

U. S. Department of Labor

Mine Safety and Health Administration
100 Bluestone Road
Mount Hope, WV 25880-1000



OCT 11 2007

Mr. Chris Blanchard
President
Performance Coal Company
P. O. Box 69
Naoma, WV 25140

Dear Mr. Blanchard:

Subject: Approved Gas Well Permit, Section 75.1700, 30 CFR 75,
Upper Big Branch Mine-South, I.D. No. 46-08436,
Performance Coal Company, Montcoal, Raleigh County,
West Virginia, Permit No. 17325-T10

This will acknowledge receipt and approval of the subject permit for extracting coal in the vicinity of gas well No. 955 located on the subject mine property.

The permit is based upon an evaluation of the projected mine plan as shown on Form OG-45 dated October 3, 2007, and is issued in accordance with provisions of Section 75.1700, 30 CFR.

Should you have any questions concerning this matter, please contact William L. Ross at (304) 877-3900/Ext. 142.

Sincerely,

/s/ Richard J. Kline

Robert G. Hardman
District Manager
Coal Mine Safety and Health, District 4

cc: Mt. Hope Field Office
Inspector
Field Office Supervisor
Files/dac

SUPERVISORY ACKNOWLEDGEMENT

| | |
|----------|----------|
| Initials | BR |
| Date | 10-11-07 |

U. S. Department of Labor

Mine Safety and Health Administration
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OCT 11 2007

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President
Performance Coal Company
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Sincerely,

A handwritten signature in black ink, appearing to read "Robert G. Hardman". The signature is written in a cursive, flowing style.

Robert G. Hardman
District Manager
Coal Mine Safety and Health, District 4

STATE OF WEST VIRGINIA
OFFICE OF MINERS' HEALTH, SAFETY & TRAINING
1615 WASHINGTON ST. EAST
CHARLESTON, WV 25311-2126

PERMIT NUMBER: BOO-1036
DATE: 10/09/2007

P E R M I T
TO EXTEND MINE WORKINGS
WITHIN THE 200 FOOT RADIUS OF OIL OR GAS WELLS

COMPANY: PERFORMANCE COAL CO.
MINE: UBBMC MONTCOAL EAGLE MINE PERMIT NUMBER: U00304292
SEAM: EAGLE
DISTRICT: CROOK
COUNTY: RALEIGH
ADDRESS: PO BOX 69
CITY: NAOMA, STATE: WV, ZIP: 25140

PERMISSION IS HEREBY GIVEN:

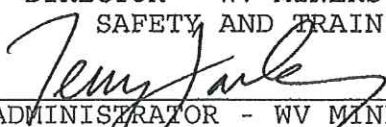
TO MINE WITHIN A 200 FOOT RADIUS OF DOMINION
NATURAL RESOURCES WELL NO. 955 ABANDONED GAS WELL
LOCATED ON THE ALBERT H. COLE ET.AL. FARM IN THE
CROOK DISTRICT OF BOONE COUNTY AS SHOWN ON THE
APPROVED ATTACHED MAP.

CONTIGENT UPON THE FOLLOWING:

1. MINING IS TO PERFORMED STRICTLY IN ACCORDANCE WITH THE MAP APPROVED BY THE DIVISION OF MINE HEALTH, SAFETY AND TRAINING HERETO.
2. A COPY OF THE PERMIT SHALL BE KEPT AT THE MINE.
3. THE PERMIT IS VOID UPON INSPECTOR'S RECOMMENDATION.
4. THE PERMIT IS NON-TRANSFERRABLE.

WELL OPERATOR: DOMINION NATURAL RESOURCES
WELL OPERATOR WELL NUMBER: 955
MINE OPERATOR WELL NUMBER: 955

Ronald L. Wooten

BY: _____
DIRECTOR - WV MINERS' HEALTH,
SAFETY AND TRAINING

ADMINISTRATOR - WV MINERS' HEALTH,
SAFETY AND TRAINING

CCS:
DOMINION NATURAL RESOURCES
REGION: 4
M.S.H.A. District Office
H.S. & T. File

FORM-OG-45
(Obverse)
[Rev. 7-85]

Date: October 3, 2007
Operator's
Well No. 955
API Well No. 47 - 005 - 00955
State County Permit

STATE OF WEST VIRGINIA
DEPARTMENT OF ENERGY, DIVISION OF MINES AND MINERALS

COAL OPERATOR'S PETITION TO OPERATE
WITHIN 200 FEET OR TO MINE THROUGH A WELL

WELL TYPE: Oil X/ Gas / Liquid Injection / Waste Disposal /
(If Gas, Production / Underground / Storage / Deep / Shallow /

LOCATION: Elevation: 1944.88' Watershed: Unnamed Tributary of Big Coal River

District: Crook County: Boone Quadrangle: Whitesville

WELL OPERATOR: Dominion Natural Resources DESIGNATED AGENT: Mr. Joe Garrett
Address 445 West Main Street Address 445 West Main Street
Clarksburg, WV 26301 Clarksburg, WV 26301

The undersigned coal operator hereby petitions for leave to do the following:

- X Mine within 200 feet of said well.
- Mine through said well when the same is properly plugged.

On the reverse side hereof is a copy of the map and plan of the undersigned coal operator showing its projected mine workings within 500 feet of said well.

The undersigned coal operator hereby represents that it will file updated or new maps and plans with the Department every six months, until mining within 500 feet of the well has ceased or until the well has been mined through.

Prior to the actual mining through of said well, the undersigned coal operator will submit the Form WR-35, Well Operator's Report of Drilling, Fracturing and/or Stimulating, or Physical Change, Affidavit of Plugging and Filling Well, and the Form WR-38, to show that the well has been properly plugged in a manner to permit the safe mining through the well.

Copies of this petition and enclosed maps and plans have been sent by registered mail to the well operator, as required by Code 22A-2-75.

Handwritten signature and date: 10-4-07

Performance Coal Company
Coal Operator
By George Revo
Its Mining Engineer

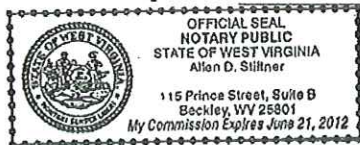
STATE OF West Virginia,
COUNTY OF Raleigh, TO WIT:

I George Revo, being first duly sworn, deposes and says that he is Mining Engineer of the coal operator named above; that he is familiar with the facts set out both in the petition and on the accompanying maps and plans; and that the same are true.

