

NO	COURSE & DISTANCE	NO	COURSE & DISTANCE
1.	N57°-34'-43"W 511.50'	9.	S54°-05'-55"E 640.20'
2.	N19°-34'-17" E 270.06'	10.	S63°-05'-55"E 547.80'
3.	N33°-10'-17" E 959.03'	11.	S54°-05'-55"E 450.05'
4.	N61°-13'-43" W 1288.40'	12.	S28°-09'-10"E 483.86'
5.	N39°-50'-25"E 1007.87'	13.	S55°-21'-12" W 1428.58'
6.	S72°-39'-35"E 1432.80'	14.	N83°-51'-46"W 981.16'
7.	S16°-20'-25"W 749.86'	15.	N54°-04'-43"W 1073.80'
8.	S71°-35'-55" E 594.00'		

TRUE NORTH DETERMINATION
 BY POLARIS OBSERVATION
 AT U.C. (02:54:40 AM. D.S.T.)
 ON OCT. 8TH, 1971
 AT: LAT. 39°-25'-29" N
 LONG. 78°-34'-44" W

S = SURVEYED LINE
 C = CALCULATED LINE

7.5 loc
2455 39° 27' 30"
201W 78° 32' 30"

Minimum Error of Closure 1:2000'
 Source of Elevation (1970) BM. 29 RAP. + 753.613' HANGING ROCK

QUADRANGLE
 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.

Fracture..... *5335*
 New Location..... *424W*
 Drill Deeper.....
 Abandonment.....

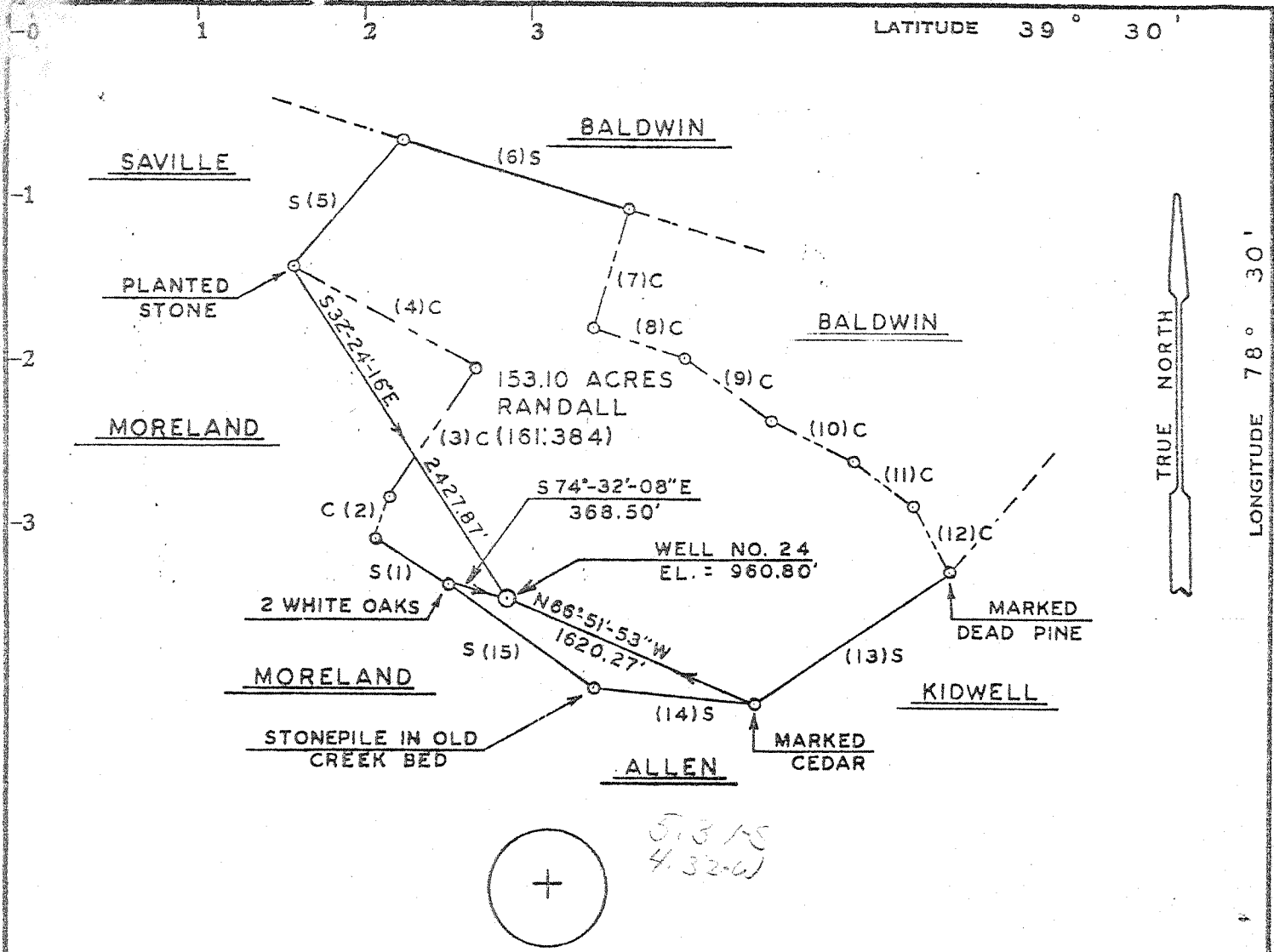
Signed: *W. Frank Piggart*
 Squares: N S E W

