:</b> ACCESS MC-57, Grid North	
<b>Site:</b> MC 57 WELL LOCATION	<b>Vertical (TVD) Reference:</b>	GL 1343.14 + 8 1351.1	
<b>Well:</b> ACCESS MC-57	<b>Section (VS) Reference:</b>	Well (0.00N,0.00E,3.98Azi)	
<b>Wellpath:</b> WEST CENTER	<b>Survey Calculation Method:</b>	Minimum Curvature	<b>Db:</b> Sybase

<b>Field:</b> MARSHALL COUNTY, WV Northern West Virginia and Pennsylvania Operations U.S.A.			
<b>Map System:</b> US State Plane Coordinate System 1927		<b>Map Zone:</b>	West Virginia, Northern Zone
<b>Geo Datum:</b> NAD27 (Clarke 1866)		<b>Coordinate System:</b>	Well Centre
<b>Sys Datum:</b> Mean Sea Level		<b>Geomagnetic Model:</b>	igrf2005

<b>Site:</b> MC 57 WELL LOCATION			
Marshall Co., WV			
<b>Site Position:</b>	<b>Northing:</b> 494821.78 ft	<b>Latitude:</b>	39 51 12.929 N
<b>From:</b> Map	<b>Easting:</b> 1697874.27 ft	<b>Longitude:</b>	80 34 34.143 W
<b>Position Uncertainty:</b> 0.00 ft		<b>North Reference:</b>	Grid
<b>Ground Level:</b> 1343.14 ft		<b>Grid Convergence:</b>	-0.69 deg

<b>Well:</b> ACCESS MC-57				<b>Slot Name:</b>			
<b>Well Position:</b>	<b>+N-S</b> 0.00 ft	<b>Northlag:</b> 494821.78 ft	<b>Latitude:</b> 39 51 12.929 N	<b>+E-W</b> 0.00 ft	<b>Easting:</b> 1697874.27 ft	<b>Longitude:</b> 80 34 34.143 W	
<b>Position Uncertainty:</b> 0.00 ft							

<b>Wellpath:</b> WEST CENTER				<b>Drilled From:</b> WEST LEG			
<b>Current Datum:</b> GL 1343.14 + 8	<b>Height</b> 1351.14 ft	<b>Tie-on Depth:</b>	1880.00 ft	<b>Above System Datum:</b>	Mean Sea Level		
<b>Magnetic Data:</b> 4/25/2008		<b>Declination:</b>	-8.48 deg	<b>Mag Dip Angle:</b>	67.82 deg		
<b>Field Strength:</b> 53282 nT		<b>+N-S</b>	ft	<b>+E-W</b>	ft	<b>Direction</b>	deg
<b>Vertical Section:</b> Depth From (TVD)							
	0.00	0.00	0.00	0.00	3.98		

<b>Survey Program for Definitive Wellpath</b>					
<b>Date:</b> 5/4/2008	<b>Validated:</b> No	<b>Version:</b> 0			
<b>Actual From</b>	<b>To</b>	<b>Survey</b>	<b>Toolcode</b>	<b>Tool Name</b>	
50.00	646.00	Survey #1 (0)	Drop Gyro-SYS	Drop Gyro Systematic	
646.00	1890.00	Survey #2 (0)	MWD-SDI-SYS	Scientific MWD Systematic	
1890.00	4132.00	Survey #1	MWD-SDI-SYS	Scientific MWD Systematic	

MD ft	Incl deg	Azim deg	TVD ft	+N-S ft	+E-W ft	Map Northing ft	Map Easting ft	← Latitude →			← Longitude →		
								Deg	Min	Sec	Deg	Min	Sec
0.00	0.48	226.20	0.00	0.00	0.00	494821.78	1697874.27	39 51	12.929 N	80 34	34.143 W		
100.00	0.17	274.10	100.00	-0.22	-0.32	494821.56	1697873.95	39 51	12.927 N	80 34	34.147 W		
200.00	0.23	200.30	200.00	-0.36	-0.55	494821.42	1697873.72	39 51	12.925 N	80 34	34.150 W		
300.00	0.42	151.50	300.00	-0.89	-0.43	494820.89	1697873.84	39 51	12.920 N	80 34	34.148 W		
400.00	0.32	170.30	399.99	-1.56	-0.19	494820.22	1697874.08	39 51	12.913 N	80 34	34.145 W		
500.00	0.48	126.10	499.99	-2.03	0.15	494819.75	1697874.42	39 51	12.909 N	80 34	34.141 W		
600.00	0.34	140.00	599.99	-2.48	0.71	494819.30	1697874.98	39 51	12.904 N	80 34	34.133 W		
700.00	0.64	166.50	699.99	-3.34	0.71	494818.44	1697874.98	39 51	12.896 N	80 34	34.133 W		
800.00	27.74	35.36	797.25	10.16	11.24	494831.94	1697885.51	39 51	13.031 N	80 34	34.000 W		
900.00	59.11	39.60	866.49	65.96	54.04	494887.74	1697928.31	39 51	13.587 N	80 34	33.460 W		
1000.00	75.58	38.99	904.82	137.36	112.19	494959.14	1697986.46	39 51	14.300 N	80 34	32.726 W		
1100.00	86.34	39.04	916.13	213.75	175.48	495035.53	1698049.75	39 51	15.062 N	80 34	31.926 W		
1200.00	89.19	39.46	918.78	291.42	238.40	495113.20	1698112.67	39 51	15.837 N	80 34	31.131 W		
1300.00	90.65	40.17	918.56	367.37	303.44	495189.15	1698177.71	39 51	16.595 N	80 34	30.309 W		
1400.00	91.82	36.60	916.16	445.65	365.59	495267.43	1698239.86	39 51	17.376 N	80 34	29.524 W		
1500.00	90.92	34.45	913.23	526.46	424.42	495348.24	1698298.69	39 51	18.182 N	80 34	28.782 W		
1600.00	89.42	30.27	913.01	611.23	477.41	495433.01	1698351.68	39 51	19.026 N	80 34	28.115 W		
1700.00	91.61	23.82	913.49	700.58	522.15	495522.36	1698396.42	39 51	19.914 N	80 34	27.555 W		
1800.00	89.71	15.22	911.29	794.63	555.75	495616.41	1698430.02	39 51	20.848 N	80 34	27.139 W		
1900.00	91.61	10.10	911.67	892.51	575.88	495714.29	1698450.15	39 51	21.817 N	80 34	26.896 W		

## Scientific Drilling Survey Report - Geographic

<b>Company:</b> CNX Gas Company, LLC	<b>Date:</b> 5/8/2008	<b>Time:</b> 13:18:51	<b>Page:</b> 2
<b>Field:</b> MARSHALL COUNTY, WV	<b>Co-ordinate(NE) Reference:</b> Well: ACCESS MC-57, Grid North		
<b>Site:</b> MC 57 WELL LOCATION	<b>Vertical (TVD) Reference:</b> GL 1343.14 + 8 1351.1		
<b>Well:</b> ACCESS MC-57	<b>Section (VS) Reference:</b> Well (0.00N,0.00E,3.98Azi)		
<b>Wellpath:</b> WEST CENTER	<b>Survey Calculation Method:</b> Minimum Curvature	<b>Db:</b> Sybase	

**Survey**

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude →			← Longitude →				
								Deg	Min	Sec	Deg	Min	Sec		
2000.00	91.37	12.93	908.77	989.46	600.06	495811.24	1698474.33	39	51	22.778	N	80	34	26.601	W
2100.00	88.20	7.68	911.15	1087.67	618.37	495909.45	1698492.64	39	51	23.751	N	80	34	26.381	W
2200.00	92.25	4.37	909.32	1186.86	630.68	496008.64	1698504.95	39	51	24.733	N	80	34	26.238	W
2300.00	88.33	0.64	908.47	1286.76	633.81	496108.54	1698508.08	39	51	25.720	N	80	34	26.214	W
2400.00	88.88	1.36	910.73	1386.69	636.75	496208.47	1698511.02	39	51	26.708	N	80	34	26.191	W
2500.00	90.57	1.57	911.36	1486.66	638.59	496308.44	1698512.86	39	51	27.696	N	80	34	26.183	W
2600.00	87.80	3.03	911.67	1586.55	643.02	496408.33	1698517.29	39	51	28.684	N	80	34	26.141	W
2700.00	90.24	4.03	915.37	1686.29	648.89	496508.07	1698523.16	39	51	29.670	N	80	34	26.081	W
2800.00	92.63	2.40	910.81	1785.86	656.67	496607.64	1698530.94	39	51	30.655	N	80	34	25.997	W
2900.00	89.80	1.01	910.68	1885.81	659.03	496707.59	1698533.30	39	51	31.643	N	80	34	25.982	W
3000.00	92.16	1.80	906.79	1985.70	661.20	496807.48	1698535.47	39	51	32.631	N	80	34	25.970	W
3100.00	91.44	2.71	903.25	2085.56	664.86	496907.34	1698539.13	39	51	33.618	N	80	34	25.938	W
3200.00	88.51	0.85	902.22	2185.45	668.28	497007.23	1698542.55	39	51	34.606	N	80	34	25.909	W
3300.00	89.67	3.10	903.43	2285.39	671.17	497107.17	1698545.44	39	51	35.594	N	80	34	25.888	W
3400.00	90.00	3.71	903.54	2385.23	676.94	497207.01	1698551.21	39	51	36.581	N	80	34	25.829	W
3500.00	92.22	3.41	901.34	2485.01	683.10	497306.79	1698557.37	39	51	37.568	N	80	34	25.765	W
3600.00	91.27	4.89	898.71	2584.73	690.01	497406.51	1698564.28	39	51	38.554	N	80	34	25.692	W
3700.00	88.31	3.70	898.50	2684.39	697.70	497506.17	1698571.97	39	51	39.540	N	80	34	25.608	W
3800.00	89.96	2.92	899.66	2784.22	703.42	497606.00	1698577.69	39	51	40.527	N	80	34	25.551	W
3900.00	90.27	2.81	899.83	2884.11	708.09	497705.89	1698582.36	39	51	41.515	N	80	34	25.506	W
4000.00	92.11	2.87	896.62	2983.86	714.19	497805.64	1698588.46	39	51	42.501	N	80	34	25.443	W
4100.00	91.58	3.05	894.81	3083.73	718.84	497905.51	1698593.11	39	51	43.489	N	80	34	25.399	W
4132.00	92.78	3.44	893.69	3115.65	720.65	497937.43	1698594.92	39	51	43.805	N	80	34	25.380	W

**Targets**

Name	Description	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude →			← Longitude →				
							Deg	Min	Sec	Deg	Min	Sec		
Intercept TD		917.00	330.10	275.62	495151.88	1698149.89	39	51	16.224	N	80	34	30.660	W
-Circle (Radius: 1)														
West Center TD		917.00	3121.91	718.95	497943.69	1698593.22	39	51	43.866	N	80	34	25.403	W
-Rectangle (2237x200)														

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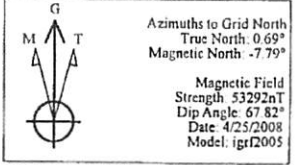
**CNX Gas Company, LLC**

Field: MARSHALL COUNTY, WV  
 Site: MC 57 WELL LOCATION  
 Well: ACCESS MC-57  
 Wellpath: EAST LEG



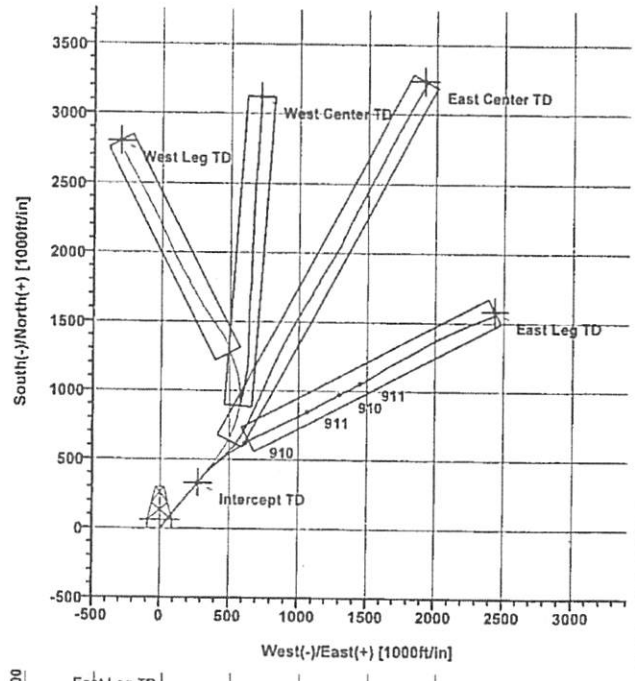
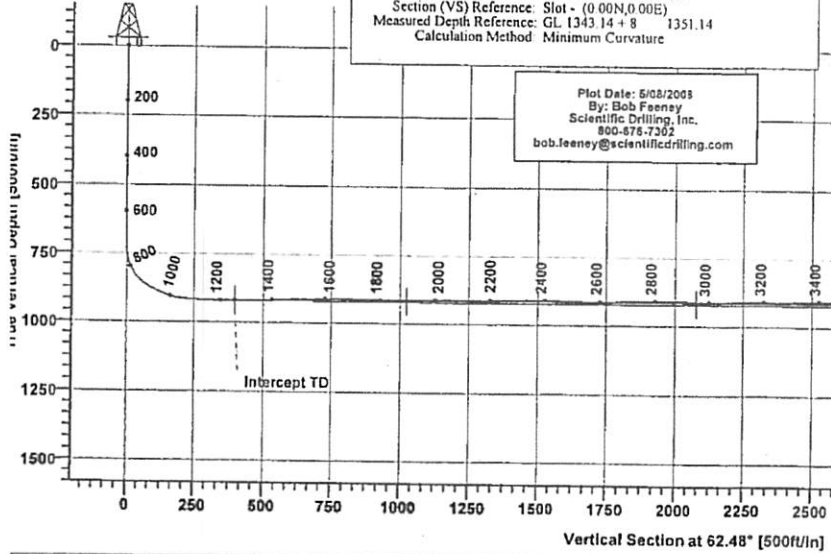
TARGET DETAILS						
Name	TVD	+N/S	+E/W	Northing	Easting	Shape
Intercept TD	917.00	330.10	275.62	495151.88	1698149.89	Circle (Radius: 1)
East Leg TD	917.00	1585.50	2435.23	495407.28	1700309.50	Rectangle (2029x200)
East Center TD	917.00	3235.97	1919.48	498058.75	1699793.75	Rectangle (2962x200)
West Center TD	917.00	3121.91	718.95	497943.69	1698593.22	Rectangle (2237x200)
West Leg TD	917.00	2802.34	-306.43	497624.12	1697567.84	Rectangle (1727x200)

**SITE DETAILS**  
**MC 57 WELL LOCATION**  
 Marshall Co., WV  
 Site Centre Northing: 494821.78  
 Easting: 1697874.27  
 Ground Level: 1343.14  
 Positional Uncertainty: 0.00  
 Convergence: -0.69



**REFERENCE INFORMATION**  
 Co-ordinate (N/E) Reference: Well Centre ACCESS MC-57, Grid North  
 Vertical (TVD) Reference: GL 1343.14 + 8 1351.14  
 Section (VS) Reference: Slot - (0.00N,0.00E)  
 Measured Depth Reference: GL 1343.14 + 8 1351.14  
 Calculation Method: Minimum Curvature

Plot Date: 5/02/2008  
 By: Bob Feeney  
 Scientific Drilling, Inc.  
 800-578-7302  
 bob.feeney@scientificdrilling.com



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SEP 25 2017

# Scientific Drilling Survey Report

WV Department of  
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Company: CNX Gas Company, LLC		Date: 5/8/2008	Time: 10:41:48	Page: 1
Field: MARSHALL COUNTY, WV		Co-ordinate(NE) Reference:	Well: ACCESS MC-57, Grid North	
Site: MC 57 WELL LOCATION		Vertical (TVD) Reference:	GL 1343.14 + 8 1351.1	
Well: ACCESS MC-57		Section (VS) Reference:	Well (0.00N,0.00E,62.48Azi)	
Wellpath: EAST LEG		Survey Calculation Method:	Minimum Curvature	Db: Sybase

Field: MARSHALL COUNTY, WV Northern West Virginia and Pennsylvania Operations U.S.A.		
Map System: US State Plane Coordinate System 1927	Map Zone: West Virginia, Northern Zone	
Geo Datum: NAD27 (Clarke 1866)	Coordinate System: Well Centre	
Sys Datum: Mean Sea Level	Geomagnetic Model: igrf2005	

Site: MC 57 WELL LOCATION				
Marshall Co., WV				
Site Position:	Northing:	494821.78 ft	Latitude:	39 51 12.929 N
From: Map	Easting:	1697874.27 ft	Longitude:	80 34 34.143 W
Position Uncertainty: 0.00 ft			North Reference:	Grid
Ground Level: 1343.14 ft			Grid Convergence:	-0.69 deg

Well: ACCESS MC-57		Slot Name:		
Well Position: +N-S 0.00 ft	Northing: 494821.78 ft	Latitude:	39 51 12.929 N	
+E-W 0.00 ft	Easting: 1697874.27 ft	Longitude:	80 34 34.143 W	
Position Uncertainty: 0.00 ft				

Wellpath: EAST LEG		Drilled From: WEST LEG	
Current Datum: GL 1343.14 + 8	Height 1351.14 ft	Tie-on Depth:	1321.00 ft
Magnetic Data: 4/25/2008		Above System Datum:	Mean Sea Level
Field Strength: 53292 nT		Declination:	-8.48 deg
Vertical Section: Depth From (TVD)	+N-S	Mag Dip Angle:	67.82 deg
ft	ft	+E-W	Direction
		ft	deg
0.00	0.00	0.00	62.48

Survey Program for Definitive Wellpath				Version: 0
Date: 5/6/2008	Validated: No		Toolcode	
Actual From	To	Survey	Tool Name	
ft	ft			
50.00	646.00	Survey #1 (0)	Drop Gyro-SYS	Drop Gyro Systematic
646.00	1321.00	Survey #2 (0)		
1321.00	3765.00	Survey #1	MWD-SDI-SYS	Scientific MWD Systematic

MD	Incl	Azim	TVD	+N-S	+E-W	VS	DLS	Build	Turn	Tool/Comment
ft	deg	deg	ft	ft	ft	ft	deg/100ft	deg/100ft	deg/100ft	
0.00	0.48	226.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
100.00	0.17	274.10	100.00	-0.22	-0.32	-0.38	0.39	-0.31	47.90	Drop Gyro-SYS
200.00	0.23	200.30	200.00	-0.36	-0.55	-0.65	0.24	0.06	-73.80	Drop Gyro-SYS
300.00	0.42	151.50	300.00	-0.89	-0.43	-0.79	0.32	0.19	-48.80	Drop Gyro-SYS
400.00	0.32	170.30	399.99	-1.56	-0.19	-0.89	0.16	-0.10	18.80	Drop Gyro-SYS
500.00	0.48	126.10	499.99	-2.03	0.15	-0.81	0.34	0.16	-44.20	Drop Gyro-SYS
600.00	0.34	140.00	599.99	-2.48	0.71	-0.52	0.17	-0.14	13.90	Drop Gyro-SYS
700.00	0.64	166.50	699.99	-3.34	0.71	-0.91	0.37	0.30	26.50	
800.00	27.74	35.36	797.25	10.16	11.24	14.67	28.17	27.09	-131.14	
900.00	59.11	39.60	866.49	65.96	54.04	78.40	31.50	31.38	4.24	
1000.00	75.58	38.99	904.82	137.36	112.19	162.96	16.48	16.47	-0.61	
1100.00	86.34	39.04	916.13	213.75	175.48	254.39	10.75	10.75	0.05	
1200.00	89.19	39.46	918.78	291.42	238.40	346.08	2.88	2.85	0.42	
1300.00	90.65	40.17	918.56	367.37	303.44	438.85	1.62	1.46	0.71	MWD-SDI-SYS
1400.00	92.85	47.87	916.54	439.86	372.07	533.21	8.00	2.20	7.69	MWD-SDI-SYS
1500.00	91.35	53.02	912.83	504.48	448.23	630.61	5.37	-1.50	5.16	MWD-SDI-SYS
1600.00	91.65	56.20	911.09	562.87	529.39	729.57	3.19	0.30	3.16	MWD-SDI-SYS
1700.00	87.95	58.22	910.01	616.15	613.96	829.19	4.22	-3.70	2.01	MWD-SDI-SYS
1800.00	89.17	62.28	913.76	665.15	701.01	929.03	4.24	1.22	4.06	MWD-SDI-SYS
1900.00	91.16	63.09	912.46	710.98	789.88	1029.02	2.15	2.00	0.81	MWD-SDI-SYS
2000.00	91.13	63.62	910.39	755.88	879.21	1128.99	0.53	-0.03	0.53	MWD-SDI-SYS



## Scientific Drilling Survey Report

Company: CNX Gas Company, LLC  
 Field: MARSHALL COUNTY, WV  
 Site: MC 57 WELL LOCATION  
 Well: ACCESS MC-57  
 Wellpath: EAST LEG

Date: 5/8/2008 Time: 10:41:48 Page: 2  
 Co-ordinate(NE) Reference: Well: ACCESS MC-57, Grid North  
 Vertical (TVD) Reference: GL 1343.14 + 8 1351.1  
 Section (VS) Reference: Well (0.00N,0.00E,62.48Azi)  
 Survey Calculation Method: Minimum Curvature Db: Sybase

**Survey**

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
2100.00	88.50	64.19	911.15	789.40	969.22	1228.92	2.70	-2.64	0.58	MWD-SDI-SYS
2200.00	92.34	62.88	911.31	844.46	1058.45	1328.87	4.06	3.85	-1.31	MWD-SDI-SYS
2300.00	90.77	60.55	908.82	891.54	1146.62	1428.82	2.81	-1.57	-2.33	MWD-SDI-SYS
2400.00	89.65	61.37	907.45	940.55	1233.78	1528.76	1.38	-1.12	0.82	MWD-SDI-SYS
2500.00	88.36	62.84	910.82	987.11	1322.21	1628.70	1.96	-1.29	1.47	MWD-SDI-SYS
2600.00	91.19	62.68	912.23	1032.55	1411.26	1728.67	2.83	2.83	-0.16	MWD-SDI-SYS
2700.00	92.02	60.04	908.93	1079.86	1498.29	1828.60	2.77	0.84	-2.64	MWD-SDI-SYS
2800.00	89.50	58.48	906.80	1131.50	1584.88	1928.37	2.96	-2.52	-1.55	MWD-SDI-SYS
2900.00	89.98	60.55	906.44	1184.04	1669.94	2028.09	2.12	0.48	2.06	MWD-SDI-SYS
3000.00	89.19	61.55	909.73	1232.36	1757.42	2127.99	1.27	-0.79	1.00	MWD-SDI-SYS
3100.00	91.28	60.70	907.37	1279.47	1845.59	2227.95	2.25	2.08	-0.85	MWD-SDI-SYS
3200.00	87.83	59.80	907.07	1329.65	1932.06	2327.82	3.54	-3.45	-0.80	MWD-SDI-SYS
3300.00	93.10	63.03	906.80	1378.42	2019.27	2427.70	6.13	5.27	3.13	MWD-SDI-SYS
3400.00	89.51	64.13	903.55	1422.33	2109.03	2527.59	3.76	-3.59	1.11	MWD-SDI-SYS
3500.00	88.40	65.26	907.18	1464.91	2199.43	2627.44	1.58	-1.11	1.13	MWD-SDI-SYS
3600.00	92.50	68.33	904.25	1504.23	2291.27	2727.06	5.12	4.09	3.07	MWD-SDI-SYS
3700.00	89.88	68.56	902.30	1541.22	2384.15	2826.51	2.63	-2.62	0.22	MWD-SDI-SYS
3765.00	86.32	70.00	904.46	1564.12	2444.93	2891.00	5.91	-5.47	2.22	MWD-SDI-SYS

**Targets**

Name	Description	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude → Deg Min Sec	← Longitude → Deg Min Sec
Intercept TD		917.00	330.10	275.62	495151.88	1698149.89	39 51 16.224 N	80 34 30.660 W
-Circle (Radius: 1)								
East Leg TD		917.00	1585.50	2435.23	486407.28	1700309.50	39 51 28.885 N	80 34 3.181 W
-Rectangle (2029x200)								

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Environmental Protection

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# Scientific Drilling Survey Report - Geographic