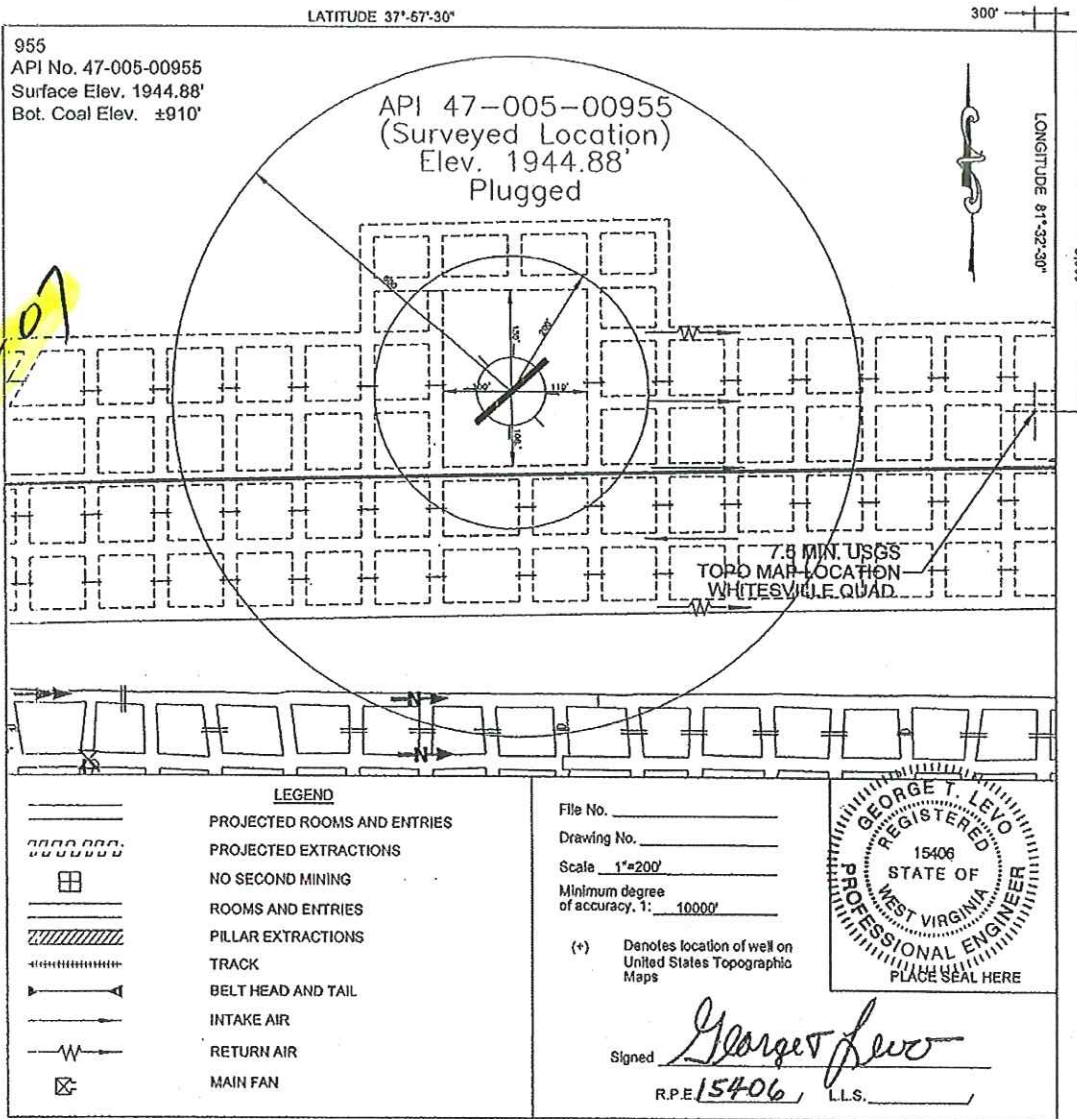
Handwritten signature of Notary Public

Subscribed and sworn to before me this September 17, 2007.

My commission expires December 13, 2010



Notary Public



FORM OG-44
(REVERSE)
(08-78)

*Boo-1036
10-4-07*

Coal Operator's Well Number **955**

Date: October 3, 20 07

Operator's Well No. 955

API Well No. 47 - 005 - 00955
State County Permit

**NOTICE BY COAL OPERATOR OF INTENTION
TO EXTEND MINE WORKING WITHIN 200 FEET OF WELL**

COAL OPERATOR Performace Coal Company **ELEVATIONS:** Surface 1944.88'
Address P.O. Box 69 Bottom of Coal ±910'
Naoma, WV 25140 Difference ±1034.88

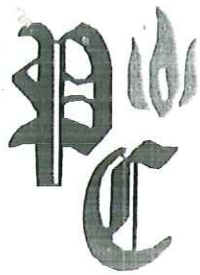
MINE Upper Big Branch **SECTION** Unit 2 **OVERBURDEN** SS/Shale **COAL SEAM** Eagle
ROOF Shale **BOTTOM** Shale

WELL TYPE: Oil Gas _____ Liquid Injection _____ Waste Disposal _____
(If "Gas", Production _____ Underground storage _____ Deep _____ Shallow _____)

LOCATION: Elevation: 1944.88' Watershed: Unnamed Tributary of Elk Run
District: Crook County: Boone Quadrangle: Whitesville
Farm: Albert H. Cole ET. AL. Tract: 3149 acres (Lease No. 68059)

STATUS: Active _____ Abandoned Drilling _____
Date completed or abandoned, August 1, 19 63

AMOUNT OF CASING IN WELL 13 - 3/8" (22'), 9 - 5/8" (383'), 7" (1782')



Performance Coal Company

P.O. Box 69

Naoma, WV

25140

September 17, 2007

Mr. Robert G. Hardman
District Manager
Mine Safety and Health Administration
100 Bluestone Road
Mt. Hope, WV 25880-1000

Mr. Terry Farley
WVMHS&T
1615 Washington Street East
Charleston, WV 25311-2126

Mr. Joe Garrett
Dominion Natural Resources
445 West Main Street
Clarksburg, WV 26301

RE: Performance Coal Company – Mine Within 200' of Gas Well 10485
Upper Big Branch Mine-South
Federal I.D. 46-08436
State I.D. U-3042-92

Dear Sirs:

Please find enclosed the necessary forms to mine in proximity of Gas well no. 47-005-00955.

If you have any questions, or require further information, please call me at (304) 854-1761.

Respectfully Submitted

Performance Coal Co.
George T. Levo
Mining Engineer

* * * COMMUNICATION RESULT REPORT (OCT. 17. 2007 8:39AM) * * *

FAX HEADER 1: MT HOPE MSHA
FAX HEADER 2:

TRANSMITTED/STORED : OCT. 17. 2007 8:38AM
FILE MODE OPTION

| FILE MODE | OPTION | ADDRESS | RESULT | PAGE |
|----------------|--------|-------------------|--------|------|
| 0938 MEMORY TX | | G3 :9-13048543529 | OK | 2/2 |

REASON FOR ERROR
 E-1) HANG UP OR LINE FAIL
 E-3) NO ANSWER
 E-5) MAIL SIZE OVER

E-2) BUSY
 E-4) NO FACSIMILE CONNECTION

U.S. Department of Labor

Mine Safety and Health Administration
 100 Bluestone Road
 Mount Hope, WV 25880-1000
 Phone 304.877.3900 Fax 304.877.3927



Fax

To: George Lavo From: 1 Paris

Fax No.: _____ No. of Pages: 2

Phone No. _____ Date: 10/17/07

Urgent For Review Please Comment Please Reply

Comments:



U.S. Department of Labor

Mine Safety and Health Administration
100 Bluestone Road
Mount Hope, WV 25880-1000
Phone 304.877.3900 Fax 304.877.3927



Fax

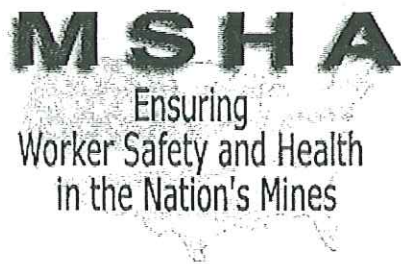
To: George Lavo From: 1 (pers)

Fax No.: 854-3529 No. of Pages: 2

Phone No. _____ Date: 10/17/07

Urgent For Review Please Comment Please Reply

Comments:



16-R-9L

23,550'

Latitude 38° 00'

5400

NOTE:

GLOGORA COAL CO. COORDINATE VALUES FOR Loc. #10485
N. 3681.99 W. 16234.23

Longitude 81° 30'

22,500'

Federal Coal Co.

11600

10213

10270

10314

ALBERT H. COLE

3149^a

N. 5122.59

W. 17808.11

10338

51501

2 B.O.

S17°20'E

720.02'

N. 5255.99
W. 22034.45

N69°30'E - 1236.22'

S88°12'E

4228.41'

S12°32'E

2133.36'

S12°11'

10372

N64°52'E

5091.90'

10485

El. 1948'

S72°19'45"W

13,178.37'

Chesapeake & Ohio R.R. Co.

MAP SHEET 161-W, S-103, W-57, F.B. 1266, P32-36

Minimum Error of Closure... 1' in 2,500'

Source of Elevation Levels from B.M. Z-187-1958 (El. 2135.45)

New Location...

Drill Deeper...

