west virginia department of environmental protection

Office of Oil and Gas
601 57th Street, S.E.
Charleston, WV 25304
(304) 926-0450
fax: (304) 926-0452

Austin Caperton, Cabinet Secretary
www.dep.wv.gov

Friday, June 28, 2019
PERMIT MODIFICATION APPROVAL
Horizontal 6A / New Drill

ARSENAL RESOURCES LLC
6031 WALLACE ROAD EXTENSION
SUITE 603
WEXFORD, PA 15090

Re: Permit Modification Approval for JOHNSON TFP 40 203
47-091-01354-00-00

Extending the lateral due to additional leases acquired. Update to casing plan included.

ARSENAL RESOURCES LLC

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

If there are any questions, please feel free to contact me at (304) 926- 0450.

James A. Martin
Chief

Operator's Well Number:	JOHNSON TFP 40 203
Farm Name:	RENEE JOHNSON
U.S. WELL NUMBER:	47-091-01354-00-00
Horizontal 6A	New Drill
Date Modification Issued:	06/28/2019

4709101354 MOD

ARSENAL RESOURCES

June 10, 2019

WVDEP
Office of Oil and Gas
ATTN: Laura Adkins
601 57th Street SE
Charleston, WV 25304

RE: Johnson TFP 40 203 – Modification due to additional leasing to extend lateral

Dear Ms. Adkins:

Enclosed please find the modification for the Johnson TFP 40 203, (API# 47-091-01354). This permit is being modified due to acquiring additional leases to extend the lateral. This well was originally permitted to 14,549.1'. We have obtained additional leasing for this site and are requesting to extend the lateral further. We would like to extend the lateral 10.1' for a total of 14,559.2'. Included are the following:

- ✓ Plat
- ✓ WW-6B, Well Work Permit Application/Casing (See changes below made in the WW6B)
- ✓ Well Bore Schematic
- ✓ WW-6A1, Lease Information
- ✓ Roadway Letter
- ✓ Site Safety Plan
- ✓ AOR

The following changes occurred within the WW6B:

- TMD changed from 22,891.2' to 22,901.3'
- Horizontal length was extended from 14,549.1' to 14,559.2'
- Conductor casing size has changed from 26" to 24"
- Conductor weight has changed from 102.7# to 94#
- Changed intermediate casing depth from 2,050' to 2,600'
- Changed production casing weight from 23# to 20#
- Changed production footage for drilling and intervals left in well from 22,891' to 22,901'
- Changed the production cement fill-up from TOC @ 1,900 to TOC @ 2,450
- Changed the production wall thickness from 0.415 to 0.361
- Changed the production burst pressure from 14,520 to 15,920

Should you have any questions or need any additional information, please feel free to contact me by phone or email. Thank you!

Sincerely,

Kelly Davis

Kelly Davis
Permitting Specialist
1-304-517-8743 mobile
1-724-940-1218 office
kdavis@arsenalresources.com

WW-6B
(04/15)

API NO. 47- 091 - 01354
OPERATOR WELL NO. Johnson TFP 40 203
Well Pad Name: Johnson TFP 40

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

1) Well Operator:	Arsenal Resources	494519412	Taylor	Fleming	Rosemont
		Operator ID	County	District	Quadrangle

2) Operator's Well Number: Johnson TFP 40 203 Well Pad Name: Johnson TFP 40

3) Farm Name/Surface Owner: Renee Johnson Public Road Access: CR 17, Oral Lake Road

4) Elevation, current ground: 1338.79' Elevation, proposed post-construction: 1332.5'

5) Well Type (a) Gas X Oil _____ Underground Storage _____
Other _____
(b)If Gas Shallow X Deep _____
Horizontal X

6) Existing Pad: Yes or No No

7) Proposed Target Formation(s), Depth(s), Anticipated Thickness and Expected Pressure(s):
Target Formation- Marcellus Shale, Top- 7,824.5ft, Bottom- 7,916.5ft, Anticipated Thickness- 92ft, Associated Pressure- 0.5 psi/ft

8) Proposed Total Vertical Depth: 7,903.5 ft

9) Formation at Total Vertical Depth: Marcellus Shale

10) Proposed Total Measured Depth: 22,901.3 ft

11) Proposed Horizontal Leg Length: 14,559.2 ft

12) Approximate Fresh Water Strata Depths: 45.5', 132.5', 187.5', 219.5' 817.5',1102.5'

13) Method to Determine Fresh Water Depths: Offsetting wells reported water depths (091-00116, 091-00117, 091-00118, 091-00120)

14) Approximate Saltwater Depths: 1987.5'

15) Approximate Coal Seam Depths: Elk Lick-322.5', Harlem-398.5', Bakerstown-477.5', Brush Creek-577.5', Upper Freeport-630.5', Lower Freeport-692.5', Upper Kittanning-760.5', Middle Kittanning-825.5', Lower Kittanning-845.5', Clarion-876.5'

16) Approximate Depth to Possible Void (coal mine, karst, other): None Known

17) Does Proposed well location contain coal seams directly overlying or adjacent to an active mine? Yes _____ No None Known

(a) If Yes, provide Mine Info: Name: _____
Depth: _____
Seam: _____
Owner: _____

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WV Department of
Environmental Protection

WW-6B
(04/15)

API NO. 47- 091 - 01354
OPERATOR WELL NO. Johnson TFP 40 203
Well Pad Name: Johnson TFP 40

18)

CASING AND TUBING PROGRAM

TYPE	Size (in)	New or Used	Grade	Weight per ft. (lb/ft)	FOOTAGE: For Drilling (ft)	INTERVALS: Left in Well (ft)	CEMENT: Fill-up (Cu. Ft.)/CTS
Conductor	24	Used		94	80	80	CTS
Fresh Water	13.375	New	J-55	54.5	1,175	1,175	CTS
Coal							
Intermediate	9.625	New	J-55	40	2,600	2,600	CTS
Production	5.5	New	P-110	20	22,901	22,901	TOC @ 2,450
Tubing							
Liners							

Signature 5-9-19

TYPE	Size (in)	Wellbore Diameter (in)	Wall Thickness (in)	Burst Pressure (psi)	Anticipated Max. Internal Pressure (psi)	Cement Type	Cement Yield (cu. ft./k)
Conductor	24	36			0	Class A, 3% CaCl2	1.2
Fresh Water	13.375	17.5	0.38	2,730	900	Class A, 3% CaCl2	1.2
Coal							
Intermediate	9.625	12.25	0.395	3,950	1,500	Class A, 3% CaCl2	1.29
Production	5.5	8.5-8.75	0.361	15,920	9,500	Class A/50:50 Poz	1.29/1.34
Tubing						5,000	
Liners						5,000	

PACKERS

Kind:				
Sizes:				
Depths Set:				

API NO. 47- 091 - 01354
OPERATOR WELL NO. Johnson TFP 40 203
Well Pad Name: Johnson TFP 40

19) Describe proposed well work, including the drilling and plugging back of any pilot hole:

The well will be started with a conductor rig drilling a 36" hole to Conductor programmed depth then running 24" casing and circulate cement back to surface. The conductor rig will move out and the drilling rig will move in and rig up. The drilling rig will then spud a 17 ½" hole and drill to fresh water casing (Surface) to the programmed depth, Run 13- 3/8" casing and cement to surface. The rig will continue drilling a 12- ¼" intermediate hole to the programmed depth, run 9- 5/8" casing and cement to surface. The rig with then continue to drill an 8- ¾" hole to a designed KOP. We will then start drilling the curve and lateral section to the programmed total measured depth, run 5 ½" casing and cement according to the program.

20) Describe fracturing/stimulating methods in detail, including anticipated max pressure and max rate:

The well will be completed using a plug and perforation method and stimulated with a slickwater and sand slurry. The anticipated maximum rate will be 90 bpm and the maximum pressure will be 9,500 psi.

21) Total Area to be disturbed, including roads, stockpile area, pits, etc., (acres): 33.56

22) Area to be disturbed for well pad only, less access road (acres): 6.20

23) Describe centralizer placement for each casing string:

24"- No centralizers 13 3/8" – one bow spring centralizer on every other joint 9 5/8" – one bow spring centralizer every third joint from TD to surface 5 ½" – one semi rigid centralizer on every joint from TD of casing to end of curve. Then every other joint to KOP. Every third joint from KOP to 2,700'; there will be no centralizers from 2,700 to surface.

24) Describe all cement additives associated with each cement type:

24" will be circulated to surface. The 13 3/8" casing will be cemented to surface with Class A cement and no greater than 3% CaCl (calcium chloride). The 9 5/8" casing will be cemented to surface with Class A cement, & no greater than 3% calcium chloride. The 5 1/2" production string will be cemented back to 2,450'(+/- 150' above the casing shoe for the 9 5/8") with Class A and 50/50 Poz cement retarded (to extend pumpability) cellophane flaked for fluid loss, Bentonite gel as an extender (increased pumpability and fluid loss), a defoaming agent to decrease cement foaming during mixing to insure the cement is of proper weight to placement and possibly gypsum gas blocking additive to aid in blocking/gas migration (in combination with other additive mentioned here, helps cement achieve a "right angle" set) during the plastic phase of the cement set-up.

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25) Proposed borehole conditioning procedures:

Top holes will be drilled with fresh water KOP. At KOP, the wellbore will be loaded with synthetic oil based mud, barite-weighted mud system with such properties as to build a filter-cake on the face of the bore-hole. This will provide lubricity as well as stabilizing the well bore. We will begin rotating the drill string and mud will be circulated upon reaching TD until no further cuttings are observed coming across the shaker screens. Once clean mud is circulated back to surface, we will pull three stands of drill pipe, load the hole, pull three strands and load the hole. The weight indicator on the rig will be monitored for any occurrences of drag and if any are noticed, we will re-run the previous stand of pipe pulled across and circulate 2x bottoms up while watching shakers for signs of cuttings. Once at the base curve, the string will be continuously rotated while pumping 2x bottoms up. We will pull three stands and fill the hole until we reach the vertical section of the well.

*Note: Attach additional sheets as needed.

ARSENAL RESOURCES

Arsenal Resources
Johnson TFP 40 203
Casing Design
Directional Plan # 1 QES

Other Names:	N/A		**County:**	Taylor	
Surface Location:	TBD		**State:**	West Virginia	
Bottom Hole Location:	TBD		**AFE #:**	XX	**API #:** XX
Total Depth:	22,901 MD (ft)		**RKB:**	27	
	7,903 TVD (ft)		**Ground Level:**	1,332	

Logs	Significant Formations (TVD)	Depth (ft) MD	Depth (ft) TVD	Hole Size	Casing and Cement	Mud	Directional & Surveys Drlg /Csg Point
None	Section 1	80	80	24" 94#			Vertical
None	Section 2		Floc	17 1/2" (PDC)		Floc Water	
				Cement: Class A 489 Sacks w/ 30% Excess TOC: Surface (top off if needed) All cement volumes are estimates			
Possible CBL after cement job		1,175	1,175	13 3/8" 54.5# J-55 STC			Vertical
None	Section 3		Floc	12 1/4" (PDC)		Floc Water	
				Cement: Class A 678 Sacks w/ 50% Excess TOC: Surface (top off if needed) All cement volumes are estimates			
Possible CBL after cement job		2,600	2,600	9 5/8" 40# J-55 LTC			Vertical
	Section 4		Floc	Mud Data / From / To Floc Water 80 2600 Floc Water 2600 7,342 11.5- 12.0 ppg SOBM 7,342 22,901			
				Bit Data / From / To 17-1/2" & 12 1/4" PDC 80 2,600 8- 3/4" (PDC) 2,600 8,342 8- 1/2" (PDC) 8,342 22,901			
				Directional Data: See Directional Plan			
			OBM				
	Big Lime		1,509				
	1st Elk Siltstone		4,884				
	Tully Lime		7,551				
	Purcell (Limestone)		7,880				
	Lower Marcellus		7,883				
				Cement: Class A: 50/50 POZ 1.2 ft3/sack +10% Exs in OH = 3912 sacks TOC : 2,450 ft All cement volumes are estimates			
	22,901 MD 7903 TVD			5 1/2" 20# P-110 VAR			

Revision 1

Note: Not drawn to scale

Cement Outside Casing
Seal Assembly in Annulus

Date Last Revised: 6-May-19
Jarrett Toms

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TECHNICAL DATA SHEET

Connection: **VAroughneckAC**
Size: **5 1/2 in X 20.00 lb/ft**
Drift: **standard**
Bevel: **standard**

Grade: VA-XP-P110

Material:

	US Customary	Metric
Yield Strength Min.	110,000 psi	758 Mpa
Yield Strength Max.	140,000 psi	965 Mpa
Tensile Strength Min.	125,000 psi	862 Mpa

Pipe:

	US Customary	Metric		US Customary	Metric
Nominal OD:	5.500 in	139.70 mm	Wall Thickness:	0.361 in	9.17 mm
Nominal ID:	4.778 in	121.36 mm	Standard Drift:	4.653 in	118.19 mm
Nominal Weight:	20.00 lb/ft	29.76 kg/m	Pipe Body Yield Strength:	729 klb	3,241 kN
Pipe Cross Section:	5.828 in²	3,760.13 mm²			

Connection:

	US Customary	Metric		
OD:	6.300 in	160.02 mm	Threads per inch:	5 Threads
ID:	4.764 in	121.00 mm		
Length:	8.976 in	228.00 mm		

Connection Performance (Uniaxial Load):

	US Customary	Metric		US Customary	Metric
Joint Strength:	729 klb	3,241 kN	Tension Efficiency:	> 100.0 %	
Collapse Resistance:.	13,970 psi	96.30 Mpa	Displacement:	1.240 gal/ft	15.40 l/m
Internal Yield Pressure:	15,920 psi	107.50 Mpa	Production:	0.932 gal/ft	11.57 l/m
Load on Coupling Face:	709 klb	3,160 kN			

Field Make Up (Friction Factor = 1.0):

	US Customary	Metric		US Customary	Metric
Minimum Torque:	15,822 ft.lb	21,451 Nm	Make-Up Loss:	4.370 in	111.00 mm
Optimum Torque:	17,580 ft.lb	23,835 Nm	Yield Torque:	22,000 ft.lb	29,800 Nm
Maximum Torque:	19,338 ft.lb	26,218 Nm			
Min. Torque on Shoulder:	%				

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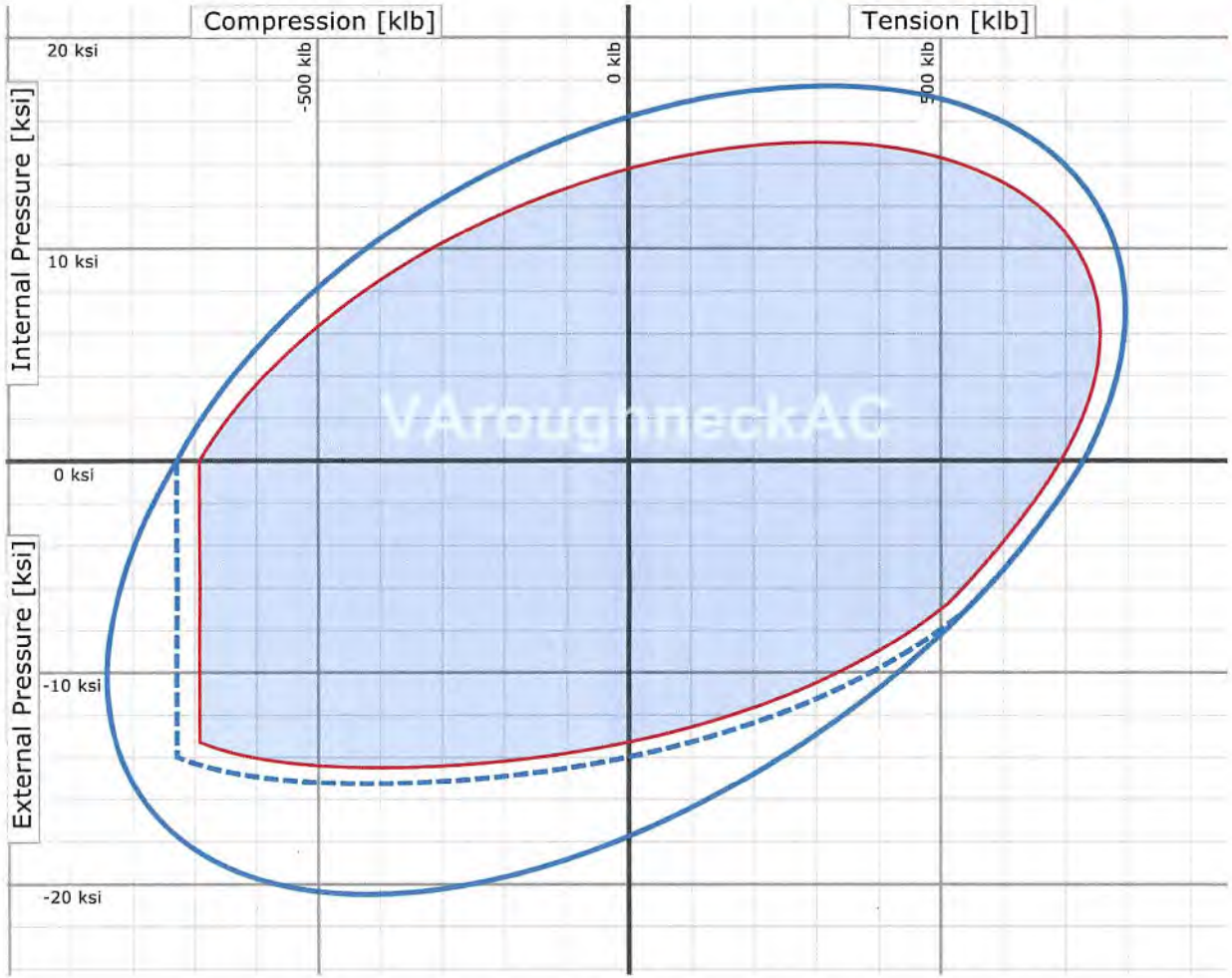
ONE STEP AHEAD.