WV Department of  
 Environmental Protection

<b>Company:</b> CNX Gas Company, LLC	<b>Date:</b> 5/8/2008	<b>Time:</b> 10:45:34	<b>Page:</b> 1
<b>Field:</b> MARSHALL COUNTY, WV	<b>Co-ordinate(NE) Reference:</b>	<b>Well:</b> ACCESS MC-57, Grid North	
<b>Site:</b> MC 57 WELL LOCATION	<b>Vertical (TVD) Reference:</b>	GL 1343.14 + 8 1351.1	
<b>Well:</b> ACCESS MC-57	<b>Section (VS) Reference:</b>	Well (0.00N,0.00E,62.48Azi)	
<b>Wellpath:</b> EAST LEG	<b>Survey Calculation Method:</b>	Minimum Curvature	<b>Db:</b> Sybase

<b>Field:</b> MARSHALL COUNTY, WV Northern West Virginia and Pennsylvania Operations U.S.A.		
<b>Map System:</b> US State Plane Coordinate System 1927	<b>Map Zone:</b>	West Virginia, Northern Zone
<b>Geo Datum:</b> NAD27 (Clarke 1866)	<b>Coordinate System:</b>	Well Centre
<b>Sys Datum:</b> Mean Sea Level	<b>Geomagnetic Model:</b>	igrf2005

<b>Site:</b> MC 57 WELL LOCATION			
Marshall Co., WV			
<b>Site Position:</b>	<b>Northing:</b> 494821.78 ft	<b>Latitude:</b>	39 51 12.929 N
<b>From:</b> Map	<b>Easting:</b> 1697874.27 ft	<b>Longitude:</b>	80 34 34.143 W
<b>Position Uncertainty:</b> 0.00 ft		<b>North Reference:</b>	Grid
<b>Ground Level:</b> 1343.14 ft		<b>Grid Convergence:</b>	-0.69 deg

<b>Well:</b> ACCESS MC-57		<b>Slot Name:</b>	
<b>Well Position:</b>	<b>+N/-S</b> 0.00 ft	<b>Northing:</b> 494821.78 ft	<b>Latitude:</b> 39 51 12.929 N
	<b>+E/-W</b> 0.00 ft	<b>Easting:</b> 1697874.27 ft	<b>Longitude:</b> 80 34 34.143 W
<b>Position Uncertainty:</b>	0.00 ft		

<b>Wellpath:</b> EAST LEG		<b>Drilled From:</b> WEST LEG	
<b>Current Datum:</b> GL 1343.14 + 8	<b>Height</b> 1351.14 ft	<b>Tie-on Depth:</b>	1321.00 ft
<b>Magnetic Data:</b> 4/25/2008		<b>Above System Datum:</b>	Mean Sea Level
<b>Field Strength:</b> 53292 nT		<b>Declination:</b>	-8.48 deg
<b>Vertical Section:</b> Depth From (TVD)	<b>+N/-S</b>	<b>Mag Dip Angle:</b>	67.82 deg
ft	ft	<b>+E/-W</b>	<b>Direction</b>
		ft	deg
0.00	0.00	0.00	62.48

<b>Survey Program for Definitive Wellpath</b>			
<b>Date:</b> 5/6/2008	<b>Validated:</b> No	<b>Version:</b> 0	
<b>Actual From</b>	<b>To</b>	<b>Survey</b>	<b>Toolcode</b> <b>Tool Name</b>
ft	ft		
50.00	646.00	Survey #1 (0)	Drop Gyro-SYS      Drop Gyro Systematic
646.00	1321.00	Survey #2 (0)	
1321.00	3765.00	Survey #1	MWD-SDI-SYS      Scientific MWD Systematic

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude →			← Longitude →		
								Deg	Min	Sec	Deg	Min	Sec
0.00	0.48	226.20	0.00	0.00	0.00	494821.78	1697874.27	39 51	12.929 N	80 34	34.143 W		
100.00	0.17	274.10	100.00	-0.22	-0.32	494821.56	1697873.95	39 51	12.927 N	80 34	34.147 W		
200.00	0.23	200.30	200.00	-0.36	-0.55	494821.42	1697873.72	39 51	12.925 N	80 34	34.150 W		
300.00	0.42	151.50	300.00	-0.89	-0.43	494820.89	1697873.84	39 51	12.920 N	80 34	34.148 W		
400.00	0.32	170.30	399.99	-1.56	-0.19	494820.22	1697874.08	39 51	12.913 N	80 34	34.145 W		
500.00	0.48	126.10	499.99	-2.03	0.15	494819.75	1697874.42	39 51	12.909 N	80 34	34.141 W		
600.00	0.34	140.00	599.99	-2.48	0.71	494819.30	1697874.98	39 51	12.904 N	80 34	34.133 W		
700.00	0.64	166.50	699.99	-3.34	0.71	494818.44	1697874.98	39 51	12.896 N	80 34	34.133 W		
800.00	27.74	35.36	797.25	10.16	11.24	494831.94	1697885.51	39 51	13.031 N	80 34	34.000 W		
900.00	59.11	39.60	866.49	65.96	54.04	494887.74	1697928.31	39 51	13.587 N	80 34	33.460 W		
1000.00	75.58	38.89	904.82	137.36	112.19	494959.14	1697986.46	39 51	14.300 N	80 34	32.726 W		
1100.00	86.34	39.04	916.13	213.75	175.48	495035.53	1698049.75	39 51	15.062 N	80 34	31.926 W		
1200.00	89.19	39.46	918.78	291.42	238.40	495113.20	1698112.67	39 51	15.837 N	80 34	31.131 W		
1300.00	90.65	40.17	918.56	367.37	303.44	495189.15	1698177.71	39 51	16.595 N	80 34	30.309 W		
1400.00	92.85	47.87	916.54	439.86	372.07	495261.64	1698246.34	39 51	17.320 N	80 34	29.440 W		
1500.00	91.35	53.02	912.83	504.48	448.23	495326.26	1698322.50	39 51	17.967 N	80 34	28.473 W		
1600.00	91.65	56.20	911.09	562.87	529.39	495384.65	1698403.66	39 51	18.554 N	80 34	27.442 W		
1700.00	87.95	58.22	910.01	616.15	613.96	495437.93	1698488.23	39 51	19.091 N	80 34	26.365 W		
1800.00	89.17	62.28	913.76	665.15	701.01	495486.93	1698575.28	39 51	19.585 N	80 34	25.257 W		
1900.00	91.16	63.09	912.46	710.98	789.88	495532.76	1698664.15	39 51	20.048 N	80 34	24.124 W		

## Scientific Drilling Survey Report - Geographic

<b>Company:</b> CNX Gas Company, LLC <b>Field:</b> MARSHALL COUNTY, WV <b>Site:</b> MC 57 WELL LOCATION <b>Well:</b> ACCESS MC-57 <b>Wellpath:</b> EAST LEG	<b>Date:</b> 5/8/2008 <b>Time:</b> 10:45:34 <b>Page:</b> 2 <b>Co-ordinate(NE) Reference:</b> Well: ACCESS MC-57, Grid North <b>Vertical (TVD) Reference:</b> GL 1343.14 + 8 1351.1 <b>Section (VS) Reference:</b> Well (0.00N,0.00E,62.48Azi) <b>Survey Calculation Method:</b> Minimum Curvature <b>Db:</b> Sybase
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**Survey**

MD ft	Incl deg	Azim deg	TVD ft	+N-S ft	+E-W ft	Map Northing ft	Map Easting ft	← Latitude →		← Longitude →					
								Deg	Min	Sec	Deg	Min	Sec		
2000.00	91.13	63.62	910.39	755.88	879.21	495577.66	1698753.48	39	51	20.503	N	80	34	22.986	W
2100.00	88.50	64.19	911.15	799.40	969.22	495621.18	1698843.49	39	51	20.943	N	80	34	21.838	W
2200.00	92.34	62.88	911.31	844.46	1058.45	495666.24	1698932.72	39	51	21.399	N	80	34	20.701	W
2300.00	90.77	60.55	908.82	891.54	1146.62	495713.32	1699020.89	39	51	21.875	N	80	34	19.578	W
2400.00	89.65	61.37	907.45	940.55	1233.78	495762.33	1699108.05	39	51	22.370	N	80	34	18.468	W
2500.00	88.36	62.84	910.82	987.11	1322.21	495808.89	1699196.48	39	51	22.840	N	80	34	17.341	W
2600.00	91.19	62.68	912.23	1032.55	1411.26	495854.33	1699285.53	39	51	23.300	N	80	34	16.206	W
2700.00	92.02	60.04	908.93	1079.86	1499.29	495901.64	1699373.56	39	51	23.778	N	80	34	15.084	W
2800.00	89.50	58.48	906.80	1131.50	1584.88	495953.28	1699459.15	39	51	24.298	N	80	34	13.995	W
2800.00	89.98	60.55	906.44	1184.04	1669.94	496005.82	1699544.21	39	51	24.827	N	80	34	12.912	W
3000.00	89.19	61.55	909.73	1232.36	1757.42	496054.14	1699631.69	39	51	25.315	N	80	34	11.798	W
3100.00	91.28	60.70	907.37	1279.47	1845.59	496101.25	1699719.86	39	51	25.791	N	80	34	10.675	W
3200.00	87.83	59.90	907.07	1329.65	1932.06	496151.43	1699806.33	39	51	26.297	N	80	34	9.573	W
3300.00	93.10	63.03	906.80	1378.42	2019.27	496200.20	1699893.54	39	51	26.789	N	80	34	8.463	W
3400.00	89.51	64.13	903.55	1422.33	2106.03	496244.11	1699983.30	39	51	27.234	N	80	34	7.318	W
3500.00	88.40	65.26	907.18	1464.91	2199.43	496286.69	1700073.70	39	51	27.665	N	80	34	6.166	W
3600.00	92.50	68.33	904.25	1504.23	2291.27	496326.01	1700165.54	39	51	28.065	N	80	34	4.994	W
3700.00	89.88	68.56	902.30	1541.22	2384.15	496363.00	1700258.42	39	51	28.441	N	80	34	3.809	W
3765.00	86.32	70.00	904.46	1584.12	2444.93	496385.90	1700319.20	39	51	28.675	N	80	34	3.033	W

**Targets**

Name	Description	TVD ft	+N-S ft	+E-W ft	Map Northing ft	Map Easting ft	← Latitude →		← Longitude →					
							Deg	Min	Sec	Deg	Min	Sec		
Intercept TD		917.00	330.10	275.62	495151.88	1698149.89	39	51	16.224	N	80	34	30.660	W
-Circle (Radius: 1)														
East Leg TD		917.00	1585.50	2435.23	496407.28	1700309.50	39	51	28.885	N	80	34	3.161	W
-Rectangle (2029x200)														

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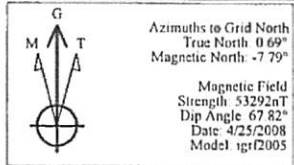
**CNX Gas Company, LLC**

Field: MARSHALL COUNTY, WV  
 Site: MC 57 WELL LOCATION  
 Well: ACCESS MC-57  
 Wellpath: EAST CENTER LEG



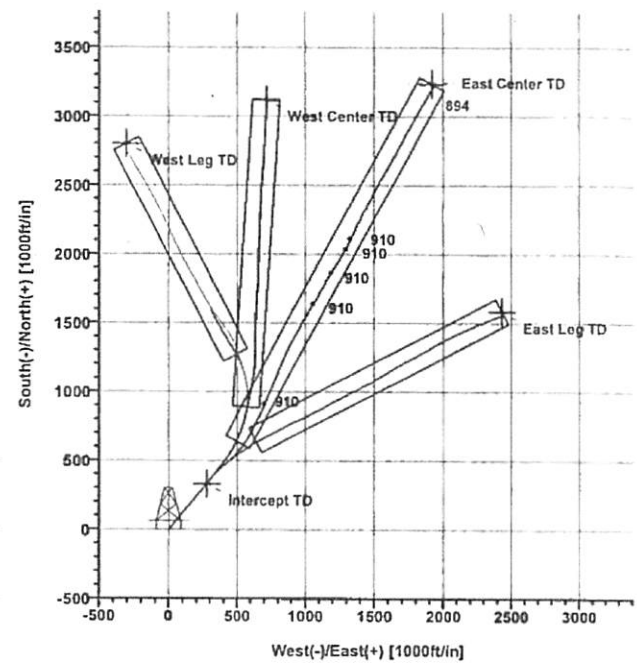
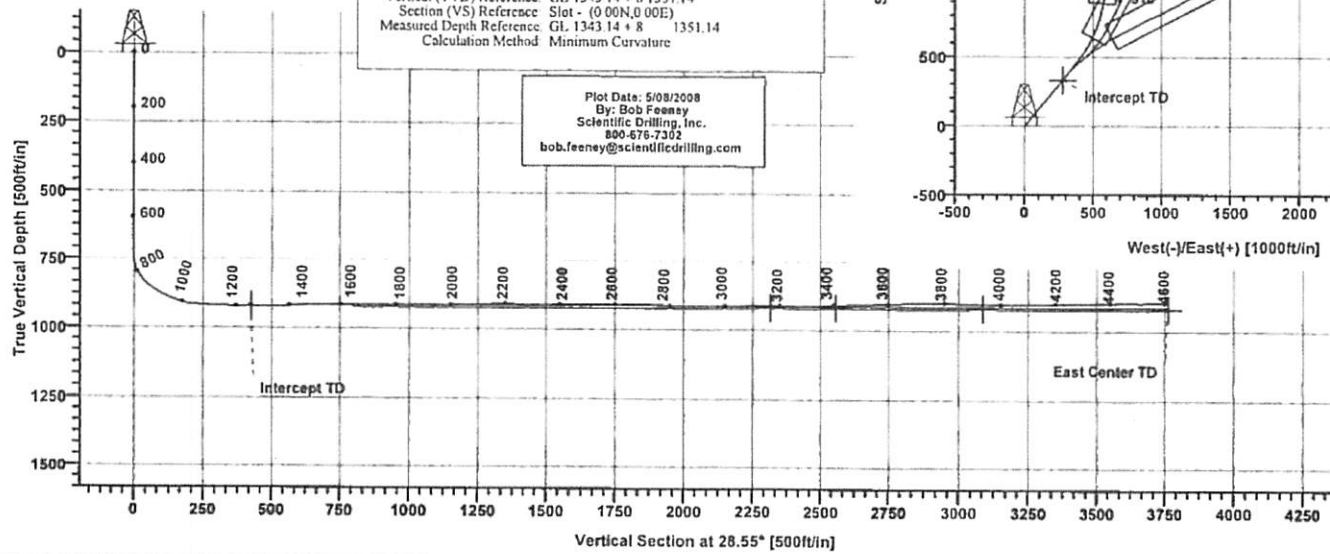
TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
Intercept TD	917.00	330.10	275.62	495151.88	1698149.89	Circle (Radius: 1)
East Center TD	917.00	3236.97	1919.48	498058.75	1699793.75	Rectangle (2962x200)
East Leg TD	917.00	1585.50	2435.23	496407.28	1700309.50	Rectangle (2029x200)
West Leg TD	917.00	2802.34	-306.43	497624.12	1697567.84	Rectangle (1727x200)
West Center TD	917.00	3121.91	718.95	497943.69	1698593.22	Rectangle (2237x200)

**SITE DETAILS**  
**MC 57 WELL LOCATION**  
 Marshall Co., WV  
 Site Centre Northing: 494821.78  
 Easting: 1697874.27  
 Ground Level: 1343.14  
 Positional Uncertainty: 0.00  
 Convergence: -0.69



**REFERENCE INFORMATION**  
 Co-ordinate (N/E) Reference: Well Centre ACCESS MC-57, Grid North  
 Vertical (TVD) Reference: GL 1343.14 + 8 1351.14  
 Section (VS) Reference: Slot - (0.00N,0.00E)  
 Measured Depth Reference: GL 1343.14 + 8 1351.14  
 Calculation Method: Minimum Curvature

Plot Date: 5/08/2008  
 By: Bob Feeney  
 Scientific Drilling, Inc.  
 800-676-7302  
 bob.feeney@scientificdrilling.com



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# Scientific Drilling Survey Report

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Company: CNX Gas Company, LLC	Date: 5/8/2008	Time: 11:03:49	Page: 1
Field: MARSHALL COUNTY, WV	Co-ordinate(NE) Reference:	Well: ACCESS MC-57, Grid North	
Site: MC 57 WELL LOCATION	Vertical (TVD) Reference:	GL 1343.14 + 8 1351.1	
Well: ACCESS MC-57	Section (VS) Reference:	Well (0.00N,0.00E,28.55Azi)	
Wellpath: EAST CENTER LEG	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Field: MARSHALL COUNTY, WV Northern West Virginia and Pennsylvania Operations U.S.A.	Map System: US State Plane Coordinate System 1927	Map Zone: West Virginia, Northern Zone
Geo Datum: NAD27 (Clarke 1866)	Coordinate System: Well Centre	
Sys Datum: Mean Sea Level	Geomagnetic Model: igrf2005	

Site: MC 57 WELL LOCATION	Marshall Co., WV		
Site Position:	Northing: 494821.78 ft	Latitude: 39 51 12.929 N	
From: Map	Easting: 1697874.27 ft	Longitude: 80 34 34.143 W	
Position Uncertainty: 0.00 ft		North Reference: Grid	
Ground Level: 1343.14 ft		Grid Convergence: -0.69 deg	

Well: ACCESS MC-57	Slot Name:		
Well Position: +N-S 0.00 ft	Northing: 494821.78 ft	Latitude: 39 51 12.929 N	
+E-W 0.00 ft	Easting: 1697874.27 ft	Longitude: 80 34 34.143 W	
Position Uncertainty: 0.00 ft			

Wellpath: EAST CENTER LEG	Drilled From: EAST LEG		
Current Datum: GL 1343.14 + 8	Tie-on Depth: 1478.00 ft	Height 1351.14 ft	
Magnetic Data: 4/25/2008	Above System Datum: Mean Sea Level		
Field Strength: 53292 nT	Declination: -8.48 deg		
Vertical Section: Depth From (TVD) ft	Mag Dip Angle: 67.82 deg	+N-S ft	+E-W ft
0.00		0.00	0.00
	Direction deg		28.55

Survey Program for Definitive Wellpath			Version: 0	Tool Name
Date: 5/8/2008	Validated: No	Survey	Toolcode	
Actual From ft	To ft			
50.00	646.00	Survey #1 (0)	Drop Gyro-SYS	Drop Gyro Systematic
646.00	1321.00	Survey #2 (0)		
1321.00	1479.00	Survey #1 (3)	MWD-SDI-SYS	Scientific MWD Systematic
1479.00	4610.00	Survey #1	MWD-SDI-SYS	Scientific MWD Systematic

MD ft	Incl deg	Azim deg	TVD ft	+N-S ft	+E-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
0.00	0.48	226.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
100.00	0.17	274.10	100.00	-0.22	-0.32	-0.35	0.39	-0.31	47.90	Drop Gyro-SYS
200.00	0.23	200.30	200.00	-0.36	-0.55	-0.57	0.24	0.06	-73.80	Drop Gyro-SYS
300.00	0.42	151.50	300.00	-0.89	-0.43	-0.99	0.32	0.19	-48.80	Drop Gyro-SYS
400.00	0.32	170.30	399.99	-1.56	-0.19	-1.46	0.16	-0.10	18.80	Drop Gyro-SYS
500.00	0.48	126.10	499.99	-2.03	0.15	-1.71	0.34	0.16	-44.20	Drop Gyro-SYS
600.00	0.34	140.00	599.99	-2.48	0.71	-1.84	0.17	-0.14	13.90	Drop Gyro-SYS
700.00	0.64	166.50	699.99	-3.34	0.71	-2.59	0.37	0.30	26.50	
800.00	27.74	35.36	797.25	10.16	11.24	14.30	28.17	27.09	-131.14	
900.00	59.11	39.60	866.49	65.96	54.04	83.77	31.50	31.38	4.24	
1000.00	75.58	38.99	904.82	137.36	112.19	174.28	16.48	16.47	-0.61	
1100.00	86.34	39.04	916.13	213.75	175.48	271.63	10.75	10.75	0.05	
1200.00	89.19	39.46	918.78	291.42	238.40	369.92	2.88	2.85	0.42	
1300.00	90.65	40.17	918.56	367.37	303.44	467.72	1.62	1.46	0.71	MWD-SDI-SYS
1400.00	92.85	47.87	916.54	439.86	372.07	564.20	8.00	2.20	7.69	MWD-SDI-SYS
1500.00	90.52	48.57	912.99	505.11	447.72	657.67	2.44	-2.33	0.70	MWD-SDI-SYS
1600.00	90.88	40.60	912.39	577.06	517.08	754.02	7.98	0.36	-7.97	MWD-SDI-SYS
1700.00	89.86	31.51	912.40	657.25	576.68	852.94	9.15	-1.02	-9.09	MWD-SDI-SYS
1800.00	90.79	26.84	912.34	745.35	623.93	952.91	4.76	0.93	-4.67	MWD-SDI-SYS
1800.00	80.29	25.00	910.43	835.17	667.83	1052.79	1.90	-0.50	-1.84	MWD-SDI-SYS

## Scientific Drilling Survey Report

<b>Company:</b> CNX Gas Company, LLC	<b>Date:</b> 5/8/2008	<b>Time:</b> 11:03:49	<b>Page:</b> 2
<b>Field:</b> MARSHALL COUNTY, WV	<b>Co-ordinate(NE) Reference:</b>	<b>Well:</b> ACCESS MC-57, Grid North	
<b>Site:</b> MC 57 WELL LOCATION	<b>Vertical (TVD) Reference:</b>	GL 1343.14 + 8 1351.1	
<b>Well:</b> ACCESS MC-57	<b>Section (VS) Reference:</b>	Well (0.00N,0.00E,28.55Azi)	
<b>Wellpath:</b> EAST CENTER LEG	<b>Survey Calculation Method:</b>	Minimum Curvature	<b>Db:</b> Sybase

**Survey**

MD ft	Incl deg	Azim deg	TVD ft	+N/S ft	+E/W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
2000.00	90.76	24.31	910.08	926.12	709.40	1152.54	0.84	0.47	-0.69	MWD-SDI-SYS
2100.00	91.62	23.13	908.42	1017.43	750.11	1252.21	1.47	0.87	-1.18	MWD-SDI-SYS
2200.00	89.29	22.63	905.21	1109.54	788.89	1351.65	2.39	-2.33	-0.50	MWD-SDI-SYS
2300.00	89.43	24.21	909.38	1201.39	828.17	1451.10	1.59	0.14	1.58	MWD-SDI-SYS
2400.00	90.94	25.48	907.72	1291.78	870.88	1550.92	1.97	1.51	1.27	MWD-SDI-SYS
2500.00	89.37	27.43	907.55	1381.36	915.29	1650.83	2.50	-1.57	1.95	MWD-SDI-SYS
2600.00	91.34	29.30	907.24	1469.67	952.20	1750.82	2.72	1.97	1.88	MWD-SDI-SYS
2700.00	89.14	29.58	905.56	1556.44	1011.86	1850.77	2.22	-2.20	0.28	MWD-SDI-SYS
2800.00	86.78	31.71	910.30	1642.42	1062.66	1950.57	3.17	-2.35	2.12	MWD-SDI-SYS
2900.00	90.71	29.33	911.26	1728.67	1113.20	2050.49	4.59	3.93	-2.38	MWD-SDI-SYS
3000.00	90.10	29.68	910.72	1815.60	1162.62	2150.47	0.70	-0.61	0.35	MWD-SDI-SYS
3100.00	91.63	31.89	908.64	1901.63	1213.50	2250.36	2.68	1.53	2.21	MWD-SDI-SYS
3200.00	88.74	31.98	908.57	1986.43	1266.48	2350.16	2.89	-2.89	0.09	MWD-SDI-SYS
3300.00	89.83	24.07	910.72	2074.75	1313.12	2450.03	7.98	1.09	-7.91	MWD-SDI-SYS
3400.00	93.07	26.11	906.64	2165.34	1355.18	2549.71	3.83	3.24	2.04	MWD-SDI-SYS
3500.00	90.60	27.25	903.44	2254.57	1400.18	2649.60	2.72	-2.47	1.14	MWD-SDI-SYS
3600.00	91.97	27.38	902.26	2343.34	1446.21	2749.57	1.38	1.37	0.13	MWD-SDI-SYS
3700.00	91.65	28.74	897.75	2431.17	1493.79	2849.46	1.40	-0.32	1.36	MWD-SDI-SYS
3800.00	88.61	28.30	897.39	2519.02	1541.53	2949.45	3.08	-3.05	-0.44	MWD-SDI-SYS
3900.00	89.03	28.14	900.89	2607.41	1588.16	3049.38	0.45	0.43	-0.15	MWD-SDI-SYS
4000.00	89.72	28.73	901.69	2695.29	1635.87	3149.37	0.90	0.68	0.59	MWD-SDI-SYS
4100.00	89.80	28.66	900.59	2782.89	1684.08	3249.36	0.11	0.09	-0.07	MWD-SDI-SYS
4200.00	91.32	28.31	899.80	2870.87	1731.62	3349.35	1.56	1.51	-0.36	MWD-SDI-SYS
4300.00	90.94	29.73	897.43	2958.27	1780.14	3449.32	1.48	-0.38	1.43	MWD-SDI-SYS
4400.00	90.75	30.54	895.23	3044.79	1830.23	3549.26	0.83	-0.19	0.81	MWD-SDI-SYS
4500.00	89.84	30.04	895.02	3131.15	1880.63	3649.21	1.03	-0.90	-0.50	MWD-SDI-SYS
4600.00	91.04	29.77	894.10	3217.86	1930.44	3749.18	1.23	1.20	-0.27	MWD-SDI-SYS
4610.00	91.04	29.77	893.91	3226.54	1935.40	3759.17	0.00	0.00	0.00	MWD-SDI-SYS