Abandonment...

"I, the undersigned, hereby certify that this map is correct to the best of my knowledge and belief and shows all the information required by paragraph 6 of the rules and regulations of the oil and gas section of the mining laws of West Virginia."

Company HOPE NATURAL GAS CO.
 Address CLARKSBURG, W. VA.
 Farm ALBERT H. COLE ET. AL.
 Tract _____ Acres 3149 Lease No. 68059
 Well (Farm) No. _____ Serial No. 10485
 Elevation (Spirit Level) 1948'
 Quadrangle BALD KNOB NE
 County BOONE District CROOK
 Engineer Jackson M. Jarvis
 Engineer's Registration No. 2397
 File No. _____ Drawing No. _____
 Date 3-4-63 Scale 1" = 2000'

STATE OF WEST VIRGINIA
 DEPARTMENT OF MINES
 OIL AND GAS DIVISION
 CHARLESTON

WELL LOCATION MAP

FILE NO. B00-955

plugged- 8/9/1963

+ Denotes location of well on United States Topographic Maps, scale 1 to 62,500, latitude and longitude lines being represented by border lines as shown.

- Denotes one inch spaces on border line of original tracing.



STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS DIVISION **4**

Quadrangle Bald Knob
Permit No. 300-955

WELL RECORD

Oil or Gas Well Gas - Dry
(KIND)

Company Hope Natural Gas Company
Address Clarksburg, W. Va.
Farm Albert M. Cole Acres 3.149
Location (waters)
Well No. 10485 Elev. 19480
District Creek County Boone
The surface of tract is owned in fee by _____
Address _____
Mineral rights are owned by _____
Address _____
Drilling commenced 3-15-63
Drilling completed 3-27-63
Date Shot Not From _____ To _____
With _____
Open Flow /10ths Water in _____ Inch
/10ths Merc. in _____ Inch
Volume None Cu. Ft.
Rock Pressure 500 lbs. 64 hrs.
Oil None bbls., 1st 24 hrs.
WELL ACIDIZED No

| Casing and Tubing | Used in Drilling | Left in Well | Packers |
|-------------------|------------------|--------------|----------------|
| Size | | | Kind of Packer |
| 16 | | | |
| 13 | | | Size of |
| <u>9-5/8</u> | <u>1112</u> | <u>1112</u> | |
| 8 1/2 | | | Depth set |
| 6 1/2 | <u>3656</u> | <u>3656</u> | |
| 5 3/16 | | | Perf. top |
| 3 | | | Perf. bottom |
| 2 | | | Perf. top |
| Linera Used | | | Perf. bottom |

CASING CEMENTED _____ SIZE _____ No. Ft. _____ Date _____
9-5/8" cemented to surface
COAL WAS ENCOUNTERED AT 104 FEET 2 1/2 INCHES
179 FEET 64 INCHES FEET INCHES
FEET INCHES FEET INCHES

WELL FRACTURED 7-12-63

RESULT AFTER TREATMENT 36 M
ROCK PRESSURE AFTER TREATMENT Not taken
Fresh Water See log Feet _____ Salt Water See log Feet _____

| Formation | Color | Hard or Soft | Top | Bottom | Oil, Gas or Water | Depth | Remarks |
|-----------|-------|--------------|--------------------|--------|-------------------|-------|---------|
| | | | | | | | |
| | | | - 0-7-2-2 - | | | | |



| FORMATION | Open or Close Hard or Soft | TOP | BOTTOM | | | |
|------------------|-------------------------------|------|--------|------|--|---|
| Sand | | 0 | 104 | | | |
| OAL | | 104 | 106 | | | |
| Sand | | 106 | 179 | | | |
| COAL | | 179 | 186 | | | |
| Sand & Shale | | 186 | 195 | | | |
| Sand | | 195 | 220 | | | |
| Sand & Shale | | 220 | 230 | | | |
| Sand | | 230 | 255 | | | |
| Sand & Sh. | | 255 | 290 | | | |
| Shale | | 290 | 335 | | | |
| Sand | | 335 | 390 | | | |
| Sand & Sh. | | 390 | 485 | | | |
| Sand | | 485 | 540 | | | |
| Sand & Sh. | | 540 | 580 | | | |
| Sand | | 580 | 610 | | | |
| Sand & Sh. | | 610 | 625 | | | |
| Sand | | 625 | 665 | | | |
| Sand & Sh. | | 665 | 905 | | | |
| Sand | | 905 | 1135 | | | |
| Sand & Sh. | | 1135 | 1145 | | | |
| Shale | | 1145 | 1300 | | | |
| Sh. & Sand | | 1300 | 1400 | | | |
| Sand | | 1400 | 1435 | | | |
| Sand & Sh. | | 1435 | 1440 | | | |
| Sand | | 1440 | 1500 | | | |
| Sand & Sh. | | 1500 | 1630 | | | |
| Shale | | 1630 | 1645 | | | |
| Sand | | 1645 | 1702 | | | |
| Shale | | 1702 | 1750 | | | |
| Sand | | 1750 | 1765 | | | |
| Shale | | 1765 | 1785 | | | |
| Sand & Sh. | | 1785 | 1795 | | | |
| Sand | | 1795 | 2310 | 1945 | | |
| Sand & Sh. | | 2310 | 2350 | | | Quit Dusting - Small Amount H ₂ O |
| Sand | | 2350 | 2380 | | | |
| R. Rock & Sh. | | 2380 | 2455 | | | |
| Black Lime | | 2455 | 2495 | | | |
| Limey Shale | | 2495 | 2540 | | | Test at 2590 0/10 W |
| UPPER MAXTON | | 2540 | 2705 | | | Test -2620 0/10 W |
| Lime | | 2705 | 2720 | | | Test- 2645 70-80/10 W |
| Sand | | 2720 | 2740 | | | FM Test at 2675 30- |
| Shale | | 2740 | 2790 | | | 10 W 1" FM. 41M & 48M |
| Red Rock | | 2790 | 2805 | | | Test at 2740 30-35/10 |
| Shale | | 2805 | 2900 | | | 1" FM - 41M & 44 M |
| Sand & Sh. | | 2900 | 2950 | | | Test at 3010 16/10 W |
| LITTLE LIME | | 2950 | 3000 | | | FM. 30M |
| BIG LIME | | 3000 | 3340 | | | Test at 3100 16/10 W |
| Sand | | 3340 | 3375 | | | FM 30M |
| Weir Shells | | 3375 | 3420 | | | Test at 3310 -0+14/1 |
| WEIR SAND | | 3420 | 3595 | | | 1" FM 136M |
| Sand & Sh. | | 3595 | 3675 | | | Test at 3340 -0+14/1 |
| TOTAL DEPTH K.B. | | | 3675 | | | 1" FM 104M |

plugged - 8/9/1963

July 27 1963
Jack W. Bailey
 Hoop Natural Gas Company

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS DIVISION

AFFIDAVIT OF PLUGGING AND FILLING WELL

AFFIDAVIT SHOULD BE MADE IN TRIPPLICATE. ONE COPY MAILED TO THE DEPARTMENT, ONE COPY TO BE RETAINED BY THE WELL OPERATOR AND THE THIRD COPY (AND EXTRA COPIES IF REQUIRED) SHOULD BE MAILED TO EACH COAL OPERATOR AT THEIR RESPECTIVE ADDRESSES.