Company HAMPSHIRE GAS CO.
 Address 6801 INDUSTRIAL RD. SPRINGFIELD, VA.
 Farm RICHARD & PATRICIA RANDALL
 Tract 1 Acres 153.10 Lease No. 463 & 523
 Well (Farm) No. 24 Serial No. _____
 Elevation (Spirit Level) 960.80'
 Quadrangle HANGING ROCK *levels 75 quad*
 County HAMPSHIRE District GORE
 Surveyor W. Frank Piggart
 Engineer's Registration No. W.VA. LICENSE NO. 51
 File No. _____ Drawing No. 7190
 Date OCT. 20, 1971 Scale 1" = 1000'

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

WELL LOCATION MAP
 FILE NO. Hamp-31-P *027*

+ 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.



NO	COURSE & DISTANCE	NO	COURSE & DISTANCE
1.	N57°-34'-43"W 511.50'	9.	S54°-05'-55"E 640.20'
2.	N19°-34'-17"E 270.06'	10.	S63°-05'-55"E 547.80'
3.	N33°-10'-17"E 959.03'	11.	S54°-05'-55"E 450.05'
4.	N61°-13'-43"W 1288.40'	12.	S28°-09'-10"E 483.86'
5.	N39°-50'-25"E 1007.87'	13.	S55°-21'-12"W 1428.58'
6.	S72°-39'-35"E 1432.80'	14.	N83°-51'-48"W 991.18'
7.	S18°-20'-25"W 749.88'	15.	N54°-04'-43"W 1073.80'
8.	S71°-35'-55"E 594.00'		

TRUE NORTH DETERMINATION
 BY POLARIS OBSERVATION
 AT U.C. (02:54:40 AM. D.S.T.)
 ON OCT. 8TH, 1971
 AT: LAT. 39°-25'-29" N
 LONG: 78°-34'-44" W

S = SURVEYED LINE
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Fracture.....
 New Location.....
 Drill Deeper.....
 Abandonment.....

Signed: *W. Thomas Bujard*
 Map No. Squares: N S E W

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 Address 6801 INDUSTRIAL RD. SPRINGFIELD, VA.
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 Tract 1 Acres 153.10 Lease No. 463 & 523
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 Elevation (Spirit Level) 960.80'
 Quadrangle HANGING ROCK NE
 County HAMPSHIRE District GORE
 Surveyor _____
 Engineer _____
 Engineer's Registration No. W.VA. LICENSE NO. 51
 File No. _____ Drawing No. 7190
 Date OCT. 20, 1971 Scale 1" = 1000'

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

WELL LOCATION MAP
 FILE NO. Hamp-31

+ 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.

8-0 ~~5-0~~ Little Cacapon (326) Deep Well (Oriskany)
 NOV 15 1971



OIL & GAS DIVISION
DEPT. OF MINES

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

Rotary
Spudder
Cable Tools Observation Well
Storage Dry
Oil or Gas Well GAS (KIND)

Range Hanging Rock
Well No. Hamp-31

WELL RECORD

Company Hampshire Gas Company
Address 6801 Industrial Rd., Springfield, Va.
Richard R. & Patricia S. Randall Acres 153.10
Location (waters) Little Capon
Well No. 24 Elev. 960.8'
County Gore Hampshire
Surface of tract is owned in fee by Richard R. & Patricia S. Randall Address
Rights are owned by Richard R. & Patricia S. Randall Address 3514 Quebec St., N.W. Washington, D.C.
Work commenced Nov. 22, 1971
Work completed Jan. 19, 1972
Shot From To

Casing and Tubing	Used in Drilling	Left in Well	Packers
Size			Kind of Packer None
16			
13 3/8" CSG	None	37'	Size of
9-5/8" CSG	None	1393'	Depth set
8 1/4			
7" GSG	None	5771'	Perf. top
5 3/16			Perf. bottom
4 1/2			Perf. top
3			Perf. bottom
2			
Liners Used			

Flow 10ths Water in Inch
10ths Merc. in Inch
To Small to Measure Cu. Ft.
Pressure 38 lbs. 24 hrs.