LOAD ENVELOPE



Recommended Field of Application

Pipe Body Envelope

Pipe Body Collapse

Efficiency (% Pipe Body) under Uniaxial Loads	
Tension:	100.0 %
Compression:	100.0 %
Internal Pressure:	89.3 %
External Pressure:	100.0 %

Sealability Rating (% Efficiency) under Combined Loads	
Tension:	100.0 %
Compression:	100.0 %
Internal Pressure:	100.0 %
External Pressure:	100.0 %

Test Conditions	
Test Medium:	Fluid
Von Mises Envelope:	95.0 %
Bending:	20.00 °/100ft

The graph is calculated under consideration of the requirements of EN ISO 13679 and API 5C3. The combined loads are calculated without the consideration of wall thickness tolerances and differ from the values in the data sheet, which are calculated with tolerances determined by API. Any printout is NOT SUBJECT TO REGULAR REVISION. The generated performance envelope shall solely be used as a tool to facilitate the comparison of performance properties under combined loads, of different grades, sizes and connections of voestalpine Tubulars products. Field-specific safety/design factors as well as other loads are not considered. Thus the results shall by no means be used to replace the own string design engineering or to justify any warranty/guaranty cases.

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ONE STEP AHEAD.

TECHNICAL DATA SHEET

Connection: **VAroughneck**
Size: **5 1/2 in X 23.00 lb/ft**
Drift: **standard**
Bevel: **standard**

Grade: VA-HC-P110

Material:

	US Customary	Metric
Yield Strength Min.	110,000 psi	758 Mpa
Yield Strength Max.	140,000 psi	965 Mpa
Tensile Strength Min.	125,000 psi	862 Mpa

Pipe:

	US Customary	Metric		US Customary	Metric
Nominal OD:	5.500 in	139.70 mm	Wall Thickness:	0.415 in	10.54 mm
Nominal ID:	4.670 in	118.62 mm	Standard Drift:	4.545 in	115.44 mm
Nominal Weight:	23.00 lb/ft	34.23 kg/m	Pipe Body Yield Strength:	729 klb	3,242 kN
Pipe Cross Section:	6.630 in²	4,276.80 mm²			

Connection:

	US Customary	Metric		
OD:	6.260 in	159.00 mm	Threads per inch:	5 Threads
ID:	4.669 in	118.60 mm		
Length:	8.976 in	228.00 mm		

Connection Performance (Uniaxial Load):

	US Customary	Metric		US Customary	Metric
Joint Strength:	729 klb	3,242 kN	Tension Efficiency:	> 100.0 %	
Collapse Resistance:.	16,350 psi	112.73 Mpa	Displacement:	1.242 gal/ft	15.43 l/m
Internal Yield Pressure:	14,518 psi	100.10 Mpa	Production:	0.890 gal/ft	11.05 l/m
Load on Coupling Face:	582 klb	2,590 kN			

Field Make Up (Friction Factor = 1.0):

	US Customary	Metric		US Customary	Metric
Minimum Torque:	17,847 ft.lb	24,197 Nm	Make-Up Loss:	4.370 in	111.00 mm
Optimum Torque:	19,830 ft.lb	26,886 Nm	Yield Torque:	24,800 ft.lb	33,600 Nm
Maximum Torque:	21,813 ft.lb	29,574 Nm			
Min. Torque on Shoulder:	%				

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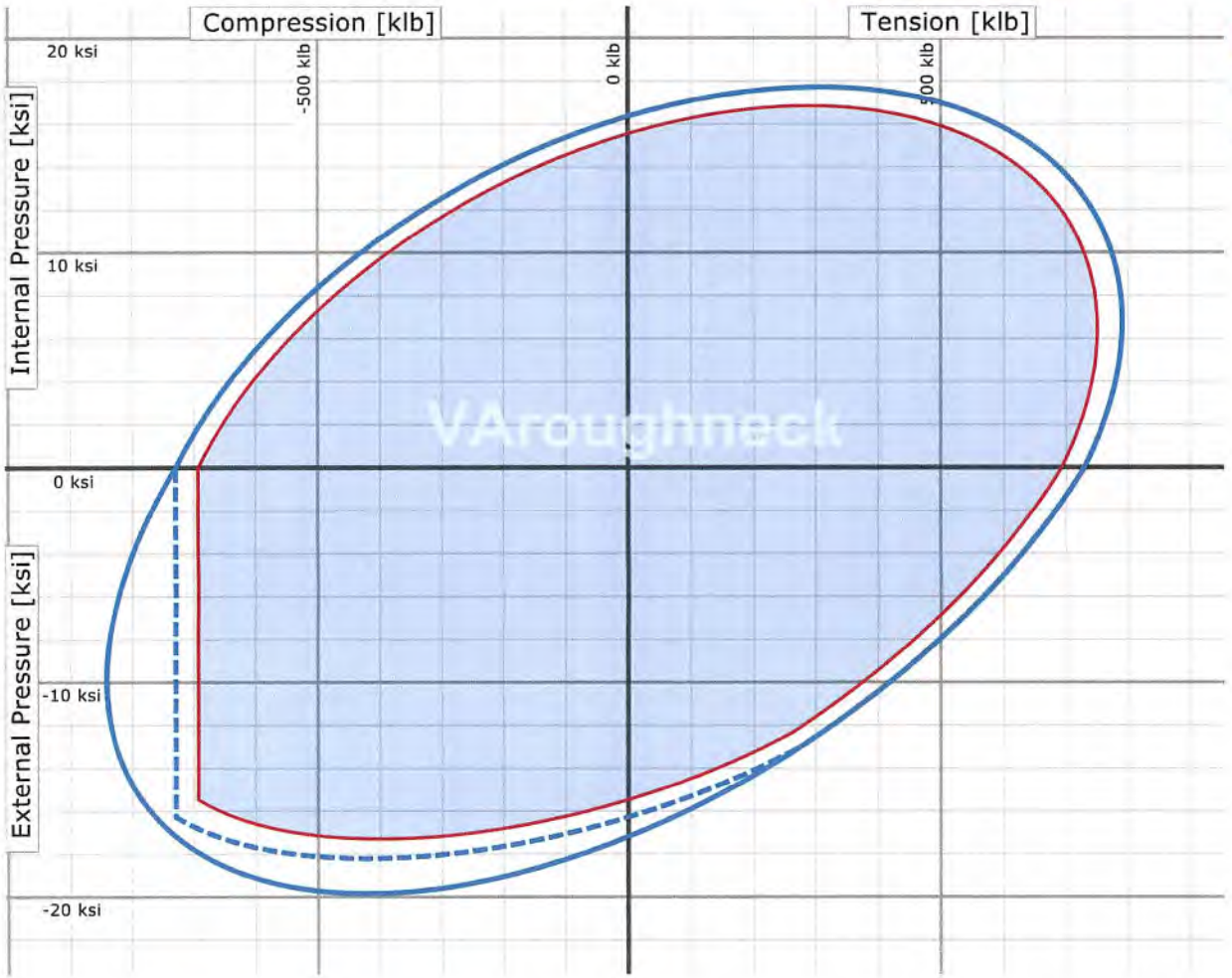
ONE STEP AHEAD.

LOAD ENVELOPE



Recommended Field of Application

Pipe Body Envelope

Pipe Body Collapse

Efficiency (% Pipe Body) under Uniaxial Loads	
Tension:	100.0 %
Compression:	100.0 %
Internal Pressure:	100.0 %
External Pressure:	100.0 %

Sealability Rating (% Efficiency) under Combined Loads	
Tension:	100.0 %
Compression:	100.0 %
Internal Pressure:	100.0 %
External Pressure:	100.0 %

Test Conditions	
Test Medium:	Fluid
Von Mises Envelope:	95.0 %
Bending:	81.00 °/100ft

The graph is calculated under consideration of the requirements of EN ISO 13679 and API 5C3. The combined loads are calculated without the consideration of wall thickness tolerances and differ from the values in the data sheet, which are calculated with tolerances determined by API. Any printout is NOT SUBJECT TO REGULAR REVISION. The generated performance envelope shall solely be used as a tool to facilitate the comparison of performance properties under combined loads, of different grades, sizes and connections of voestalpine Tubulars products. Field-specific safety/design factors as well as other loads are not considered. Thus the results shall by no means be used to replace the own string design engineering or to justify any warranty/guaranty cases.

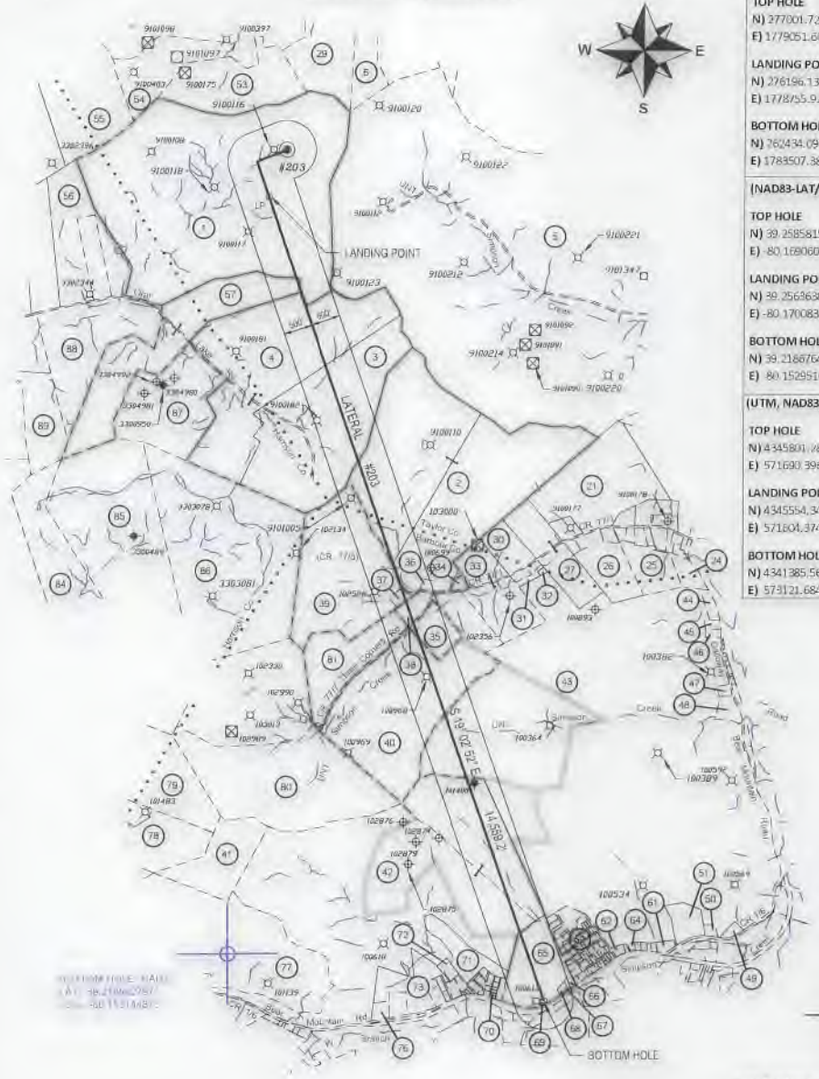
voestalpine
ONE STEP AHEAD

SURFACE HOLE SURVEYED 39° 17' 30" (NAD27)
BOTTOM HOLE SURVEYED 39° 15' 00" (NAD27)

822'

7,998'

Latitude: (NAD27)



N
W E
S

(NAD83-WVN) US SURVEY FT.

TOP HOLE
N) 377801.722
E) 1779051.682

LANDING POINT
N) 376196.134
E) 1778755.920

BOTTOM HOLE
N) 362434.096
E) 1783507.385

(NAD83-LAT/LONG) DECIMAL

TOP HOLE
N) 39.258581597
E) -80.168060374

LANDING POINT
N) 39.256363822
E) -80.170083565

BOTTOM HOLE
N) 39.218676455
E) -80.152951074

(UTM, NAD83) METER

TOP HOLE
N) 4345801.784
E) 571690.396

LANDING POINT
N) 4345554.349
E) 571501.374

BOTTOM HOLE
N) 4341385.568
E) 573121.684

11,352'
12,078'

Longitude: (NAD27)

#203

SURFACE HOLE (NAD27)
LAT: 39.258488268°
LON: -80.16925348°

REFERENCE NOTES
1. Property lines as shown taken from deeds, tax maps, and field locations. A full boundary survey is not expressed or implied. All bearings are based on grid North. Ownership taken from public records Taylor County, West Virginia Date 2018
2. State Plane Coordinates & NAD83 Lat/Long by differential submeter mapping grade GPS.
3. There are no railroads, dwellings, or agricultural buildings within 625 feet of center of pad.
4. No water wells found within 250' of the center of well pad.

LEGEND

- PROPOSED WELL LATERAL
- PROPOSED WELL TIE LINE
- STREAM
- EXISTING ROAD
- BUFFER
- PROPERTY LINE
- MINERAL TRACT BOUNDARY
- COUNTY BOUNDARY LINE
- #H PROPOSED WELL HEAD
- EXISTING WELL HEAD (Active)
- EXISTING WELL HEAD (Plugged)
- EXISTING WELL HEAD (Abandoned)
- EXISTING WELL HEAD (Never Drilled)
- EXISTING WELL HEAD (Future Drill)
- LANDING POINT\BOTTOM HOLE
- (#) SURFACE OWNER

FILE#: 17078-007
SHEET#: 1 of 2
SCALE: 1" = 3000'
TICK SCALE: 1" = 2000'
MINIMUM DEGREE OF ACCURACY: 1/200
PROVEN SOURCE OF ELEVATION: WV-RTN CORS STATION

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.

Signed: Herbert L Parsons III 25 6-3-2019
P.S. #2361: Herbert L. Parsons, III P.S.