Glorora Coal Company
COAL OPERATOR OR OWNER
 Blue Pennant, W. Va.
ADDRESS
 Same
COAL OPERATOR OR OWNER
 Hope Natural Gas Company
NAME OF WELL OPERATOR
 Charleston, W. Va.
COMPLETE ADDRESS
 WELL AND LOCATION 19
 District
 Creek,
 Boone,
 County
 Lease of Property Owner
 First National Bank Bldg.
ADDRESS
 Well No. 10015
 Albert H. Cole
 Farm

STATE INSPECTOR SUPERVISING PLUGGING

AFFIDAVIT

STATE OF WEST VIRGINIA,
County of Boone

ss:

Ernest W. Rogers and Cecil J. Terry
being first duly sworn according to law depose and say that they are experienced in the work of plugging and filling oil and gas wells and were employed by Hope Natural Gas Co. well operator, and participated in the work of plugging and filling the above well, that said work was commenced on the 1st day of August, 1903, and that the well was plugged and filled in the following manner:

| FORMATION | FILLING MATERIAL | | PLUGS USED | CASING | |
|----------------|------------------|---------|------------|-------------|--------------|
| | Feet | ft | | CS-1 PULLED | CS-2 LEFT IN |
| Subsidiary | | | | | |
| Aquagel | 2670 | 1100 | | 12-2/8" | |
| Stone | 2100 | 275 | | | |
| Cement | 2750 | 2700 | | | 281 |
| Cement & Stone | 2700 | 1010 | | | |
| Aquagel | 2700 | 1904 | | | |
| Cement | 1904 | 1904 | | 742' | 383' |
| Aquagel | 1904 | 1115 | | | |
| Cement | 1115 | 1115 | | 1922' | 1782' |
| Aquagel | 1115 | 1112 | | | |
| Cement | 1112 | 726 | | | |
| Aquagel | 726 | 716 | | | |
| Aquagel | 716 | 225 | | | |
| Crush & Stone | 225 | 216 | | | |
| Cement | 216 | Surface | | | |

DESCRIPTION OF MONUMENT
10' dia. C.C. casing set 12-1/2'
above ground and cemented solid.

and that the work of plugging and filling said well was completed on the 5th day of August, 1903.

And further deponents saith not.

Sworn to and subscribed before me this 10 day of Aug, 1903.

My commission expires:

27th 1907



Ernest W. Rogers
Cecil J. Terry

Notary Public.

Permit No. 800-955-P

10219 2102

PROPOSED MANNER OF PLUGGING AND FILLING WELL
(REQUIRED BY RULES AND REGULATIONS)

WEST VIRGINIA DEPARTMENT OF MINES
OIL AND GAS DIVISION

WORK ORDER

H. W. G. Co.
Well 10135

Well to be plugged and filled as follows:

Fill to surface with aquapel

Cut and remove 7" casing

Cement solid from 2750' to 2700'

Spot plugs of cement at the following depths;

2520', 1775' and 1122' - 10' below bottom of 9-5/8" casing
which is cemented to surface and must be left in.

Cement solid from 216' to surface account of coal beds and
erect suitable marker in accordance with Rule 1³ revised.

To the Department of Mines
Coal Owner or Operator,
Lease or Property Owner.

Gentlemen:

This "work order" is submitted for your approval and concurrence and unless notified of your disapproval or non-concurrence, the undersigned will proceed with the plugging and filling of said well in the above described manner on the date inspector is notified after permit is issued.

Very truly yours,

John H. Bailey
Hore Natural Gas Company

Well Operator

No objections have been filed by the coal owner or coal operator, or any available adjacent lease or property owners or interposed by the Department of Mines to the manner herein described for the plugging and filling of the well above mentioned. Therefore, the same is hereby approved this

26th day of July, 1953.

DEPARTMENT OF MINES
Oil and Gas Division

Marie E. Kippich

NOTE: This "work order" shall be filed in 3 copies, one copy for the files of the Department of Mines, one to be approved or corrected and returned to the well operator as his authority for plugging said well, and one for the well inspector.



STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS DIVISION

NOTICE OF INTENTION TO PLUG AND ABANDON WELL

(REQUIRED BY SECTION 9, ARTICLE 4, CHAPTER 22 OF THE CODE)

To THE DEPARTMENT OF MINES,
Charleston, W. Va.

Hogona Coal Co.
Coal Operator

Hoge National Gas Company
Name of Well Operator

Blue Tennet, J. Va.
Address

Herdshaw, J. Va.
Complete Address

Coal Owner

July 27, 1929

Date

WELL TO BE ABANDONED

1900, District

Surface: William O. Hunt
1010 S. Grand Street
Huntington, W. Va.

2900, County

Address

Albert H. Holo, et al Farm

Inspector to be notified Mr. Glen Jones City Peytona, W. Va. Telephone 835-2469 (Brushton)

Gentlemen:— 24 HOURS IN ADVANCE OF PLUGGING

The undersigned well operator is about to abandon the above described well and will commence

the work of plugging and abandoning said well on the date inspector is notified (which date shall not be less than five days after the day on which this notice is made as received, or in due course should be received by the Department of Mines.)

This notice is given you in order that your respective representatives may be present at the plugging and filling of said well. You are further notified that whether you are represented or not represented the undersigned will proceed on that date or shortly thereafter to plug and fill said well in the manner required by Section 9, Article 4, Chapter 22 of the Code and given in detail on the reverse side of this notice, in "Work Order."

This notice is being mailed by registered mail to each of you at the above addresses on the above date.



Very truly yours,

Hoge National Gas Company
Well Operator

NOTE: Upon abandonment of any well drilled prior to June 1, 1929, a plat prepared by a registered engineer shall be filed with THREE COPIES OF APPLICATION, (OG-3) AND "WORK ORDER" AND TWO COPIES OF THE WELL RECORD, (OG-10). The map must show the district and county in which the tract of land is located, the name and acreage of same, the name or names of the owners of adjacent tracts and the location of the well to be abandoned, determined by survey with the courses and distances of such well from two permanent points or landmarks on said tract.

NOTE: In case plugging is not commenced within four months from the date of permit, same shall expire and be of no further force or effect.

NOTE: PERMIT IS NOT TRANSFERABLE.

BLANKET BOND ~~AND~~ PLUG

| Strata | Weight of Core No. & Gr. Size | TCF | DEPTH | Core Line Measurement | Water Found Depth | Oil Found Depth | Gas Found Depth | Remarks |
|------------------|----------------------------------|------|-------|--------------------------|----------------------|--------------------|--------------------|--|
| Shale | | 0 | 101 | | | | | |
| Shale | | 101 | 106 | | | | | |
| Shale | | 103 | 170 | | | | | |
| Shale | | 170 | 188 | | | | | |
| Sand & Sh. | | 188 | 195 | | | | | |
| Shale | | 195 | 270 | | | | | |
| Sand & Sh. | | 270 | 310 | | | | | |
| Shale | | 310 | 330 | | | | | |
| Sand & Sh. | | 330 | 335 | | | | | |
| Shale | | 335 | 390 | | | | | |
| Sand & Sh. | | 390 | 405 | | | | | |
| Shale | | 405 | 510 | | | | | |
| Sand & Sh. | | 510 | 580 | | | | | |
| Shale | | 580 | 610 | | | | | |
| Sand & Sh. | | 610 | 625 | | | | | |
| Sand | | 625 | 695 | | | | | |
| Sand & Sh. | | 695 | 905 | | | | | |
| Sand | | 905 | 1135 | | | | | |
| Sand & Sh. | | 1135 | 1145 | | | | | |
| Shale | | 1145 | 15 | | | | | |
| Sh. & Sand | | 1500 | 1400 | | | | | |
| Sand | | 1400 | 1435 | | | | | |
| Sand & Sh. | | 1435 | 1440 | | | | | |
| Sand | | 1440 | 1500 | | | | | |
| Sand & Sh. | | 1500 | 1630 | | | | | |
| Shale | | 1630 | 1645 | | | | | |
| Sand | | 1645 | 1700 | | | | | |
| Shale | | 1700 | 1750 | | | | | |
| Sand | | 1750 | 1765 | | | | | |
| Shale | | 1765 | 1785 | | | | | |
| Sand & Sh. | | 1785 | 1795 | | | | | |
| Sand | | 1795 | 2310 | | | | | |
| Sand & Sh. | | 2310 | 2350 | | 2015 | | | Oil & Gas - Small - Amount 1/2 |
| Sand | | 2350 | 2380 | | | | | |
| S. Sand & Sh. | | 2380 | 2455 | | | | | |
| Black Sand | | 2455 | 2495 | | | | | |
| Oil & Sand | | 2495 | 2540 | | | | | |
| WATER SAND | | 2540 | 2705 | | | | | Test at 2540 0/10 W Test - 2540 0/10 W Test - 2540 70-80/10 W W. Test at 2575 30-4 10 W 1" W. Sand & Sh. Test at 2700 30-35/10 1" W. - W. & Sh. W. Test at 2710 16/10 W W. 300 |
| Sand | | 2705 | 2720 | | | | | Test at 2700 16/10 W W. 300 |
| Shale | | 2720 | 2740 | | | | | Test at 2710 - 0-10/10 1" W. 2000 |
| Sand | | 2740 | 2790 | | | | | Test at 2710 - 0-10/10 1" W. 2000 |
| Shale | | 2790 | 2805 | | | | | Test at 2790 - 7/10 1" W. 200 |
| Shale | | 2805 | 2900 | | | | | Test at 2790 17/10 1" W. 200 |
| Sand & Sh. | | 2900 | 2950 | | | | | Test at 2875 18-20 1" W. 200 & 250 |
| WATER SAND | | 2950 | 3000 | | | | | |
| Oil Sand | | 3000 | 3100 | | | | | |
| Sand | | 3100 | 3375 | | | | | |
| Oil & Sh. | | 3375 | 3400 | | | | | |
| WATER SAND | | 3400 | 3595 | | | | | |
| Sand & Sh. | | 3595 | 3675 | | | | | |
| TOTAL DEPTH R.B. | | | 3675 | | | | | |