Attach copy of cementing record.
CASING CEMENTED 7" SIZE 5771 No. Ft. 1/9/72 Date
Amount of cement used (bags) See Reverse Side
Name of Service Co. Halliburton
COAL WAS ENCOUNTERED AT FEET INCHES
FEET INCHES FEET INCHES
FEET INCHES FEET INCHES

ACIDIZED (DETAILS)
FRACTURED (DETAILS)
SOFT AFTER TREATMENT (Initial open Flow or bbls.)
BACK PRESSURE AFTER TREATMENT HOURS

Water Feet 143' Salt Water Feet 1873'-2670'
Producing Sand Oriskany Sandstone - gas show Depth 5773-5936

Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth	Remarks
Sandstone	Lt Gy.	Shaly	0	70	Fresh wtr.	143	
Siltstone	Red brn & gray		70	740			
Shale							
Siltstone							
Shale	Lt Gy.		740	-1560			
Siltstone	Lt. Gy.		1560	1890	Salt Water	1873-2670	
Shale	Black		1890	1910			
Siltstone							
Shale	Lt. Gy.		1910	2650			
Shale	Black		2650	2670			
Siltstone							
Shale & Siltstone	Lt. Gy.		2670	3010			Sandy
Shale & Siltstone	Med. Gy.		3010	3310			Fossils & limestone stringers
Siltstone w/ Shale	Med. Gy.		3310	4190			Sli. calcareous
Shale w/ Siltstone	Med. Gy.		4190	5190			Silty
Shale	Dr. Gy.		5190	5340			
Shale	Dr. Gy.	MARBLE	5340	5615			Calcareous
Metabentonite	Brn.	Tioga	5615	5620			Tioga
Shale	Black	Needmore	5620	5640			
Shale	Dr. Gy.	Shale	5640	5773			Calcareous
Sandstone	Lt. Gy.	Oriskany	5773	5936			Calcareous (Oriskany)

(over)

MAY 30 1972

Formation	Color	Hard or Soft	Top 4	Bottom	Oil, Gas or Water	Depth Found	Remarks
Sandstone & Limestone	Lt. Gy <i>Oriskany</i>		5936	5944 <i>475</i>			
<u>CEMENTING DATA</u>							
13-3/8" CSG							Cemented to surface with 50 sacks of Portland Class "A" cement.
9-5/8" CSG							Cemented to surface with 450 sacks of Thixotropic cement and 100 sacks of Portland Class "A" cement.
7" CSG							Cemented in two stages. First stage cemented with 170 sacks of Portland Class "A" cement and 30 sacks of Latex. No cement returns. Second stage required 500 sacks of Diacel "D" cement. No cement returns.

*USGS has quality mud
when well 4021 ft deep
and 3620 ft deep
W.A. Hobbs*

Date 11 July 10, 1972
 APPROVED *Edward J. Anderson*, Owner
 By *John J. Anderson* (Title)

STATE OF WEST VIRGINIA
DEPARTMENT OF ENERGY
DIVISION OF OIL AND GAS

AFFIDAVIT OF PLUGGING AND FILLING WELL

AFFIDAVIT SHOULD BE IN TRIPLICATE, one copy mailed to the Division, 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.

RECEIVED
Division of Energy

NOV 19 90
Permitting
and Gas Section

Farm name: RANDALL, RICHARD & PAT Operator Well No.:24

LOCATION: Elevation: 960.80 Quadrangle: LEVELS
District: GORE County: HAMPSHIRE
Latitude: 13000 Feet South of 39 Deg. 27 Min. 30 Sec.
Longitude 10400 Feet West of 78 Deg. 32 Min. 30 Sec.

Well type: OIL _____ GAS X

Company: Hampshire Gas Company Coal Operator N/A
6801 Industrial Road or Owner _____
Springfield, Virginia 22151 _____

Agent: Mr. Ronnie A. Miller Coal Operator _____
Inspector: Phillip Tracy or Owner _____
Permit Issued: 06/03/85 _____

AFFIDAVIT

STATE OF WEST VIRGINIA,
County of Hampshire ss:

Hampshire Gas Company and I. L. Morris Well Service 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 Hampshire Gas Company, well operator, and participated in the work of plugging and filling the above well, that said work was commenced on the 6th day of June, 1985, and that the well was plugged and filled in the following manner:

TYPE	FROM	TO	PIPE REMOVED	LEFT
Portland Class A	5994	5939	N/A	Open Hole
Portland Class A	5939	5517	N/A	7"-23#/Ft.
6% Bentonite Gel	5517	130	N/A	7"-23#/Ft.
Portland Class A	130	Surface	N/A	7"-23#/Ft.