HERBERT L PARSONS III
REGISTERED
No. 2361
STATE OF
WEST VIRGINIA
PROFESSIONAL SURVEYOR

BOTTOM HOLE SURVEYED 80° 07' 30" (NAD27)
SURFACE HOLE SURVEYED 80° 10' 00" (NAD27)

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25304

DATE: JUNE 3, 2019
OPERATOR'S WELL #: JOHNSON TFP-40 # 203
API WELL #: 47 091 01354 MOD #1
STATE COUNTY PERMIT

Well Type: ☐ Oil ☐ Waste Disposal ☒ Production ☐ Deep
☒ Gas ☐ Liquid Injection ☐ Storage ☒ Shallow

WATERSHED: SIMPSON CREEK
COUNTY / DISTRICT: TAYLOR CO. FLEMINGTON DISTRICT
SURFACE OWNER: RENEE JOHNSON
OIL & GAS ROYALTY OWNER: HEIRS & ASSIGNS OF EARL LAWSON, HEIRS & ASSIGNS OF DULCIE STARKEY, HEIRS & ASSIGNS OF MARTHA ROBERTS, HEIRS & ASSIGNS OF VIRGIE BARTLETT, HEIRS & ASSIGNS OF BLANCHE WATSON, HEIRS & ASSIGNS OF DEZZIE BUTTS, AND HEIRS & ASSIGNS OF HASSEL LAWSON

ELEVATION: 1,332.5'
QUADRANGLE: ROSEMONT, WV
ACREAGE: 284 ±
ACREAGE: 284 ±

☒ DRILL ☐ CONVERT ☐ DRILL DEEPER ☐ REDRILL ☒ FRACTURE OR STIMULATE
☐ PLUG OFF FORMATION ☐ PERFORATE NEW FORMATION ☐ PLUG & ABANDON
☐ CLEAN OUT & REPLUG ☐ OTHER CHANGE SPECIFY:

TARGET FORMATION: MARCELLUS
ESTIMATED DEPTH: TVD: 7,903.5' TMD: 22,901.3'

WELL OPERATOR: ARSENAL RESOURCES
ADDRESS: 6031 WALLACE ROAD EXTENSION # 300
CITY: WEXFORD STATE: PA ZIP: 15090

DESIGNATED AGENT: WILLIAM VEIGEL
ADDRESS: 65 PROFESSIONAL PLACE SUITE 200
CITY: BRIDGEPORT STATE: WV ZIP: 26330

SURFACE PARCEL OWNER INFORMATION

ID#	PARCEL NUMBER	OWNER NAME
1	033-15-331-27	JOHNSON RENEE
57	033-15-351-10	RENEE JOHNSON
4	033-15-351-12	EIP III WEST VIRGINIA LLC
3	033-15-351-13	EIP III WEST VIRGINIA LLC
2	001-09-9-2	STEWART FARM LLC
39	001-09-9-1	STEWART FARM LLC
37	001-09-9-2.1	BOARD OF EDUCATION
38	001-09-9-3	STEWART FARM LLC
35	091-09-9-20.1	SMALLWOOD RUSSELL & ANGELA WRS
40	001-09-9-20	SEESE ROBERT & BRENDA HWS
43	001-09-9-22	WOLFE LARRY, ROBERT WOLFE & STANLEY WOLFE ET UXES,
42	001-09-12-2	POLINO ENTERPRISES INC
65	001-09-12-27	WOLFE LARRY MICHAEL
69	001-09-12-28	WOLFE LARRY M & ELLEN S HWS

ADJOINER PARCEL OWNER INFORMATION

ID#	PARCEL NUMBER	OWNER NAME
5	091-04-11-1	CFS FARMS LIMITED LIABILITY CO
6	091-04-8-22	GRIPPIN JAMES S & ELAINE M
21	091-04-11-5.5	BECKWITH LUMBER COMPANY
24	091-04-11-7.5	NELSON HELEN L HURST MARY M
25	091-04-11-6	RAVIS JERRY LEE ESTATE
26	091-04-11-5.1	RAVIS JERRY L ESTATE
27	091-04-11-3	PROPST PAUL
29	091-04-8-21	CARLYLE G MILLARD
30	091-04-11-2	PROPST PAUL
31	001-09-9-8	CLEAVENGER LEONARD D
32	001-09-9-8.2	CLEAVENGER LEONARD D
33	001-09-9-7	CROUSE ORLAN, JR
34	001-09-9-6	STEWART FARM LLC
36	001-09-9-4	STEWART FARM LLC
41	001-09-12-1	POLINO ENTERPRISES INC
44	001-09-9-17.1	MADDIX MICHAEL R ET UX
45	001-09-9-11	SALTIS STEVE JR & AMY HWS
46	001-09-9-12	SALTIS STEVE JR & AMY R HWS
47	001-09-9-13	MURPHY GEORGE H JR & TAMELA J, HWS
48	001-09-9-22.2	WOLFE MICHAEL B
49	001-09-12-4.2	KNOTTS TERRY & DONETTA
50	001-09-12-14	MOSESSO JOHN A TRUST
51	001-09-9-22.3	KRIZNER FRANK A & RENEE B HWS
52		CLEAVENGER PLAT
53	091-04-7-9	CEQUEL COMMUNICATIONS LLC
54	091-04-7-27	CEQUEL COMMUNICATIONS LLC
55	091-04-7-8	SHIRLEY A FRUM, CLINTON A FRUM, ET UX
56	033-15-351-9	RENEE JOHNSON
61	001-09-12-4	SWIGER ARGYLE C
62	001-09-12A-9	ELMOND MUREL L (L/E)
64	001-09-12A-91	DELANEY V GRACE & KRISTI J FREEMAN, WROS
66	001-09-12-26	WOLFE STANLEY, ROBERT&LARRY
67	001-09-12-27.2	WOLFE LARRY MATTHEW &RACHELLE L HWS
68	001-09-12-27.1	HURTADO SUZANNE
70		BROWNTON PLAN OF LOTS
71	001-09-12.61	CHARLTON RANDALL L & CAROLYN,
72	001-09-12.60	SCHIMANSKY STEVEN & DEBRA HWS
73	001-09-12.42	FOSTER ROGER & ETHEL
76	001-09-12.41	TRADER PAUL & LORETTA
77	001-09-11-1.2	BECKWITH LUMBER CO INC
78	033-15-371-3	EIP III WEST VIRGINIA LLC
79	033-15-371-6	EIP III WEST VIRGINIA LLC
80	001-09-10.2	SMITH JO ANN V
81	001-09-9-19	STEWART FARM LLC
84	033-15-351-22	EIP III WEST VIRGINIA LLC
85	033-15-351-23	EIP III WEST VIRGINIA LLC
86	033-15-351-24	EIP III WEST VIRGINIA LLC
87	033-15-351-11	EIP III WEST VIRGINIA LLC
88	033-15-351-9	JOHNSON RENEE
89	033-15-351-7	WARDER ORAN LEE & JANICE L

REFERENCE NOTES
1. Property lines as shown taken from deeds, tax maps, and field locations. A full boundary survey is not expressed or implied. All bearings are based on grid North. Ownership taken from public records Taylor County, West Virginia Date 2018
2. State Plane Coordinates & NAD83 Lat\Long by differential submeter mapping grade GPS.
3. There are no railroads, dwellings, or agricultural buildings within 625 feet of center of pad.
4. No water wells found within 250' of the center of well pad.

LEGEND

- PROPOSED WELL LATERAL
- PROPOSED WELL TIE LINE
- STREAM
- EXISTING ROAD
- BUFFER
- PROPERTY LINE
- MINERAL TRACT BOUNDARY
- COUNTY BOUNDARY LINE
- #H PROPOSED WELL HEAD
- EXISTING WELL HEAD (Active)
- EXISTING WELL HEAD (Plugged)
- EXISTING WELL HEAD (Abandoned)
- EXISTING WELL HEAD (Never Drilled)
- EXISTING WELL HEAD (Future Drill)
- LANDING POINT\BOTTOM HOLE
- (#) SURFACE OWNER

FILE#: 17078-007
SHEET#: 2 of 2
SCALE: 1" = 3000'
TICK SCALE: 1" = 2000'
MINIMUM DEGREE OF ACCURACY: 1/200
PROVEN SOURCE OF ELEVATION: WV-RTN CORS STATION

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.

Signed: 6-3-2019
P.S. #2361: Herbert L. Parsons, III P.S.

HERBERT L PARSONS III REGISTERED No. 2361 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25304

DATE: JUNE 3, 2019
JOHNSON TFP-40
OPERATOR'S WELL #: # 203
MOD #1
API WELL #: 47 (STATE) 091 (COUNTY) 01354 (PERMIT)

Well Type: ☐ Oil ☐ Waste Disposal ☒ Production ☐ Deep
☒ Gas ☐ Liquid Injection ☐ Storage ☒ Shallow

WATERSHED: SIMPSON CREEK
ELEVATION: 1,332.5'
COUNTY / DISTRICT: TAYLOR CO. FLEMINGTON DISTRICT
QUADRANGLE: ROSEMONT, WV
SURFACE OWNER: RENEE JOHNSON
ACREAGE: 284 ±
OIL & GAS ROYALTY OWNER: HEIRS & ASSIGNS OF EARL LAWSON, HEIRS & ASSIGNS OF DULCIE STARKEY, HEIRS & ASSIGNS OF MARTHA ROBERTS, HEIRS & ASSIGNS OF VIRGIE BARTLETT, HEIRS & ASSIGNS OF BLANCHE WATSON, HEIRS & ASSIGNS OF DEZZIE BUTTS, AND HEIRS & ASSIGNS OF HASSEL LAWSON
ACREAGE: 284 ±

☒ DRILL ☐ CONVERT ☐ DRILL DEEPER ☐ REDRILL ☒ FRACTURE OR STIMULATE
☐ PLUG OFF FORMATION ☐ PERFORATE NEW FORMATION ☐ PLUG & ABANDON
☐ CLEAN OUT & REPLUG ☐ OTHER CHANGE SPECIFY:

TARGET FORMATION: MARCELLUS
ESTIMATED DEPTH: TVD: 7,903.5' TMD: 22,901.3'

WELL OPERATOR: ARSENAL RESOURCES
ADDRESS: 6031 WALLACE ROAD EXTENSION # 300
CITY: WEXFORD STATE: PA ZIP: 15090

DESIGNATED AGENT: WILLIAM VEIGEL
ADDRESS: 65 PROFESSIONAL PLACE SUITE 200
CITY: BRIDGEPORT STATE: WV ZIP: 26330

4709101354

WW-6A1
(5/13)

Operator's Well No. Johnson TFP40 203

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

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

(1) the tract of land is the same tract described in this Application, partly or wholly depicted in the accompanying plat, and described in the Construction and Reclamation Plan;

(2) the parties and recordation data (if recorded) for lease(s) or other continuing contract(s) by which the Applicant claims the right to extract, produce or market the oil or gas are as follows:

Lease Name or Number	Grantor, Lessor, etc.	Grantee, Lessee, etc.	Royalty	Book/Page

See Attached

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

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

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

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

Well Operator: Arsenal Resources
By: William Veigel
Its: Designated Agent

Attachment to WW-6A1, Johnson TFP 40 203

Letter Designation/Number Designation on Plat	Grantor, Lessor, Assignor, etc.	Grantee, Lessee, Assignee, etc.	Royalty	Book/Page	Acreage
1 (00006031)	Blanch Watson (Widow), Dezzie Butts & Terry H. Butts (Her Husband), Dulcie Starkey (Widow), Martha Roberts (Widow), Gail Wilson (Widow), Mary Bartlett (Widow), James Bartlett & Elsa Bartlett (His Wife), Ernestine White & John White (Her Husband), Leoma Chandler (Widow), and Ellenor Whitman & Paul Whitman (Her Husband)	Union Drilling, Inc.	12.50%	1030/412	284
	Union Drilling, Inc.	Equitable Resources Exploration, Inc.		1189/1209	
	Equitable Resources Exploration, Inc.	Equitable Resources Exploration Company		1199/642	
	Equitable Resources Exploration Company	Enervest East Limited Partnership		22/181 (Taylor County)	
	Enervest East Limited Partnership	The Houston Exploration Company		1359/820	
	The Houston Exploration Company	Seneca-Upshur Petroleum, Incorporated		1367/1084	
	Seneca-Upshur Petroleum, Incorporated	Seneca-Upshur Petroleum, LLC		1467/119	
57 (00006674)	Debra A. Mulneix	Mar Key, LLC	12.50%	1561/464	85
57 (00006675)	Phyllis G. Steele	Mar Key, LLC	12.50%	1561/454	85
57 (00006676)	Alice L. Donley	Mar Key, LLC	12.50%	1561/451	85
57 (00006677)	Rebecca Collins Biser, acting in her capacity as Attorney in Fact for James R. Collins, Jr.	Mar Key, LLC	12.50%	1561/490	85
57 (00006697)	Gale M. Steele, widow	Mar Key, LLC	12.50%	1568/76	85

Attachment to WW-6A1, Johnson TFP 40 203

57 (00007736)	Marlene B. Steele, widow, by David E. Bowen and Cheryl L. Bowen, as Attorney-in-Fact	Mar Key, LLC	12.50%	1585/239	85
57 (00007761)	George F. Jack, Jr., single	Mar Key, LLC	12.50%	1598/842	85.1375
57 (00007766)	Charles H. Roberts, widower	Mar Key, LLC	12.50%	1596/493	85.1375
57 (00007864)	Mike Ross Inc. & Waco Oil and Gas Inc.	Mar Key, LLC	12.50%	1599/315	85.1375
57 (00007990)	Chad W. Johnson	Mar Key, LLC	12.50%	1604/287	85.1375
3, 4 (00008218)	H. Dotson Cather and Diana Cather	NRM Petroleum Corporation	12.50%	1076/548	226
	NRM Petroleum Corporation	NRM 78-2, Ltd.		7/656 (Taylor County)	
	NRM 78-2, Ltd.	Ensource, Inc.		4/16 (Taylor County)	
	Ensource, Inc.	UMC Petroleum Corporation, a Texas Corporation		Unrecorded (Secretary of State)	
	UMC Petroleum Corporation, a Texas Corporation	UMC Petroleum Corporation, a Delaware Corporation		7/656	
	UMC Petroleum Corporation, a Delaware Corporation	Eastern American Energy Company		1248/378	
	Eastern American Energy Company	Energy Corporation of America		16/488	
	Energy Corporation of America	Greylock Production, LLC		1603/1121	
	Greylock Production, LLC	Mar Key, LLC		1607/855	
3, 4 (00008217)	Laura Goff Davis, Harold Dotson Cather and Diane Goff Cather, his wife	NRM Petroleum Corporation	12.50%	1076/550	225
	NRM Petroleum Corporation	NRM 78-2, Ltd.		7/656 (Taylor County)	
	NRM 78-2, Ltd.	Ensource, Inc.		4/16 (Taylor County)	
	Ensource, Inc.	UMC Petroleum Corporation, a Texas Corporation		Unrecorded (Secretary of State)	
	UMC Petroleum Corporation, a Texas Corporation	UMC Petroleum Corporation, a Delaware Corporation		7/656	

Attachment to WW-6A1, Johnson TFP 40 203

	UMC Petroleum Corporation, a Delaware Corporation	Eastern American Energy Company		1248/378	
	Eastern American Energy Company	Energy Corporation of America		16/488	
	Energy Corporation of America	Greylock Production, LLC		1603/1121	
	Greylock Production, LLC	Mar Key, LLC		1607/855	
2 (00008235)	John F. Stewart, widower	Petro-Lewis Corporation	12.50%	75/154	200
	Petro-Lewis Corporation	Partnership Properties Company		77/226	
	Partnership Properties Company	Eastern American Energy Corporation		95/112	
	Eastern American Energy Corporation	Energy Corporation of America		438/429	
	Energy Corporation of America	Greylock Production, LLC		178/401	
	Greylock Production, LLC	Mar Key, LLC		179/96	
37 (00003421)	L.L. Moss and Mary Margaret Moss, his wife	Petroleum Development Corporation	12.50%	111/88	75
	Petroleum Development Corporation	PDC Mountaineer, LLC		150/444	
	PDC Mountaineer, LLC	River Ridge Energy, LLC		17/228	
37 (00003422)	John E. Lough and Elda D. Lough, his wife	Petroleum Development Corporation	12.50%	111/114	75
	Petroleum Development Corporation	PDC Mountaineer, LLC		150/444	
	PDC Mountaineer, LLC	River Ridge Energy, LLC		17/228	
38 (00008243)	Shirley Jean Nutt, fka Shirley Jean Isabella, fka Shirley Jean Stewart, married dealing in her sole and separate property	Mar Key, LLC	12.50%	179/548	5
38 (00008275)	Lee Ann Hancock, widow	Mar Key, LLC	12.50%	180/302	5
38 (00008392)	Franklin Delano Stweart, married dealing in his sole and separate property	Mar Key, LLC	12.50%	181/13	5
38 (00008241)	Shirley Jean Nutt, Power of Attorney for Barbara Ellen Brown (fka Barbara Ellen Harrison), widow	Mar Key, LLC	12.50%	179/544	5

Attachment to WW-6A1, Johnson TFP 40 203

38 (00008276)	Carol Ann Dement	Mar Key, LLC	12.50%	180/304	5
38 (00008242)	Robert E. Seese and Brenda K. Seese, married	Mar Key, LLC	12.50%	179/546	5
38 (00008330)	John Minor Stewart, married dealing in his sole and separate property	Mar Key, LLC	12.50%	180/589	5
35, 40 (00008492)	Coalquest Development, LLC	Mar Key, LLC	12.50%	181/240	26
40 (00004386)	Robert Seese and Brenda K. Seese	Petroleum Development Corporation	12.50%	150/68	12
	Petroleum Development Corporation	PDC Mountaineer, LLC		150/444	
	PDC Mountaineer, LLC	River Ridge Energy, LLC		17/228	
40 (00005898)	John A. Moscsso and Mary K. Mosesso, his wife	Union Drilling, Inc.	12.50%	79/55	98
	Union Drilling, Inc.	Equitable Resources Exploration, Inc.		325/219	
	Equitable Resources Exploration, Inc.	Equitable Resources Energy Company		328/171	
	Equitable Resources Energy Company	Fuel Resources Production and Development Company		116/81	
	Fuel Resources Production and Development Company	The Houston Exploration Company		383/187 (also 136/162)	
	The Houston Exploration Company	Seneca-Upshur Petroleum, Inc.		404/381	
	Seneca-Upshur Petroleum, Inc.	Seneca-Upshur Petroleum, LLC		16/637 (also 447/129)	
43 (00005929)	Virginia C. McDonald	Union Drilling and Allerton Miller	12.50%	47/443	114
	Allerton Miller	Union Drilling, Inc.		98/11	
	Union Drilling, Inc.	Equitable Resources Exploration, Inc.		325/219	
	Equitable Resources Exploration, Inc.	Equitable Resources Energy Company		328/171	
	Equitable Resources Energy Company	Fuel Resources Production and Development Company		116/81	
	Fuel Resources Production and Development Company	The Houston Exploration Company		383/187	