July 17, 1973
Frank Buckley
 State Natural Resources

Process No Adjust Results

9/17/2007 12:38

Raw file> G:/Engineering/PCC Engineering/MASON/Data/rw5/GW-10485-955 09-17-2007.RW

CRD file> G:/Engineering/CRD's/PCC/Upper Big Branch/GW 10485 955 9-17-2007.crd

Scale Factor: 1.00000000

Correct for Earth Curvature: OFF

Starting Point 1: N 344458.995 E 1832308.551 Z 2125.294

BackSight Point 2: N 344362.160 E 1832466.962 Z 2156.018

| Point No. | Horizontal Angle | Zenith Angle | Slope Dist | Inst HT | Rod HT | Northing | Easting | Elev |
|-----------|------------------|--------------|------------|---------|--------|------------|-------------|----------|
| 3 | AR145.5130 | 97.1844 | 259.020 | 5.480 | 4.880 | 344446.872 | 1832051.924 | 2092.927 |
| T/H | | | | | | | | |
| 4 | AR90.0838 | 95.1249 | 131.320 | 5.120 | 4.880 | 344316.226 | 1832057.766 | 2081.234 |
| T/H | | | | | | | | |
| 5 | AR209.1813 | 99.0430 | 251.020 | 5.120 | 4.880 | 344094.863 | 1831946.223 | 2041.880 |
| T/H | | | | | | | | |
| 6 | AR194.2803 | 96.3910 | 334.960 | 4.990 | 4.880 | 343844.572 | 1831727.028 | 2003.185 |
| T/H | | | | | | | | |
| 7 | AR227.5931 | 97.5657 | 170.220 | 5.160 | 4.880 | 343842.226 | 1831558.450 | 1979.923 |
| PK NAIL | | | | | | | | |
| 8 | AR57.3635 | 111.0820 | 110.200 | 5.430 | 4.880 | 343756.215 | 1831614.707 | 1940.735 |
| GW 955 | | | | | | | | |
| 9 | AR2.3252 | 69.5756 | 108.480 | 2.960 | 4.880 | 343843.902 | 1831562.767 | 1980.488 |
| PK NAIL | | | | | | | | |
| 10 | AR301.5951 | 82.0901 | 156.960 | 5.220 | 4.880 | 343840.218 | 1831718.212 | 2002.265 |
| T/H | | | | | | | | |
| 11 | AR130.1248 | 83.2644 | 343.720 | 4.870 | 4.880 | 344095.678 | 1831944.790 | 2041.489 |
| T/H | | | | | | | | |
| 12 | AR165.5110 | 81.0059 | 246.360 | 5.020 | 4.880 | 344311.671 | 1832056.863 | 2080.098 |
| T/H | | | | | | | | |
| 13 | AR152.1933 | 84.2631 | 135.800 | 4.780 | 4.880 | 344446.831 | 1832056.272 | 2093.151 |
| T/H | | | | | | | | |
| 14 | AR267.2912 | 82.5130 | 254.560 | 5.200 | 4.880 | 344459.011 | 1832308.563 | 2125.119 |
| P.O.B. | | | | | | | | |

Closure Results

Starting Point 1: N 344458.995 E 1832308.551 Z 2125.294

Ending Point 14: N 344459.011 E 1832308.563 Z 2125.119

Azimuth Of Error: 37°25'14"

North Error : 0.01601

East Error : 0.01225

Vertical Error : -0.17460

Hz Dist Error : 0.02016

Sl Dist Error : 0.17576

Traverse Lines> 12

SideShots> 12

Horiz Dist Traversed: 2469.595

Slope Dist Traversed: 2502.610

Closure Precision: 1 in 122483

Raw File> G:\Engineering\PCC Engineering\MASON\Data\rw5\GW-10485-955 09-17-2007.RW

CRD File> G:\Engineering\CRD's\PCC\Upper Big Branch\GW 10485 955 9-17-2007.crd

Note

JB,NMGW-10485-955 09-17-2007,DT09-17-2007,TM00:42:04

MO,AD0,UN2,SF1.0,EC0,EO0.0,AU0

File exported from Survey Pro

Note

JB,NMGW-10485-955 09-16-2007,DT09-16-2007,TM21:41:19

MO,AD0,UN2,SF1.0,EC0,EO0.0,AU0

| PntNo | Northing | Easting | Elevation | Desc |
|-------|-------------|--------------|-----------|---------------|
| 1 | 344458.9950 | 1832308.5510 | 2125.2940 | LOGAN FORK-11 |

Note

Data Collector Serial Number: FS69A53256

| PntNo | Northing | Easting | Elevation | Desc |
|-------|-------------|--------------|-----------|---------------|
| 2 | 344362.1600 | 1832466.9620 | 2156.0180 | LOGAN FORK-10 |

Note

Foresight Target:My Prism, HR:4.88 (4.88 + 0.0 Offset), Prism Const.:0.0mm

OC,OP1,N 344458.995,E 1832308.551,EL2125.294,-- LOGAN FORK-11

HR:4.88 (4.88 + 0.0 Offset)

| InstHt | RodHt |
|--------|-------|
| 5.480 | 4.880 |

| OcPt | BsPt | Azi | SetAzi |
|------|------|-----|------------|
| 1 | 2 | | 278°41'33" |

Note

Backsight HR:4.88 (4.88 + 0.0 Offset), Prism Const.:0.0mm

| OcPt | BsPt | Azi | SetAzi |
|------|------|-----|------------|
| 1 | 2 | | 121°26'13" |

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm

OC,OP1,N 344458.995,E 1832308.551,EL2125.294,-- LOGAN FORK-11

| OcPt | BsPt | Azi | SetAzi |
|------|------|-----|------------|
| 1 | 2 | | 121°26'13" |