Description of monument: Stainless Steel Engraved Plate - Welded

11/26/90

and that the work of plugging and filling said well was completed on the 6th day of June, 1985.

And further deponents saith not.

Ronnie A. Miller
Ronnie A. Miller-Superintendent of Storage
Operations

Sworn and subscribe before me this 16th day of November, 1990
My commission expires: 7/30/91

Jerry H. Bell
Notary Public

DEC 3 1990

B. Salter

U. S.

ORGANIZATION: WEST VIRGINIA

SAMPLE #: 72ALB 2392.

(ALL V

well No.

Dorchester County

well

STATION: 23-2-36

HIGGINSVILLE, W.

DATE COLLECTED: 12 27 71

TIME:

BALANCE DETERMINATION

	MG/L	ME/L
CALCIUM	3400.00	169.66
MAGNESIUM	330.00	27.15
SODIUM	13000.00	565.50
POTASSIUM	99.00	2.53
AMMONIA AS NH4	77.40	4.29

CATION TOTAL 769.13

BICARBONATE	63.00	1.03
CARBONATE	0.0	0.0
SULFATE	130.00	2.71
*CHLORIDE	27000.00	761.67
FLUORIDE	0.50	0.03
NITRATE	0.0	0.0

ANION TOTAL 765.44

DIFFERENCE = 3.69

SUM = 1534.57

% ERROR = 0.24

LOGICAL SURVEY - WATER ANALYSIS

TORY - ALBANY, NEW YORK

PROCESSING DATE: 3/21/72

S IN MILLIGRAMS PER LITER EXCEPT WHERE NOTED)

31 (WV65)

ADDITIONAL CONSTITUENTS

ALK. CO3 AS CaCO3	0.0
ALK. HCO3 AS CaCO3	52.000
CARBONATE EQUIV.	31.000
DISS. SOLIDS, SUM	44072.000
HARDNESS, NON-CARB	9796.000
HARDNESS, TOTAL	9848.000
NITRATE AS N	0.0
NITROGEN, NH4 AS N	60.000
PH (LAB)	7.000
SILICA	4.500
SP. CONDUCT. (LAB)	62800.000

This sample contained an unknown amount of surface water mixed with A1V Foam #1 - an alcohol base surface active agent.

Well depth 4021

~~Albany~~
RDS OR
BY AN *

ORGANIZATION: WEST VIRGINIA

SAMPLE #: 72ALB 2391.

STATION: 23-2-36

DATE COLLECTED: 01 06 72

TIME:

HAMPSHIRE CO

HIGGINSVILLE

BALANCE DETERMINATION

	MG/L	ME/L
CALCIUM	14000.00	698.60 <i>BA</i>
MAGNESIUM	1600.00	131.62
SODIUM	47000.00	2044.50
POTASSIUM	210.00	5.37
AMMONIA AS NH4	77.40	4.29

CATION TOTAL

2884.38

BICARBONATE	18.00	0.30
CARBONATE	0.0	0.0
*SULFATE	320.00	6.66
*CHLORIDE	110,000.00	3103.10
FLUORIDE	1.40	0.07
NITRATE	0.0	0.0

ANION TOTAL

3110.13

DIFFERENCE = -225.75

SUM = 5994.51

% ERROR = -3.77

ECOLOGICAL SURVEY - WATER ANALYSIS

LABORATORY - ALBANY, NEW YORK

PROCESSING DATE: 3/15/72

RESULTS IN MILLIGRAMS PER LITER EXCEPT WHERE NOTED)

Well No. 31 (WVG.)

ADDITIONAL CONSTITUENTS

ALK. CO ₃ AS CaCO ₃	0.0
ALK. HCO ₃ AS CaCO ₃	15.000
CARBONATE EQUIV.	9.000
*DISS. SOLIDS, SUM	173219.000
HARDNESS, NON-CARB	41529.000
HARDNESS, TOTAL	41544.000
NITRATE AS N	0.0
NITROGEN, NH ₄ AS N	60.000
PH (LAB)	6.200
SILICA	1.500
SP. CONDUCT. (LAB)	143000.000 CA

This sample contained an unknown amount of surface water mixed with well water #1 - an alcohol base surface active agent.

well depth 5650 ft.

drilling from 5450' - 5652'
Helderberg at 5652'

Check for Fe & Mn det.
WARDS OR
BY AN *