Attachment to WW-6A1, Johnson TFP 40 203

	The Houston Exploration Company	Seneca-Upshur Petroleum, Inc.		404/381 (139/48)	
	Seneca-Upshur Petroleum, Inc.	Seneca-Upshur Petroleum, LLC		16/637	
42, 65, 69 (00005891)	John A. Mosesso, single; Raymond Chess and Kathryn Chess	Allerton Miller	12.50%	DB 49/227	250
	Allerton Miller	Union Drilling, Inc.		98/11	
	Union Drilling, Inc.	Equitable Resources Exploration, Inc.		325/219	
	Equitable Resources Exploration, Inc.	Equitable Resources Energy Company		328/171	
	Equitable Resources Energy Company	Fuel Resources Production and Development Company		116/81	
	Fuel Resources Production and Development Company	The Houston Exploration Company		383/187	
	The Houston Exploration Company	Seneca-Upshur Petroleum, Inc.		404/381 (139/48)	
	Seneca-Upshur Petroleum, Inc.	Seneca-Upshur Petroleum, LLC		16/637	

West Virginia Secretary of State — Online Data Services

Business and Licensing

Online Data Services Help

Business Organization Detail

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MAR KEY LLC

Organization Information							
Org Type	Effective Date	Established Date	Filing Date	Charter	Class	Sec Type	Termination Date	Termination Reason
LLC | Limited Liability Company	7/11/2011		7/11/2011	Domestic	Profit			

Organization Information			
Business Purpose	2111 - Mining, Quarrying, Oil & Gas Extraction - Oil and Gas Extraction - Crude Oil and Natural Gas Extraction	Capital Stock	
Charter County		Control Number	99Q1F
Charter State	WV	Excess Acres	
At Will Term	A	Member Managed	MBR
At Will Term Years		Par Value	

Authorized Shares

Addresses	
Type	**Address**
Designated Office Address	65 PROFESSIONAL PLACE SUITE 200 BRIDGEPORT, WV, 26330
Mailing Address	6031 WALLACE ROAD EXTENSION SUITE 300 WEXFORD, PA, 15090 USA
Notice of Process Address	CORPORATION SERVICE COMPANY 209 WEST WASHINGTON STREET CHARLESTON, WV, 25302
Principal Office Address	6031 WALLACE ROAD EXTENSION SUITE 300 WEXFORD, PA, 15090 USA
Type	**Address**

Officers	
Type	**Name/Address**
Member	ARSENAL RESOURCES ENERGY LLC 6031 WALLACE ROAD EXTENSION SUITE 300 WEXFORD, PA, 15090
Organizer	PAUL M HERZING 560 EPSILON DR. PITTSBURGH, PA, 15238 USA
Type	**Name/Address**

Annual Reports
Date filed

3/30/2017
6/20/2016
6/30/2015
4/28/2014
6/28/2013
5/8/2012
Date filed

For more information, please contact the Secretary of State's Office at 304-558-8000.

Tuesday, November 28, 2017 — 9:44 AM

Agreement to Drill, Complete and Operate Oil & Gas Wells

This Agreement to Drill, Complete and Operate Oil & Gas Wells (this "Agreement"), by and among Arsenal Resources LLC, a West Virginia limited liability company ("Arsenal"), River Ridge Energy, LLC, a Delaware limited liability company ("River Ridge"), and River Ridge Energy, Holdings, LLC, a Delaware limited liability company ("River Ridge Holdings"), is effective as of March 1, 2017. (the "Effective Date") and sets forth the terms pursuant to which Arsenal will drill, complete and operate the Wells (as defined below) on behalf of River Ridge and River Ridge Holdings. Arsenal, River Ridge, and River Ridge Holdings are each a "Party" and are collectively the "Parties". In consideration of the foregoing and the respective agreements hereinafter set forth and the mutual benefits to be derived therefrom, the Parties, intending to be legally bound, hereby agree as follows:

1. **Term:** This Agreement is effective from the Effective Date until terminated by Arsenal on the one hand or River Ridge and River Ridge Holdings on the other hand with 30 days' written notice to the other Party or Parties, as applicable (the "Term").

2. **Authorization to Operate:** River Ridge and River Holdings authorize Arsenal to undertake and perform, on River Ridge and River Ridge Holdings behalf, all operations, including without limitation permit applications, well pad preparation, drilling and completing wells, and marketing gas, oil and other hydrocarbons therefrom with respect to all oil and gas wells to be drilled on oil and gas leasehold acreage held by River Ridge or River Ridge Holdings. River Ridge, River Ridge Holdings and Arsenal are affiliates with a common parent. Arsenal was formed to operate oil and gas leasehold acreage held by River Ridge, River Ridge Holdings and certain other affiliates. Arsenal agrees that it shall, in a good and workmanlike manner and in accordance with industry standards as they prevail in the area, drill, complete and operate oil and gas wells on leasehold acreage owned by River Ridge or River Ridge Holdings from time to time as directed by River Ridge or River Ridge Holdings (collectively, the "Wells").

3. **No Third Party Beneficiary:** This Agreement is for the benefit of the Parties and is not for the benefit of any third party.

4. **Counterparts:** This Agreement may be simultaneously executed in several counterparts and via facsimile or similar electronic transmittal, each of which shall be deemed to be an original and taken together shall constitute one and the same instrument.

[Signature Page Follows]

IN WITNESS WHEREOF, Arsenal, River Ridge, and River Ridge Holdings have caused their duly authorized representatives to execute this Agreement as of the Effective Date.

ARSENAL RESOURCES LLC

By: _____
Name: Joel E. Symonds
Title: Vice President - Land

RIVER RIDGE ENERGY, LLC

By: _____
Name: Joel E. Symonds
Title: Vice President - Land

RIVER RIDGE HOLDINGS, LLC

By: _____
Name: Joel E. Symonds
Title: Vice President - Land

West Virginia Secretary of State — Online Data Services

Business and Licensing

Online Data Services Help

Business Organization Detail

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SENECA-UPSHUR PETROLEUM, LLC

Organization Information							
Org Type	**Effective Date**	**Established Date**	**Filing Date**	**Charter**	**Class**	**Sec Type**	**Termination Date**	**Termination Reason**
LLC | Limited Liability Company	2/12/1973		2/12/1973	Domestic	Profit			

Organization Information			
Business Purpose	2111 - Mining, Quarrying, Oil & Gas Extraction - Oil and Gas Extraction - Crude Oil and Natural Gas Extraction	**Capital Stock**	
Charter County		**Control Number**	0
Charter State	WV	**Excess Acres**	0
At Will Term	A	**Member Managed**	MBR
At Will Term Years		**Par Value**	
Authorized Shares			

Addresses

Type	Address
Designated Office Address	65 PROFESSIONAL PLACE SUITE 200 BRIDGEPORT, WV, 26330
Mailing Address	6031 WALLACE ROAD EXTENSION SUITE 300 WEXFORD, PA, 15090 USA
Notice of Process Address	CORPORATION SERVICE COMPANY 209 WEST WASHINGTON STREET CHARLESTON, WV, 25302
Principal Office Address	6031 WALLACE ROAD EXTENSION SUITE 300 WEXFORD, PA, 15090 USA
Type	Address

Officers

Type	Name/Address
Member	RIVER RIDGE ENERGY, LLC 6031 WALLACE ROAD EXTENSION, SUITE 300 WEXFORD, PA, 15090
Organizer	TAMMY J OWEN 300 SUMMERS STREET, STE 1500 PO BOX 2107 CHARLESTON, WV, 25328 USA
Type	Name/Address

DBA

DBA Name	Description	Effective Date	Termination Date
KEYSPAN PRODUCTION & DEVELOPMENT COMPANY	TRADENAME	6/11/2004	
NATIONAL GRID	TRADENAME	8/17/2007	
NATIONAL GRID PRODUCTION AND DEVELOPMENT	TRADENAME	12/5/2008	5/9/2012
DBA Name	Description	Effective Date	Termination Date

Name Changes

Date	Old Name
3/28/2011	SENECA-UPSHUR PETROLEUM, INC.
Date	**Old Name**

Date	Amendment
6/15/2016	AMENDMENT FILED CHANGING FROM A MANAGER-MANAGED CO. TO A MEMBER-MANAGED CO. >> REMOVED ROBERT KOZEL & STEPHEN A. BISHOP AS MANAGERS & ADDED SOLE MEMBER (C IMAGE).
3/28/2011	CONVERSION: FROM SENECA-UPSHUR PETROLEUM, INC. TO SENECA-UPSHUR PETROLEUM, LLC
7/25/1997	MERGER; MERGING LITTLE SWISS DRILLING COMPANY, A QUAL WV CORP AND PALACE VALLEY PETROLEUM COMPANY, A QUAL WV CORP WITH AND INTO SENECA-UPSHUR PETROLEUM, INC., A QUAL WV CORP, THE SURVIVOR.
Date	**Amendment**

Annual Reports

Filed For
2018
2017
2016
2015
2014
2013
2012
2011
2010
2009
2008
2007
2006
2005
2004
2003
2002
2001
2000

1999
1998
Date filed

For more information, please contact the Secretary of State's Office at 304-558-8000.

Wednesday, July 18, 2018 — 1:13 PM

ARSENAL RESOURCES

People Powered. Asset Strong.

May 1, 2019

Mr. James Martin, Chief of Oil and Gas
West Virginia Department of Environmental Protection
601 57th Street, SE
Charleston, WV 25304

RE: Ownership of Roadways; Johnson TFP 40

Dear Mr. Martin:

In preparation of filing a permit application for the above referenced well, the Title Department of Arsenal Resources has conducted a thorough title examination in order to determine the ownership of the oil and gas underlying roadways crossed by the proposed well[s]. If owned in fee by the West Virginia Department of Transportation, Division of Highways, a lease covering its interest in the roadway or roadways has been properly obtained and provided in the application materials. If a right of way only, the oil and gas underlying such roadway or roadways is owned by the adjoining landowners and is also covered by the leaseholds provided in the application materials.

If you have any questions, concerns or need further information, please do not hesitate to contact me at the address listed below.

Sincerely,

Coty Brandon

Coty Brandon
Title Manager

6031 Wallace Road Ext, Suite 300
Wexford, PA 15090
P: 724-940-1100
F: 800-428-0981
www.arsenalresources.com

4709101354 MOD

ARSENAL RESOURCES

SITE SAFETY PLAN

JOHNSON TFP 40 WELL PAD #203

911 Address:

4006 Green Valley Rd

Bridgeport, WV 26330

Edward L. Reynolds
5-9-19

JOHNSON TFP 40 Well Pad #203 Site Safety Plan
Table of Contents

Section 1 – Contacts, Schedules, and Meetings

A. Emergency Contact Information

This section details the method of notification to the public if an H2S Gas, blowout, or flaring emergency would be encountered. This section also lists the H2S Safety Services and Equipment that will be brought on site in case of an H2S Emergency.

Emergency Contact Information

The 24-hour Emergency Contact Information including the name and phone numbers of persons to be notified shall be posted in the production trailer in a common area and in plain sight for reference. The Emergency Contact Information is identified in the following table:

Arsenal Resources – Emergency Contact Information		
Name	**Position**	**24-Hour Phone #**
Jon Sheldon	Chief Operating Officer	304-376-0719
Ross Schweitzer	Senior Director of Drilling	724-584-1192
Brandon Wedde	Senior Director of Completions	724-719-1240
Greg McCully	Director of Health and Safety	724-991-9172
West Virginia DEP Office of Oil & Gas – Emergency Contact Information		
Name	**Position**	**24-Hour Phone #**
Ken Greynolds	Local WVDEP Inspector, Taylor County	304-203-6613
	Office of Oil & Gas	304-926-0499
	WVDEP Emergency Spill Hotline	1-800-642-3074
Emergency Response Units		
National Response Center for Reporting Chemical or Oil Spills		800-424-8802
WVDEP Emergency Spill Center		800-642-3074
Ambulance, Fire, and Law Enforcement		911
Taylor County EMS		304-265-0904
Taylor County Emergency Service Center		304-265-2524
Taylor County Sheriff Department		304-265-3428

B. Public Facility Contact Information

According to information provided to Arsenal Resources by D&H, there are six public facilities located within the one-mile radius of the site. These facilities are listed in the table below:

Bailey Memorial UMC	63 Bailey Church Rd	Rosemont	WV	26424	304-842-1141
Flemington Assembly Church of God	1001 West Veterans Memorial HWY	Flemington	WV	26347	304-506-3448
Victory Valley Church	Route 76	Rosemont	WV	26424	304-739-4787
USPS	1791 W Veterans Memorial Hwy	Rosemont	WV	26424	800-275-8777
D&K Custom Cutting	1686 E Veterans Memorial Hwy	Flemington	WV	26347	304-739-3[illegible]
Mustangs & Bullets	4041 Green Valley Rd	Bridgeport	WV	26330	304-842-4363

All landowners within a 1 Mile Radius are listed as part of the Well Safety Plan Map.
* - *ESRI Aerial Imaging was used to determine the location of Schools/Public Facilities/Houses within one mile of the project site.*

C. H2S Gas, Blow Out, and Flaring Emergency Notification and Evacuation Procedures

This section details the method of notification to the public if an H2S Gas, blowout, or flaring emergency would be encountered. This section also lists the H2S Safety Services and Equipment that will be brought on-site in case of an H2S Emergency.

Evacuation Plan
In the event of an emergency that requires evacuation, personnel are to vacate the well pad area in a calm and orderly fashion by exiting the pad via the access road onto CR 17.

The procedure to be used in alerting nearby persons in the event of any occurrence that could pose a threat to life or property will be arranged and completed with public officials in detail, prior to drilling into the hydrogen sulfide formations.

In the event of an actual emergency, the following steps will be immediately taken:

1. Arsenal Resources will immediately notify the appropriate parties from the Emergency Contacts Section of this plan and any other appropriate parties to conduct necessary evacuation notifications. The emergency officials will immediately warn each resident and transient's down-wind within the radius of exposure from the well site, and then warn all residents in the radius of exposure. Additional evacuation zones may be necessary as the situation warrants. Arsenal Resources will provide assistance to emergency authorities.

2. Arsenal Resources will dispatch sufficient personnel to assist with traffic control in the vicinity away from the potentially dangerous area as requested and directed by the emergency authorities in charge of the evacuation procedures. A guard will be stationed at the entrance of the well site to monitor essential and non-essential traffic.

3. General:
   A. The area included within the radius of exposure is considered to be the zone of maximum potential hazard from a hydrogen sulfide gas escape. Immediate evacuation of public areas, in accordance with the provisions of this contingency plan, is imperative. When it is determined that conditions exist which create an additional area (beyond the initial zone of maximum potential hazard) vulnerable to possible hazard, public areas in the additional hazardous area will be evacuated in accordance

with the contingency plan.

B. In the event of a disaster, after the public areas have been evacuated and traffic stopped, it is expected that local civil authorities will have arrived and within a few hours will have assumed direction of and control of the public, including all public areas. Arsenal Resources will cooperate with these authorities to the fullest extent and will exert every effort by careful advice to such authorities to prevent panic or rumors.

C. Arsenal Resources will dispatch appropriate management personnel at the disaster site as soon as possible. The company's personnel will cooperate with and provide such information to civil authorities as they might require.

D. One of the products of the combustion of hydrogen sulfide is sulfur dioxide (SO_2). Under certain conditions this gas may be equally as dangerous as H_2S. A pump type detector device, which determines the percent of SO_2 in air through concentrations in ppm, will be available. Although normal air movement is sufficient to dissipate this material to safe levels, the SO_2 detector should be utilized to check concentrations in the proximity of the well once every hour, or as necessary and the situation warrants. Also, if any low areas are suspected of having high concentrations, personnel should be made aware of these areas, and steps should be taken to determine whether or not these low areas are hazardous.