Note

Backsight HR:4.88 (4.88 + 0.0 Offset), Prism Const.:0.0mm

BS check 1 - 2:ZE80.4304,SD188.18,HD err= 0.052094, VD err= 0.228984

BS Circle check : angular err= 0.0000

MD:SD 1:259.02

RF,OP1,FP3,AR267.1745,ZE97.1843,SD259.02,HR4.88,--T/H

RF,OP1,FP3,AR87.1755,ZE262.4115,SD259.02,HR4.88,--T/H

Horizontal Angle Error: 0.0003

Zenith Angle Error: 0.0002

Slope Distance Error: 0.0

Horizontal Angle Error compares to the average: 0.0000

Zenith Angle Error compares to the average: 0.0000

Slope Distance Error compares to the average: 0.0

| OcPt | FsPt | HorzAngle | SlopeDist | ZenithAng | Desc |
|------|------|---------------|-----------|------------|------|
| BD 1 | 2 | AR 121°26'13" | 0.000 | 90°00'00" | |
| BR 1 | 2 | AR 301°26'26" | 0.000 | 270°00'00" | |
| FD 1 | 3 | AR 267°17'45" | 259.020 | 97°18'43" | T/H |
| FR 1 | 3 | AR 87°17'55" | 259.020 | 262°41'15" | T/H |

Note

OC,OP3,N 344446.872491,E 1832051.923689,EL2092.92692,--T/H

| OcPt | BsPt | Azi | SetAzi |
|------|------|-----|------------|
| 3 | 1 | | 121°26'13" |

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm

HR:4.88 (0.0 + 0.0 Offset)

InstHt RodHt
5.120 4.880

OcPt BsPt Azi SetAzi
3 1 87°17'44"

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm

MD:SD 1:131.32

RF,OP3,FP4,AR177.2623,ZE95.1242,SD131.32,HR4.88,--T/H

RF,OP3,FP4,AR357.2637,ZE264.4703,SD131.32,HR4.88,--T/H

Horizontal Angle Error: 0.0001

Zenith Angle Error: 0.0015

Slope Distance Error: 0.0

Horizontal Angle Error compares to the average: 0.0000

Zenith Angle Error compares to the average: 0.0000

Slope Distance Error compares to the average: 0.0

| | OcPt | FsPt | HorzAngle | SlopeDist | ZenithAng | Desc |
|----|------|------|---------------|-----------|------------|------|
| BD | 3 | 1 | AR 87°17'44" | 0.000 | 90°00'00" | |
| BR | 3 | 1 | AR 267°17'59" | 0.000 | 270°00'00" | |
| FD | 3 | 4 | AR 177°26'23" | 131.320 | 95°12'42" | T/H |
| FR | 3 | 4 | AR 357°26'37" | 131.320 | 264°47'03" | T/H |

Note

OC,OP4,N 344316.226377,E 1832057.766016,EL2081.233665,--T/H

OcPt BsPt Azi SetAzi
4 3 87°17'44"

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm

OcPt BsPt Azi SetAzi
4 3 357°26'22"

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm

MD:SD 1:251.02

RF,OP4,FP5,AR206.4431,ZE99.0427,SD251.02,HR4.88,--T/H

RF,OP4,FP5,AR26.4437,ZE260.5526,SD251.02,HR4.88,--T/H

Horizontal Angle Error: 0.0008

Zenith Angle Error: 0.0007

Slope Distance Error: 0.0

Horizontal Angle Error compares to the average: 0.0000

Zenith Angle Error compares to the average: 0.0000

Slope Distance Error compares to the average: 0.0

| | OcPt | FsPt | HorzAngle | SlopeDist | ZenithAng | Desc |
|----|------|------|---------------|-----------|------------|------|
| BD | 4 | 3 | AR 357°26'22" | 0.000 | 90°00'00" | |
| BR | 4 | 3 | AR 177°26'20" | 0.000 | 270°00'00" | |
| FD | 4 | 5 | AR 206°44'31" | 251.020 | 99°04'27" | T/H |
| FR | 4 | 5 | AR 26°44'37" | 251.020 | 260°55'26" | T/H |

Note

OC,OP5,N 344094.863316,E 1831946.223166,EL2041.88038,--T/H

OcPt BsPt Azi SetAzi
5 4 357°26'22"

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm

HR:4.88 (0.0 + 0.0 Offset)

InstHt RodHt
4.990 4.880

OcPt BsPt Azi SetAzi
5 4 26°44'35"

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm
OC,OP5,N 344094.863316,E 1831946.223166,EL2041.88038,--T/H

OcPt BsPt Azi SetAzi
5 4 26°44'35"

Note

Backsight HR:4.88 (4.88 + 0.0 Offset), Prism Const.:0.0mm
BS check 5 - 4:ZE81.0026,SD250.96,HD err= -0.002604, VD err= -0.015737

BS Circle check : angular err= 0.0001

MD:SD 1:334.96

RF,OP5,FP6,AR221.1243,ZE96.3914,SD334.96,HR4.88,--T/H

RF,OP5,FP6,AR41.1250,ZE263.2054,SD334.96,HR4.88,--T/H

Horizontal Angle Error: 0.0010

Zenith Angle Error: 0.0008

Slope Distance Error: 0.0

Horizontal Angle Error compares to the average: 0.0000

Zenith Angle Error compares to the average: 0.0000

Slope Distance Error compares to the average: 0.0

| | OcPt | FsPt | HorzAngle | SlopeDist | ZenithAng | Desc |
|----|------|------|---------------|-----------|------------|------|
| BD | 5 | 4 | AR 26°44'35" | 0.000 | 90°00'00" | |
| BR | 5 | 4 | AR 206°44'52" | 0.000 | 270°00'00" | |
| FD | 5 | 6 | AR 221°12'43" | 334.960 | 96°39'14" | T/H |
| FR | 5 | 6 | AR 41°12'50" | 334.960 | 263°20'54" | T/H |

Note

OC,OP6,N 343844.572098,E 1831727.027786,EL2003.184546,--T/H

OcPt BsPt Azi SetAzi
6 5 26°44'35"

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm

HR:4.88 (0.0 + 0.0 Offset)

InstHt RodHt
5.160 4.880

OcPt BsPt Azi SetAzi
6 5 41°12'38"

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm

MD:SD 1:170.22

RF,OP6,FP7,AR269.1217,ZE97.5654,SD170.22,HR4.88,--PK NAIL

RF,OP6,FP7,AR89.1211,ZE262.0300,SD170.24,HR4.88,--PK NAIL

Horizontal Angle Error: 0.0016

Zenith Angle Error: 0.0006

Slope Distance Error: 0.02

Horizontal Angle Error compares to the average: 0.0000

Zenith Angle Error compares to the average: 0.0000

Slope Distance Error compares to the average: 0.0

| | OcPt | FsPt | HorzAngle | SlopeDist | ZenithAng | Desc |
|----|------|------|---------------|-----------|------------|---------|
| BD | 6 | 5 | AR 41°12'38" | 0.000 | 90°00'00" | |
| BR | 6 | 5 | AR 221°12'48" | 0.000 | 270°00'00" | |
| FD | 6 | 7 | AR 269°12'17" | 170.220 | 97°56'54" | PK NAIL |
| FR | 6 | 7 | AR 89°12'11" | 170.240 | 262°03'00" | PK NAIL |

Note

OC,OP7,N 343842.225708,E 1831558.449828,EL1979.922678,--PK NAIL

OcPt BsPt Azi SetAzi
7 6 41°12'38"

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm

HR:4.88 (0.0 + 0.0 Offset)

InstHt RodHt
5.430 4.880

OcPt BsPt Azi SetAzi
7 6 89°12'09"

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm
MD:SD 1:110.2

RF,OP7,FP8,AR146.4847,ZE111.0814,SD110.2,HR4.88,--GW 955
RF,OP7,FP8,AR326.4857,ZE248.5134,SD110.18,HR4.88,--GW 955

Horizontal Angle Error: 0.0006

Zenith Angle Error: 0.0012

Slope Distance Error: 0.02

Horizontal Angle Error compares to the average: 0.0000

Zenith Angle Error compares to the average: 0.0000

Slope Distance Error compares to the average: 0.0

| | OcPt | FsPt | HorzAngle | SlopeDist | ZenithAng | Desc |
|----|------|------|---------------|-----------|------------|--------|
| BD | 7 | 6 | AR 89°12'09" | 0.000 | 90°00'00" | |
| BR | 7 | 6 | AR 269°12'25" | 0.000 | 270°00'00" | |
| FD | 7 | 8 | AR 146°48'47" | 110.200 | 111°08'14" | GW 955 |
| FR | 7 | 8 | AR 326°48'57" | 110.180 | 248°51'34" | GW 955 |