**Targets**

Name	Description	TVD ft	+N/S ft	+E/W ft	Map Northing ft	Map Easting ft	← Latitude →			← Longitude →				
							Deg	Min	Sec	Deg	Min	Sec		
Intercept TD		917.00	330.10	275.62	495151.88	1698149.89	39	51	16.224	N	80	34	30.660	W
-Circle (Radius: 1)														
East Center TD		917.00	3236.97	1919.48	498058.75	1699793.75	39	51	45.145	N	80	34	10.026	W
-Rectangle (2962x200)														

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# Scientific Drilling Survey Report - Geographic

WV Department of  
Environmental Protection

<b>Company:</b> CNX Gas Company, LLC	<b>Date:</b> 5/8/2008	<b>Time:</b> 11:05:10	<b>Page:</b> 1
<b>Field:</b> MARSHALL COUNTY, WV	<b>Co-ordinate(NE) Reference:</b>	<b>Well:</b> ACCESS MC-57, Grid North	
<b>Site:</b> MC 57 WELL LOCATION	<b>Vertical (TVD) Reference:</b>	GL 1343.14 + 8 1351.1	
<b>Well:</b> ACCESS MC-57	<b>Section (VS) Reference:</b>	<b>Well (0.00N,0.00E,28.55Azi)</b>	
<b>Wellpath:</b> EAST CENTER LEG	<b>Survey Calculation Method:</b>	Minimum Curvature	<b>Db:</b> Sybase

**Field:** MARSHALL COUNTY, WV  
Northern West Virginia and Pennsylvania Operations  
U.S.A.

**Map System:** US State Plane Coordinate System 1927  
**Geo Datum:** NAD27 (Clarke 1866)  
**Sys Datum:** Mean Sea Level

**Map Zone:** West Virginia, Northern Zone  
**Coordinate System:** Well Centre  
**Geomagnetic Model:** Igrf2005

**Site:** MC 57 WELL LOCATION

Marshall Co., WV

**Site Position:** Northing: 494821.78 ft Latitude: 39 51 12.929 N  
From: Map Easting: 1697874.27 ft Longitude: 80 34 34.143 W  
**Position Uncertainty:** 0.00 ft  
**Ground Level:** 1343.14 ft North Reference: Grid  
Grid Convergence: -0.69 deg

**Well:** ACCESS MC-57 **Slot Name:**

**Well Position:** +N/-S 0.00 ft Northing: 494821.78 ft Latitude: 39 51 12.929 N  
+E/-W 0.00 ft Easting: 1697874.27 ft Longitude: 80 34 34.143 W  
**Position Uncertainty:** 0.00 ft

**Wellpath:** EAST CENTER LEG

<b>Current Datum:</b> GL 1343.14 + 8	<b>Height</b> 1351.14 ft	<b>Drilled From:</b> EAST LEG
<b>Magnetic Data:</b> 4/25/2008		<b>Tie-on Depth:</b> 1479.00 ft
<b>Field Strength:</b> 53292 nT		<b>Above System Datum:</b> Mean Sea Level
<b>Vertical Section:</b> Depth From (TVD)	+N/-S	<b>Declination:</b> -8.48 deg
ft	ft	<b>Mag Dip Angle:</b> 67.82 deg
0.00	0.00	<b>+E/-W</b>
		ft
		<b>Direction</b>
		deg
		28.55

**Survey Program for Definitive Wellpath**

**Date:** 5/8/2008 **Validated:** No  
**Actual From** **To** **Survey** **Version:** 0  
**ft** **ft** **ft** **Toolcode** **Tool Name**

50.00	646.00	Survey #1 (0)	Drop Gyro-SYS	Drop Gyro Systematic
646.00	1321.00	Survey #2 (0)		
1321.00	1479.00	Survey #1 (3)	MWD-SDI-SYS	Scientific MWD Systematic
1479.00	4610.00	Survey #1	MWD-SDI-SYS	Scientific MWD Systematic

**Survey**

MD ft	Incl deg	Azlm deg	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude → Deg Min Sec	← Longitude → Deg Min Sec
0.00	0.48	226.20	0.00	0.00	0.00	494821.78	1697874.27	39 51 12.929 N	80 34 34.143 W
100.00	0.17	274.10	100.00	-0.22	-0.32	494821.56	1697873.95	39 51 12.927 N	80 34 34.147 W
200.00	0.23	200.30	200.00	-0.36	-0.55	494821.42	1697873.72	39 51 12.925 N	80 34 34.150 W
300.00	0.42	151.50	300.00	-0.89	-0.43	494820.89	1697873.84	39 51 12.920 N	80 34 34.148 W
400.00	0.32	170.30	399.99	-1.56	-0.19	494820.22	1697874.08	39 51 12.913 N	80 34 34.145 W
500.00	0.48	126.10	499.99	-2.03	0.15	494819.75	1697874.42	39 51 12.909 N	80 34 34.141 W
600.00	0.34	140.00	599.99	-2.48	0.71	494819.30	1697874.98	39 51 12.904 N	80 34 34.133 W
700.00	0.64	166.50	699.99	-3.34	0.71	494818.44	1697874.98	39 51 12.898 N	80 34 34.133 W
800.00	27.74	36.36	797.25	10.16	11.24	494831.94	1697885.51	39 51 13.031 N	80 34 34.000 W
900.00	59.11	39.60	866.49	65.96	54.04	494887.74	1697928.31	39 51 13.587 N	80 34 33.460 W
1000.00	75.58	38.99	904.82	137.36	112.19	494959.14	1697986.46	39 51 14.300 N	80 34 32.726 W
1100.00	86.34	39.04	916.13	213.75	175.48	495035.53	1698049.75	39 51 15.062 N	80 34 31.926 W
1200.00	89.19	39.46	918.78	291.42	238.40	495113.20	1698112.67	39 51 15.837 N	80 34 31.131 W
1300.00	90.65	40.17	918.56	367.37	303.44	495189.15	1698177.71	39 51 16.595 N	80 34 30.309 W
1400.00	92.85	47.87	916.54	439.86	372.07	495261.64	1698246.34	39 51 17.320 N	80 34 29.440 W
1500.00	90.52	48.57	912.99	505.11	447.72	495326.89	1698321.99	39 51 17.974 N	80 34 28.480 W
1600.00	90.88	40.60	912.39	577.06	517.08	495398.84	1698391.35	39 51 18.693 N	80 34 27.601 W
1700.00	89.86	31.51	912.40	657.25	576.68	495479.03	1698450.95	39 51 19.492 N	80 34 26.850 W
1800.00	90.79	26.84	912.34	745.35	623.93	495567.13	1698498.20	39 51 20.369 N	80 34 26.257 W
1900.00	90.29	25.00	910.43	835.17	667.83	495656.95	1698542.10	39 51 21.261 N	80 34 25.708 W

## Scientific Drilling Survey Report - Geographic

WV Department of  
Environmental Protection

<b>Company:</b> CNX Gas Company, LLC	<b>Date:</b> 5/8/2008	<b>Time:</b> 11:05:10	<b>Page:</b> 2
<b>Field:</b> MARSHALL COUNTY, WV	<b>Co-ordinate(NE) Reference:</b>	<b>Well:</b> ACCESS MC-57, Grid North	
<b>Site:</b> MC 57 WELL LOCATION, WV	<b>Vertical (TVD) Reference:</b>	GL 1343.14 + 8 1351.1	
<b>Well:</b> ACCESS MC-57	<b>Section (VS) Reference:</b>	Well (0.00N,0.00E,28.55Azi)	
<b>Wellpath:</b> EAST CENTER LEG	<b>Survey Calculation Method:</b>	Minimum Curvature	<b>Db:</b> Sybase

**Survey**

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude →		← Longitude →	
								Deg	Min	Sec	Deg
2000.00	90.76	24.31	910.08	926.12	709.40	495747.90	1698583.67	39	51	22.165	N 80 34 25.189 W
2100.00	91.62	23.13	908.42	1017.43	750.11	495839.21	1698624.38	39	51	23.072	N 80 34 24.681 W
2200.00	89.29	22.63	905.21	1109.54	788.89	495931.32	1698663.16	39	51	23.987	N 80 34 24.198 W
2300.00	89.43	24.21	909.38	1201.39	828.17	496023.17	1698702.44	39	51	24.899	N 80 34 23.708 W
2400.00	90.94	25.48	907.72	1291.78	870.88	496113.56	1698745.15	39	51	25.798	N 80 34 23.175 W
2500.00	89.37	27.43	907.55	1381.36	915.29	496203.14	1698789.56	39	51	26.688	N 80 34 22.619 W
2600.00	91.34	29.30	907.24	1469.67	962.20	496291.45	1698836.47	39	51	27.567	N 80 34 22.031 W
2700.00	89.14	29.58	905.56	1556.44	1011.86	496378.22	1698886.13	39	51	28.430	N 80 34 21.407 W
2800.00	86.78	31.71	910.30	1642.42	1062.66	496464.20	1698936.93	39	51	29.286	N 80 34 20.769 W
2900.00	90.71	29.33	911.26	1728.67	1113.20	496550.45	1698987.47	39	51	30.144	N 80 34 20.134 W
3000.00	90.10	29.68	910.72	1815.60	1162.62	496637.38	1699036.89	39	51	31.009	N 80 34 19.514 W
3100.00	91.63	31.89	908.64	1901.63	1213.50	496723.41	1699087.77	39	51	31.865	N 80 34 18.875 W
3200.00	88.74	31.98	908.57	1986.43	1266.48	496808.21	1699140.75	39	51	32.709	N 80 34 18.208 W
3300.00	89.83	24.07	910.72	2074.75	1313.12	496896.53	1699187.39	39	51	33.588	N 80 34 17.624 W
3400.00	93.07	26.11	906.64	2165.34	1355.18	496987.12	1699229.45	39	51	34.488	N 80 34 17.098 W
3500.00	90.60	27.25	903.44	2254.57	1400.18	497076.35	1699274.45	39	51	35.375	N 80 34 16.535 W
3600.00	91.97	27.38	902.26	2343.34	1446.21	497165.12	1699320.48	39	51	36.258	N 80 34 15.958 W
3700.00	91.65	28.74	897.75	2431.17	1493.79	497252.95	1699368.06	39	51	37.131	N 80 34 15.362 W
3800.00	88.61	28.30	897.39	2519.02	1541.53	497340.80	1699415.80	39	51	38.005	N 80 34 14.763 W
3900.00	89.03	28.14	900.89	2607.41	1588.16	497429.19	1699462.43	39	51	38.884	N 80 34 14.178 W
4000.00	89.72	28.73	901.69	2695.29	1635.87	497517.07	1699510.14	39	51	39.758	N 80 34 13.580 W
4100.00	89.80	28.66	900.59	2782.89	1684.08	497604.67	1699558.35	39	51	40.630	N 80 34 12.975 W
4200.00	91.32	28.31	899.80	2870.87	1731.62	497692.65	1699605.89	39	51	41.505	N 80 34 12.379 W
4300.00	90.94	29.73	897.43	2958.27	1780.14	497780.05	1699654.41	39	51	42.374	N 80 34 11.770 W
4400.00	90.75	30.54	895.23	3044.79	1830.23	497866.57	1699704.50	39	51	43.235	N 80 34 11.141 W
4500.00	89.84	30.04	895.02	3131.15	1880.63	497952.93	1699754.90	39	51	44.095	N 80 34 10.508 W
4600.00	91.04	29.77	894.10	3217.86	1930.44	498039.64	1699804.71	39	51	44.957	N 80 34 9.882 W
4610.00	91.04	29.77	893.91	3226.54	1935.40	498048.32	1699809.67	39	51	45.044	N 80 34 9.820 W

**Targets**

Name	Description	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	← Latitude →		← Longitude →	
							Deg	Min	Sec	Deg
Intercept TD		917.00	330.10	275.62	495151.88	1698149.89	39	51	16.224	N 80 34 30.660 W
-Circle (Radius: 1)										
East Center TD		917.00	3236.97	1919.48	498058.75	1699793.75	39	51	45.145	N 80 34 10.026 W
-Rectangle (2962x200)										



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JOB NO.:	21D0408311	Report Time:	2400	1 of 12
COMPANY:	CNX GAS	API JOB #		
LOCATION:	Northern Appalachian Basin	WORK ORDER#	126807	
RIG NAME:	Crown Rig # 2	FIELD:	Marshall County	
STATE:	West Virginia	Township:	Cameron	
COUNTY:	Marshall County	SECT/RANGE:		
WELL NAME:	MC-57			

From Saturday, April 26, 2008 at 0000 to Saturday, April 26, 2008 at 2400

DRILLING SUMMARY				Drilling Parameters							
Start Depth	663.00	Rotary Hours	2.00	WOB	670	Pick UP	0	Slack Off	0	SPM	
End Depth	786.00	Circulating Hours	1.00	RAB	0	SPP	300	FlowRate	0-0		0
Total Drilled:	123.00	Avg. Total ROP:	17.57	<b>Mud Data</b>							
Total Rotary Drilled:	71.00	Avg. Rotary ROP:	35.50	Type		PV	0	SOLID		0	
Total Drilled Sliding:	52.00	Avg. Slide ROP:	10.40	Weight	0	GAS	0	YP	0	BHT°	0
Slide Hours:	5.00	Percent Rotary:	57.72	Viscosity	0	SAND	0	PH	0	Flow T°	0
Below Rotary Hrs.	16.00	Percent Slide:	42.28	Chlorides	0	WL	0			Oil %	0

PERSONNEL		CASING			BHA		
Lead Directional :	Robert Domingue	Size	Lb/ft	Set Depth	BHA # 1:4 3/4 XR20, 3 3/4 7/8 lobe 2.3 stage 3 deg bend, 3 1/2 Float Sub, 3 1/2 NM MSS, 3 1/2 NM Pony Flex, 3 3/4 Drill Collar, 3 1/2 Gap Sub, 3 1/2 NM Flex DC, 3 7/8 X/O.		
Second Directional :	Toby Barrick	Signature:					
MWD Operator1	Brandon Fruge						
MWD Operator2	Larry Romero - Robert McCarthy						
Directional Company:	SDI						
Geologist:							
Company Man:	Joshua Hinton						
Incl. In:	0	Azm. In:	0	Incl. Out:	0	Azm. Out:	0

**GENERAL COMMENT**

Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
26-Apr-08	00:00	08:00	8.00	0	0	Standby	Rigging Up
26-Apr-08	08:00	09:30	1.50	663	663	TIH	TIH Blow Water
26-Apr-08	09:30	10:00	0.50	663	670	Drilling	Drig Cement,Shoe,
26-Apr-08	10:00	11:30	1.50	670	734	Drilling	Drig
26-Apr-08	11:30	12:30	1.00	734	734	Circulating	Circulating
26-Apr-08	12:30	13:00	0.50	734	734	POOH	POOH
26-Apr-08	13:00	15:20	2.33	734	734	Change BHA	Change BHA
26-Apr-08	15:20	16:00	0.67	734	734	TIH	TIH
26-Apr-08	16:00	16:40	0.67	734	734	Other	Try to orient,interference, no luck
26-Apr-08	16:40	17:25	0.75	734	734	POOH	POOH scribe pipe
26-Apr-08	17:25	18:25	1.00	734	734	TIH	TIH scribe pipe all the way in hole
26-Apr-08	18:25	18:40	0.25	734	734	Rig repair	Work on boom pin
26-Apr-08	18:40	19:00	0.33	734	734	TIH	TIH
26-Apr-08	19:00	24:00	5.00	734	786	Sliding	Sliding

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<b>JOB NO.:</b> 21D0408311	<b>Report Time:</b> 2400	2 of 12
<b>COMPANY:</b> CNX GAS	<b>API JOB #</b>	
<b>LOCATION:</b> Northern Appalachain Basin	<b>WORK ORDER#</b> 126807	
<b>RIG NAME:</b> Crown Rig # 2	<b>FIELD:</b> Marshall County	
<b>STATE:</b> West Virginia	<b>Township:</b> Cameron	
<b>COUNTY:</b> Marshall County	<b>SECTRANGE:</b>	
<b>WELL NAME:</b> MC-57		

From Sunday, April 27, 2008 at 0000 to Sunday, April 27, 2008 at 2400

DRILLING SUMMARY				Drilling Parameters							
Start Depth	786.00	Rotary Hours	0.00	WOB	670	Pick UP	0	Slack Off	0	SPM	
End Depth	1047.00	Circulating Hours	0.67	RAB	0	SPP	640	FlowRate	0-0	0	
Total Drilled:	261.00	Avg. Total ROP:	12.73	Mud Data							
Total Rotary Drilled:	0.00	Avg. Rotary ROP:	NA	Type		PV	0	SOLID	0		
Total Drilled Sliding:	261.00	Avg. Slide ROP:	12.73	Weight	0	GAS	0	YP	0	BHT°	0
Slide Hours:	20.50	Percent Rotary:	.00	Viscosity	0	SAND	0	PH	0	Flow T°	0
Below Rotary Hrs.	24.00	Percent Slide:	100.00	Chlorides	0	WL	0			Oil %	0

PERSONNEL		cASING			BHA		
Lead Directional :	Robert Domingue	Size	Lb/ft	Set Depth	BHA # 2-4 3/4 XR20, Vector Magnet Sub, 3 3/4 7/8 lobe 2.3 stage 3 deg bend, 3 1/2 Float Sub, 3 1/2 NM MSS, 3 1/2 NM Pony Flex, 3 3/4 Drill Collar, 3 1/2 Gap Sub, 3 1/2 NM Flex DC, 3 7/8 X/O.		
Second Directional :	Toby Barrick	Signature:					
MWD Operator1	Brandon Fruge						
MWD Operator2	Larry Romero - Robert McCarthy						
Directional Company:	SDI						
Geologist:							
Company Man:	Joshua Hinton						
Incl. In:	0	Azm. In:	0	Incl. Out:	0	Azm. Out:	0

**GENERAL COMMENT**

Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
27-Apr-08	00:00	07:30	7.50	786	871	Sliding	Sliding
27-Apr-08	07:30	07:50	0.33	871	871	Circulating	Circulating PolyPlus Sweep
27-Apr-08	07:50	08:30	0.67	871	871	POOH	POOH
27-Apr-08	08:30	09:45	1.25	871	871	Change BHA	Dial down motor and add Vector magnet
27-Apr-08	09:45	10:10	0.42	871	871	Rig Service-Inhole	Rig Service-Inhole
27-Apr-08	10:10	10:40	0.50	871	871	TIH	TIH
27-Apr-08	10:40	11:00	0.33	871	871	Circulating	Adjust air pressure
27-Apr-08	11:00	24:00	13.00	871	1047	Sliding	Drilling Curve

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<b>JOB NO.:</b> 21D0408311	<b>Report Time:</b> 2400	3 of 12
<b>COMPANY:</b> CNX GAS	<b>API JOB #</b>	
<b>LOCATION:</b> Northern Appalachian Basin	<b>WORK ORDER#</b> 126807	
<b>RIG NAME:</b> Crown Rig # 2	<b>FIELD:</b> Marshall County	
<b>STATE:</b> West Virginia	<b>Township:</b> Cameron	
<b>COUNTY:</b> Marshall County	<b>SECTRANGE:</b>	
<b>WELL NAME:</b> MC-57		

From Monday, April 28, 2008 at 0000 to Monday, April 28, 2008 at 2400

DRILLING SUMMARY				Drilling Parameters							
Start Depth	1047.00	Rotary Hours	5.83	WOB	5	Pick UP	0	Slack Off	0	SPM	
End Depth	1806.00	Circulating Hours	1.50	RAB	0	SPP	600	FlowRate	0.0	0	
Total Drilled:	759.00	Avg. Total ROP:	58.76	Mud Data							
Total Rotary Drilled:	520.00	Avg. Rotary ROP:	89.14	Type		PV	0	SOLID	0		
Total Drilled Sliding:	239.00	Avg. Slide ROP:	33.74	Weight	0	GAS	0	YP	0	BHT°	0
Slide Hours:	7.08	Percent Rotary:	68.51	Viscosity	0	SAND	0	PH	0	Flow T°	0
Below Rotary Hrs.	24.00	Percent Slide:	31.49	Chlorides	0	WL	0			Oil %	0

PERSONNEL		cASING			BHA		
Lead Directional :	Robert Domingue	Size	Lb/ft	Set Depth	BHA # 3/4 3/4 XR15, 3 3/4 7/8 lobe 2.3 stage 3 deg bend, 3 1/2 Float Sub, 3 1/2 NM MSS, 3 1/2 NM Pony Flex, 3 3/4 Drill Collar, 3 1/2 Gap Sub, 3 1/2 NM Flex DC, 3 7/8 X/O.		
Second Directional :	Toby Barrick	Signature:					
MWD Operator1	Brandon Fruge						
MWD Operator2	Larry Romero - Robert McCarthy						
Directional Company:	SDI						
Geologist:							
Company Man:	Joshua Hinton						
Incl. In:	0	Azm. In:	0	Incl. Out:	0	Azm. Out:	0

GENERAL COMMENT

Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
28-Apr-08	00:00	00:45	0.75	1047	1079	Drilling	Drill land top Pittsburg Coal @ 914 TVD
28-Apr-08	00:45	01:15	0.50	1079	1079	Circulating	Circulating Hole Clean
28-Apr-08	01:15	04:45	3.50	1079	1079	Other	perma Block Well
28-Apr-08	04:45	05:45	1.00	1079	1079	Short Trip	Short Trip to shoe hold pressure on Block
28-Apr-08	05:45	06:35	0.83	1079	1079	TIH	TIH
28-Apr-08	06:35	12:15	5.67	1079	1241	Sliding	Sliding & Drig to intercept
28-Apr-08	12:15	12:30	0.25	1241	1241	Other	Pull Vector Tool
28-Apr-08	12:30	12:45	0.25	1241	1251	Drilling	Drilling - Intercept Production well
28-Apr-08	12:45	13:00	0.25	1251	1267	Drilling	Drilling - (WOB:4;GPM :0;RPM:40)
28-Apr-08	13:00	14:00	1.00	1267	1267	Circulating	Circulating Hook up Compressor & Blow Down Well
28-Apr-08	14:00	15:00	1.00	1267	1267	POOH	POOH
28-Apr-08	15:00	17:00	2.00	1267	1267	Change BHA	Change BHA
28-Apr-08	17:00	17:30	0.50	1267	1267	TIH	TIH
28-Apr-08	17:30	18:00	0.50	1267	1267	Rig Service-Inhole	Rig Service-Inhole
28-Apr-08	18:00	18:45	0.75	1267	1347	Drilling	Drilling - (WOB:4;GPM :0;RPM:40)
28-Apr-08	18:45	18:50	0.08	1347	1351	Sliding	Sliding - (WOB:670;GPM :0;TFO:-45)
28-Apr-08	18:50	20:20	1.50	1351	1490	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)