This evacuation plan will also be posted in the production trailer in a common area and in plain sight for personnel to reference if there is an emergency that requires evacuation. The evacuation plan will be reviewed in the pre-drill or weekly safety meetings with all personnel.

D. Pre-Spud Meeting.

The Pre-Spud Meeting Form included on the next page will be used during the pre-spud meeting to account for all parties that are present. The invited parties shall include Representatives from Arsenal Resources Drilling and HSE Departments, the regional WVDEP Inspector, and representatives from all contractor companies being utilized during the drilling process.

Meeting Date:_____

Pre-Spud Meeting

JOHNSON TFP40 Well Pad #203

NAME	TITLE
	Arsenal Resources DRILLING REPRESENTATIVE
	Arsenal Resources SITE SUPERVISOR/REPRESENTATIVE
	STATE INSPECTOR
	DRILLING CONTRACTOR REPRESENTATIVE

E. Daily Visitor Sign-In Sheets

Arsenal Resources utilizes a third-party security contractor to monitor the main entry to our sites from the start of the drilling process through the conclusion of flowback. The contractors will be utilizing their forms to document all individuals that access Arsenal Resources' well pad.

F. Safety Meetings

Safety Meetings: Arsenal Resources and selected contractors shall hold a "pre- drill" safety meeting to discuss Well Site Safety during operations at the project location.

Safety Meetings will be held on a daily basis, prior to starting different phases of the operation (e.g., completion or work over operations), or when safety issues arise or need to be addressed.

Attendance logs will be kept for all site safety meetings and maintained on site.

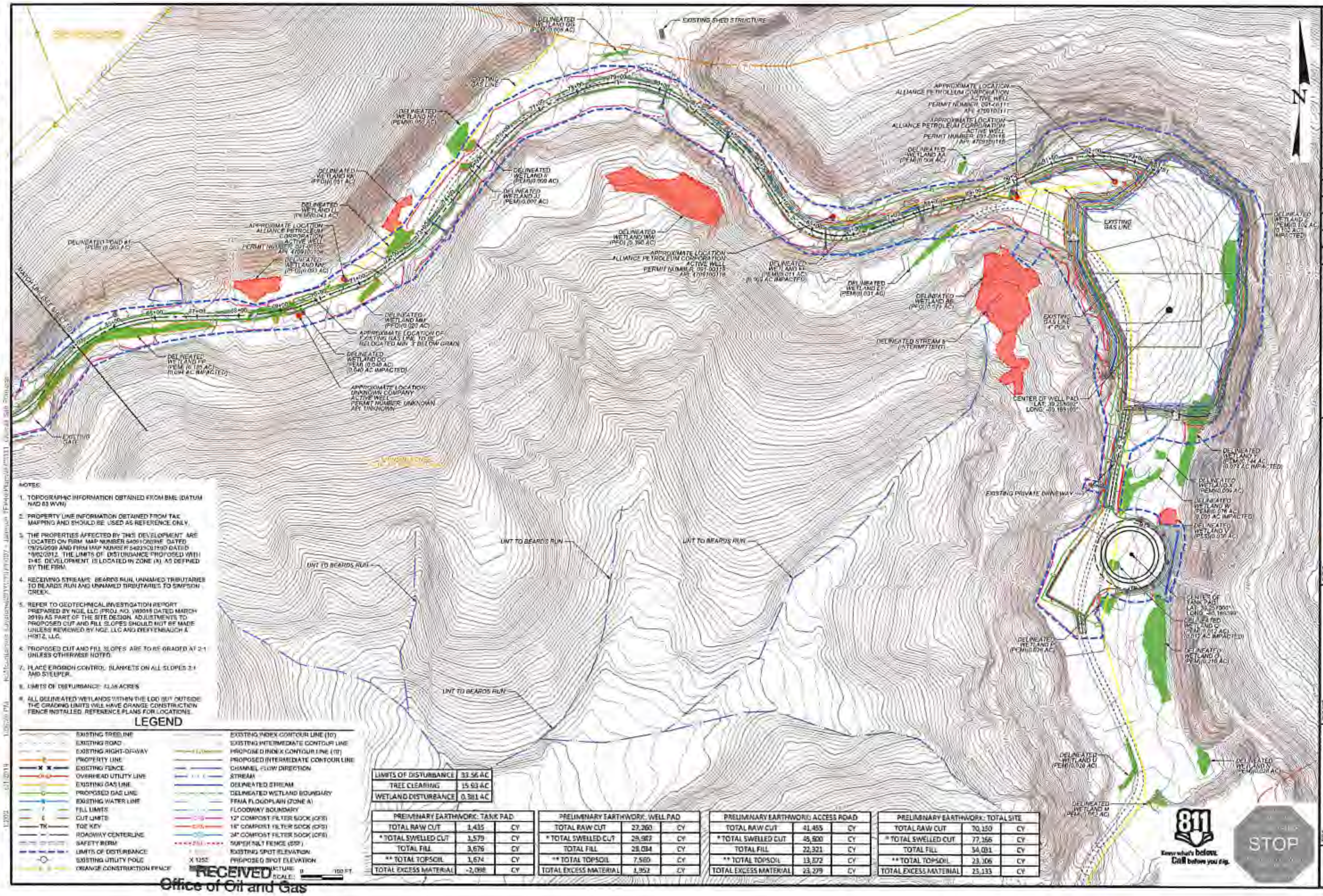
The local WV DEP inspector, Ken Greynolds, or another Office of Oil and Gas representative and emergency responders from the area will be notified of and invited to the pre-drill and subsequent meeting.

Section 2 – Maps and Diagrams

A. Plan View Map

The following pages include a Plan view map of the location, access road, pit(s), flare lines, nearby dwellings, notation of the north direction and the prevailing wind direction.

ISSUED FOR CONSTRUCTION



NOTES:

1. TOPOGRAPHIC INFORMATION OBTAINED FROM BME (DATUM NAD 83 WVN)
2. PROPERTY LINE INFORMATION OBTAINED FROM TAX MAPPING AND SHOULD BE USED AS REFERENCE ONLY.
3. THE PROPERTIES AFFECTED BY THIS DEVELOPMENT ARE LOCATED ON FIRM MAP NUMBER 54091C0035E DATED 09/25/2009 AND FIRM MAP NUMBER 54033C0150D DATED 10/02/2012. THE LIMITS OF DISTURBANCE PROPOSED WITH THIS DEVELOPMENT IS LOCATED IN ZONE (X) AS DEFINED BY THE FIRM.
4. RECEIVING STREAMS: BEARDS RUN, UNNAMED TRIBUTARIES TO BEARDS RUN AND UNNAMED TRIBUTARIES TO SIMPSON CREEK.
5. REFER TO GEOTECHNICAL INVESTIGATION REPORT PREPARED BY NGE, LLC (PROJ. NO. W8018 DATED MARCH 2019) AS PART OF THE SITE DESIGN. ADJUSTMENTS TO PROPOSED CUT AND FILL SLOPES SHOULD NOT BE MADE UNLESS REVIEWED BY NGE, LLC AND DIEFFENBAUCH & HRITZ, LLC.
6. PROPOSED CUT AND FILL SLOPES ARE TO BE GRADED AT 2:1 UNLESS OTHERWISE NOTED.
7. PLACE EROSION CONTROL BLANKETS ON ALL SLOPES 3:1 AND STEEPER.
8. LIMITS OF DISTURBANCE: 33.56 ACRES
9. ALL DELINEATED WETLANDS WITHIN THE LOD BUT OUTSIDE THE GRADING LIMITS WILL HAVE ORANGE CONSTRUCTION FENCE INSTALLED. REFERENCE PLANS FOR LOCATIONS.

LEGEND

EXISTING TREELINE	EXISTING INDEX CONTOUR LINE (10')
EXISTING ROAD	EXISTING INTERMEDIATE CONTOUR LINE
EXISTING RIGHT-OF-WAY	PROPOSED INDEX CONTOUR LINE (10')
PROPERTY LINE	PROPOSED INTERMEDIATE CONTOUR LINE
EXISTING FENCE	CHANNEL FLOW DIRECTION
OVERHEAD UTILITY LINE	STREAM
EXISTING GAS LINE	DELINEATED STREAM
PROPOSED GAS LINE	DELINEATED WETLAND BOUNDARY
EXISTING WATER LINE	FEMA FLOODPLAIN (ZONE A)
FILL LIMITS	FLOODWAY BOUNDARY
CUT LIMITS	12" COMPOST FILTER SOCK (CFS)
TOE KEY	18" COMPOST FILTER SOCK (CFS)
ROADWAY CENTERLINE	24" COMPOST FILTER SOCK (CFS)
SAFETY BERM	SUPER SILT FENCE (SSF)
LIMITS OF DISTURBANCE	EXISTING SPOT ELEVATION
EXISTING UTILITY POLE	PROPOSED SPOT ELEVATION
ORANGE CONSTRUCTION FENCE	…CTURE

SCALE: 0 100 FT.

LIMITS OF DISTURBANCE	33.56 AC
TREE CLEARING	15.93 AC
WETLAND DISTURBANCE	0.381 AC

PRELIMINARY EARTHWORK: TANK PAD		
TOTAL RAW CUT	1,435	CY
* TOTAL SWELLED CUT	1,579	CY
TOTAL FILL	3,676	CY
** TOTAL TOPSOIL	1,674	CY
TOTAL EXCESS MATERIAL	-2,098	CY

PRELIMINARY EARTHWORK: WELL PAD		
TOTAL RAW CUT	27,260	CY
* TOTAL SWELLED CUT	29,987	CY
TOTAL FILL	28,034	CY
** TOTAL TOPSOIL	7,560	CY
TOTAL EXCESS MATERIAL	1,952	CY

PRELIMINARY EARTHWORK: ACCESS ROAD		
TOTAL RAW CUT	41,455	CY
* TOTAL SWELLED CUT	45,600	CY
TOTAL FILL	22,321	CY
** TOTAL TOPSOIL	13,372	CY
TOTAL EXCESS MATERIAL	23,279	CY

PRELIMINARY EARTHWORK: TOTAL SITE		
TOTAL RAW CUT	70,150	CY
* TOTAL SWELLED CUT	77,166	CY
TOTAL FILL	54,031	CY
** TOTAL TOPSOIL	23,106	CY
TOTAL EXCESS MATERIAL	23,133	CY

NO	DATE	REVISION
1	5/21/2019	ISSUED FOR CONSTRUCTION
2	5/31/2019	ISSUED FOR CONSTRUCTION

DRAWN: DDC · CHECKED: ENS · APPROVED: HLP · DATE: MAY 2019 · PROJECT NO: 17078-007

DIEFFENBAUCH & HRITZ, LLC
1085 Chaplin Road, Suite 200
Morgantown, WV 26501
www.dandhengineers.com
P: 304.985.3505 F: 304.985.3557

CLIENT: ARSENAL

PROJECT: JOHNSON TFP40 WELL SITE

TITLE: OVERALL SITE PLAN

DRAWING NO: 11

811 Know what's below. Call before you dig.

STOP

RECEIVED
Office of Oil and Gas

JUN 11 2019

WV Department of
Environmental Protection

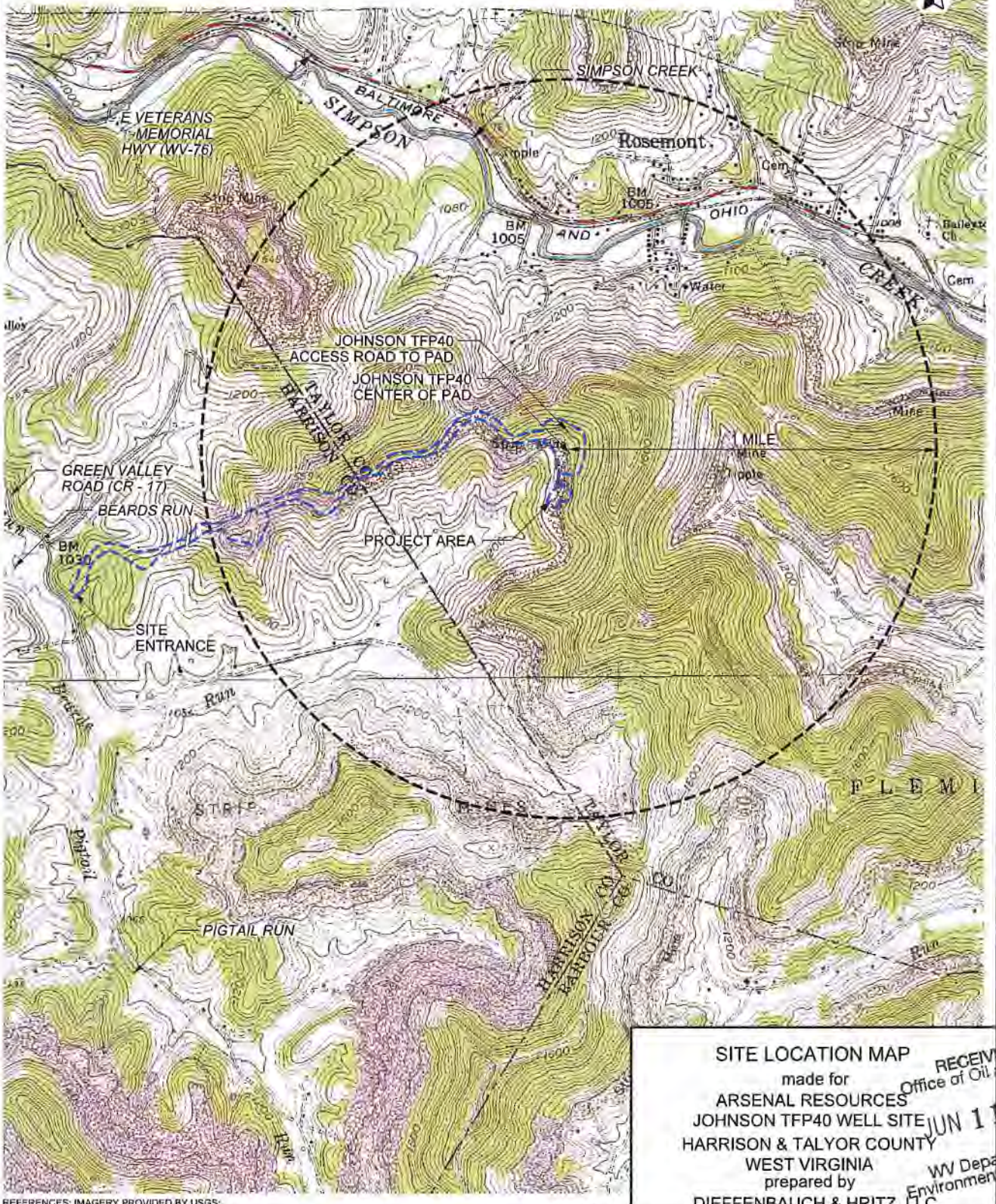
B. Topographic Map

This section includes a Topographic map of the well location, including a 1 mile radius of well location, and UTM NAD 83 coordinates of well site entrance, UTM NAD 83 coordinates of the point the access road intersects the public route, and public route numbers and/or route names.

SITE ACCESS ROAD ENTRANCE (NAD83)
UTM (METER)
N: 4345150.695
E: 569526.425
GEOGRAPHIC (DMS)
LAT: 39° 15' 10.43"
LONG: -80° 11' 3.15"

ACCESS ROAD TO PAD (NAD83)
UTM (METER)
N: 4345904.476
E: 571674.923
GEOGRAFIC (DMS)
LAT: 39° 15' 34.25"
LONG: -80° 10' 9.22"

CENTER OF PAD (NAD83)
UTM (METER)
N: 4345803.620
E: 571690.367
GEOGRAFIC (DMS)
LAT: 39° 15' 30.97"
LONG: -80° 10' 8.62"



REFERENCES: IMAGERY PROVIDED BY USGS:
ROSEMONT & BROWNTOWN QUADRANGLES;
WEST VIRGINIA 7.5 MINUTE SERIES

SCALE : 0 2000 ft.