Note

OC,OP8,N 343756.215018,E 1831614.707301,EL1940.734863,--GW 955

OcPt BsPt Azi SetAzi
8 7 89°12'09"

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm

OC,OP8,N 343756.215018,E 1831614.707301,EL1940.734863,--GW 955

OcPt BsPt Azi SetAzi
8 7 89°12'09"

Note

Backsight HR:4.88 (4.88 + 0.0 Offset), Prism Const.:0.0mm

OC,OP8,N 343756.215018,E 1831614.707301,EL1940.734863,--GW 955

HR:4.88 (4.88 + 0.0 Offset)

InstHt RodHt
2.960 4.880

OcPt BsPt Azi SetAzi
8 7 89°12'09"

Note

Backsight HR:4.88 (4.88 + 0.0 Offset), Prism Const.:0.0mm

OcPt BsPt Azi SetAzi
8 7 326°48'44"

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm

OC,OP8,N 343756.215018,E 1831614.707301,EL1940.734863,--GW 955

OcPt BsPt Azi SetAzi
8 7 326°48'44"

Note

Backsight HR:4.88 (4.88 + 0.0 Offset), Prism Const.:0.0mm

BS check 8 - 7:ZE70.2401,SD109.1,HD err= 0.003443, VD err= -4.510547

BS Circle check : angular err= 0.0000

OC,OP6,N 343844.572098,E 1831727.027786,EL2003.184546,--T/H

OcPt BsPt Azi SetAzi
6 7 326°48'44"

Note

Backsight HR:4.88 (4.88 + 0.0 Offset), Prism Const.:0.0mm

| PntNo | Northing | Easting | Elevation | Desc |
|-------|-------------|--------------|-----------|--------|
| 8 | 343756.2150 | 1831614.7073 | 1936.2249 | GW 955 |

Note
OC,OP8,N 343756.215018,E 1831614.707301,EL1936.224863,--GW 955

| OcPt | BsPt | Azi | SetAzi |
|------|------|-----|------------|
| 8 | 7 | | 326°48'44" |

Note
Backsight HR:4.88 (4.88 + 0.0 Offset), Prism Const.:0.0mm
OC,OP8,N 343756.215018,E 1831614.707301,EL1936.224863,--GW 955

| OcPt | BsPt | Azi | SetAzi |
|------|------|-----|------------|
| 8 | 7 | | 326°48'44" |

Note
Backsight HR:4.88 (4.88 + 0.0 Offset), Prism Const.:0.0mm
BS check 8 - 7:ZE70.2402,SD109.1,HD err= 0.003621, VD err= -9.021045
BS Circle check : angular err= 0.0000
OC,OP6,N 343844.572098,E 1831727.027786,EL2003.184546,--T/H

| OcPt | BsPt | Azi | SetAzi |
|------|------|-----|------------|
| 6 | 7 | | 326°48'44" |

Note
Backsight HR:4.88 (4.88 + 0.0 Offset), Prism Const.:0.0mm

| PntNo | Northing | Easting | Elevation | Desc |
|-------|-------------|--------------|-----------|--------|
| 8 | 343756.2150 | 1831614.7073 | 1945.2449 | GW 955 |

Note
OC,OP8,N 343756.215018,E 1831614.707301,EL1945.244863,--GW 955

| OcPt | BsPt | Azi | SetAzi |
|------|------|-----|------------|
| 8 | 7 | | 326°48'44" |

Note
Backsight HR:4.88 (4.88 + 0.0 Offset), Prism Const.:0.0mm
OC,OP8,N 343756.215018,E 1831614.707301,EL1945.244863,--GW 955

| OcPt | BsPt | Azi | SetAzi |
|------|------|-----|------------|
| 8 | 7 | | 326°48'44" |

Note
Backsight HR:4.88 (4.88 + 0.0 Offset), Prism Const.:0.0mm
BS check 8 - 7:ZE70.2402,SD109.1,HD err= 0.003621, VD err= -0.001045
BS Circle check : angular err= 0.0000
MD:SD 1:108.48
RF,OP8,FP9,AR329.2137,ZE69.5750,SD108.48,HR4.88,--PK NAIL
RF,OP8,FP9,AR149.2147,ZE290.0157,SD108.48,HR4.88,--PK NAIL
Horizontal Angle Error: 0.0002
Zenith Angle Error: 0.0013
Slope Distance Error: 0.0
Horizontal Angle Error compares to the average: 0.0000
Zenith Angle Error compares to the average: 0.0000
Slope Distance Error compares to the average: 0.0

| OcPt | FsPt | HorzAngle | SlopeDist | ZenithAng | Desc |
|------|------|---------------|-----------|------------|---------|
| BD 8 | 7 | AR 326°48'44" | 0.000 | 90°00'00" | |
| BR 8 | 7 | AR 146°48'56" | 0.000 | 270°00'00" | |
| FD 8 | 9 | AR 329°21'37" | 108.480 | 69°57'50" | PK NAIL |
| FR 8 | 9 | AR 149°21'47" | 108.480 | 290°01'57" | PK NAIL |

Note
OC,OP9,N 343843.901898,E 1831562.766902,EL1980.488236,--PK NAIL

| OcPt | BsPt | Azi | SetAzi |
|------|------|-----|------------|
| 9 | 8 | | 326°48'44" |

Note
Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm
HR:4.88 (0.0 + 0.0 Offset)

InstHt RodHt
 5.220 4.880
 OcPt BsPt Azi SetAzi
 9 8 149°21'36"

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm
 OC,OP9,N 343843.901898,E 1831562.766902,EL1980.488236,--PK NAIL

OcPt BsPt Azi SetAzi
 9 8 149°21'36"

Note

Backsight HR:4.88 (4.88 + 0.0 Offset), Prism Const.:0.0mm
 BS check 9 - 8:ZE111.2933,SD109.52,HD err= -0.011037, VD err= -4.542502
 BS Circle check : angular err= 0.0000

MD:SD 1:156.96

RF,OP9,FP10,AR91.2128,ZE82.0858,SD156.96,HR4.88,--T/H
 RF,OP9,FP10,AR271.2135,ZE277.5056,SD156.96,HR4.88,--T/H

Horizontal Angle Error: 0.0001

Zenith Angle Error: 0.0006

Slope Distance Error: 0.0

Horizontal Angle Error compares to the average: 0.0000

Zenith Angle Error compares to the average: 0.0000

Slope Distance Error compares to the average: 0.0

| | OcPt | FsPt | HorzAngle | SlopeDist | ZenithAng | Desc |
|----|------|------|---------------|-----------|------------|------|
| BD | 9 | 8 | AR 149°21'36" | 0.000 | 90°00'00" | |
| BR | 9 | 8 | AR 329°21'44" | 0.000 | 270°00'00" | |
| FD | 9 | 10 | AR 91°21'28" | 156.960 | 82°08'58" | T/H |
| FR | 9 | 10 | AR 271°21'35" | 156.960 | 277°50'56" | T/H |

Note

OC,OP10,N 343840.217701,E 1831718.212485,EL2002.265097,--T/H

OcPt BsPt Azi SetAzi
 10 9 149°21'36"

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm
 HR:4.88 (0.0 + 0.0 Offset)

InstHt RodHt
 4.870 4.880

Note

OC,OP10,N 343840.217701,E 1831718.212485,EL2002.265097,--T/H

OcPt BsPt Azi SetAzi
 10 9 149°21'36"

Note

Backsight HR:4.88 (4.88 + 0.0 Offset), Prism Const.:0.0mm

OcPt BsPt Azi SetAzi
 10 9 271°21'28"