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Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
28-Apr-08	20:20	20:25	0.08	1490	1500	Sliding	Sliding - (WOB:670;GPM :0;TFO:-100)
28-Apr-08	20:25	20:55	0.50	1500	1553	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
28-Apr-08	20:55	21:00	0.08	1553	1561	Sliding	Sliding - (WOB:670;GPM :0;TFO:-90)
28-Apr-08	21:00	21:30	0.50	1561	1616	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
28-Apr-08	21:30	21:45	0.25	1616	1625	Sliding	Sliding - (WOB:670;GPM :0;TFO:-85)
28-Apr-08	21:45	21:55	0.17	1625	1648	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
28-Apr-08	21:55	22:05	0.17	1648	1657	Sliding	Sliding - (WOB:670;GPM :0;TFO:-90)
28-Apr-08	22:05	22:20	0.25	1657	1673	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
28-Apr-08	22:20	22:25	0.08	1673	1677	Sliding	Sliding - (WOB:670;GPM :0;TFO:360)
28-Apr-08	22:25	22:30	0.08	1677	1679	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
28-Apr-08	22:30	22:45	0.25	1679	1687	Sliding	Sliding - (WOB:670;GPM :0;TFO:-90)
28-Apr-08	22:45	23:00	0.25	1687	1711	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
28-Apr-08	23:00	23:10	0.17	1711	1718	Sliding	Sliding - (WOB:670;GPM :0;TFO:-90)
28-Apr-08	23:10	23:20	0.17	1718	1743	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
28-Apr-08	23:20	23:30	0.17	1743	1752	Sliding	Sliding - (WOB:670;GPM :0;TFO:-90)
28-Apr-08	23:30	23:45	0.25	1752	1774	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
28-Apr-08	23:45	23:50	0.08	1774	1783	Sliding	Sliding - (WOB:670;GPM :0;TFO:-90)
28-Apr-08	23:50	24:00	0.17	1783	1806	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)

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<b>JOB NO.:</b>	21D0408311	<b>Report Time:</b>	2400	4 of 12
<b>COMPANY:</b>	CNX GAS	<b>API JOB #</b>		
<b>LOCATION:</b>	Northern Appalachian Basin	<b>WORK ORDER#</b>	126807	
<b>RIG NAME:</b>	Crown Rig # 2	<b>FIELD:</b>	Marshall County	
<b>STATE:</b>	West Virginia	<b>Township:</b>	Cameron	
<b>COUNTY:</b>	Marshall County	<b>SECTRANGE:</b>		
<b>WELL NAME:</b>	MC-57			

From Tuesday, April 29, 2008 at 0000 to Tuesday, April 29, 2008 at 2400

DRILLING SUMMARY				Drilling Parameters							
Start Depth	1806.00	Rotary Hours	8.50	WOB	5	Pick UP	0	Slack Off	0	SPM	
End Depth	2659.00	Circulating Hours	0.00	RAB	0	SPP	600	FlowRate	0-0	0	
Total Drilled:	1022.00	Avg. Total ROP:	47.72	<b>Mud Data</b>							
Total Rotary Drilled:	706.00	Avg. Rotary ROP:	83.06	Type		PV	0	SOLID	0		
Total Drilled Sliding:	316.00	Avg. Slide ROP:	24.46	Weight	0	GAS	0	YP	0	BHT°	0
Slide Hours:	12.92	Percent Rotary:	69.08	Viscosity	0	SAND	0	PH	0	Flow T°	0
Below Rotary Hrs.	24.00	Percent Slide:	30.92	Chlorides	0	WL	0			Oil %	0

PERSONNEL		cASING			BHA		
Lead Directional :	Robert Domingue	Size	Lb/ft	Set Depth	BHA # 4:4 3/4 XR15, 3 3/4 7/8 tobe 2.3 stage 3 deg bend, 3 1/2 Float Sub, 3 1/2 NM MSS, 3 1/2 NM Pony Flex, 3 3/4 Drill Collar, 3 1/2 Gap Sub, 3 1/2 NM Flex DC, 3 7/8 X/O,		
Second Directional :	Toby Barrick	Signature:					
MWD Operator1	Brandon Fruge						
MWD Operator2	Larry Romero - Robert McCarthy						
Directional Company:	SDI						
Geologist:							
Company Man:	Joshua Hinton						
Incl. In:	0	Azm. In:	0	Incl. Out:	0	Azm. Out:	0

**GENERAL COMMENT**

Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
29-Apr-08	00:00	00:15	0.25	1806	1815	Sliding	Sliding - (WOB:670;GPM :0;TFO:-90)
29-Apr-08	00:15	00:30	0.25	1815	1837	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	00:30	00:40	0.17	1837	1846	Sliding	Sliding - (WOB:670;GPM :0;TFO:-80)
29-Apr-08	00:40	00:55	0.25	1846	1869	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	00:55	01:10	0.25	1869	1880	Sliding	Sliding - (WOB:670;GPM :0;TFO:-60)
29-Apr-08	01:10	01:15	0.08	1880	1886	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	01:15	01:20	0.08	1886	1891	Sliding	Sliding - (WOB:670;GPM :0;TFO:360)
29-Apr-08	01:20	01:30	0.17	1891	1901	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	01:30	01:45	0.25	1901	1912	Sliding	Sliding - (WOB:670;GPM :0;TFO:-80)
29-Apr-08	01:45	01:55	0.17	1912	1932	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	01:55	02:05	0.17	1932	1942	Sliding	Sliding - (WOB:670;GPM :0;TFO:-90)
29-Apr-08	02:05	02:15	0.17	1942	1964	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	02:15	02:25	0.17	1964	1975	Sliding	Sliding - (WOB:670;GPM :0;TFO:-90)
29-Apr-08	02:25	02:35	0.17	1975	1995	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	02:35	02:45	0.17	1995	2006	Sliding	Sliding - (WOB:670;GPM :0;TFO:-90)
29-Apr-08	02:45	03:00	0.25	2006	2027	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	03:00	03:15	0.25	2027	2038	Sliding	Sliding - (WOB:670;GPM :0;TFO:-100)

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Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
29-Apr-08	03:15	03:25	0.17	2038	2060	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	03:25	03:40	0.25	2060	2071	Sliding	Sliding - (WOB:670;GPM :0;TFO:-90)
29-Apr-08	03:40	03:55	0.25	2071	2091	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	03:55	04:10	0.25	2091	2102	Sliding	Sliding - (WOB:670;GPM :0;TFO:-80)
29-Apr-08	04:10	04:25	0.25	2102	2123	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	04:25	04:35	0.17	2123	2134	Sliding	Sliding - (WOB:670;GPM :0;TFO:-60)
29-Apr-08	04:35	04:55	0.33	2134	2154	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	04:55	05:10	0.25	2154	2165	Sliding	Sliding - (WOB:670;GPM :0;TFO:-60)
29-Apr-08	05:10	05:25	0.25	2165	2184	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	05:25	05:30	0.08	2184	2196	Sliding	Sliding - (WOB:670;GPM :0;TFO:-70)
29-Apr-08	05:30	05:45	0.25	2196	2216	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	05:45	06:15	0.50	2216	2228	Sliding	Sliding - (WOB:670;GPM :0;TFO:-70)
29-Apr-08	06:15	06:30	0.25	2228	2248	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	06:30	07:00	0.50	2248	2253	Sliding	Sliding - (WOB:670;GPM :0;TFO:-80)
29-Apr-08	07:00	07:05	0.08	2253	2258	Sliding	Sliding - (WOB:670;GPM :0;TFO:-80)
29-Apr-08	07:05	07:15	0.17	2258	2264	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	07:15	07:25	0.17	2264	2267	Sliding	Sliding - (WOB:670;GPM :0;TFO:-90)
29-Apr-08	07:25	07:30	0.08	2267	2276	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	07:30	07:35	0.08	2276	2278	Sliding	Sliding - (WOB:670;GPM :0;TFO:-150)
29-Apr-08	07:35	07:45	0.17	2278	2284	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	07:45	07:50	0.08	2284	2293	Sliding	Sliding - (WOB:670;GPM :0;TFO:180)
29-Apr-08	07:50	08:00	0.17	2293	2301	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	08:00	08:05	0.08	2301	2303	Sliding	Sliding - (WOB:670;GPM :0;TFO:-150)
29-Apr-08	08:05	08:10	0.08	2303	2310	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	08:10	08:35	0.42	2310	2342	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	08:35	08:45	0.17	2342	2347	Sliding	Sliding - (WOB:670;GPM :0;TFO:180)
29-Apr-08	08:45	09:00	0.25	2347	2374	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	09:00	09:10	0.17	2374	2390	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	09:10	09:20	0.17	2390	2395	Sliding	Sliding - (WOB:670;GPM :0;TFO:0)
29-Apr-08	09:20	09:25	0.08	2395	2405	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	09:25	09:40	0.25	2405	2438	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	09:40	10:15	0.58	2438	2438	Rig Service-Inhole	Rig Service-Inhole
29-Apr-08	10:15	10:25	0.17	2438	2448	Sliding	Sliding - (WOB:670;GPM :0;TFO:130)
29-Apr-08	10:25	10:35	0.17	2448	2469	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	10:35	10:50	0.25	2469	2472	Sliding	Sliding - (WOB:670;GPM :0;TFO:110)
29-Apr-08	10:50	11:00	0.17	2472	2501	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	11:00	11:25	0.42	2501	2532	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	11:25	12:00	0.58	2532	2547	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	12:00	12:15	0.25	2547	2564	Sliding	Sliding - (WOB:670;GPM :0;TFO:25)
29-Apr-08	12:15	12:40	0.42	2564	2596	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	12:40	13:00	0.33	2596	2596	Rig repair	Rig repair
29-Apr-08	13:00	13:05	0.08	2596	2606	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	13:05	13:25	0.33	2606	2606	Rig repair	Rig repair
29-Apr-08	13:25	14:20	0.92	2606	2606	Other	Taking Gama counts
29-Apr-08	14:20	14:30	0.17	2606	2627	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	14:30	14:50	0.33	2627	2659	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	14:50	15:15	0.42	2216	2216	Short Trip	P/U to 2216 for sidetrack out of coal
29-Apr-08	15:15	15:45	0.50	2216	2216	Sliding	Sliding- Trough for SideTrack.

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Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
29-Apr-08	15:45	20:45	5.00	2216	2232	Sliding	Sliding - Time Drill (WOB:670;GPM :0;TFO:120)
29-Apr-08	20:45	21:40	0.92	2232	2264	Sliding	Sliding - (WOB:0;GPM :0;TFO:110)
29-Apr-08	21:40	21:50	0.17	2264	2279	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	21:50	22:05	0.25	2279	2290	Sliding	Sliding - (WOB:5;GPM :0;TFO:-90)
29-Apr-08	22:05	22:20	0.25	2290	2311	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	22:20	22:40	0.33	2311	2324	Sliding	Sliding - (WOB:5;GPM :0;TFO:-70)
29-Apr-08	22:40	23:05	0.42	2324	2343	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	23:05	23:35	0.50	2343	2354	Sliding	Sliding - (WOB:5;GPM :0;TFO:-70)
29-Apr-08	23:35	23:50	0.25	2354	2374	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
29-Apr-08	23:50	24:00	0.17	2374	2385	Sliding	Sliding - (WOB:5;GPM :0;TFO:-70)

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Vermont Department of  
Environmental Protection

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WV Department of  
Environmental Protection



JOB NO.:	21D0408311	Report Time:	2400	5 of 12
COMPANY:	CNX GAS	API JOB #		
LOCATION:	Northern Appalachian Basin	WORK ORDER#	126807	
RIG NAME:	Crown Rig # 2	FIELD:	Marshall County	
STATE:	West Virginia	Township:	Cameron	
COUNTY:	Marshall County	SECTRANGE:		
WELL NAME:	MC-57			

From Wednesday, April 30, 2008 at 0000 to Wednesday, April 30, 2008 at 2400

DRILLING SUMMARY				Drilling Parameters							
Start Depth	2385.00	Rotary Hours	16.50	WOB	5	Pick UP	0	Slack Off	0	SPM	
End Depth	3797.00	Circulating Hours	0.92	RAB	0	SPP	600	FlowRate	0-0	0	
Total Drilled:	1412.00	Avg. Total ROP:	65.17	Mud Data							
Total Rotary Drilled:	1249.00	Avg. Rotary ROP:	75.70	Type				PV	0	SOLID	0
Total Drilled Sliding:	163.00	Avg. Slide ROP:	31.55	Weight	0	GAS	0	YP	0	BHT°	0
Slide Hours:	5.17	Percent Rotary:	88.46	Viscosity	0	SAND	0	PH	0	Flow T°	0
Below Rotary Hrs.	24.00	Percent Slide:	11.54	Chlorides	0	WL	0			Oil %	0

PERSONNEL		cASING			BHA		
Lead Directional :	Robert Domingue	Size	Lb/ft	Set Depth	BHA # 4:4 3/4 XR15, 3 3/4 7/8 lobe 2.3 stage 3 deg bend, 3 1/2 Float Sub, 3 1/2 NM MSS, 3 1/2 NM Pony Flex, 3 3/4 Drill Collar, 3 1/2 Gap Sub, 3 1/2 NM Flex DC, 3 7/8 X/O,		
Second Directional :	Toby Barrick	Signature:					
MWD Operator1	Brandon Fruge						
MWD Operator2	Lary Romero - Robert McCarthy						
Directional Company:	SDI						
Geologist:							
Company Man:	Joshua Hinton						
Incl. In:	0	Azm. In:	0	Incl. Out:	0	Azm. Out:	0

GENERAL COMMENT

Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
30-Apr-08	00:00	00:05	0.08	2385	2387	Sliding	Sliding - (WOB:5;GPM :0;TFO:-70)
30-Apr-08	00:05	00:15	0.17	2387	2406	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	00:15	00:35	0.33	2406	2406	Rig Service-Inhole	Rig Service-Inhole
30-Apr-08	00:35	00:45	0.17	2406	2419	Sliding	Sliding - (WOB:5;GPM :0;TFO:-90)
30-Apr-08	00:45	01:20	0.58	2419	2469	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	01:20	01:25	0.08	2469	2472	Sliding	Sliding - (WOB:5;GPM :0;TFO:-150)
30-Apr-08	01:25	01:35	0.17	2472	2485	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	01:35	01:40	0.08	2485	2490	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
30-Apr-08	01:40	02:45	1.08	2490	2602	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	02:45	02:55	0.17	2602	2607	Sliding	Sliding - (WOB:5;GPM :0;TFO:170)
30-Apr-08	02:55	03:40	0.75	2607	2659	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	03:40	03:50	0.17	2659	2667	Sliding	Sliding - (WOB:5;GPM :0;TFO:10)
30-Apr-08	03:50	04:25	0.58	2667	2700	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	04:25	04:35	0.17	2700	2706	Sliding	Sliding - (WOB:5;GPM :0;TFO:10)
30-Apr-08	04:35	05:00	0.42	2706	2738	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	05:00	05:15	0.25	2738	2744	Sliding	Sliding - (WOB:5;GPM :0;TFO:10)
30-Apr-08	05:15	05:20	0.08	2744	2753	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)



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Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
30-Apr-08	05:20	05:40	0.33	2753	2773	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	05:40	05:45	0.08	2773	2779	Sliding	Sliding - (WOB:5;GPM :0;TFO:125)
30-Apr-08	05:45	05:55	0.17	2779	2789	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	05:55	06:00	0.08	2789	2790	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
30-Apr-08	06:00	06:15	0.25	2790	2816	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	06:15	06:20	0.08	2816	2819	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	06:20	06:45	0.42	2819	2824	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
30-Apr-08	06:45	07:05	0.33	2824	2847	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	07:05	07:35	0.50	2847	2853	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	07:35	07:40	0.08	2853	2859	Sliding	Sliding - (WOB:5;GPM :0;TFO:15)
30-Apr-08	07:40	07:50	0.17	2859	2878	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	07:50	08:10	0.33	2878	2894	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	08:10	08:15	0.08	2894	2899	Sliding	Sliding - (WOB:5;GPM :0;TFO:20)
30-Apr-08	08:15	08:20	0.08	2899	2909	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	08:20	08:35	0.25	2909	2925	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	08:35	08:40	0.08	2925	2927	Sliding	Sliding - (WOB:5;GPM :0;TFO:160)
30-Apr-08	08:40	08:50	0.17	2927	2941	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	08:50	09:00	0.17	2941	2958	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	09:00	09:10	0.17	2958	2968	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
30-Apr-08	09:10	09:15	0.08	2968	2973	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	09:15	09:40	0.42	2973	2973	Rig Service-Inhole	Rig Service-Inhole
30-Apr-08	09:40	09:55	0.25	2973	2996	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	09:55	10:20	0.42	2996	3006	Sliding	Sliding - (WOB:5;GPM :0;TFO:90)
30-Apr-08	10:20	10:35	0.25	3006	3011	Sliding	Sliding - (WOB:5;GPM :0;TFO:90)
30-Apr-08	10:35	10:45	0.17	3011	3036	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	10:45	11:00	0.25	3036	3051	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	11:00	11:10	0.17	3051	3059	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
30-Apr-08	11:10	11:15	0.08	3059	3067	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	11:15	11:25	0.17	3067	3076	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	11:25	11:30	0.08	3076	3079	Sliding	Sliding - (WOB:5;GPM :0;TFO:10)
30-Apr-08	11:30	11:35	0.08	3079	3083	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	11:35	11:40	0.08	3083	3087	Sliding	Sliding - (WOB:5;GPM :0;TFO:0)
30-Apr-08	11:40	11:50	0.17	3087	3092	Sliding	Sliding - (WOB:5;GPM :0;TFO:0)
30-Apr-08	11:50	12:05	0.25	3092	3099	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	12:05	12:30	0.42	3099	3126	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	12:30	12:35	0.08	3126	3129	Sliding	Sliding - (WOB:5;GPM :0;TFO:0)
30-Apr-08	12:35	12:40	0.08	3129	3131	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	12:40	13:00	0.33	3131	3158	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	13:00	13:05	0.08	3158	3163	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
30-Apr-08	13:05	13:30	0.42	3163	3193	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	13:30	13:35	0.08	3193	3196	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
30-Apr-08	13:35	14:00	0.42	3196	3226	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	14:00	14:10	0.17	3226	3236	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	14:10	14:15	0.08	3236	3238	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
30-Apr-08	14:15	14:30	0.25	3238	3250	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	14:30	14:40	0.17	3250	3253	Sliding	Sliding - (WOB:5;GPM :0;TFO:170)
30-Apr-08	14:40	14:45	0.08	3253	3258	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	14:45	15:10	0.42	3258	3268	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)

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Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
30-Apr-08	15:10	15:15	0.08	3268	3271	Sliding	Sliding - (WOB:5;GPM :0;TFO:10)
30-Apr-08	15:15	16:05	0.83	3271	3347	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	16:05	16:25	0.33	3347	3353	Sliding	Sliding - (WOB:5;GPM :0;TFO:20)
30-Apr-08	16:25	17:05	0.67	3353	3395	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	17:05	17:15	0.17	3395	3400	Sliding	Sliding - (WOB:5;GPM :0;TFO:95)
30-Apr-08	17:15	17:40	0.42	3400	3443	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	17:40	17:45	0.08	3443	3444	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
30-Apr-08	17:45	18:25	0.67	3444	3506	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	18:25	18:35	0.17	3506	3508	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
30-Apr-08	18:35	19:00	0.42	3508	3542	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	19:00	19:40	0.67	3542	3542	Rig Service-Inhole	Rig Service-Inhole
30-Apr-08	19:40	19:50	0.17	3542	3558	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	19:50	19:55	0.08	3558	3560	Sliding	Sliding - (WOB:5;GPM :0;TFO:170)
30-Apr-08	19:55	20:15	0.33	3560	3590	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	20:15	20:25	0.17	3590	3590	Circulating	Gamma Counts
30-Apr-08	20:25	20:45	0.33	3590	3622	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	20:45	21:00	0.25	3622	3622	Circulating	Gamma Counts
30-Apr-08	21:00	21:05	0.08	3622	3625	Sliding	Sliding - (WOB:5;GPM :0;TFO:360)
30-Apr-08	21:05	22:00	0.92	3625	3685	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	22:00	22:30	0.50	3685	3685	Circulating	Clean hole
30-Apr-08	22:30	22:35	0.08	3685	3688	Sliding	Sliding - (WOB:5;GPM :0;TFO:170)
30-Apr-08	22:35	23:05	0.50	3688	3727	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	23:05	23:10	0.08	3727	3729	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
30-Apr-08	23:10	23:35	0.42	3729	3760	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
30-Apr-08	23:35	23:45	0.17	3760	3762	Sliding	Sliding - (WOB:5;GPM :0;TFO:160)
30-Apr-08	23:45	24:00	0.25	3762	3797	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)

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SEP 25 2017  
WV Department of  
Environmental Protection



JOB NO.:	21D0408311	Report Time:	2400	6 of 12
COMPANY:	CNX GAS	API JOB #		
LOCATION:	Northern Appalachian Basin	WORK ORDER#	126807	
RIG NAME:	Crown Rig # 2	FIELD:	Marshall County	
STATE:	West Virginia	Township:	Cameron	
COUNTY:	Marshall County	SECTRANGE:		
WELL NAME:	MC-57			

From Thursday, May 01, 2008 at 0000 to Thursday, May 01, 2008 at 2400

DRILLING SUMMARY				Drilling Parameters							
Start Depth	1901.00	Rotary Hours	9.00	WOB	5	Pick UP	0	Slack Off	0	SPM	
End Depth	4018.00	Circulating Hours	0.67	RAB	0	SPP	600	FlowRate	0-0	0	
Total Drilled:	1026.00	Avg. Total ROP:	64.13	Mud Data							
Total Rotary Drilled:	1003.00	Avg. Rotary ROP:	111.44	Type		PV	0	SOLID	0		
Total Drilled Sliding:	23.00	Avg. Slide ROP:	3.29	Weight	0	GAS	0	YP	0	BHT°	0
Slide Hours:	7.00	Percent Rotary:	97.76	Viscosity	0	SAND	0	PH	0	Flow T°	0
Below Rotary Hrs.	24.00	Percent Slide:	2.24	Chlorides	0	WL	0			Oil %	0

PERSONNEL				cASING			BHA
Lead Directional :	Robert Domingue			Size	Lb/ft	Set Depth	BHA # 5:4 3/4 XR15, 3 3/4 7/8 lobe 2.3 stage 3 deg bend, 3 1/2 Float Sub, 3 1/2 NM MSS, 3 1/2 NM Pony Flex, 3 3/4 Drill Collar, 3 1/2 Gap Sub, 3 1/2 NM Flex DC, 3 7/8 XO,
Second Directional :	Toby Barrick						
MWD Operator1	Brandon Fruge						
MWD Operator2	Larry Romero - Robert McCarthey						
Directional Company:	SDI						
Geologist:							
Company Man:	Joshua Hinton			Signature:			
Incl. In:	0	Azm. In:	0	Incl. Out:	0	Azm. Out:	0

GENERAL COMMENT

Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
1-May-08	01:50	02:05	0.25	3939	3941	Sliding	Sliding - (WOB:5;GPM :0;TFO:20)
1-May-08	02:05	02:45	0.67	3941	4018	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	02:45	06:45	4.00	1901	1901	Short Trip	Short Trip to 1901 to sidetrack west center
1-May-08	06:45	07:50	1.08	1901	1901	Rig Service-Inhole	Rig Service-Inhole
1-May-08	07:50	08:20	0.50	1901	1901	Circulating	Work while make trough
1-May-08	08:20	10:00	1.67	1901	1906	Sliding	Sliding - (WOB:5;GPM :0;TFO:20)
1-May-08	10:00	11:30	1.50	1906	1912	Sliding	Sliding - (WOB:5;GPM :0;TFO:20)
1-May-08	11:30	11:45	0.25	1912	1933	Sliding	Sliding - (WOB:5;GPM :0;TFO:120)
1-May-08	11:45	12:00	0.25	1933	1964	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	00:00	00:20	0.33	3797	3813	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	00:20	00:25	0.08	3813	3816	Sliding	Sliding - (WOB:5;GPM :0;TFO:160)
1-May-08	00:25	01:50	1.42	3816	3939	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	12:00	12:10	0.17	1964	1969	Sliding	Sliding - (WOB:5;GPM :0;TFO:85)
1-May-08	12:10	12:20	0.17	1969	1995	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	12:20	12:40	0.33	1995	2004	Sliding	Sliding - (WOB:5;GPM :0;TFO:-85)
1-May-08	12:40	12:50	0.17	2004	2022	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	12:50	12:55	0.08	2022	2025	Sliding	Sliding - (WOB:5;GPM :0;TFO:-120)