SITE LOCATION MAP
made for
ARSENAL RESOURCES
JOHNSON TFP40 WELL SITE
HARRISON & TALYOR COUNTY
WEST VIRGINIA
prepared by
DIEFFENBAUCH & HRITZ, LLC
1095 Chaplin Rd Suite 200, Morgantown, WV 26501
Phone: 304-985-5555 Fax: 304-985-5557

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Office of Oil and Gas
JUN 11 2019
WV Department of
Environmental Protection

1:2000 9/27/2018 3:05:29 PM K:\Mountaineer Keystone\2017\1707A-007 - Johnson TFP40\Common\Site Location Map_(1 MILE)_3SM.dgn

C. Evacuation Plan Procedures

In the event of an H2S emergency, the following steps will be immediately taken:

1. Arsenal Resources will immediately notify the appropriate parties from the Emergency Contacts Section of this plan and any other appropriate parties to conduct necessary evacuation notifications. The emergency officials will immediately warn each resident and transient's down-wind within the radius of exposure from the well site, and then warn all residents in the radius of exposure. Additional evacuation zones may be necessary as the situation warrants. Arsenal Resources will provide assistance to emergency authorities.
2. Arsenal Resources will dispatch sufficient personnel to assist with traffic control in the vicinity away from the potentially dangerous area as requested and directed by the emergency authorities in charge of the evacuation procedures. A guard will be stationed at the entrance of the well site to monitor essential and non-essential traffic.

General:

A. The area included within the radius of exposure is considered to be the zone of maximum potential hazard from a hydrogen sulfide gas escape. Immediate evacuation of public areas, in accordance with the provisions of this contingency plan, is imperative. When it is determined that conditions exist which create an additional area (beyond the initial zone of maximum potential hazard) vulnerable to possible hazard, public areas in the additional hazardous area will be evacuated in accordance with the contingency plan.

B. In the event of a disaster, after the public areas have been evacuated and traffic stopped, it is expected that local civil authorities will have arrived and within a few hours will have assumed direction of and control of the public, including all public areas. Arsenal Resources will cooperate with these authorities to the fullest extent and will exert every effort by careful advice to such authorities to prevent panic or rumors.

C. Arsenal Resources will dispatch appropriate management personnel at the disaster site as soon as possible. The company's personnel will cooperate with and provide such information to civil authorities as they might require.

D. One of the products of the combustion of hydrogen sulfide is sulfur dioxide (SO_2). Under certain conditions this gas may be equally as dangerous as H_2S. A pump type detector device, which determines the percent of SO_2 in air through concentrations in ppm, will be available. Although normal air movement is sufficient to dissipate this material to safe levels, the SO_2 detector should be utilized to check concentrations in the proximity of the well once every hour, or as necessary and the situation warrants. Also, if any low areas are suspected of having high concentrations, personnel should be made aware of these areas, and steps should be taken to determine whether or not these low areas are hazardous.

Section 3 - Well Work

This section includes written descriptions of well work and procedure to be used during the drilling, completion, and production phases, including schematic plan views of each, as well as casing sheets.

Project Description

This project includes the construction of several temporary and permanent features including a 8,383 foot long, 16 foot wide gravel access road to a 182,660 square foot gravel well pad with associated erosion and sediment control BMP's. An additional 238 foot long access road is to be constructed from the gravel well pad to a 40,280 square foot gravel AST and Manifold pad. Once the well pad is constructed, the well is to be drilled as a horizontal well for natural gas extraction purposes.

General Drilling Program

1. Move in and rig up rat hole rig and drill 36" conductor hole and run 26" conductor casing to approximately 80' depth. Cement to surface via pump truck thru swedge and up the backside and drill 16" mouse hole per rig specifications. Rig down move off rat hole rig.
2. Move in and rig up a double or triple drilling rig, rig up flow lines and steel pits, and drill 17 ½" hole to a depth of 300' – 1000' depending on local fresh water depth. Drilling medium will be on fresh water. Run new, J-55, 54.5#, 13 3/8" casing and hardware to near bottom and cement to surface with Class A, 3% CaCl2 cement. Wait at least 8 hrs. on cement prior to drilling. If no cement circulation, call the inspector, run a CBL to determine cement top, then grout from the top back to surface. Wait on top grout 8hrs if grout is needed prior to drilling. Nipple up casing with annular BOP and test.
3. *Open Mine Contingency Plan:* when an open mine is encountered, Arsenal Resources will run 20" (H-40, 94#) and hardware as a mine string. The mine string will be set between 30 to 50 feet below the base of the open mine encountered. The mine string will have a cement balance job on the bottom (below the open mine), and the top will be surface-grouted to ground level. Then drill down to the proposed surface depth and set 13 -3/8" casing as originally planned.
4. Rig up directional drillers (if they are scheduled to nudge the surface) and trip in hole with 12 ¼" bit and drill on fresh water to the depth of 50 feet below the base of the 5th Sand, at approximately 1,500-2,800 feet. Any change from permitted depth will result in immediate notification to the OOG inspector for approval and subsequent modification to other well casing plans on the same pad will be made immediately to the OOG inspector. Run new, J-55 40#, 9 5/8" casing and hardware to near bottom and cement to surface with Class A cement. Wait at least 8 hrs. on cement prior to drilling.
5. Trip in hole with directional tools and 8 ¾" bit, continue drilling on fresh water to KOP. Then switch to a synthetic base mud system, and drill and build angle at 9 degree doglegs and land well at approximately 90 degrees horizontal in the lower Marcellus. Trip for directional issues or bit as needed, and drill 8 ¾" or 8 ½" hole.
6. Drill 8 3/4" or 8 ½" hole to planned total depth. Condition and prep the hole for casing run, and trip out of the hole. Lay down drilling assembly, and rig up casing crew and handling equipment. Run 5.5" 20# P-110, production casing the entire

measured depth of the well. Rig down casing crew and equipment, and rig up cementing crew. Cement production casing in 2 stages, with the lead and tail consisting of various densities of Class A cement slurry. The top of the production cement will be brought to approximately 150' within the intermediate casing shoe.

Once drilling operations have finished, the Johnson TFP40 #203 will be handed over to completions. Arsenal Resources will complete the well, using wireline perforating, and slickwater fracing. The number of stages will be determined once the lateral has been drilled. Each stage will consist of 400,000 lbs. of sand and approximately 350,000 gallons of water.

Well Equipment Set Up Procedure

1. Well set up starts by meeting with completions, flow back, set up contractor, and production supervisor.
2. A discussion is made on where to set surface equipment, GPU's Tanks and lines.
3. Procedure for equipment setup is to level off and gravel GPU and Tank area. Build concrete pad for GPU's and construct tank containment, and then set GPU's and Tanks. Install header pipe and dump lines to tanks. Install Sand traps, Lock-out casing valve and install prefabbed well head fittings, and dig up and install 3" lines to well heads. X-Ray all welds on gas lines; install skillets and block of lines for Hydrostatic test, test pipe. Drain pipe, remove plugs and skillets, bolt piping back up. Finish hooking up ESD Controls.
4. Welding is done in one corner of locations, utilizing flow backs LEL and our Personal LEL Monitors

Wellbore Casing and Cement Information

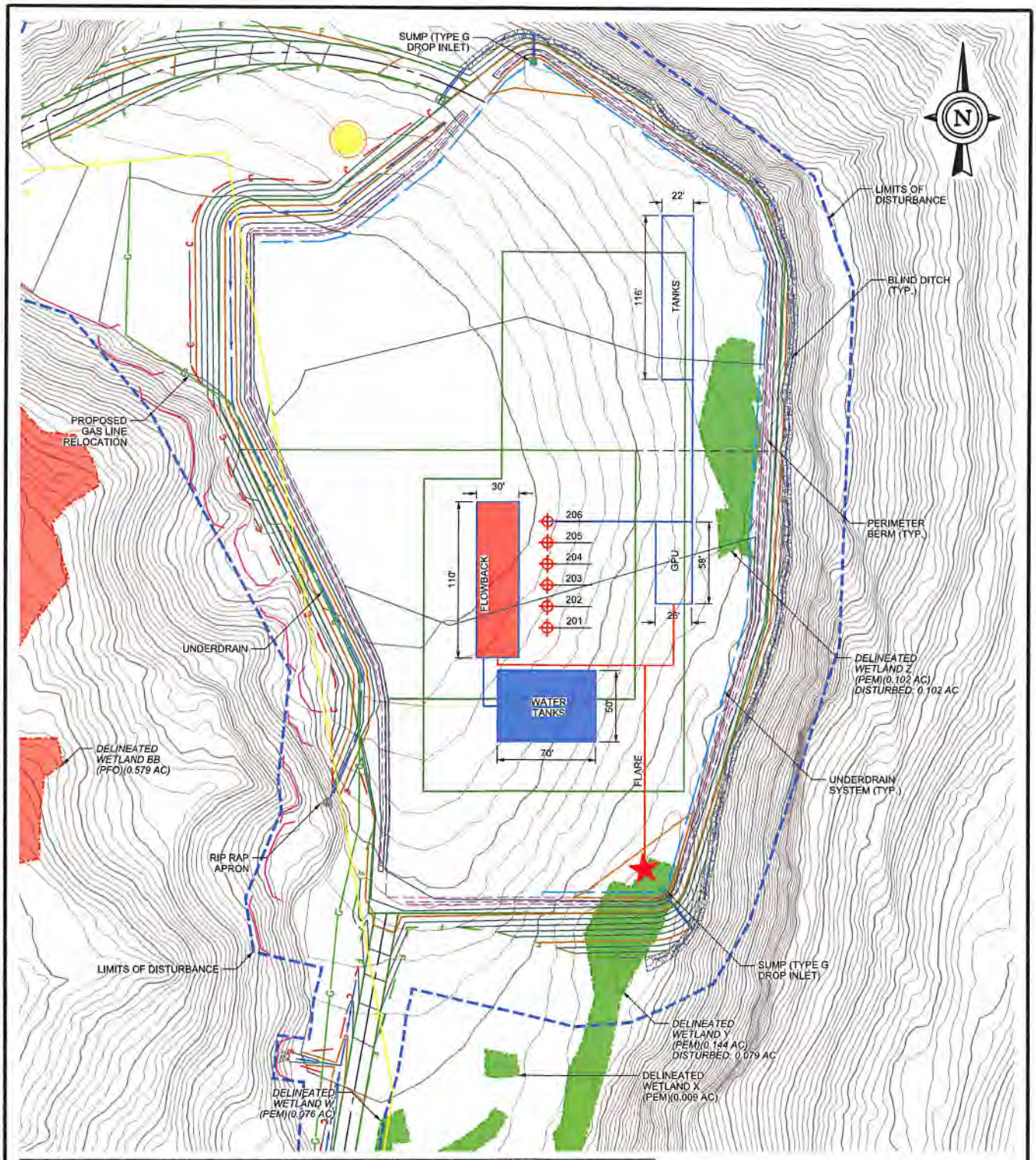
Geology information pertaining to the depths of freshwater, saltwater, coal, voids, etc., as listed on the Well Permit Application have been identified in the table below:

Geologic Information	
Approximate freshwater strata depths	45.5', 132.5', 187.5', 219.5', 817.5', 1102.5'
Approximate saltwater depths	1987.5'
Approximate coal seam depths	322.5', 398.5', 477.5', 577.5', 630.5', 692.5', 760.5', 825.5', 845.5, 876.5'
Approximate void depths (coal, karst, other)	None

1. Casing and Cementing Standards listed on the Well Work Permit Application Casing and Tubing Program Table have been identified in the table below:

Casing & Tubing Program						
Casing Type	Size	Grade	Weight /FT	For Drilling	Left in Well	Fill Up
Conductor	24"		94#	80'	80'	CTS
Fr. Water	13.375"	J-55	54.5#	1,175'	1,175'	CTS
Intermediate	9.625"	J-55	40#	2,600'	2,600'	CTS
Production	5.5"	P-110	20#	22,901'	22,901'	TOC @ 2,450
Tubing						

All casing and cement will meet current API standards any special conditions required of the permit that were set forth upon approval.



WELL NO.	STATE PLAN COORDINATE (WVN NAD 83)		LAT/LONG COORDINATE		LAT/LONG COORDINATE (NAD 83) (DMS)		UTM COORDINATE (NAD83-ZONE 17-METER)		EXISTING ELEV (NAVD88) (FT)	PROPOSED ELEV. NAVD88) (FT)
WELL 201	NORTHINNG	276971.7221	LAT:	39.258489°	LAT:	39°15'30.60"	NORTHINNG	4345792.144	1335.08'	1333.5'
	EASTING	1779051.6624	LONG	-80.169060°	LONG:	-80°10'08.61"	EASTING	571690.548		
WELL 202	NORTHINNG	276986.7221	LAT:	39.258540°	LAT:	39°15'30.75"	NORTHINNG	4345796.714	1335.90'	1333.5'
	EASTING	1779051.6624	LONG	-80.169060°	LONG:	-80°10'08.62"	EASTING	571690.472		
WELL 203	NORTHINNG	277001.7221	LAT:	39.258582°	LAT:	39°15'30.89"	NORTHINNG	4345801.284	1337.01'	1333.5'
	EASTING	1779051.6624	LONG	-80.169060°	LONG:	-80°10'08.62"	EASTING	571690.397		
WELL 204	NORTHINNG	277016.7221	LAT:	39.258623°	LAT:	39°15'31.04"	NORTHINNG	4345805.854	1337.79'	1333.5'
	EASTING	1779051.6624	LONG	-80.169061°	LONG:	-80°10'08.62"	EASTING	571690.321		
WELL 205	NORTHINNG	277031.7221	LAT:	39.258664°	LAT:	39°15'31.19"	NORTHINNG	4345810.424	1338.26'	1333.5'
	EASTING	1779051.6624	LONG	-80.169061°	LONG:	-80.10'08.62"	EASTING	571690.245		
WELL 206	NORTHINNG	277046.7221	LAT:	39.258705°	LAT:	39°15'31.34"	NORTHINNG	4345814.994	1338.79'	1333.5'
	EASTING	1779051.6624	LONG	-80.169062°	LONG:	-80°10'08.62"	EASTING	571690.169		

SCALE : 0 100 ft.

FLOWBACK SCHEMATIC LAYOUT

made for

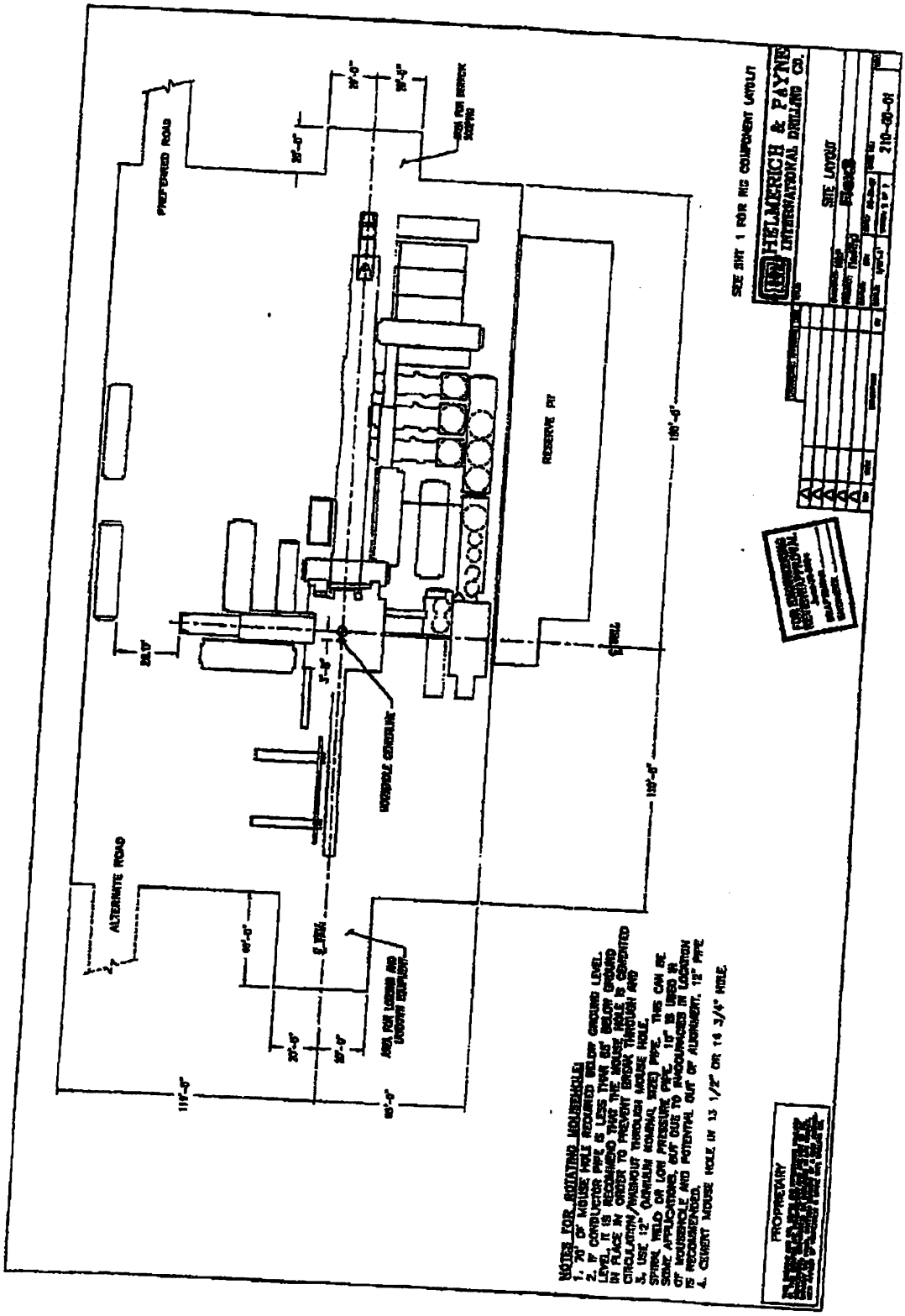
ARSENAL RESOURCES

JOHNSON TFP40 WELL SITE

Harrison and Taylor County, West Virginia

prepared by

DIEFFENBAUCH & HRITZ, LLC
1095 Chaplin Rd Suite 200, Morgantown, WV 26501
Phone: 304-985-5555 Fax: 304-985-5557



B. LEPC Submission

The following page contains a Statement detailing that the plan will be provided to the local emergency planning committee or county emergency services office within at least 7 days from land disturbance or well work.