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm
 OC,OP10,N 343840.217701,E 1831718.212485,EL2002.265097,--T/H

OcPt BsPt Azi SetAzi
 10 9 271°21'28"

Note

Backsight HR:4.88 (4.88 + 0.0 Offset), Prism Const.:0.0mm
 BS check 10 - 9:ZE97.5826,SD157.02,HD err= 0.012599, VD err= -0.015236
 BS Circle check : angular err= 0.0000

RD:BD 1:271.2129

RD:FD 1:41.3430

RD:ZD 1:83.2637

MD:SD 1:343.7
 RF,OP10,FP,AR41.3430,ZE83.2637,SD343.7,HR4.88,--
 RD:FV 1:221.3437
 RD:ZV 1:276.3251
 MD:SD 1:343.7
 RF,OP10,FP,AR221.3437,ZE276.3251,SD343.7,HR4.88,--
 RD:BV 1:91.2147

Horizontal Angle Error: 0.0011
 Zenith Angle Error: 0.0032
 Slope Distance Error: 0.0

MD:SD 1:343.72
 RF,OP10,FP11,AR41.3415,ZE83.2634,SD343.72,HR4.88,--T/H
 RF,OP10,FP11,AR221.3422,ZE276.3306,SD343.7,HR4.88,--T/H

Horizontal Angle Error: 0.0002
 Zenith Angle Error: 0.0020
 Slope Distance Error: 0.02

Horizontal Angle Error compares to the average: 0.0000
 Zenith Angle Error compares to the average: 0.0000
 Slope Distance Error compares to the average: 0.0

| | OcPt | FsPt | HorzAngle | SlopeDist | ZenithAng | Desc |
|----|------|------|---------------|-----------|------------|------|
| BD | 10 | 9 | AR 271°21'28" | 0.000 | 90°00'00" | |
| BR | 10 | 9 | AR 91°21'33" | 0.000 | 270°00'00" | |
| FD | 10 | 11 | AR 41°34'15" | 343.720 | 83°26'34" | T/H |
| FR | 10 | 11 | AR 221°34'22" | 343.700 | 276°33'06" | T/H |

Note

OC,OP11,N 344095.677978,E 1831944.789929,EL2041.488661,--T/H

| OcPt | BsPt | Azi | SetAzi |
|------|------|-----|------------|
| 11 | 10 | | 271°21'28" |

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm
 HR:4.88 (0.0 + 0.0 Offset)

| InstHt | RodHt |
|--------|-------|
| 5.020 | 4.880 |

| OcPt | BsPt | Azi | SetAzi |
|------|------|-----|------------|
| 11 | 10 | | 221°34'16" |

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm

OC,OP11,N 344095.677978,E 1831944.789929,EL2041.488661,--T/H

| OcPt | BsPt | Azi | SetAzi |
|------|------|-----|------------|
| 11 | 10 | | 221°34'16" |

Note

Backsight HR:4.88 (4.88 + 0.0 Offset), Prism Const.:0.0mm

BS check 11 - 10:ZE96.3415,SD343.72,HD err= -0.001302, VD err= 0.031185

BS Circle check : angular err= 0.0000

MD:SD 1:246.36
 RF,OP11,FP12,AR27.2521,ZE81.0056,SD246.36,HR4.88,--T/H
 RF,OP11,FP12,AR207.2530,ZE278.5858,SD246.36,HR4.88,--T/H

Horizontal Angle Error: 0.0009
 Zenith Angle Error: 0.0006
 Slope Distance Error: 0.0

Horizontal Angle Error compares to the average: 0.0000
 Zenith Angle Error compares to the average: 0.0000
 Slope Distance Error compares to the average: 0.0

| | OcPt | FsPt | HorzAngle | SlopeDist | ZenithAng | Desc |
|----|------|------|---------------|-----------|------------|------|
| BD | 11 | 10 | AR 221°34'16" | 0.000 | 90°00'00" | |
| BR | 11 | 10 | AR 41°34'16" | 0.000 | 270°00'00" | |

FD 11 12 AR 27°25'21" 246.360 81°00'56" T/H
 FR 11 12 AR 207°25'30" 246.360 278°58'58" T/H

Note

OC,OP12,N 344311.670824,E 1832056.863257,EL2080.098253,--T/H

OcPt BsPt Azi SetAzi
 12 11 221°34'16"

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm
 HR:4.88 (0.0 + 0.0 Offset)

InstHt RodHt
 4.780 4.880

OcPt BsPt Azi SetAzi
 12 11 207°25'25"

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm
 MD:SD 1:135.8

RF,OP12,FP13,AR359.4502,ZE84.2621,SD135.8,HR4.88,--T/H

RF,OP12,FP13,AR179.4518,ZE275.3319,SD135.8,HR4.88,--T/H

Horizontal Angle Error: 0.0009

Zenith Angle Error: 0.0020

Slope Distance Error: 0.0

Horizontal Angle Error compares to the average: 0.0000

Zenith Angle Error compares to the average: 0.0000

Slope Distance Error compares to the average: 0.0

| | OcPt | FsPt | HorzAngle | SlopeDist | ZenithAng | Desc |
|----|------|------|---------------|-----------|------------|------|
| BD | 12 | 11 | AR 207°25'25" | 0.000 | 90°00'00" | |
| BR | 12 | 11 | AR 27°25'50" | 0.000 | 270°00'00" | |
| FD | 12 | 13 | AR 359°45'02" | 135.800 | 84°26'21" | T/H |
| FR | 12 | 13 | AR 179°45'18" | 135.800 | 275°33'19" | T/H |

Note

OC,OP13,N 344446.831077,E 1832056.272026,EL2093.151067,--T/H

OcPt BsPt Azi SetAzi
 13 12 207°25'25"

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm
 HR:4.88 (0.0 + 0.0 Offset)

InstHt RodHt
 5.200 4.880

OcPt BsPt Azi SetAzi
 13 12 179°44'58"

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm

OC,OP13,N 344446.831077,E 1832056.272026,EL2093.151067,--T/H

OcPt BsPt Azi SetAzi
 13 12 179°44'58"

Note

Backsight HR:4.88 (4.88 + 0.0 Offset), Prism Const.:0.0mm

BS check 13 - 12:ZE95.3916,SD135.82,HD err= -0.002416, VD err= -0.009335

BS Circle check : angular err= 0.0000

MD:SD 1:254.56

RF,OP13,FP14,AR87.1402,ZE82.5124,SD254.56,HR4.88,--P.O.B.

RF,OP13,FP14,AR267.1419,ZE277.0825,SD254.56,HR4.88,--P.O.B.

Horizontal Angle Error: 0.0016

Zenith Angle Error: 0.0011

Slope Distance Error: 0.0

Horizontal Angle Error compares to the average: 0.0000

Zenith Angle Error compares to the average: 0.0000

Slope Distance Error compares to the average: 0.0

| OcPt | FsPt | HorzAngle | SlopeDist | ZenithAng | Desc |
|-------|------|---------------|-----------|------------|--------|
| BD 13 | 12 | AR 179°44'58" | 0.000 | 90°00'00" | |
| BR 13 | 12 | AR 359°44'59" | 0.000 | 270°00'00" | |
| FD 13 | 14 | AR 87°14'02" | 254.560 | 82°51'24" | P.O.B. |
| FR 13 | 14 | AR 267°14'19" | 254.560 | 277°08'25" | P.O.B. |

Note

OC,OP14,N 344459.011105,E 1832308.563179,EL2125.119365,--P.O.B.

| OcPt | BsPt | Azi | SetAzi |
|------|------|-----|------------|
| 14 | 13 | | 179°44'58" |

Note

Backsight HR:0.0 (0.0 + 0.0 Offset), Prism Const.:0.0mm

Set local time from 00:42:31 to 00:43:00 Difference: +00:00:29

Set local time from 00:43:42 to 12:43:00 Difference: +11:59:18