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Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
1-May-08	12:55	13:00	0.08	2025	2027	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	13:00	13:20	0.33	2027	2060	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	13:20	13:30	0.17	2060	2065	Sliding	Sliding - (WOB:5;GPM :0;TFO:-150)
1-May-08	13:30	13:40	0.17	2065	2091	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	13:40	13:55	0.25	2091	2001	Sliding	Sliding - (WOB:5;GPM :0;TFO:-150)
1-May-08	13:55	14:00	0.08	2001	2109	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	14:00	14:05	0.08	2109	2114	Sliding	Sliding - (WOB:5;GPM :0;TFO:-60)
1-May-08	14:05	14:20	0.25	2114	2123	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	14:20	14:30	0.17	2123	2154	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	14:30	14:40	0.17	2154	2162	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	14:40	15:00	0.33	2162	2172	Sliding	Sliding - (WOB:5;GPM :0;TFO:0)
1-May-08	15:00	15:05	0.08	2172	2185	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	15:05	15:15	0.17	2185	2201	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	15:15	15:40	0.42	2201	2215	Sliding	Sliding - (WOB:5;GPM :0;TFO:-75)
1-May-08	15:40	16:50	0.17	2215	2216	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	16:50	16:55	0.08	2216	2219	Sliding	Sliding - (WOB:5;GPM :0;TFO:-90)
1-May-08	16:55	16:05	0.17	2219	2248	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	16:05	16:20	0.25	2248	2252	Sliding	Sliding - (WOB:5;GPM :0;TFO:-160)
1-May-08	16:20	16:30	0.17	2252	2279	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	16:30	16:40	0.17	2279	2281	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
1-May-08	16:40	17:40	1.00	2281	2390	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	17:40	17:55	0.25	2390	2393	Sliding	Sliding - (WOB:5;GPM :0;TFO:-80)
1-May-08	17:55	18:00	0.08	2393	2406	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	18:00	19:40	1.67	2406	2406	Rig Service-Inhole	Rig Service-Inhole
1-May-08	19:40	20:00	0.33	2406	2440	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	20:00	20:35	0.58	2440	2440	Rig repair	Work on soap pump
1-May-08	20:35	21:40	1.08	2440	2546	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	21:40	21:50	0.17	2546	2546	Circulating	Gamma Counts
1-May-08	21:50	22:00	0.17	2546	2551	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
1-May-08	22:00	22:55	0.92	2551	2643	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	22:55	23:15	0.33	2643	2647	Sliding	Sliding - (WOB:5;GPM :0;TFO:-20)
1-May-08	23:15	23:35	0.33	2647	2675	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
1-May-08	23:35	23:45	0.17	2675	2679	Sliding	Sliding - (WOB:5;GPM :0;TFO:-10)
1-May-08	23:45	24:00	0.25	2679	2706	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)

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NY Department of  
Environmental Protection

47051012100

West Virginia Department of Environmental Protection



JOB NO.:	21D0408311	Report Time:	2400	7 of 12
COMPANY:	CNX GAS	API JOB #:		
LOCATION:	Northern Appalachian Basin	WORK ORDER#:	128807	
RIG NAME:	Crown Rig # 2	FIELD:	Marshall County	
STATE:	West Virginia	Township:	Cameron	
COUNTY:	Marshall County	SECTRANGE:		
WELL NAME:	MC-57			

From Friday, May 02, 2008 at 0000 to Friday, May 02, 2008 at 2400

DRILLING SUMMARY				Drilling Parameters						
Start Depth	2706.00	Rotary Hours	15.33	WOB	5	Pick UP	0	Slack Off	0	SPM
End Depth	4132.00	Circulating Hours	3.75	RAB	0	SPP	600	FlowRate	0-0	0
Total Drilled:	1426.00	Avg. Total ROP:	75.72	Mud Data						
Total Rotary Drilled:	1318.00	Avg. Rotary ROP:	85.96	Type		PV	0	SOLID	0	
Total Drilled Sliding:	108.00	Avg. Slide ROP:	30.86	Weight	0	GAS	0	YP	0	BHT°
Slide Hours:	3.50	Percent Rotary:	92.43	Viscosity	0	SAND	0	PH	0	Flow T°
Below Rotary Hrs.	24.00	Percent Slide:	7.57	Chlorides	0	WL	0	Oil %	0	

PERSONNEL		CASING			BHA		
Lead Directional :	Robert Domingue	Size	Lb/ft	Set Depth	BHA # 5:4 3/4 XR15, 3 3/4 7/8 lobe 2.3 stage 3 deg bend, 3 1/2 Float Sub, 3 1/2 NM MSS, 3 1/2 NM Pony Flex, 3 3/4 Drill Collar, 3 1/2 Gap Sub, 3 1/2 NM Flex DC, 3 7/8 X/O.		
Second Directional :	Toby Bamck	Signature:					
MWD Operator1	Brandon Fruge						
MWD Operator2	Larry Romero - Robert McCarthey						
Directional Company:	SDI						
Geologist:							
Company Man:	Joshua Hinton						
Incl. In:	0	Azm. In:	0	Incl. Out:	0	Azm. Out:	0

GENERAL COMMENT

Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
2-May-08	00:00	00:15	0.25	2706	2710	Sliding	Sliding - (WOB:5;GPM :0;TFO:-20)
2-May-08	00:15	00:55	0.67	2710	2770	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	00:55	01:05	0.17	2770	2778	Sliding	Sliding - (WOB:5;GPM :0;TFO:-20)
2-May-08	01:05	01:10	0.08	2778	2784	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	01:10	01:15	0.08	2784	2788	Sliding	Sliding - (WOB:5;GPM :0;TFO:-150)
2-May-08	01:15	01:40	0.42	2788	2817	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	01:40	01:45	0.08	2817	2821	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
2-May-08	01:45	01:55	0.17	2821	2832	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	01:55	02:00	0.08	2832	2835	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
2-May-08	02:00	03:00	1.00	2835	2927	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	03:00	03:10	0.17	2927	2927	Other	Gamma counts (UP:25.16, DOWN:43.07)
2-May-08	03:10	03:15	0.08	2927	2929	Sliding	Sliding - (WOB:5;GPM :0;TFO:360)
2-May-08	03:15	03:35	0.33	2929	2969	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	03:35	03:40	0.08	2869	2974	Sliding	Sliding - (WOB:5;GPM :0;TFO:135)
2-May-08	03:40	03:55	0.25	2974	2991	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	03:55	04:00	0.08	2991	2994	Sliding	Sliding - (WOB:5;GPM :0;TFO:150)
2-May-08	04:00	04:25	0.42	2994	3033	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)

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Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
2-May-08	04:25	04:30	0.08	3033	3035	Sliding	Sliding - (WOB:5;GPM :0;TFO:170)
2-May-08	04:30	04:45	0.25	3035	3054	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	04:45	04:50	0.08	3054	3059	Sliding	Sliding - (WOB:5;GPM :0;TFO:170)
2-May-08	04:50	05:45	0.92	3059	3148	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	05:45	05:50	0.08	3148	3151	Sliding	Sliding - (WOB:5;GPM :0;TFO:120)
2-May-08	05:50	06:05	0.25	3151	3166	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	06:05	06:15	0.17	3166	3166	Other	Gamma Counts 39up - 23 Down
2-May-08	06:15	06:20	0.08	3166	3173	Sliding	Sliding - (WOB:5;GPM :0;TFO:170)
2-May-08	06:20	06:25	0.08	3173	3179	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	06:25	06:30	0.08	3179	3182	Sliding	Sliding - (WOB:5;GPM :0;TFO:170)
2-May-08	06:30	06:45	0.25	3182	3210	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	06:45	06:55	0.17	3210	3217	Sliding	Sliding - (WOB:5;GPM :0;TFO:170)
2-May-08	06:55	07:20	0.42	3217	3247	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	07:20	07:30	0.17	3247	3252	Sliding	Sliding - (WOB:5;GPM :0;TFO:30)
2-May-08	07:30	09:05	1.58	3252	3416	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	09:05	09:35	0.50	3416	3416	Rig Service-Inhole	Rig Service-Inhole
2-May-08	09:35	09:45	0.17	3416	3418	Sliding	Sliding - (WOB:5;GPM :0;TFO:120)
2-May-08	09:45	10:45	1.00	3418	3528	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	10:45	10:50	0.08	3528	3531	Sliding	Sliding - (WOB:5;GPM :0;TFO:360)
2-May-08	10:50	11:50	1.00	3531	3606	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	11:50	12:10	0.33	3606	3606	Circulating	Gama counts
2-May-08	12:10	12:25	0.25	3606	3611	Sliding	Sliding - (WOB:5;GPM :0;TFO:160)
2-May-08	12:25	13:10	0.75	3611	3637	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	13:10	13:20	0.17	3637	3646	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	13:20	13:40	0.33	3646	3646	Circulating	Gama
2-May-08	13:40	14:00	0.33	3646	3653	Sliding	Sliding - (WOB:5;GPM :0;TFO:15)
2-May-08	14:00	14:05	0.08	3653	3660	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	14:05	14:20	0.25	3660	3667	Sliding	Sliding - (WOB:5;GPM :0;TFO:170)
2-May-08	14:20	14:25	0.08	3667	3669	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	14:25	14:40	0.25	3669	3701	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	14:40	15:00	0.33	3701	3732	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	15:00	15:15	0.25	3732	3750	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	15:15	15:20	0.08	3750	3752	Sliding	Sliding - (WOB:5;GPM :0;TFO:170)
2-May-08	15:20	15:30	0.17	3752	3765	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	15:30	15:50	0.33	3765	3797	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	15:50	15:55	0.08	3797	3807	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	15:55	16:05	0.17	3807	3810	Sliding	Sliding - (WOB:5;GPM :0;TFO:20)
2-May-08	16:05	16:10	0.08	3810	3821	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	16:10	18:00	1.83	3821	3821	Circulating	Work on booster
2-May-08	18:00	18:35	0.58	3821	3821	Rig Service-Inhole	Rig Service-Inhole
2-May-08	18:35	19:15	0.67	3821	3887	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	19:15	19:30	0.25	3887	3887	Circulating	Gamma Counts
2-May-08	19:30	19:35	0.08	3887	3890	Sliding	Sliding - (WOB:5;GPM :0;TFO:20)
2-May-08	19:35	19:55	0.33	3890	3918	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	19:55	20:00	0.08	3918	3921	Sliding	Sliding - (WOB:5;GPM :0;TFO:360)
2-May-08	20:00	21:10	1.17	3921	4002	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	21:10	21:20	0.17	4002	4006	Sliding	Sliding - (WOB:5;GPM :0;TFO:150)
2-May-08	21:20	21:40	0.33	4006	4034	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)

Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
2-May-08	21:40	21:50	0.17	4034	4038	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
2-May-08	21:50	23:00	1.17	4038	4132	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
2-May-08	23:00	24:00	1.00	4132	4132	Circulating	Clean hole

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 Office of Oil and Gas  
 SEP 25 2017  
 Vermont Department of  
 Environmental Protection

47051025100



<b>JOB NO.:</b>	21D0408311	<b>Report Time:</b>	2400	8 of 12
<b>COMPANY:</b>	CNX GAS	<b>API JOB #:</b>		
<b>LOCATION:</b>	Northern Appalachian Basin	<b>WORK ORDER#:</b>	126807	
<b>RIG NAME:</b>	Crown Rig # 2	<b>FIELD:</b>	Marshall County	
<b>STATE:</b>	West Virginia	<b>Township:</b>	Cameron	
<b>COUNTY:</b>	Marshall County	<b>SECTRANGE:</b>		
<b>WELL NAME:</b>	MC-57			

From Saturday, May 03, 2008 at 0000 to Saturday, May 03, 2008 at 2400

DRILLING SUMMARY				Drilling Parameters									
Start Depth	1332.00	Rotary Hours	6.75	WOB	5	Pick UP	0	Slack Off	0	SPM			
End Depth	2091.00	Circulating Hours	4.58	RAB	0	SPP	600	FlowRate	0-0				
Total Drilled:	787.00	Avg. Total ROP:	45.84	<b>Mud Data</b>									
Total Rotary Drilled:	667.00	Avg. Rotary ROP:	98.81	Type			PV	0	SOLID	0			
Total Drilled Sliding:	120.00	Avg. Slide ROP:	11.52	Weight	0	GAS	0	YP	0	BHT°			0
Slide Hours:	10.42	Percent Rotary:	84.75	Viscosity	0	SAND	0	PH	0	Flow T°			0
Below Rotary Hrs.	24.00	Percent Slide:	15.25	Chlorides	0	WL	0			Oil %			0

PERSONNEL				cASING			BHA				
Lead Directional :	Robert Domingue			Size	Lb/ft	Set Depth	BHA # 8:4 3/4 XR15, 3 3/4 7/8 toba 2.3 stage 3 deg bend, 3 1/2 Float Sub, 3 1/2 NM MSS, 3 1/2 NM Pony Flex, 3 3/4 Drill Collar, 3 1/2 Gap Sub, 3 1/2 NM Flex DC, 3 7/8 X/O,				
Second Directional :	Toby Barrick			Signature:							
MWD Operator1	Brandon Fruge										
MWD Operator2	Lary Romero - Robert McCartney										
Directional Company:	SDI										
Geologist:											
Company Man:	Joshua Hinton			Incl. In:	0	Azm. In:	0	Incl. Out:	0	Azm. Out:	0

**GENERAL COMMENT**

Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
3-May-08	00:00	03:00	3.00	1395	1395	Circulating	Pull back and blow down to 1395'
3-May-08	03:00	03:45	0.75	1395	1395	Circulating	Build trough From 1385' to 1395'
3-May-08	03:45	05:30	1.75	1395	1398	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
3-May-08	05:30	07:45	2.25	1398	1410	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
3-May-08	07:45	08:00	0.25	1410	1423	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
3-May-08	08:00	08:30	0.50	1322	1322	Short Trip	Short Trip Pull back to 1322 for sidetrack
3-May-08	08:30	09:00	0.50	1332	1332	POOH	POOH to 1332
3-May-08	09:00	09:30	0.50	1332	1332	Rig Service-Inhole	Rig Service-Inhole
3-May-08	09:30	10:00	0.50	1332	1332	Circulating	Build trough from 1322 to 1332
3-May-08	10:00	15:00	5.00	1332	1374	Sliding	Sliding - (WOB:5;GPM :0;TFO:90)
3-May-08	15:00	16:00	1.00	1374	1427	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
3-May-08	16:00	16:05	0.08	1427	1432	Sliding	Sliding - (WOB:5;GPM :0;TFO:90)
3-May-08	16:05	16:20	0.25	1432	1458	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
3-May-08	16:20	16:30	0.17	1458	1463	Sliding	Sliding - (WOB:5;GPM :0;TFO:140)
3-May-08	16:30	17:05	0.58	1463	1490	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
3-May-08	17:05	17:10	0.08	1490	1495	Sliding	Sliding - (WOB:5;GPM :0;TFO:80)
3-May-08	17:10	17:55	0.75	1495	1585	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)

10/20/2017



4705101100  
SEP 12 2017

West Virginia Department of  
Environmental Protection

Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
3-May-08	17:55	18:40	0.75	1585	1585	Rig Service-Inhole	Rig Service-Inhole
3-May-08	18:40	18:45	0.08	1585	1591	Sliding	Sliding - (WOB:5;GPM :0;TFO:60)
3-May-08	18:45	19:10	0.42	1591	1648	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
3-May-08	19:10	19:15	0.08	1648	1652	Sliding	Sliding - (WOB:5;GPM :0;TFO:90)
3-May-08	19:15	19:20	0.08	1652	1657	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
3-May-08	19:20	19:30	0.17	1657	1657	Circulating	Gamma Counts
3-May-08	19:30	19:35	0.08	1657	1660	Sliding	Sliding - (WOB:5;GPM :0;TFO:160)
3-May-08	19:35	20:05	0.50	1660	1711	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
3-May-08	20:05	20:10	0.08	1711	1714	Sliding	Sliding - (WOB:5;GPM :0;TFO:120)
3-May-08	20:10	20:20	0.17	1714	1743	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
3-May-08	20:20	20:25	0.08	1743	1747	Sliding	Sliding - (WOB:5;GPM :0;TFO:30)
3-May-08	20:25	20:50	0.42	1747	1790	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
3-May-08	20:50	20:55	0.08	1790	1793	Sliding	Sliding - (WOB:5;GPM :0;TFO:30)
3-May-08	20:55	21:10	0.25	1793	1822	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
3-May-08	21:10	21:15	0.08	1822	1825	Sliding	Sliding - (WOB:5;GPM :0;TFO:20)
3-May-08	21:15	22:20	1.08	1825	1948	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
3-May-08	22:20	22:25	0.08	1948	1950	Sliding	Sliding - (WOB:5;GPM :0;TFO:-90)
3-May-08	22:25	23:10	0.75	1950	2030	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
3-May-08	23:10	23:20	0.17	2030	2030	Circulating	Gamma Counts
3-May-08	23:20	23:25	0.08	2030	2033	Sliding	Sliding - (WOB:5;GPM :0;TFO:-150)
3-May-08	23:25	23:45	0.33	2033	2076	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
3-May-08	23:45	23:50	0.08	2076	2080	Sliding	Sliding - (WOB:5;GPM :0;TFO:-90)
3-May-08	23:50	24:00	0.17	2080	2091	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)

4705101100

West Virginia Department of  
Environmental Protection



JOB NO.:	21D0408311	Report Time:	2400	9 of 12
COMPANY:	CNX GAS	API JOB #		
LOCATION:	Northern Appalachian Basin	WORK ORDER#	126807	
RIG NAME:	Crown Rig # 2	FIELD:	Marshall County	
STATE:	West Virginia	Township:	Cameron	
COUNTY:	Marshall County	SECT/RANGE:		
WELL NAME:	MC-57			

From Sunday, May 04, 2008 at 0000 to Sunday, May 04, 2008 at 2400

DRILLING SUMMARY				Drilling Parameters							
Start Depth	2091.00	Rotary Hours	16.75	WOB	5	Pick UP	0	Slack Off	0	SPM	
End Depth	3733.00	Circulating Hours	1.67	RAB	0	SPP	600	FlowRate	0.0	0	
Total Drilled:	1642.00	Avg. Total ROP:	75.78	Mud Data							
Total Rotary Drilled:	1503.00	Avg. Rotary ROP:	89.73	Type				PV	0	SOLID	0
Total Drilled Sliding:	139.00	Avg. Slide ROP:	28.27	Weight	0	GAS	0	YP	0	BHT°	0
Slide Hours:	4.92	Percent Rotary:	91.53	Viscosity	0	SAND	0	PH	0	Flow T°	0
Below Rotary Hrs.	24.00	Percent Slide:	8.47	Chlorides	0	WL	0			Oil %	0

PERSONNEL		cASING			BHA		
Lead Directional :	Robert Domingue	Size	Lb/ft	Set Depth	BHA # 8-4 3/4 XR15, 3 3/4 7/8 lobe 2.3 stage 3 deg bend, 3 1/2 Float Sub, 3 1/2 NM MSS, 3 1/2 NM Pony Flex, 3 3/4 Drill Collar, 3 1/2 Gap Sub, 3 1/2 NM Flex DC, 3 7/8 X/O,		
Second Directional :	Toby Barrick	Signature:					
MWD Operator1	Brandon Fruge						
MWD Operator2	Larry Romero - Robert McCarthey						
Directional Company:	SDI						
Geologist:							
Company Man:	Joshua Hinton						
Incl. In:	0	Azm. In:	0	Incl. Out:	0	Azm. Out:	0

GENERAL COMMENT

Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
4-May-08	00:00	00:25	0.42	2091	2139	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	00:25	00:30	0.08	2139	2142	Sliding	Sliding - (WOB:5;GPM :0;TFO:-90)
4-May-08	00:30	00:40	0.17	2142	2154	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	00:40	00:45	0.08	2154	2154	Circulating	Gamma Counts
4-May-08	00:45	00:50	0.08	2154	2158	Sliding	Sliding - (WOB:5;GPM :0;TFO:-20)
4-May-08	00:50	01:30	0.67	2158	2232	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	01:30	01:35	0.08	2232	2234	Sliding	Sliding - (WOB:5;GPM :0;TFO:-150)
4-May-08	01:35	01:45	0.17	2234	2264	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	01:45	01:50	0.08	2264	2267	Sliding	Sliding - (WOB:5;GPM :0;TFO:-120)
4-May-08	01:50	02:35	0.75	2267	2354	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	02:35	02:45	0.17	2354	2354	Circulating	Gamma Counts
4-May-08	02:45	02:50	0.08	2354	2358	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	02:50	03:00	0.17	2358	2358	Circulating	Gamma Counts
4-May-08	03:00	03:05	0.08	2358	2360	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
4-May-08	03:05	03:15	0.17	2360	2379	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	03:15	03:25	0.17	2379	2383	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
4-May-08	03:25	03:45	0.33	2383	2406	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)

Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
4-May-08	03:45	03:55	0.17	2406	2413	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
4-May-08	03:55	05:00	1.08	2413	2501	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	05:00	05:20	0.33	2501	2532	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	05:20	05:30	0.17	2532	2564	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	05:30	05:40	0.17	2564	2567	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
4-May-08	05:40	06:00	0.33	2567	2588	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	06:00	06:10	0.17	2588	2588	Circulating	Gamma
4-May-08	06:10	06:15	0.08	2588	2593	Sliding	Sliding - (WOB:5;GPM :0;TFO:45)
4-May-08	06:15	06:30	0.25	2593	2627	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	06:30	06:50	0.33	2627	2659	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	06:50	07:10	0.33	2659	2689	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	07:10	07:30	0.33	2689	2705	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	07:30	07:45	0.25	2705	2705	Circulating	Gama
4-May-08	07:45	08:00	0.25	2705	2723	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	08:00	08:15	0.25	2723	2726	Sliding	Sliding - (WOB:5;GPM :0;TFO:-10)
4-May-08	08:15	08:25	0.17	2726	2752	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	08:25	08:40	0.25	2752	2784	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	08:40	09:05	0.42	2784	2789	Sliding	Sliding - (WOB:5;GPM :0;TFO:160)
4-May-08	09:05	09:15	0.17	2789	2816	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	09:15	09:25	0.17	2816	2833	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	09:25	09:30	0.08	2833	2836	Sliding	Sliding - (WOB:5;GPM :0;TFO:-140)
4-May-08	09:30	09:40	0.17	2836	2847	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	09:40	10:00	0.33	2847	2847	Rig Service-Inhole	Rig Service-Inhole
4-May-08	10:00	10:15	0.25	2847	2878	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	10:15	10:20	0.08	2878	2880	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	10:20	10:30	0.17	2880	2885	Sliding	Sliding - (WOB:5;GPM :0;TFO:20)
4-May-08	10:30	10:40	0.17	2885	2893	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	10:40	10:50	0.17	2893	2898	Sliding	Sliding - (WOB:5;GPM :0;TFO:90)
4-May-08	10:50	11:10	0.33	2898	2910	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	11:10	11:20	0.17	2910	2915	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	11:20	11:35	0.25	2915	2915	Circulating	Gama
4-May-08	11:35	11:40	0.08	2915	2921	Sliding	Sliding - (WOB:5;GPM :0;TFO:140)
4-May-08	11:40	11:45	0.08	2921	2926	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	11:45	11:50	0.08	2926	2928	Sliding	Sliding - (WOB:5;GPM :0;TFO:170)
4-May-08	11:50	11:55	0.08	2928	2941	Drilling	Drilling - (WOB:5;GPM :0;RPM:0)
4-May-08	11:55	12:10	0.25	2941	2958	Drilling	Drilling - (WOB:5;GPM :0;RPM:0)
4-May-08	12:10	12:15	0.08	2958	2961	Sliding	Sliding - (WOB:5;GPM :0;TFO:170)
4-May-08	12:15	12:20	0.08	2961	2973	Drilling	Drilling - (WOB:5;GPM :0;RPM:0)
4-May-08	12:20	12:35	0.25	2973	2988	Drilling	Drilling - (WOB:5;GPM :0;RPM:0)
4-May-08	12:35	12:45	0.17	2988	2991	Sliding	Sliding - (WOB:5;GPM :0;TFO:20)
4-May-08	12:45	12:50	0.08	2991	3004	Drilling	Drilling - (WOB:5;GPM :0;RPM:0)
4-May-08	12:50	13:10	0.33	3004	3021	Drilling	Drilling - (WOB:5;GPM :0;RPM:0)
4-May-08	13:10	13:25	0.25	3021	3029	Sliding	Sliding - (WOB:5;GPM :0;TFO:20)
4-May-08	13:25	13:30	0.08	3029	3036	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	13:30	13:50	0.33	3036	3057	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	13:50	13:55	0.08	3057	3061	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	13:55	14:00	0.08	3061	3067	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	14:00	14:15	0.25	3067	3099	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)