ARSENAL RESOURCES

Arsenal Resources acknowledges that a copy of this Site Safety Plan will be submitted to the Local Emergency Planning Committee or county emergency services office, as listed in the contacts section of this plan, within at least 7 days from land disturbance or well work.

Larry E. Carder
Permitting Manager

Section 4 – Chemical Inventory and Safety Data Sheets (SDS)

A. SDS Availability / Location

The SDS sheets will be provided and maintained by the selected contractor(s) and for personnel to reference.

The location of the SDS sheets, how they are referenced, and maintained shall be detailed in each of the operations meetings and the pre-drill or weekly safety meetings with all personnel.

B. Inventory of Mud Materials

1. Inventory: At least 70,965 pounds of barite will be kept on location plus additional weight at the warehouse. At least 2,075 bbls of drilling fluid will be onsite and additional fluid will be stored both on location and at the warehouse.

2. The number and type of mixing units for mixing the mud on site shall be provided by the selected contractor and kept in the production trailer in a designated archive area for reference.

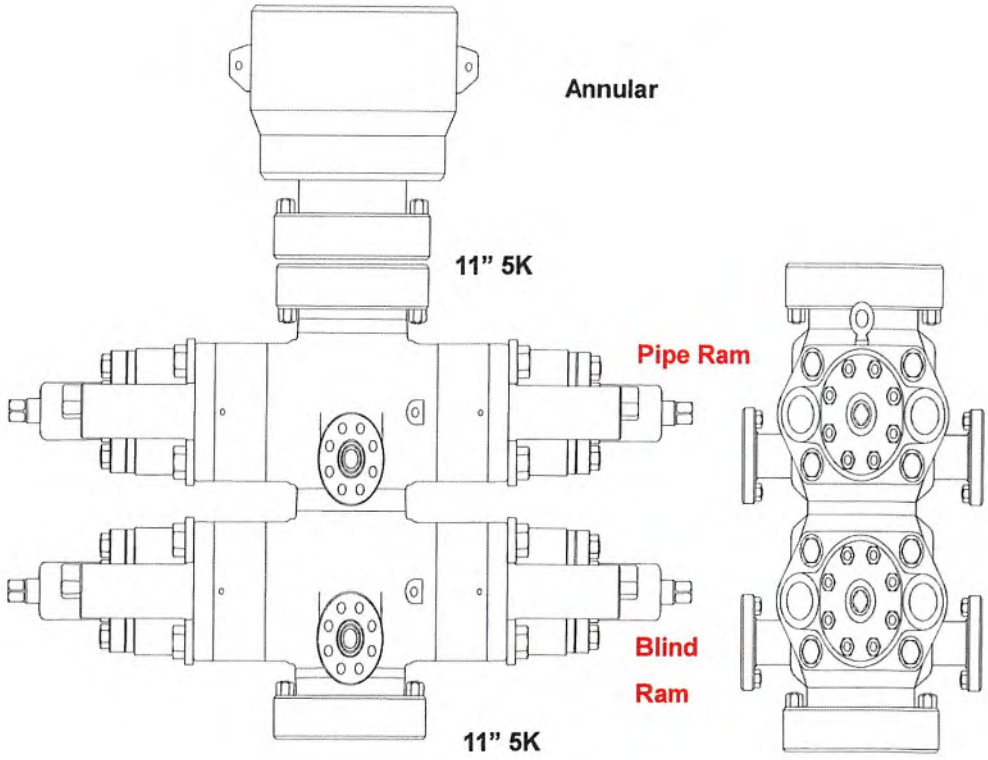
3. The selected driller shall use IADC well control methods. These shall include the Driller's Method, Wait and Weight, Dynamic Volumetric, Migration/Bleed, and Lubrication/Bleed. The primary methods are Driller's Method and Wait and Weight.

Section 5 -BOP and Well Control

A. BOP Equipment

The following pages include schematics and information on the BOP equipment.

11" 5K Double Ram BOP



Choke & Kill

Designed as a flexible connection to the choke manifold.
Tube: petroleum resistant for oil based drilling fluids
Cover: ozone, petroleum, and abrasion resistant
Reinforcement: high tensile steel wire spiral layers
Thermal Blanket: 1500° continuous ratings, non-flammable, non-conductive
Armor Wall: .144"
Max Length: 150 feet

-20° F / +212° F
-29° C / +100° C

Item	ID inch	OD inch	WP psi	Test psi	Weight lbs./ft
CK-48 Red	3	4.94	5,000	10,000	14.9
CK-56 Red	3½	5.44			17.7
CK-64 Red	4	6.31			26.4
CK-48 Armor	3	6.5			20.8
CK-56 Armor	3½	7			23.1
CK-64 Armor	4	8			26.3
CK-4810K Red	3	5.31	10,000	15,000	22.3
CK-5610K Red	3½	5.81			25.0
CK-6410K Red	4	4.75			36.1
CK-4810K Armor	3	6.5			26.0
CK-5610K Armor	3½	7			29.0
CK-6410K Armor	4	8			32.8

BOP Control Line

For blowout preventer lines.
Tube: for hydraulic BOP actuation
Thermal Blanket: 1500° continuous rating, non-flammable, non-conductive
Armor Wall: .08"
Popular with a larger hex and longer threads for easier installation of hammer unions.

-20° F / +212° F
-29° C / +100° C

Item	ID inch	OD inch	WP psi	Test psi	Weight lbs./ft
BOP-16 Armor	1	2.06	5,000	10,000	3.9
BOP-32 Armor	2	3.75			11.7
BOP-16	1	1.77			2.1
BOP-32	2	3.09			10.2

Carbon or stainless steel nipples are available and 1/2", 3/4", 1-1/4", and 1-1/2" sizes are available too.


Weld-on Flanges or Hammer Unions


Integral 1002/1502 Hammer Union Fittings


Safety Clamps


Fire Proof Quick Connects


Ring Gaskets

Section 5, continued

B. BOP Testing

Procedure and Schedule for Testing the BOP Stack: For the bottom and horizontal wellbore drilling phase, the BOP equipment shall be function tested upon initial installation, weekly, and after each bit trip. The BOP equipment shall be pressure tested upon initial installation and every twenty-one (21) days thereafter. All pressure tests shall be performed for thirty (30) minutes. Annular preventers should be tested to seventy percent (70%) of the rated capacity and ram preventers should be tested to eighty percent (80%) of the rated capacity.

BOP Schedule: A schedule of BOP equipment installation and operation shall be kept for each applicable string in the Detailed Daily Reports that are kept in the production trailer in a designated archive location for reference.

Adjustments and variances are only permitted with consent of the area drilling/completion manager and WVDEP Inspector.

The Testing will follow the requirements of 35-8 5.7.c.2.

C. BOP Equipment and Assembly Installation Schedule

1. The 13 3/8" Rotating Head will be installed when nippling up on the 13 3/8" casing. It will divert returns to the pit while air drilling this section.

2. The 9 5/8" BOP stack will be installed when nippling up on the 13 3/8" casing. The BOP will be pressure tested using a test plug. The BOP will be tested to a pressure of 250 psi low and 5,000 psi high and the annular to 250 psi low and 2,500 psi high prior to drilling out 8 5/8" casing.

3. When the 10,000 psi BOP stack is in use, a 10,000 psi upper and lower Kelly cock will be employed. They will be tested when the BOP stack is tested.

D. Personnel with Well Control Training

A list of all personnel with approved well control training and current certification recognized by the International Association of Drilling Contractors (IADC) shall be provided to the Office prior to the pre-spud meeting. Current Arsenal Resources employee with Wild Well Control training is Ross Schweitzer and Jarrett Toms.

E. Well Event Record Keeping

Detailed Log: A detailed daily record of events shall be kept during the drilling operation noting any significant event (e.g., lost circulation, presence of hydrogen sulfide, fluid entry, kicks and abnormal pressures). The daily reports will be kept in the production trailer in a designated archive location for reference.

F. Inspector Notification

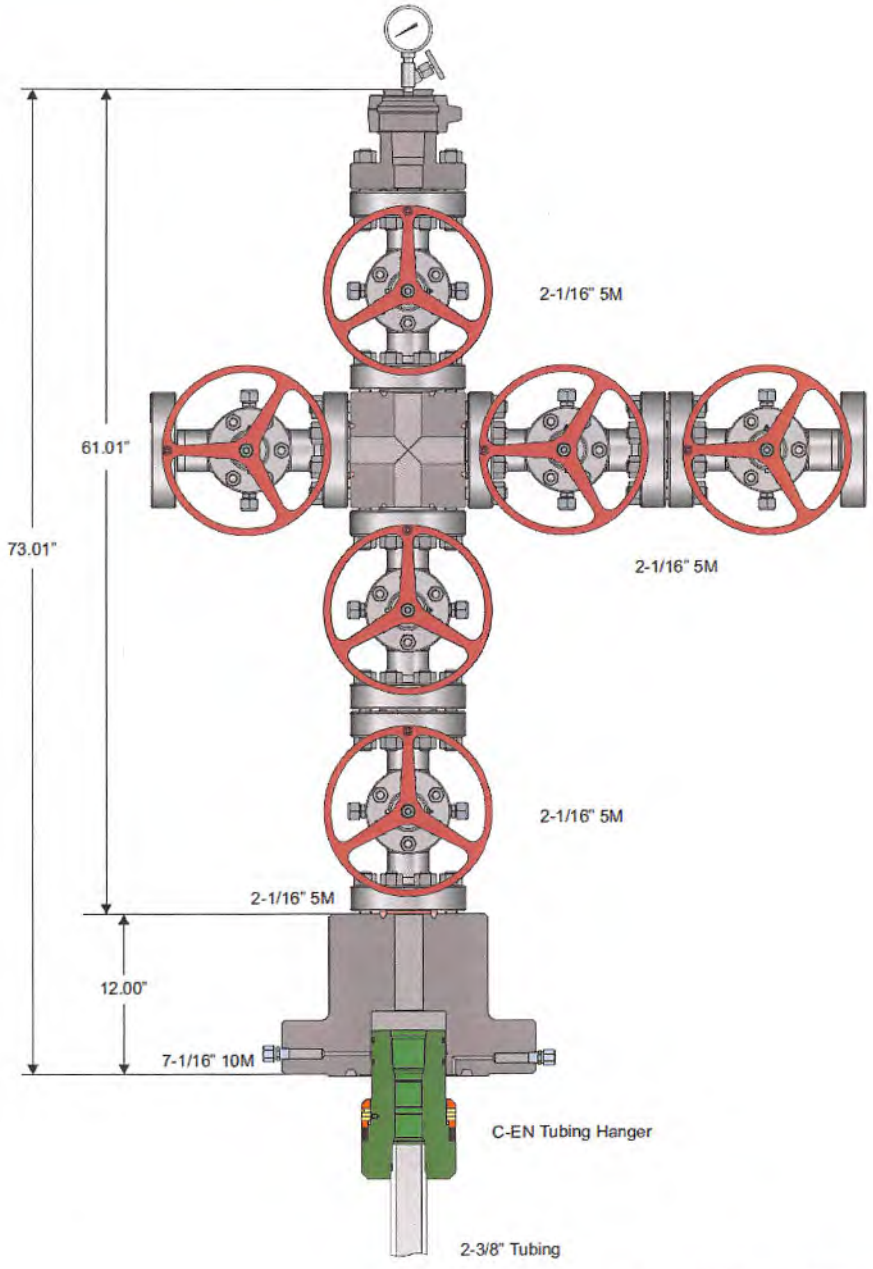
A detailed record of significant drilling events will be recorded in Arsenal Resources well log book. The state inspector will be notified upon any significant drilling events including the encounter of Hydrogen Sulfide Gas, lost circulation, fluid entry, abnormal pressures, etc.

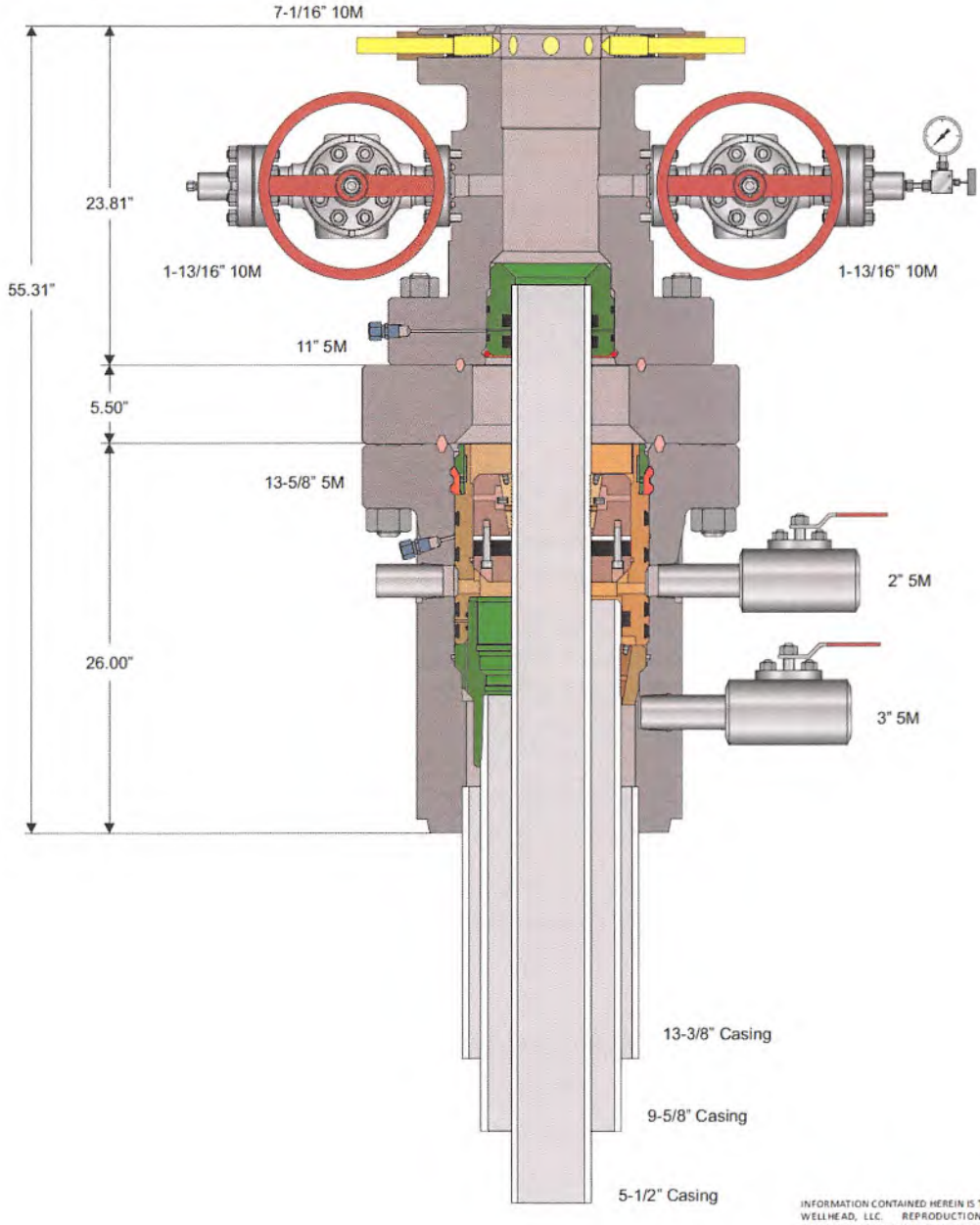
G. Wellhead Assembly

The following pages contain sketches of the anticipated wellhead assemblies that will be used.