47051012100

Virginia Department of  
Environmental Protection

Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
4-May-08	14:15	14:30	0.25	3099	3125	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	14:30	14:40	0.17	3125	3127	Sliding	Sliding - (WOB:5;GPM :0;TFO:5)
4-May-08	14:40	14:45	0.08	3127	3130	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	14:45	15:00	0.25	3130	3162	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	15:00	15:10	0.17	3162	3162	Circulating	Gamma
4-May-08	15:10	15:25	0.25	3162	3173	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	15:25	15:30	0.08	3173	3178	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
4-May-08	15:30	15:35	0.08	3178	3194	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	15:35	15:55	0.33	3194	3219	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	15:55	16:00	0.08	3219	3222	Sliding	Sliding - (WOB:5;GPM :0;TFO:130)
4-May-08	16:00	16:15	0.25	3222	3235	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	16:15	16:25	0.17	3235	3235	Circulating	Gamma Counts
4-May-08	16:25	16:35	0.17	3235	3241	Sliding	Sliding - (WOB:5;GPM :0;TFO:20)
4-May-08	16:35	16:40	0.08	3241	3245	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	16:40	16:55	0.25	3245	3245	Circulating	Gamma Counts
4-May-08	16:55	17:05	0.17	3245	3251	Sliding	Sliding - (WOB:5;GPM :0;TFO:10)
4-May-08	17:05	17:40	0.58	3251	3266	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	17:40	18:05	0.42	3266	3272	Sliding	Sliding - (WOB:5;GPM :0;TFO:20)
4-May-08	18:05	18:25	0.33	3272	3291	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	18:25	18:45	0.33	3291	3291	Rig Service-Inhole	Rig Service-Inhole
4-May-08	18:45	19:00	0.25	3291	3317	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	19:00	19:15	0.25	3317	3322	Sliding	Sliding - (WOB:5;GPM :0;TFO:160)
4-May-08	19:15	19:45	0.50	3322	3370	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	19:45	19:50	0.08	3370	3374	Sliding	Sliding - (WOB:5;GPM :0;TFO:-160)
4-May-08	19:50	20:10	0.33	3374	3402	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	20:10	20:15	0.08	3402	3406	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
4-May-08	20:15	20:50	0.58	3406	3465	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	20:50	20:55	0.08	3465	3468	Sliding	Sliding - (WOB:5;GPM :0;TFO:20)
4-May-08	20:55	21:15	0.33	3468	3496	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	21:15	21:20	0.08	3496	3500	Sliding	Sliding - (WOB:5;GPM :0;TFO:360)
4-May-08	21:20	21:35	0.25	3500	3528	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	21:35	21:40	0.08	3528	3531	Sliding	Sliding - (WOB:5;GPM :0;TFO:360)
4-May-08	21:40	22:15	0.58	3531	3591	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	22:15	22:25	0.17	3591	3596	Sliding	Sliding - (WOB:5;GPM :0;TFO:-160)
4-May-08	22:25	22:45	0.33	3596	3623	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	22:45	22:50	0.08	3623	3627	Sliding	Sliding - (WOB:5;GPM :0;TFO:-120)
4-May-08	22:50	23:05	0.25	3627	3648	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
4-May-08	23:05	23:15	0.17	3648	3651	Sliding	Sliding - (WOB:5;GPM :0;TFO:-170)
4-May-08	23:15	24:00	0.75	3651	3733	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)

4705 SEP 05 2017 00



<b>JOB NO.:</b> 21D0408311	<b>Report Time:</b> 2400	10 of 12
<b>COMPANY:</b> CNX GAS	<b>API JOB #</b>	
<b>LOCATION:</b> Northern Appalachain Basin	<b>WORK ORDER#</b> 126807	
<b>RIG NAME:</b> Crown Rig # 2	<b>FIELD:</b> Marshall County	
<b>STATE:</b> West Virginia	<b>Township:</b> Cameron	
<b>COUNTY:</b> Marshall County	<b>SECTRANGE:</b>	
<b>WELL NAME:</b> MC-57		

From Monday, May 05, 2008 at 0000 to Monday, May 05, 2008 at 2400

DRILLING SUMMARY				Drilling Parameters						
Start Depth	1490.00	Rotary Hours	7.72	WOB	5	Pick UP	0	Slack Off	0	SPM
End Depth	3765.00	Circulating Hours	1.83	RAB	0	SPP	600	FlowRate	0-0	1505
Total Drilled:	916.00	Avg. Total ROP:	64.66	Mud Data						
Total Rotary Drilled:	800.00	Avg. Rotary ROP:	103.67	Type		PV	0	SOLID	0	
Total Drilled Sliding:	116.00	Avg. Slide ROP:	17.98	Weight	0	GAS	0	YP	0	BHT°
Slide Hours:	6.45	Percent Rotary:	87.34	Viscosity	0	SAND	0	PH	0	Flow T°
Below Rotary Hrs.	24.00	Percent Slide:	12.66	Chlorides	0	WL	0	Oil %	0	

PERSONNEL		cASING			BHA		
Lead Directional :	Robert Domingue	Size	Lb/ft	Set Depth	BHA # 7:4 3/4 XR15, 3 3/4 7/8 lobe 2.3 stage 3 deg band, 3 1/2 Float Sub, 3 1/2 NM MSS, 3 1/2 NM Pony Flex, 3 3/4 Drill Collar, 3 1/2 Gap Sub, 3 1/2 NM Flex DC, 3 7/8 X/O,		
Second Directional :	Toby Barrick	Signature:					
MWD Operator1	Brandon Fruge						
MWD Operator2	Larry Romero - Robert McCarthy						
Directional Company:	SDI						
Geologist:							
Company Man:	Joshua Hinton						
Incl. In:	0	Azm. In:	0	Incl. Out:	0	Azm. Out:	0

**GENERAL COMMENT**

Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
5-May-08	00:00	00:25	0.42	3733	3765	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	00:25	01:15	0.83	3765	3765	Circulating	Clean hole
5-May-08	01:15	04:20	3.08	3765	3765	POOH	POOH to shoe
5-May-08	04:20	07:30	3.17	3765	3765	Rig Service-Inhole	Rig Service-Inhole
5-May-08	07:30	08:15	0.75	1490	1490	TIH	TIH to 1490 for sidetrack
5-May-08	08:15	08:45	0.50	1490	1490	Sliding	Troughing for sidetrack
5-May-08	08:45	10:00	1.25	1490	1493	Sliding	Sliding - (WOB:5;GPM :0;TFO:-170)
5-May-08	10:00	11:45	1.75	1493	1505	Sliding	Sliding - (WOB:5;GPM :0;TFO:-120)
5-May-08	11:45	12:05	0.33	1505	1521	Sliding	Sliding - (WOB:5;GPM :0;TFO:-120)
5-May-08	12:05	12:25	0.33	1521	1531	Sliding	Sliding - (WOB:5;GPM :0;TFO:-100)
5-May-08	12:25	12:30	0.08	1531	1553	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	12:30	12:45	0.25	1553	1570	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	12:45	12:55	0.17	1570	1584	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	12:55	13:05	0.17	1584	1596	Sliding	Sliding - (WOB:5;GPM :0;TFO:-70)
5-May-08	13:05	13:10	0.08	1596	1616	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	13:10	13:28	0.30	1616	1626	Sliding	Sliding - (WOB:5;GPM :0;TFO:-70)
5-May-08	13:28	13:40	0.20	1626	1648	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)

Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
5-May-08	13:40	13:50	0.17	1648	1663	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	13:50	14:10	0.33	1663	1675	Sliding	Sliding - (WOB:5;GPM :0;TFO:-90)
5-May-08	14:10	14:26	0.27	1675	1679	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	14:26	14:35	0.15	1679	1681	Sliding	Sliding - (WOB:5;GPM :0;TFO:-80)
5-May-08	14:35	14:45	0.17	1681	1711	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	14:45	15:10	0.42	1711	1723	Drilling	723Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	15:10	15:20	0.17	1723	1742	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	15:20	15:30	0.17	1742	1744	Sliding	Sliding - (WOB:5;GPM :0;TFO:-80)
5-May-08	15:30	15:40	0.17	1744	1774	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	15:40	15:45	0.08	1774	1777	Sliding	Sliding - (WOB:5;GPM :0;TFO:0)
5-May-08	15:45	16:05	0.33	1777	1806	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	16:05	16:15	0.17	1806	1808	Sliding	Sliding - (WOB:5;GPM :0;TFO:0)
5-May-08	16:15	16:20	0.08	1808	1837	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	16:20	16:40	0.33	1837	1869	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	16:40	16:45	0.08	1869	1871	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
5-May-08	16:45	17:00	0.25	1871	1901	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	17:00	17:05	0.08	1901	1903	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
5-May-08	17:05	17:25	0.33	1903	1948	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	17:25	17:30	0.08	1948	1950	Sliding	Sliding - (WOB:5;GPM :0;TFO:-10)
5-May-08	17:30	18:05	0.58	1950	2021	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	18:05	18:15	0.17	2021	2021	Circulating	Clean hole
5-May-08	18:15	18:35	0.33	2021	2060	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	18:35	19:10	0.58	2060	2060	Rig Service-Inhole	Rig Service-Inhole
5-May-08	19:10	20:00	0.83	2060	2154	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	20:00	20:10	0.17	2154	2154	Circulating	Gamma Counts
5-May-08	20:10	20:20	0.17	2154	2176	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	20:20	20:30	0.17	2176	2176	Circulating	Gamma Counts
5-May-08	20:30	20:35	0.08	2176	2179	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
5-May-08	20:35	20:45	0.17	2179	2184	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	20:45	21:10	0.42	2184	2184	Rig repair	Work on air compressor
5-May-08	21:10	21:20	0.17	2184	2192	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	21:20	21:25	0.08	2192	2196	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
5-May-08	21:25	21:35	0.17	2196	2211	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	21:35	21:45	0.17	2211	2216	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
5-May-08	21:45	22:00	0.25	2216	2243	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	22:00	22:05	0.08	2243	2248	Sliding	Sliding - (WOB:5;GPM :0;TFO:10)
5-May-08	22:05	22:20	0.25	2248	2264	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	22:20	22:25	0.08	2264	2269	Sliding	Sliding - (WOB:5;GPM :0;TFO:360)
5-May-08	22:25	22:35	0.17	2269	2295	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	22:35	22:45	0.17	2295	2299	Sliding	Sliding - (WOB:5;GPM :0;TFO:360)
5-May-08	22:45	23:30	0.75	2299	2374	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
5-May-08	23:30	24:00	0.50	2374	2374	Circulating	Clean hole

4705101100

SEP 25 2017  
West Virginia Department of Environmental Protection



JOB NO.:	21D0408311	Report Time:	2400	11 of 12
COMPANY:	CNX GAS	API JOB #		
LOCATION:	Northern Appalachain Basin	WORK ORDER#	126807	
RIG NAME:	Crown Rig # 2	FIELD:	Marshall County	
STATE:	West Virginia	Township:	Cameron	
COUNTY:	Marshall County	SECTRANGE:		
WELL NAME:	MC-57			

From Tuesday, May 06, 2008 at 0000 to Tuesday, May 06, 2008 at 2400

DRILLING SUMMARY				Drilling Parameters							
Start Depth	0.00	Rotary Hours	16.15	WOB	5	Pick UP	0	Slack Off	0	SPM	
End Depth	4001.00	Circulating Hours	1.18	RAB	0	SPP	600	FlowRate	0.0	1505	
Total Drilled:	1627.00	Avg. Total ROP:	74.01	Mud Data							
Total Rotary Drilled:	1478.00	Avg. Rotary ROP:	91.52	Type				PV	0	SOLID	0
Total Drilled Sliding:	149.00	Avg. Slide ROP:	25.54	Weight	0	GAS	0	YP	0	BHT°	0
Slide Hours:	5.83	Percent Rotary:	90.84	Viscosity	0	SAND	0	PH	0	Flow T°	0
Below Rotary Hrs.	24.00	Percent Slide:	9.16	Chlorides	0	WL	0			Oil %	0

PERSONNEL				cASING			BHA
Lead Directional :	Robert Domingue			Size	Lb/ft	Set Depth	BHA # 7-4 3/4 XR15, 3 3/4 7/8 lobe 2.3 stage 3 deg bend, 3 1/2 Float Sub, 3 1/2 NM MSS, 3 1/2 NM Pony Flex, 3 3/4 Drill Collar, 3 1/2 Gap Sub, 3 1/2 NM Flex DC, 3 7/8 X/O,
Second Directional :	Toby Barrick			Signature:			
MWD Operator1	Brandon Fruge						
MWD Operator2	Larry Romero - Robert McCarthey						
Directional Company:	SDI						
Geologist:							
Company Man:	Joshua Hinten						
Incl. In:	0	Azm. In:	0	Incl. Out:	0	Azm. Out:	0

GENERAL COMMENT

Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
6-May-08	00:00	00:05	0.08	2374	2376	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
6-May-08	00:05	00:20	0.25	2376	2406	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	00:20	00:25	0.08	2406	2408	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
6-May-08	00:25	00:55	0.50	2408	2469	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	00:55	01:00	0.08	2469	2471	Sliding	Sliding - (WOB:5;GPM :0;TFO:160)
6-May-08	01:00	02:10	1.17	2471	2596	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	02:10	02:15	0.08	2596	2598	Sliding	Sliding - (WOB:5;GPM :0;TFO:170)
6-May-08	02:15	02:25	0.17	2598	2627	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	02:25	02:35	0.17	2627	2629	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
6-May-08	02:35	02:50	0.25	2629	2659	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	02:50	02:55	0.08	2659	2662	Sliding	Sliding - (WOB:5;GPM :0;TFO:-160)
6-May-08	02:55	03:05	0.17	2662	2681	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	03:05	03:15	0.17	2681	2681	Circulating	Gamma Counts
6-May-08	03:15	03:20	0.08	2681	2684	Sliding	Sliding - (WOB:5;GPM :0;TFO:-160)
6-May-08	03:20	04:10	0.83	2684	2768	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	04:10	04:20	0.17	2768	2771	Sliding	Sliding - (WOB:5;GPM :0;TFO:-5)
6-May-08	04:20	04:40	0.33	2771	2800	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)

Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
6-May-08	04:40	05:00	0.33	2800	2804	Sliding	Sliding - (WOB:5;GPM :0;TFO:-5)
6-May-08	05:00	05:05	0.08	2804	2816	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	05:05	05:30	0.42	2816	2826	Sliding	Sliding - (WOB:5;GPM :0;TFO:-5)
6-May-08	05:30	05:35	0.08	2826	2829	Sliding	Sliding - (WOB:5;GPM :0;TFO:-5)
6-May-08	05:35	05:50	0.25	2829	2847	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	05:50	06:00	0.17	2847	2860	Drilling	Drilling - (WOB:5;GPM :0;TFO:-50)
6-May-08	06:00	06:05	0.08	2860	2862	Sliding	Sliding - (WOB:5;GPM :0;TFO:-50)
6-May-08	06:05	06:10	0.08	2862	2867	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	06:10	06:15	0.08	2867	2878	Sliding	Sliding - (WOB:5;GPM :0;TFO:-50)
6-May-08	06:15	06:40	0.42	2878	2909	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	06:40	06:55	0.25	2909	2935	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	06:55	07:05	0.17	2935	2938	Sliding	Sliding - (WOB:5;GPM :0;TFO:-50)
6-May-08	07:05	07:10	0.08	2938	2941	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	07:10	07:25	0.25	2941	2967	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	07:25	07:30	0.08	2967	2970	Sliding	Sliding - (WOB:5;GPM :0;TFO:-50)
6-May-08	07:30	07:35	0.08	2970	2972	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	07:35	07:50	0.25	2972	2972	Rig Service-Inhole	Rig Service-Inhole
6-May-08	07:50	08:10	0.33	2972	3004	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	08:10	08:25	0.25	3004	3021	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	08:25	08:30	0.08	3021	3024	Sliding	Sliding - (WOB:5;GPM :0;TFO:-50)
6-May-08	08:30	08:35	0.08	3024	3036	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	08:35	08:50	0.25	3036	3040	Sliding	Sliding - (WOB:5;GPM :0;TFO:-50)
6-May-08	08:50	09:10	0.33	3040	3067	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	09:10	09:25	0.25	3067	3099	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	09:25	09:40	0.25	3099	3114	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	09:40	09:45	0.08	3114	3121	Sliding	Sliding - (WOB:5;GPM :0;TFO:-40)
6-May-08	09:45	09:50	0.08	3121	3030	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	09:50	10:10	0.33	3030	3162	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	10:10	10:30	0.33	3162	3173	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	10:30	10:40	0.17	3173	3205	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	10:40	10:50	0.17	3205	3215	Sliding	Sliding - (WOB:5;GPM :0;TFO:-115)
6-May-08	10:50	11:10	0.33	3215	3225	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	11:10	11:20	0.17	3225	3236	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	11:20	12:10	0.83	3236	3250	Sliding	Sliding - (WOB:5;GPM :0;TFO:-75)
6-May-08	12:10	12:15	0.08	3250	3257	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	12:15	12:30	0.25	3257	3268	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	12:30	12:45	0.25	3268	3280	Sliding	Sliding - (WOB:5;GPM :0;TFO:-85)
6-May-08	12:45	12:50	0.08	3280	3289	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	12:50	13:15	0.42	3289	3320	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	13:15	13:25	0.17	3320	3330	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	13:25	13:30	0.08	3330	3332	Sliding	Sliding - (WOB:5;GPM :0;TFO:-60)
6-May-08	13:30	13:40	0.17	3332	3345	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	13:40	13:50	0.17	3345	3347	Sliding	Sliding - (WOB:5;GPM :0;TFO:-20)
6-May-08	13:50	13:55	0.08	3347	0	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	13:55	14:15	0.33	0	3383	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	14:15	14:30	0.25	3383	3393	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	14:30	14:40	0.17	3393	3396	Sliding	Sliding - (WOB:5;GPM :0;TFO:40)
6-May-08	14:40	14:50	0.17	3396	3408	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)



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Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
6-May-08	14:50	15:00	0.17	3408	3410	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
6-May-08	15:00	15:05	0.08	3410	3415	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	15:05	15:25	0.33	3415	3440	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	15:25	15:30	0.08	3440	3442	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
6-May-08	15:30	15:40	0.17	3442	3446	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	15:40	16:05	0.42	3446	3474	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	16:05	16:10	0.08	3474	3476	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
6-May-08	16:10	16:15	0.08	3476	3479	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	16:15	16:24	0.15	3479	3499	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	16:24	16:40	0.27	3499	3499	Circulating	Gamma
6-May-08	16:40	16:45	0.08	3499	3502	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
6-May-08	16:45	17:20	0.58	3502	3569	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	17:20	17:30	0.17	3569	3569	Circulating	Gamma Counts
6-May-08	17:30	17:40	0.17	3569	3574	Sliding	Sliding - (WOB:5;GPM :0;TFO:360)
6-May-08	17:40	17:55	0.25	3574	3606	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	17:55	18:30	0.58	3606	3606	Circulating	Clean hole
6-May-08	18:30	19:05	0.58	3606	3606	Rig Service-Inhole	Rig Service-Inhole
6-May-08	19:05	19:35	0.50	3606	3653	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	19:35	19:45	0.17	3653	3655	Sliding	Sliding - (WOB:5;GPM :0;TFO:-170)
6-May-08	19:45	20:00	0.25	3655	3685	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	20:00	20:10	0.17	3685	3689	Sliding	Sliding - (WOB:5;GPM :0;TFO:-170)
6-May-08	20:10	20:25	0.25	3689	3717	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	20:25	20:30	0.08	3717	3720	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
6-May-08	20:30	20:50	0.33	3720	3748	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	20:50	20:55	0.08	3748	3752	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
6-May-08	20:55	21:10	0.25	3752	3780	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	21:10	21:15	0.08	3780	3783	Sliding	Sliding - (WOB:5;GPM :0;TFO:180)
6-May-08	21:15	22:15	1.00	3783	3875	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	22:15	22:25	0.17	3875	3878	Sliding	Sliding - (WOB:5;GPM :0;TFO:360)
6-May-08	22:25	22:45	0.33	3878	3917	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	22:45	22:55	0.17	3917	3919	Sliding	Sliding - (WOB:5;GPM :0;TFO:-10)
6-May-08	22:55	23:15	0.33	3919	3948	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
6-May-08	23:15	23:25	0.17	3948	3950	Sliding	Sliding - (WOB:5;GPM :0;TFO:360)
6-May-08	23:25	24:00	0.58	3950	4001	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)

RECEIVED  
Office of Oil and Gas

SEP 25 2017

VA Department of  
Environmental Protection



<b>JOB NO.:</b> 21D0408311	<b>Report Time:</b> 2400	<b>12 of 12</b>
<b>COMPANY:</b> CNX GAS	<b>API JOB #</b>	
<b>LOCATION:</b> Northern Appalachian Basin	<b>WORK ORDER#:</b> 128807	
<b>RIG NAME:</b> Crown Rig # 2	<b>FIELD:</b> Marshall County	
<b>STATE:</b> West Virginia	<b>Township:</b> Cameron	
<b>COUNTY:</b> Marshall County	<b>SECTRANGE:</b>	
<b>WELL NAME:</b> MC-57		

From Wednesday, May 07, 2008 at 0000 to Wednesday, May 07, 2008 at 2400

DRILLING SUMMARY				Drilling Parameters							
Start Depth	4001.00	Rotary Hours	6.92	WOB	5	Pick UP	0	Slack Off	0	SPM	
End Depth	4610.00	Circulating Hours	9.33	RAB	0	SPP	600	FlowRate	0-0	1505	
Total Drilled:	609.00	Avg. Total ROP:	79.43	Mud Data							
Total Rotary Drilled:	587.00	Avg. Rotary ROP:	84.87	Type		PV	0	SOLID	0		
Total Drilled Sliding:	22.00	Avg. Slide ROP:	29.33	Weight	0	GAS	0	YP	0	BHT°	0
Slide Hours:	0.75	Percent Rotary:	96.39	Viscosity	0	SAND	0	PH	0	Flow T°	0
Below Rotary Hrs.	24.00	Percent Slide:	3.61	Chlorides	0	WL	0	Oil %	0		
PERSONNEL				cASING			BHA				
Lead Directional :	Robert Domingue			Size	Lb/ft	Set Depth	BHA # 7 3/4 XR15, 3 3/4 7/8 lobe 2.3 stage 3 deg bend, 3 1/2 Float Sub, 3 1/2 NM MSS, 3 1/2 NM Pony Flex, 3 3/4 Drill Collar, 3 1/2 Gap Sub, 3 1/2 NM Flex DC, 3 7/8 X/O.				
Second Directional :	Toby Barrick			Signature:							
MWD Operator1	Brandon Fruge										
MWD Operator2	Larry Romero - Robert McCarthy										
Directional Company:	SDI										
Geologist:											
Company Man:	Joshua Hinton										
Incl. In:	0	Azm. In:	0	Incl. Out:	0	Azm. Out:	0				

**GENERAL COMMENT**

Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
7-May-08	00:00	00:05	0.08	4001	4003	Sliding	Sliding - (WOB:5;GPM :0;TFO:-10)
7-May-08	00:05	00:20	0.25	4003	4026	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
7-May-08	00:20	00:25	0.08	4026	4030	Sliding	Sliding - (WOB:5;GPM :0;TFO:360)
7-May-08	00:25	01:25	1.00	4030	4127	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
7-May-08	01:25	01:30	0.08	4127	4131	Sliding	Sliding - (WOB:5;GPM :0;TFO:360)
7-May-08	01:30	02:15	0.75	4131	4190	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
7-May-08	02:15	02:25	0.17	4190	4194	Sliding	Sliding - (WOB:5;GPM :0;TFO:-20)
7-May-08	02:25	02:40	0.25	4194	4222	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
7-May-08	02:40	02:50	0.17	4222	4222	Circulating	Collect Gamma (26.53 UP, 41.17 DOWN)
7-May-08	02:50	03:15	0.42	4222	4254	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
7-May-08	03:15	03:20	0.08	4254	4256	Sliding	Sliding - (WOB:5;GPM :0;TFO:-170)
7-May-08	03:20	03:40	0.33	4256	4285	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
7-May-08	03:40	03:45	0.08	4285	4288	Sliding	Sliding - (WOB:5;GPM :0;TFO:-170)
7-May-08	03:45	04:25	0.67	4288	4248	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
7-May-08	04:25	04:35	0.17	4248	4248	Circulating	Gamma Counts
7-May-08	04:35	04:50	0.25	4248	4364	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
7-May-08	04:50	05:05	0.25	4364	4385	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)

Date	Start Time	End Time	Hours	Start Depth	End Depth	Activity Code	COMMENT
7-May-08	05:05	05:45	0.67	4385	4385	Circulating	Circulating
7-May-08	05:45	06:05	0.33	4385	4385	Circulating	Gamma
7-May-08	06:05	06:15	0.17	4385	4388	Sliding	Sliding - (WOB:5;GPM :0;TFO:-170)
7-May-08	06:15	06:30	0.25	4388	4396	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
7-May-08	06:30	06:50	0.33	4396	4427	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
7-May-08	06:50	07:05	0.25	4427	4459	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
7-May-08	07:05	09:00	1.92	4459	4610	Drilling	Drilling - (WOB:5;GPM :0;RPM:45)
7-May-08	09:00	17:00	8.00	4610	4610	Circulating	Circulating POOH Blowing Down Laterals
7-May-08	17:00	24:00	7.00	4610	4610	POOH	POOH L/O tools Standby for Rig move

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SEP 25 2017

Virginia Department of  
Environmental Protection

4705101100CP

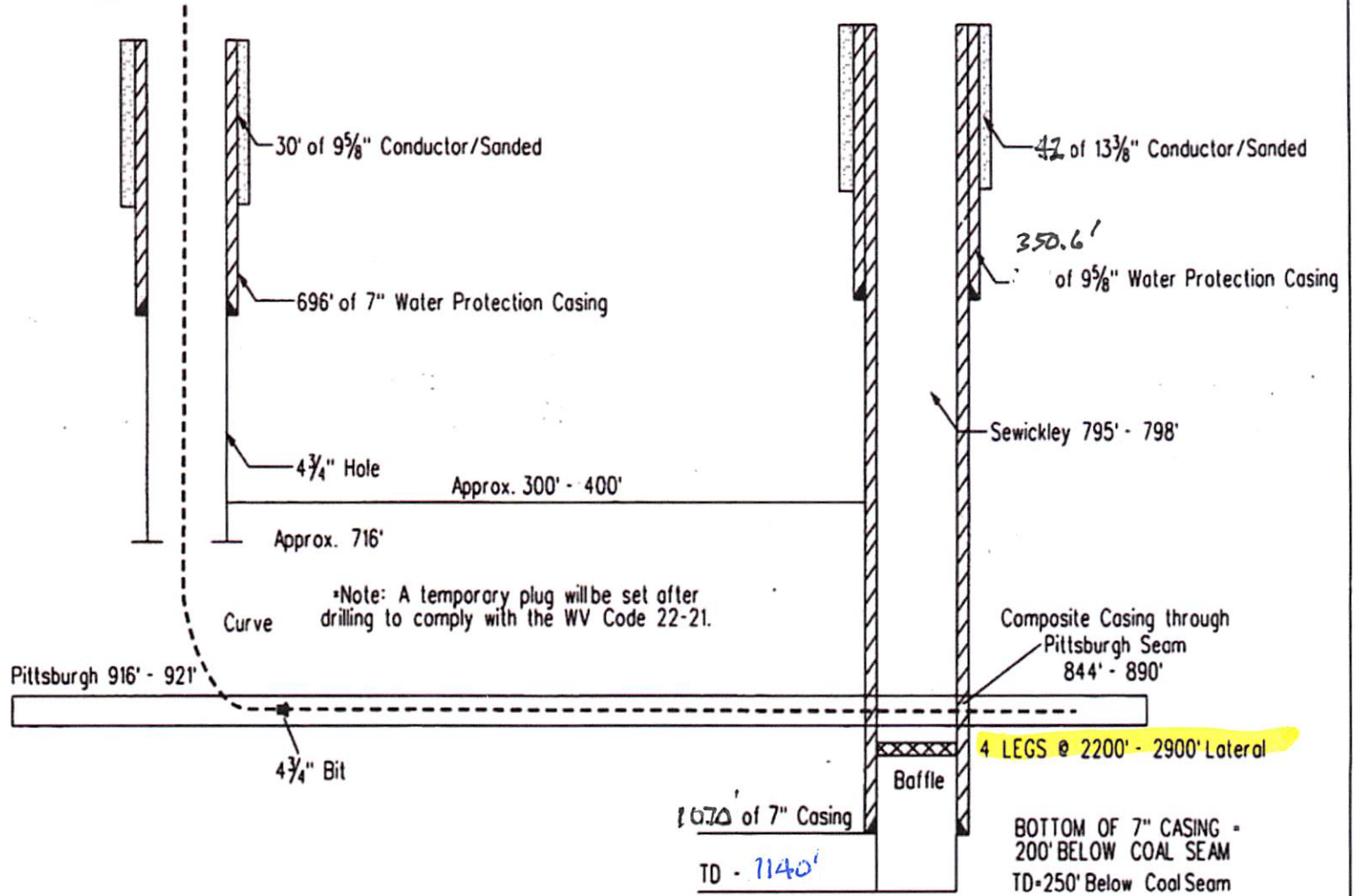
FIGURE 1

CNX GAS COMPANY LLC

MC57

(5101101CP)  
ACCESS MC57A

(5101100CP)  
PRODUCTION MC57



1/23/08

\*NOTE: Additional casing string may be used depending on hole conditions

NOT TO SCALE

4705101100CP

ATTACHMENT A

Marshall County CBM Well No. MC-57 Drill Log

API- 47-5101100

Depth	Description
Dirt and Fill	0-10'
Shale	10'-35'
Sand	35'-45'
Shale	45'-105'
Sand	105'-195'
Shale	195'-205'
Sand	205'-405'
Coal	405'-408'
Shale	408'-650'
RR	650'-795'
Sand	795'-883'
Coal	883'-890'
Shale	890'-1005'
RR	1005'-1170'
Sand	1170'-1200'

10/20/2017

WR35  
Rev (2-01)

4705101100CP  
DATE: 8/13/08  
API #: 47-5101100C

State of West Virginia  
Department of Environmental Protection  
Office of Oil and Gas  
Well Operator's Report of Well Work

MS

Farm name: Mueller, John Operator Well No.: MC-57  
LOCATION: Elevation: 1313.39' Quadrangle: Cameron  
District: Cameron County: Marshall  
Latitude:            Feet South of 39 Deg. 52 Min. 30 Sec.  
Longitude:            Feet West of 80 Deg. 32 Min. 30 Sec.  
Company: CNX Gas Company, LLC

	Casing & Tubing	Used in drilling	Left in well	Cement Fill Up (# of Sacks)
Address: 2481 John Nash Blvd., Bluefield, WV 24701	13-3/8	42'	42'	Sanded In
Agent: Les Arrington	9-5/8"	350.6'	350.6'	130 sks
Inspector: Bill Hatfield	7"	1070.2'	1070.2'	155 sks
Date Permit Issued: 2/29/2008				
Date Well Work Commenced: 3/30/2008				
Date Well Work Completed: 5/12/2008				
Verbal Plugging: N/A				
Date Permission granted on: N/A				
Rotary Cable <u>R/C</u>				
Total Depth (feet): '				
Fresh Water Depth (ft.): 350 ft				
Salt Water Depth (ft.): N/A				
Is coal being mined in area (N/Y)? No				
Coal Depths (ft.): 792' 876.5'				

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SEP 16 2009

WV Department of Environmental Protection

OPEN FLOW DATA

Producing formation Pittsburgh Coal Seam depth (ft) 876.5'-881'  
Gas: Initial open flow 0 MCF/d Oil: Initial open flow NA Bbl/d  
Final open flow NA MCF/d Final open flow NA Bbl/d  
Time of open flow between initial and final tests NA Hours  
Static rock Pressure NA psig (surface pressure) after NA Hours

Second producing formation            Pay zone depth (ft)             
Gas: Initial open flow            MCF/d Oil: Initial open flow            Bbl/d  
Final open flow            MCF/d Final open flow            Bbl/d  
Time of open flow between initial and final tests            Hours  
Static rock Pressure            psig (surface pressure) after            Hours

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WV Department of Environmental Protection

NOTE: ON BACK OF THIS FORM PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.  
Gas Well MC-57 (API No. 47-510-1100) is a horizontal well for CNX Gas Company, LLC. Refer to the attached information for additional information.

Signed: Geoff Fanning  
By: Geoff Fanning, Drill Foreman  
Date: August 13, 2008

FEB 13 2009

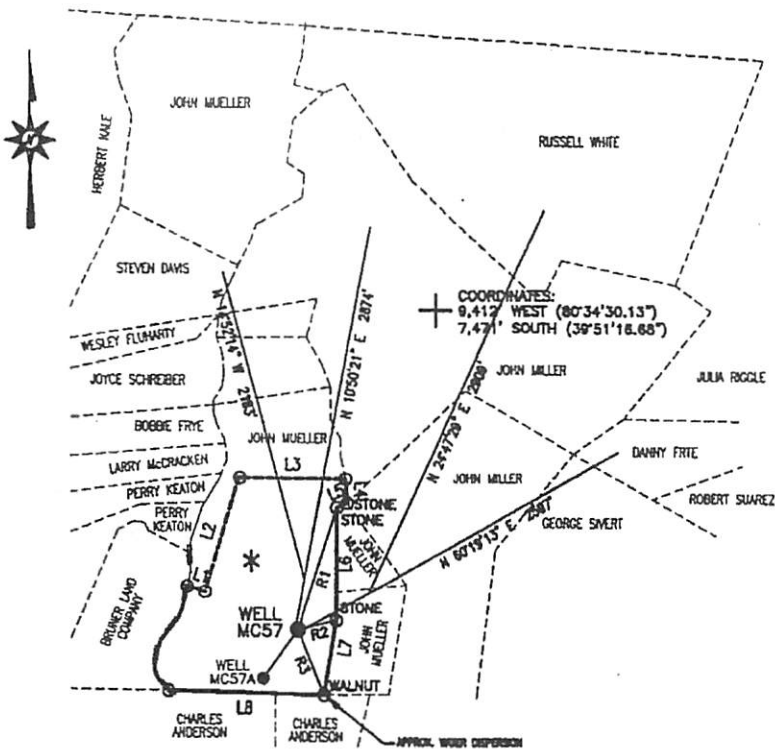
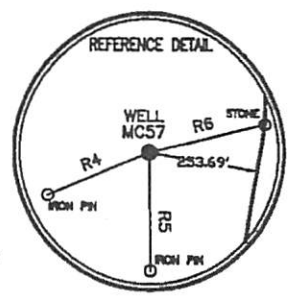
10/20/2017

MARS 1100C

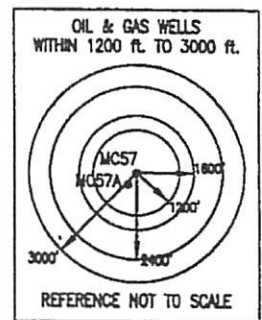
LATITUDE 39°52'30"

LONGITUDE 80°32'30"

REFERENCE LINES		
LINE	BEARING	DISTANCE
R1	N 17°48'41" E	895.47'
R2	N 76°27'46" E	275.84'
R3	S 22°26'37" E	478.37'
R4	S 86°53'21" W	255.03'
R5	S 00°43'54" E	269.54'
R6	N 76°27'46" E	275.84'



- NOTES:
1. THERE ARE NO OCCUPIED DWELLINGS WITHIN 200' OF PROPOSED WELL.
  2. PROPOSED WELL IS GREATER THAN 100' FROM THE MINERAL LINE.



\* JOHN MUELLER  
TM/PAR 8/35  
DB/PG 608/625  
33.10 ACRES ±

LINE	BEARING	DISTANCE
L1	S 72°25'31" E	128.39'
L2	N 16°22'56" E	823.65'
L3	S 86°24'12" E	738.25'
L4	S 03°46'00" E	185.00'
L5	S 86°15'00" W	78.00'
L6	S 00°25'00" W	788.00'
L7	S 08°35'00" W	513.88'
L8	N 88°35'24" W	1081.77'



I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAN IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENERGY.

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS  
DATE DECEMBER 7, 20 07  
OPERATOR'S WELL NO. MC57  
API WELL NO. 47-051-0100-C  
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY: 1/2500 FILE No.: MC57  
SCALE: 1" = 1,000'  
PROVEN SOURCE OF ELEVATION: U.S.G.S. MONUMENT - THOMAS 1498.81'

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

WELL TYPE: OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  "GAS" PRODUCTION  STORAGE  DEEP  SHALLOW

LOCATION: ELEVATION: 1313.39' WATERSHED: UNNAMED TRIBUTARY TO NORTH FORK OF GRAVE CREEK  
DISTRICT: CAMERON COUNTY: MARSHALL QUADRANGLE: CAMERON, WV-PA 7.5'  
SURFACE OWNER: JOHN MUELLER ACREAGE: 33.10±  
ROYALTY OWNER: SEE ATTACHED LEASE ACREAGE: \_\_\_\_\_  
PROPOSED WORK: \_\_\_\_\_ LEASE No.: \_\_\_\_\_  
DRILL:  CONVERT: \_\_\_\_\_ DRILL DEEPER: \_\_\_\_\_ REDRILL: \_\_\_\_\_ FRACTURE OR STIMULATE: \_\_\_\_\_ PLUG OFF OLD: \_\_\_\_\_  
FORMATION: \_\_\_\_\_ PERFORMANCE NEW FORMATION: \_\_\_\_\_ PLUG AND ABANDON: \_\_\_\_\_ CLEAN OUT AND REFLUID: \_\_\_\_\_ OTHER: \_\_\_\_\_  
PHYSICAL CHANGE IN WELL (SPECIFY): NONE TARGET FORMATION: PITTSBURGH  
ESTIMATED DEPTH: 1140'±

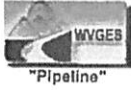
WELL OPERATOR: CNX Gas Company LLC DESIGNATED AGENT: JOHN H. JOHNSTON FEB 23 2008  
ADDRESS: 2481 JOHN NASH BLVD., BLUEFIELD, WV 24701 ADDRESS: BANK ONE CENTER, PO BOX 1588, CHARLESTON, WV 25326-1598

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Office of Oil and Gas  
SEP 25 2017  
WV Department of Environmental Protection

MARS 1100 C

7/23/2017

WVGES O&G Record Reporting System



Select County: (051) Marshall Select datatypes: (Check All)

Enter Permit #: 1100

Get Data: Resal

Location  Production  Plugging  
 Owner/Completion  Stratigraphy  Sample  
 Pay/ShowWater  Logs  Btm Hole Loc

- Table Descriptions
- County Code Translations
- Permit Numbering Schemas
- Wellbore Names
- Special Information
- Disclaimer
- WVGES Main
- "Pipeline Plus" New

WV Geological & Economic Survey

Well: County = 051 Permit = 1100

Report Time: Sunday, July 23, 2017 8:35:57 AM

Location Information: View Map

API	COUNTY	PERMIT	TAX_DISTRICT	QUAD_75	QUAD_15	LAT_DD	LONG_DD	UTME	UTMN
4705101100	Marshall	1100	Cameron	Cameron	33.854833	-80.574954	536358.7	4411709.5	

There is no Bottom Hole Location data for this well

Owner Information:

API	CMP_DT	SUFFIX	STATUS	SURFACE_OWNER	WELL_NUM	CO_NUM	LEASE	LEASE_NUM	MINERAL_OWN	OPERATOR_AT_COMPLETION	PROP_VD	PROP_TRGT_FM	TFM_EST_FR
4705101100	5/12/2008		Original Loc. Completed	John Mueller	MC57					CNX Gas Co. LLC (North)	1140	Pittsburgh coal	

Completion Information:

API	CMP_DT	SPUD_DT	ELEV DATUM	FIELD	DEEPEST_FM	DEEPEST_FMT	INITIAL_CLASS	FINAL_CLASS	TYPE	RIG	CMP_MTHD	TVD	TMD	NEW_FTO	O_BEF	G_AFT	O_BEF	D_AFT	NGL_BEF	NGL_AFT	P_BEF	TL_BEF	P_AFT	TI	
4705101100	5/12/2008	3/30/2008	1313	Ground Level	Majorville	Pennsylvanian System	Pittsburgh coal	Development Well	Development Well	Methane (CBM)	Rotary	Unstrty/Cased	1140												

Pay/Show/Water Information:

API	CMP_DT	ACTIVITY	PRODUCT	SECTION	DEPTH_TOP	FM_TOP	DEPTH_BOT	FM_BOT	G_BEF	G_AFT	O_BEF	O_AFT	WATER_QNTY
4705101100	5/12/2008		Fresh Water	Vertical									
4705101100	5/12/2008		Methane Pay Gas	Vertical	877	Pittsburgh coal	881	Pittsburgh coal					

Production Gas Information: (Volumes in Mcf)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_GAS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101100	CNX Gas Co. LLC (North)	2008	10.378	0	0	0	0	0	0	0	0	0	0	0	0
4705101100	CNX Gas Co. LLC (North)	2009	47,145	6,126	4,560	4,387	4,059	2,120	3,870	4,224	3,793	3,550	3,579	3,393	3,594
4705101100	CNX Gas Co. LLC (North)	2010	40,593	3,891	3,138	3,845	3,438	3,482	3,353	3,383	3,404	3,271	3,255	3,073	3,400
4705101100	CNX Gas Co. LLC (North)	2011	28,584	3,148	2,420	2,341	2,108	2,175	2,084	2,143	2,220	2,555	2,665	2,237	2,480
4705101100	CNX Gas Co. LLC (North)	2012	25,598	2,221	2,221	2,084	2,020	2,049	1,937	2,177	2,184	2,152	2,354	2,103	2,186
4705101100	CNX Gas Co. LLC (North)	2013	24,190	1,940	2,003	1,135	1,941	2,208	2,026	1,964	2,112	2,078	2,119	1,845	1,689
4705101100	CNX Gas Co. LLC (North)	2014	21,178	1,877	1,870	1,937	1,847	1,865	1,884	1,952	1,984	1,894	1,717	1,314	1,455
4705101100	CNX Gas Co. LLC (North)	2015	20,428	1,243	1,847	2,106	1,975	2,079	1,964	2,073	1,705	1,418	1,370	1,265	1,385
4705101100	Consolidation Coal Co.	2016	23,839	1,274	1,237	2,420	2,427	2,214	1,907	1,760	1,745	1,733	2,378	2,365	2,373

Production Oil Information: (Volumes in Bbl) \*\* some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_OIL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101100	CNX Gas Co. LLC (North)	2008	0	0	0	0	0	0	0	0	0	0	0	0	0
4705101100	CNX Gas Co. LLC (North)	2009	0	0	0	0	0	0	0	0	0	0	0	0	0
4705101100	CNX Gas Co. LLC (North)	2010	0	0	0	0	0	0	0	0	0	0	0	0	0
4705101100	CNX Gas Co. LLC (North)	2011	0	0	0	0	0	0	0	0	0	0	0	0	0
4705101100	CNX Gas Co. LLC (North)	2012	0	0	0	0	0	0	0	0	0	0	0	0	0
4705101100	CNX Gas Co. LLC (North)	2013	0	0	0	0	0	0	0	0	0	0	0	0	0
4705101100	CNX Gas Co. LLC (North)	2014	0	0	0	0	0	0	0	0	0	0	0	0	0
4705101100	CNX Gas Co. LLC (North)	2015	0	0	0	0	0	0	0	0	0	0	0	0	0
4705101100	Consolidation Coal Co.	2016	0	0	0	0	0	0	0	0	0	0	0	0	0

Production NGL Information: (Volumes in Bbl) \*\* some operators may have reported NGL under Oil

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_NGL	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101100	CNX Gas Co. LLC (North)	2013	0	0	0	0	0	0	0	0	0	0	0	0	0
4705101100	CNX Gas Co. LLC (North)	2014	0	0	0	0	0	0	0	0	0	0	0	0	0
4705101100	CNX Gas Co. LLC (North)	2015	0	0	0	0	0	0	0	0	0	0	0	0	0
4705101100	Consolidation Coal Co.	2016	0	0	0	0	0	0	0	0	0	0	0	0	0

Production Water Information: (Volumes in Gallons)

API	PRODUCING_OPERATOR	PRD_YEAR	ANN_WTR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DCM
4705101100	Consolidation Coal Co.	2016	0	0	0	0	0	0	0	0	0	0	0	0	0

Stratigraphy Information:

API	SUFFIX	FM	FM_QUALITY	DEPTH_TOP	DEPTH_QUALITY	THICKNESS	THICKNESS_QUALITY	ELEV DATUM
4705101100		Original Loc. unidentified coal	CBM: Dril Hole	405	Reasonable			1313 Ground Level
4705101100		Original Loc. unidentified coal	CBM: Dril Hole	883	Reasonable			1313 Ground Level

Wireline (E-Log) Information:

API	LOG_TOP	LOG_BOT	DEEPEST_FML	LOGS_AVAIL	SCAN	DIGITIZED	GR_TOP	GR_BOT	D_TOP	D_BOT	N_TOP	N_BOT	I_TOP	I_BOT	T_TOP	T_BOT	S_TOP	S_BOT	O_TOP	O_BOT	INCH2	INCH4	REDUCED	KOP	LOGMD	ELEV_KB	ELEV_GL	ELEV_DF	LOG
4705101100	0	905		G.C.D	Y	N			897	3	905										N	N							

Comment: log scale high resolution 10in=100.

Downloadable Log Images: We advise you to save the log image file to your PC for viewing. To do so, right-click the .tif image of interest and select the save option. Then you can direct the file to a location of your choice. Please note these images vary in size and some may take several minutes to download, especially if using a 56k or slower dialup connection.

Quick Reference Guide for Log File Names: For more info about WVGES scanned logs click [here](#)  
 geologic log types:  
 d density (includes bulk density, compensated density, density, density porosity, grain density, matrix density, etc.)  
 e photoelectric adsorption (PE or Pa, etc.)  
 g gamma ray

http://www.wvgs.wvnet.edu/oginfo/pipeline/pipeline2.asp?txtsearchapi=4705101100

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 Environmental Protection

10/20/2017



SEP 25 2017

WV Department of  
Environmental Protection

4705101100 CP  
1) Date: July 23, 2017  
2) Operator's Well No. MC-57  
3) API Well No. 47-51-01100  
State County Permit

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS  
NOTICE OF APPLICATION TO PLUG AND ABANDON A WELL

4) SURFACE OWNER(S) TO BE SERVED

(a) Name Consol Mining Company LLC.  
Address 1000 Consol Energy Drive  
Canonsburg, PA 15317

(b) Name \_\_\_\_\_  
Address \_\_\_\_\_

(c) Name \_\_\_\_\_  
Address \_\_\_\_\_

(6) INSPECTOR James Nicholson  
Address PO BOX 44  
Moundsville, WV 26041  
Telephone (304) 552-3874

5)a) COAL OPERATOR

Name CONSOLIDATION COAL CO.  
Address 1 Bridge Street  
Monongah, WV 26554

(b) COAL OWNER(S) WITH DECLARATION:

Name \_\_\_\_\_  
Address \_\_\_\_\_

(c) COAL LESSEE WITH DECLARATION:

Name \_\_\_\_\_  
Address \_\_\_\_\_

TO THE PERSON(S) NAMED ABOVE: You should have received this Form and the following documents:

- (1) The Application to Plug and Abandon a Well on form WW-4B, which sets out the parties involved in the work, and describes the well and its location and the plugging work order; and
- (2) The Plat (surveyor's map) showing the well location on Form WW-6.

THE REASON YOU RECEIVED THESE DOCUMENTS IS THAT YOU HAVE RIGHTS REGARDING THE APPLICATION WHICH ARE SUMMARIZED IN THE "INSTRUCTIONS" ON THE REVERSE SIDE OF THE COPY OF THE APPLICATION (FORM WW-4(B) DESIGNATED FOR YOU. HOWEVER, YOU ARE NOT REQUIRED TO TAKE ANY ACTION AT ALL.

Take notice under Chapter 22-6 of the West Virginia Code, the undersigned well operator proposes to file or has filed this Notice and Application and accompanying documents for a permit to plug and abandon a well with the Chief of the Office of Oil and Gas, West Virginia Department of Environmental Protection, with respect to the well at the location described on the attached Application and depicted on the attached Form WW-6. Copies of this Notice, the Application, and the plat have been mailed by registered or certified mail or delivered by hand to the person(s) named above (or by publication in certain circumstances) on or before the day of mailing or delivery by the Chief.

WELL OPERATOR Consolidation Coal Company

By Mason Smith MS  
Its Project Engineer  
Address 6126 Energy Road  
Moundsville, WV 26041  
Telephone (304) - 843 - 3565

Subscribed and sworn before me this 8 day of August, 2017

Joseph E Williams Notary Public

Marshall County, State of West Virginia

My commission expires June, 5, 2024



Oil and Gas Privacy Notice

The Office of Oil and Gas processes your personal information, such as name, address and phone number, as a part of our regulatory duties. Your personal information may be disclosed to other State agencies or third parties in the normal course of business or as needed to comply with statutory or regulatory requirements, including Freedom of Information Act requests. Our office will appropriately secure your personal information. If you have any questions about our use of your personal information, please contact DEP's Chief Privacy Officer at [depprivacyofficer@wv.gov](mailto:depprivacyofficer@wv.gov).

10/20/2017

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS

4705101100CP

CONSTRUCTION AND RECLAMATION PLAN AND SITE REGISTRATION APPLICATION FORM  
GENERAL PERMIT FOR OIL AND GAS PIT WASTE DISCHARGE

Operator Name Consolidation Coal Company OP Code \_\_\_\_\_

Watershed North Fork of Grave Creek Quadrangle Cameron, WV-PA

Elevation 1313.72' County Marshall District Cameron

Description of anticipated Pit Waste: N/A

Do you anticipate using more than 5,000 bbls of water to complete the proposed well work? Yes \_\_\_\_\_ No X

Will a synthetic liner be used in the pit? N/A. If so, what mil.? \_\_\_\_\_

Proposed Disposal Method For Treated Pit Wastes:

- Land Application
- Underground Injection (UIC Permit Number \_\_\_\_\_)
- Reuse (at API Number \_\_\_\_\_)
- Off Site Disposal (Supply form WW-9 for disposal location)
- Other (Explain Tanks, see attached letter)

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Drilling medium anticipated for this well? Air, freshwater, oil based, etc. Freshwater

If oil based, what type? Synthetic, petroleum, etc.? \_\_\_\_\_

Additives to be used? Bentonite, Bicarbonate of Soda

Drill cuttings disposal method? Leave in pit, landfill, removed offsite, etc. Reused or Disposed (see attached letter)

-If left in pit and plan to solidify what medium will be used? Cement, lime, sawdust \_\_\_\_\_

-Landfill or offsite name/permit number? \_\_\_\_\_

I certify that I understand and agree to the terms and conditions of the GENERAL WATER POLLUTION PERMIT issued on August 1, 2005, by the Office of Oil and Gas of the West Virginia Department of Environmental Protection. I understand that the provisions of the permit are enforceable by law. Violations of any term or condition of the general permit and/or other applicable law or regulation can lead to enforcement action.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment.

Company Official Signature Mason Smith

Company Official (Typed Name) Mason Smith

Company Official Title Project Engineer

Subscribed and sworn before me this 8 day of August, 2017

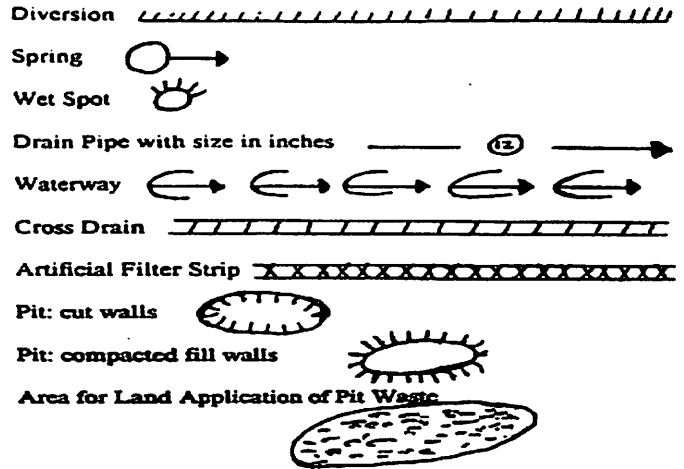
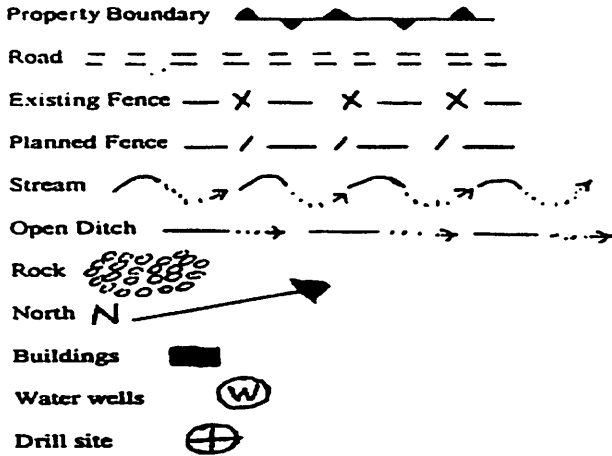
Joseph E Williams

Notary Public

My commission expires June 5, 2024



LEGEND



Proposed Revegetation Treatment: Acres Disturbed <1 Prevegetation pH 6

Lime 3 Tons/acre or to correct to pH 6

Fertilizer (10-20-20 or equivalent) 500 lbs/acre (500 lbs minimum)

Mulch 2 Tons/acre

Seed Mixtures

Area I

Seed Type	lbs/acre
Seed mix in accordance with WVDEP oil and gas Erosion and Sediment Control Field Manual	

Area II

Seed Type	lbs/acre
Seed mix in accordance with WVDEP oil and gas Erosion and Sediment Control Field Manual	

Attach:  
 Drawing(s) of road, location, pit and proposed area for land application.  
 Photocopied section of involved 7.5' topographic sheet.

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Plan Approved by: \_\_\_\_\_

Comments: \_\_\_\_\_

Title: \_\_\_\_\_ Date: \_\_\_\_\_

Field Reviewed? ( ) Yes ( ) No

**MURRAY AMERICAN ENERGY, INC.  
& CONSOLIDATION COAL COMPANY**

**MURRAY AMERICAN ENERGY,  
INC. & CONSOLIDATION COAL  
COMPANY**

46226 National Road  
St. Clairsville, OH 43950

phone: 304.843.3565

fax: 304.843.3546

e-mail: [MasonSmith@coalsource.com](mailto:MasonSmith@coalsource.com)

**MASON SMITH**

Project Engineer

September 15, 2017

Department of Environmental Protection  
Office of Oil and Gas  
601-57<sup>th</sup> Street  
Charleston, WV 25320

To Whom It May Concern,

As per the Division of Environmental Protection, Office of Oil and Gas request, Consolidation Coal Company submits the following procedures utilizing pit waste.

Upon submitting a well work application (without a general permit for Oil & Gas Pit Waste Discharge Application), Consolidation Coal Company will construct no pits, but instead will use mud tanks to contain all drilling muds.

Once the well is completed, that material (minus the cave material) will be trucked to the next well to be plugged or to DEP facilities number U-0033-83, O-78-83, U-140-83, or U-1011-93.

Sincerely,



Mason Smith  
Project Engineer

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10/20/2017

N/A

6. Provide a statement that no waste material will be used for deicing or fill material on the property.

7. Describe the groundwater protection instruction and training to be provided to the employees. Job procedures shall provide direction on how to prevent groundwater contamination.

8. Provide provisions and frequency for inspections of all GPP elements and equipment.

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Environmental Protection

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

N/A

STATE OF WEST VIRGINIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
OFFICE OF OIL AND GAS  
GROUNDWATER PROTECTION PLAN

Operator Name: CONSOLIDATION COAL COMPANY  
Watershed (HUC 10): North Fork of Grave Creek Quad: CAMERON, WV, PA 7.5'  
Farm Name: \_\_\_\_\_

- 1. List the procedures used for the treatment and discharge of fluids. Include a list of all operations that could contaminate the groundwater.

[Empty response box for question 1]

- 2. Describe procedures and equipment used to protect groundwater quality from the list of potential contaminant sources above.

[Empty response box for question 2]

- 3. List the closest water body, distance to closest water body, and distance from closest Well Head Protection Area to the discharge area.

[Empty response box for question 3]

- 4. Summarize all activities at your facility that are already regulated for groundwater protection.

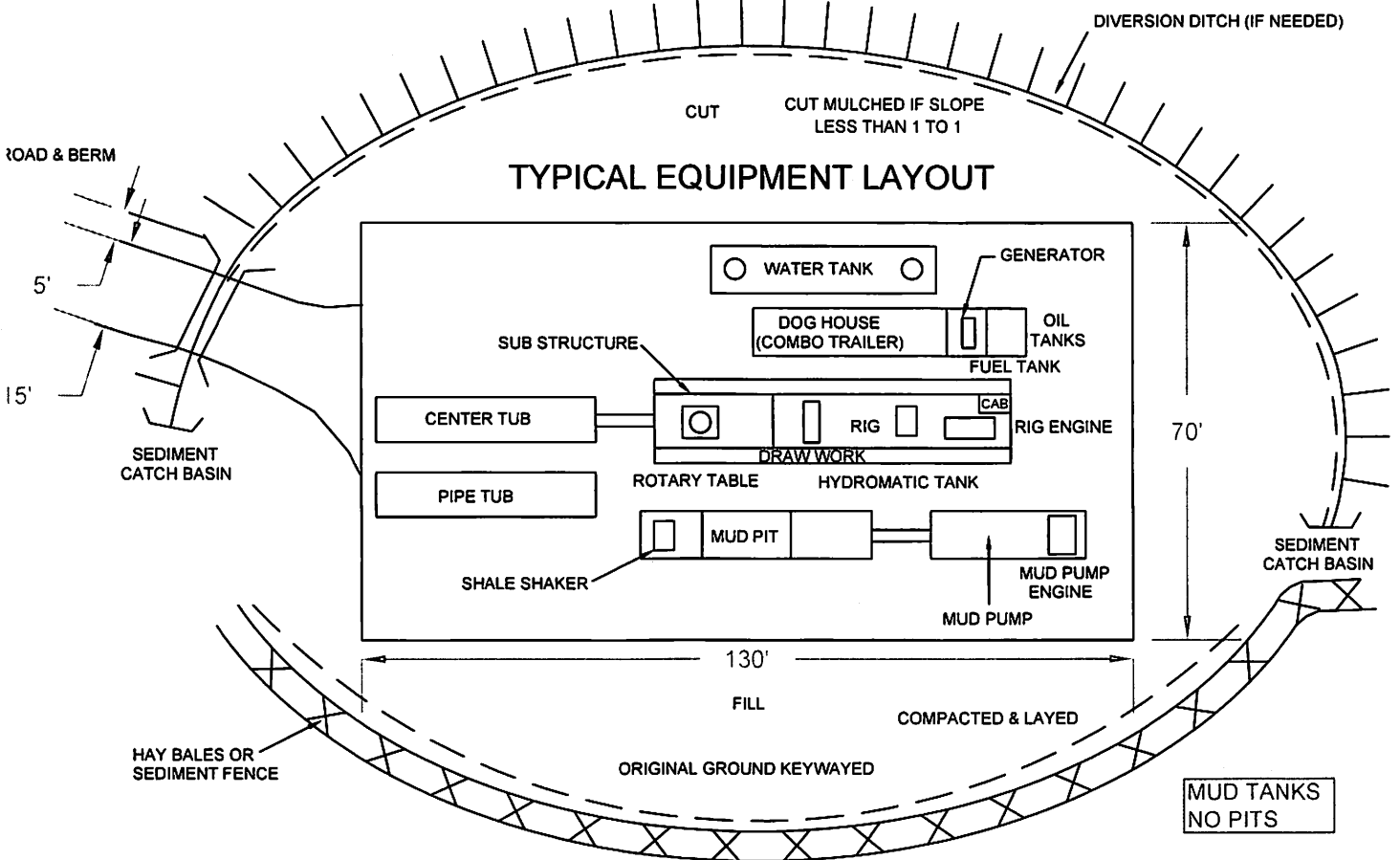
[Empty response box for question 4]

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- 5. Discuss any existing groundwater quality data for your facility or an adjacent property.

CONSOLIDATION COAL COMPANY  
NORTHERN WEST VIRGINIA  
OPERATIONS

TYPICAL DRAWING OF  
WELL PLUGGING  
SITE PLAN



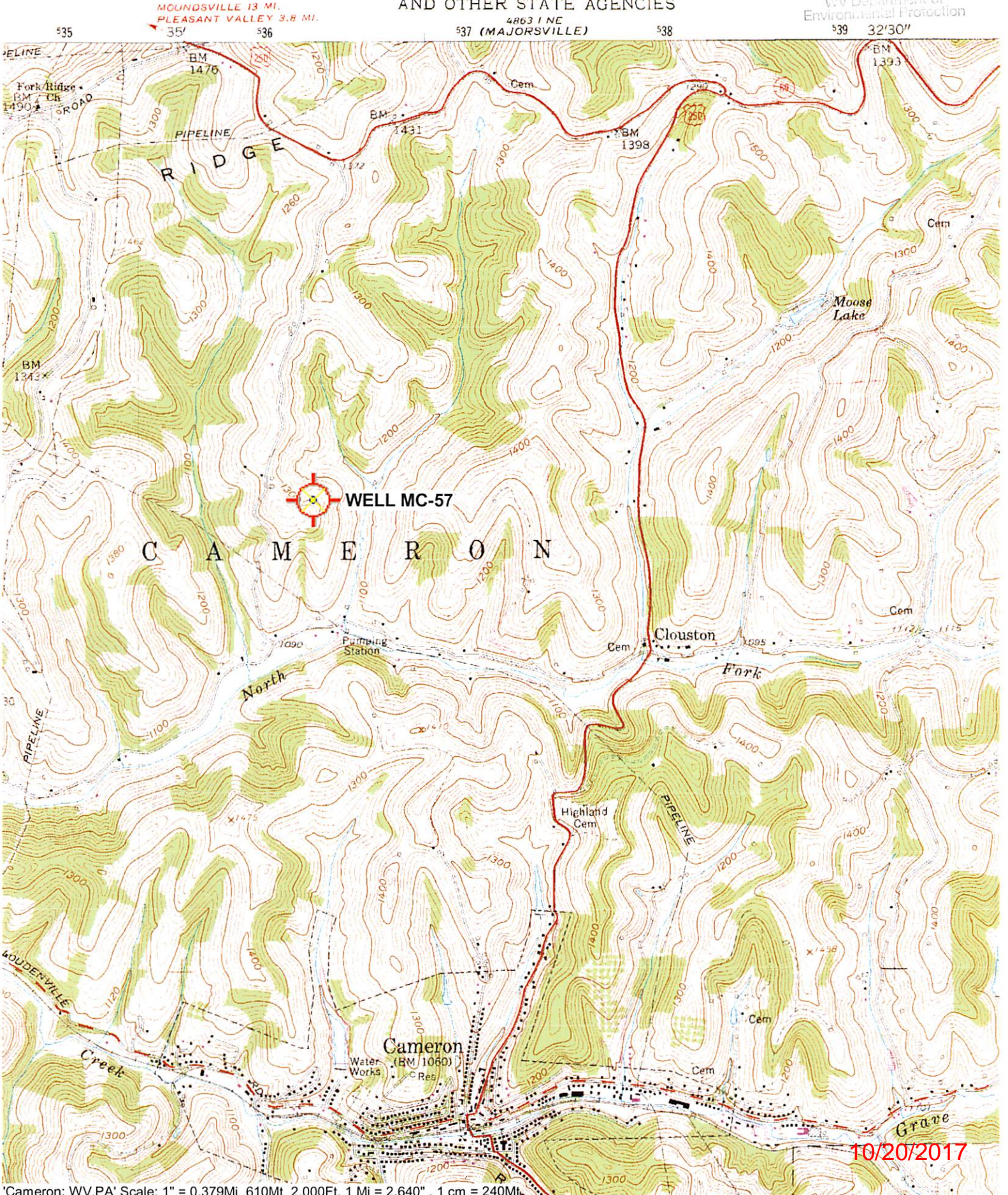
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STATE OF WEST VIRGINIA  
REPRESENTED BY THE  
STATE OF WEST VIRGINIA GEOLOGICAL SURVEY  
AND OTHER STATE AGENCIES

4705 101100 CP

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10/20/2017



WW-7  
8-30-06



West Virginia Department of Environmental Protection  
Office of Oil and Gas  
WELL LOCATION FORM: GPS

API: 47-051-01100 WELL NO.: MC-57

FARM NAME: John Mueller

RESPONSIBLE PARTY NAME: Consolidation Coal Company

COUNTY: Marshall DISTRICT: Cameron

QUADRANGLE: Cameron, WV PA

SURFACE OWNER: Consol Mining Company LLC

ROYALTY OWNER: \_\_\_\_\_

UTM GPS NORTHING: 4,411,695 m

UTM GPS EASTING: 536,334 m GPS ELEVATION: 400 m (1313.72')

The Responsible Party named above has chosen to submit GPS coordinates in lieu of preparing a new well location plat for a plugging permit or assigned API number on the above well. The Office of Oil and Gas will not accept GPS coordinates that do not meet the following requirements:

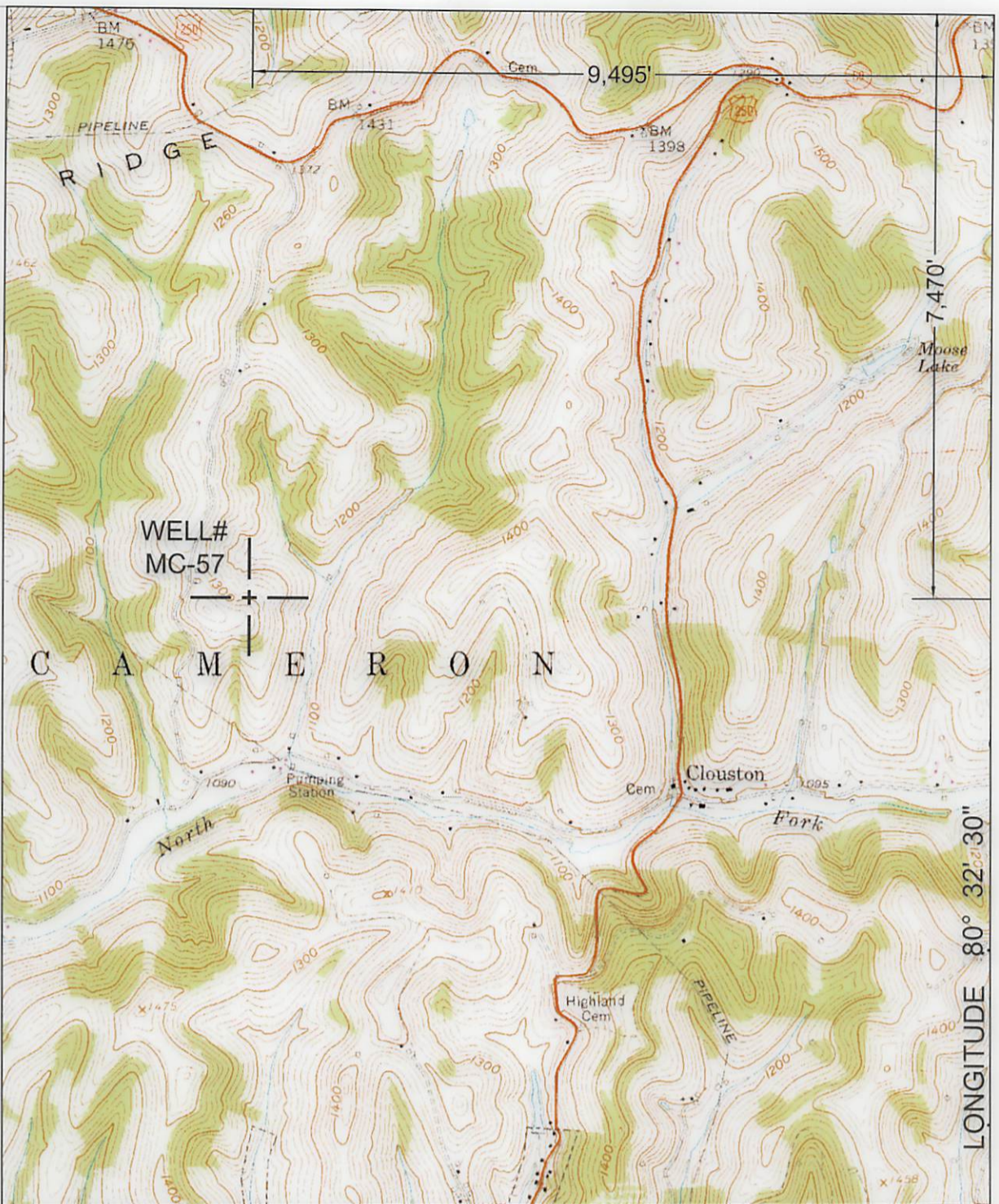
- Datum: NAD 1983, Zone: 17 North, Coordinate Units: meters, Altitude: height above mean sea level (MSL) – meters.
- Accuracy to Datum – 3.05 meters
- Data Collection Method:  
Survey grade GPS X: Post Processed Differential \_\_\_\_\_  
Real-Time Differential X  
Mapping Grade GPS \_\_\_\_\_: Post Processed Differential \_\_\_\_\_  
Real-Time Differential \_\_\_\_\_
- Letter size copy of the topography map showing the well location.

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I the undersigned, hereby certify this data is correct to the best of my knowledge and belief and shows all the information required by law and the regulations issued and prescribed by the Office of Oil and Gas.

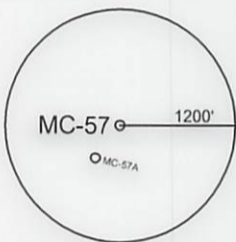
[Signature] Professional Surveyor  
Signature Title  
July 23, 2017  
Date

LATITUDE  
39° 52' 30"



NORTH

SURROUNDING WELLS  
WITHIN 1200' RADIUS



LONGITUDE 80° 32' 30"

UTM ZONE 17N NAD83 CONUS	LAT/LONG NAD27 CONUS
NORTHING 4,411,695 METERS	39° 51' 15.94" N
EASTING 536,334 METERS	80° 34' 31.59" W

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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.  
P.S. 2002



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

DATE JULY 23, 20 17  
OPERATORS WELL NO. MC-57

API WELL NO. 47 - 51 - 01100 CP  
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY: 172500  
FILE NO.: CAMERON 1.DWG  
SCALE: 1"=2000'  
PROVEN SOURCE OF ELEVATION: GPS METADATA OR COMPANY NETWORK TIED INTO U.S.G.S.

WV DEP  
OFFICE OF OIL AND GAS  
601 57TH ST., CHARLESTON, WV 25304



WELL TYPE: OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL  "GAS" PRODUCTION  STORAGE  DEEP  SHALLOW

LOCATION: ELEVATION: 1313.72' WATERSHED: NORTH FORK OF GRAVE CREEK  
DISTRICT: CAMERON COUNTY: MARSHALL QUADRANGLE: CAMERON, WV-PA 7.5'  
SURFACE OWNER: CONSOL MINING COMPANY LLC. ACREAGE: 33.1± ACRES  
ROYALTY OWNER: LEASE ACREAGE: LEASE NO.: 10/20/2017

DRILL: CONVERT: DRILL DEEPER: REDRILL: FRACTURE OR STIMULATE: PLUG OFF OLD:  
FORMATION: PERFORATE NEW FORMATION: PLUG AND ABANDON: X CLEAN OUT AND REPLUG: OTHER:  
PHYSICAL CHANGE IN WELL (SPECIFY): TARGET FORMATION: NONE ESTIMATED DEPTH:

WELL OPERATOR: CONSOLIDATION COAL COMPANY DESIGNATED AGENT: RONNIE HARSH  
ADDRESS: 6126 ENERGY DRIVE, MOUNDSVILLE WV 26041 ADDRESS: 6126 ENERGY DRIVE, MOUNDSVILLE WV 26041

COUNTY NAME  
PERMIT