Cactus Wellhead

2-1/16" 5M Production Tree
DUE123





H. Well Kill Procedures

1. Inventory: At least 70,965 pounds of barite will be kept on location plus additional weight at the warehouse. At least 2,075 bbls of drilling fluid will be onsite and additional fluid will be stored both on location and at the warehouse.

2. The number and type of mixing units for mixing the mud on site shall be provided by the selected contractor and kept in the production trailer in a designated archive area for reference.

3. The selected driller shall use IADC well control methods. These shall include the Driller's Method, Wait and Weight, Dynamic Volumetric, Migration/Bleed, and Lubrication/Bleed. The primary methods are Driller's Method and Wait and Weight.

Section 6 – Hydrogen Sulfide (H2S)

A. Hydrogen Sulfide (H2S) Detection and Warning Equipment

Arsenal Resources has a MeshGuard LEL and H2S Monitoring system installed on the rig. The system triggers audio and visual alarms if it detects LEL or H2S at action levels.

The system consists of the following:

1 H_2S Fixed Monitor w/2 relays (relays location in doghouse & company man trailer)

4 H_2S Sensors (sensors located on rig floor, cellar, shakers, and mud tank)

2 Explosion Proof Alarms (Light and Siren)

Arsenal Resources employees will utilize MGC multi-gas detectors. The selected contractor foreman shall immediately notify the WV DEP Office of Oil and Gas Inspector and the Office when Hydrogen Sulfide is encountered.

B. H2S Personnel Training

Personnel involved with the monitoring, detection or warning of the presence of Hydrogen Sulfide shall be provided training in a special training session detailing how to use the equipment and issue the necessary warning prior to the operations commencing. This is special Hydrogen Sulfide detection training that will be conducted by the selected contractor.

C. Inspector Notification of H2S Presence

The selected contractor shall immediately contact the WV DEP Office of Oil and Gas Inspector by phone when Hydrogen Sulfide is detected and alert the guard station that no entry to the site shall be granted to unauthorized personnel during that time until the presence of Hydrogen Sulfide is no longer detected and the site is deemed safe by the WV DEP Office of Oil and Gas Inspector or Office Representative.

D. Establishment of Protective Zones

Evacuation and Notification of General Public if an H2S Emergency Occurs:

In the event of an accident that requires notification to the residents within 2,500 feet of the well site, local emergency responders and the Taylor County Emergency Services shall be notified by phone and coordinate alerting the residents by phone or in person and advise them of the appropriate action.

The selected contractor shall maintain the 2,500 foot protection zone during all applicable events such as hydrogen sulfide, blow-outs and flaring by alerting the local emergency responders and the Taylor County Emergency Services and having them coordinate notifications and evacuation of the protection zone.

E. H2S PPE

Personal Protective Equipment (PPE):
During operations, all personnel shall have on hard hats, safety goggles, fire retardant clothing, steel toe boots and earplugs at all times. Additional PPE may be required for specialized tasks.

Each individual's required PPE will be detailed in the Job Safety Analysis report that is kept in the production trailer in a designated archive area for reference, and shall be reviewed by each individual prior to the start of their shift.

Personnel without the required PPE will not be granted access to the site.

H_2S Safety Services Equipment List:

In the event of an H2S Emergency, Total Safety or TekSolv will be contacted to provide the following:

Hydrogen Sulfide Safety Package

Respiratory Safety Systems

QTY	DESCRIPTION
8	30-minute pressure demand SCBA with Pigtail.
4	4 supplied Air Respirators with 5 minute escape bottles.

Detection and Alarm Safety System

1	Personal H_2S monitors
1	Portable Tri-Gas Hand Held Meter (O_2, LEL, H_2S)
1	Gastech Manual Impingement Pump Type Detector
2	Boxes H_2S Tubes Various Ranges
2	Boxes SO_2 Tubes Various Ranges
1	Calibration Gas
1	Set Paper Work for Records: Training, Cal, Inspection, other

Additional Safety Related Equipment

QTY	Description
2	Windsocks with Pole and Bracket
1	Set Well Condition Sign w/Green, Yellow, Red Flags
1	Primary Safe Briefing Area Sign
1	Secondary Safe Briefing Area Sign
1	Oxygen Resuscitator

Section 7 – Flaring

A. Description and Plan including schematic of installation for duration of flaring activities:

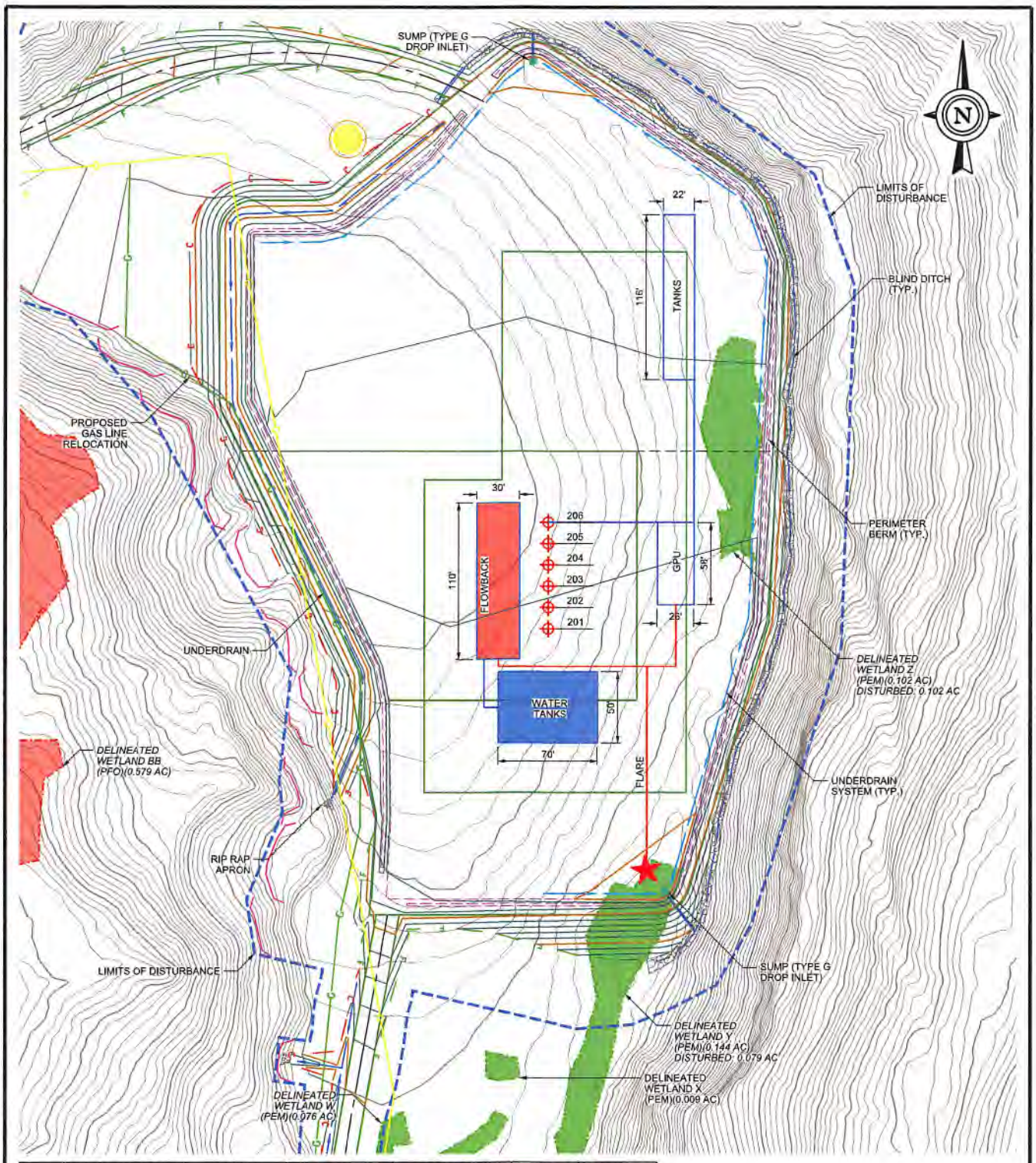
1. Flare Line will be constructed using three inch flare line tubing and anchored with cement anchor blocks. The line will have a dual choke assembly manifold with adjustable manual chokes. A detailed Pad Flaring Diagram is located in Section 7.

2. The selected contractor will designate the system to light the flare and the dedication of the back-up igniters.

3. The Taylor County Emergency Services and local Volunteer Fire Department shall be notified by the selected contractor foreman prior to lighting the flare when possible, and as soon after lighting the flare as reasonably possible.

4. A minimum distance of 100 feet will be maintained to the nearest flammable material beyond the end of the flare line. The flare line has been placed in order to avoid any distance less than 100 feet to the nearest wooded area. The flare line minimum distances to the nearest flammable material shall be detailed in each of the operations meetings and the pre-drill or weekly safety meetings with all personnel.

5. The estimated flaring operations for this site are anticipated to last no longer than two weeks.



WELL NO.	STATE PLAN COORDINATE (WVN NAD 83)		LAT/LONG COORDINATE		LAT/LONG COORDINATE (NAD 83) (DMS)		UTM COORDINATE (NAD83-ZONE 17-METER)		EXISTING ELEV (NAVD88) (FT)	PROPOSED ELEV. NAVD88) (FT)
WELL 201	NORTHINNG	276971.7221	LAT:	39.258499°	LAT:	39°15'30.60"	NORTHINNG	4345792.144	1335.06'	1333.5'
	EASTING	1779051.6624	LONG:	-80.169060°	LONG:	-80°10'08.61"	EASTING	571690.548		
WELL 202	NORTHINNG	276986.7221	LAT:	39.258540°	LAT:	39°15'30.75"	NORTHINNG	4345796.714	1335.90'	1333.5'
	EASTING	1779051.6624	LONG:	-80.169060°	LONG:	-80°10'08.62"	EASTING	571690.472		
WELL 203	NORTHINNG	277001.7221	LAT:	39.258582°	LAT:	39°15'30.89"	NORTHINNG	4345801.284	1337.01'	1333.5'
	EASTING	1779051.6624	LONG:	-80.169060°	LONG:	-80°10'08.62"	EASTING	571690.397		
WELL 204	NORTHINNG	277016.7221	LAT:	39.258623°	LAT:	39°15'31.04"	NORTHINNG	4345805.854	1337.79'	1333.5'
	EASTING	1779051.6624	LONG:	-80.169061°	LONG:	-80°10'08.62"	EASTING	571690.321		
WELL 205	NORTHINNG	277031.7221	LAT:	39.258664°	LAT:	39°15'31.19"	NORTHINNG	4345810.424	1338.26'	1333.5'
	EASTING	1779051.6624	LONG:	-80.169061°	LONG:	-80.10'08.62"	EASTING	571690.245		
WELL 206	NORTHINNG	277046.7221	LAT:	39.258705°	LAT:	39°15'31.34"	NORTHINNG	4345814.994	1338.79'	1333.5'
	EASTING	1779051.6624	LONG:	-80.169062°	LONG:	-80°10'08.62"	EASTING	571690.169		

SCALE : 0 100 ft.

FLOWBACK SCHEMATIC LAYOUT

made for

ARSENAL RESOURCES

JOHNSON TFP40 WELL SITE

Harrison and Taylor County, West Virginia

prepared by

DIEFFENBAUCH & HRITZ, LLC
1095 Chaplin Rd Suite 200, Morgantown, WV 26501
Phone: 304-985-5555 Fax: 304-985-5557

1:100 9/21/2018 8:51:13 AM K:\Mountaineer Keystone\2017\17078-007 - Johnson TFP40\Common\Flowback Schematic Layout.dgn

Section 8 – Collision Avoidance

A. Established Definitions

Protocol and established safeguard designed to prevent underground collisions during any drilling on multi-well pads.

B. Description of Risk

Arsenal Resources uses an anti-collision protocol on all wells as a safeguard designed to prevent underground collision during any drilling on multi-well pads.

C. Plan Components

1. All surveys will be MWD/EM survey tools in all hole sections, and surveys will be taken every stand (Around 90'). If the SF < 1 surveys will be taken on a more frequent basis, most likely every 30'. We will discuss with the WVDEP Oil and Gas Inspector.

2. All directional and MWD tools will be visually inspected by directional MWD personnel and Arsenal Resources site representatives at a minimum.

3. Surface nudges will be planned by the directional company as needed to maintain a safe SF.

4. The same survey tools that we use in the vertical section will be used.

5. The directional company uses a AC software to maintain a safe SF. Compass is the current company's software.

6. Arsenal Resources will maintain the state minimum SF factors in all whole sections.

    a. Minimum SF standards (thresholds) required – SF > 1.5 shall be obtained early as practical and maintained. Survey every stand (90').
    b. SF > 2 applies when in proximity to any fractured or any producing well that exists on the well pad. Survey every stand (90'). **Additional risk management might be needed as well and will be addressed as needed.

7. Lateral Section
    a. Arsenal Resources will work with the directional companies to maintain delineation, grid connections, and ensure magnetic interference correction is being followed. The onsite Arsenal Resources representative and the directional company's MWD personnel will be responsible for QC/QA.

8. For any existing horizontal or vertical well found adjacent to the lateral section Arsenal Resources will maintain over a 2 SF and will review each well on a case by case basis with a pre-drilled AC program along with continually updating the plan while drilling.

9. Arsenal Resources will attach the wall map showing all wells on the pad spaced at 10' - 15' apart. If there is a fractured well, (live) well, Arsenal Resources will note it in the drawing.

10. When there is an existing wellbore on the pad, Arsenal Resources will attach notes and or surveys for the well.

11. If a collision should occur, the wellbores would be shut in immediately and the well would need to be killed with kill mud. If a survey shows imminent risk for a collision, Arsenal Resources will stop drilling and confirm with a gyro, then evaluate the situation on a case by case basis. If Arsenal Resources can steer away with MWD or a gyro we will, or we will plug back if needed.

12. Arsenal Resources will notify the WVDEP Oil and Gas inspector immediately of any underground collision or if the SF level 1 is determined.

13. Arsenal Resources will provide other supportive resources as needed.

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Arsenal Resources

Taylor County, West Virginia
Johnson TFP40 #203

Anti-collision Report (Attached)

ARSENAL
RESOURCES

Arsenal Resources

Taylor County, West Virginia
Johnson TFP40 Pad
Johnson TFP40 #203

Wellbore #1
Design #1

QES Anticollision Report

17 October, 2018

QES
DIRECTIONAL DRILLING

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Reference	Design #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0 us	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**		

Survey Tool Program **Date** 10/17/2018

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	22,901.3	Design #1 (Wellbore #1)	MWD default	MWD - Standard

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Johnson TFP40 Pad						
Johnson TFP40 #201 - Wellbore #1 - Design #1	3,592.6	3,588.9	18.5	2.1	1.126	Level 2, CC
Johnson TFP40 #201 - Wellbore #1 - Design #1	3,600.0	3,596.3	18.5	2.1	1.125	Level 2, ES, SF
Johnson TFP40 #202 - Wellbore #1 - Design #1	3,652.7	3,650.9	6.3	-9.1	0.408	Level 1, CC, ES, SF
Johnson TFP40 #204 - Wellbore #1 - Design #1	2,500.0	2,500.0	15.0	4.0	1.370	Level 3, CC, ES, SF
Johnson TFP40 #205 - Wellbore #1 - Design #1	2,500.0	2,500.0	30.0	19.0	2.739	CC, ES, SF
Johnson TFP40 #206 - Wellbore #1 - Design #1	2,500.0	2,500.0	45.0	34.0	4.109	CC, ES
Johnson TFP40 #206 - Wellbore #1 - Design #1	2,600.0	2,599.5	46.2	34.9	4.066	SF

Offset Design Johnson TFP40 Pad - Johnson TFP40 #201 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD default

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	180.00	-30.0	0.0	30.0			
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-30.0	0.0	30.0	29.8	182.838	
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-30.0	0.0	30.0	29.4	48.891	
300.0	300.0	300.0	300.0	0.5	0.5	180.00	-30.0	0.0	30.0	28.9	28.218	
400.0	400.0	400.0	400.0	0.8	0.8	180.00	-30.0	0.0	30.0	28.5	19.832	
500.0	500.0	500.0	500.0	1.0	1.0	180.00	-30.0	0.0	30.0	28.0	15.289	
600.0	600.0	600.0	600.0	1.2	1.2	180.00	-30.0	0.0	30.0	27.6	12.439	
700.0	700.0	700.0	700.0	1.4	1.4	180.00	-30.0	0.0	30.0	27.1	10.485	
800.0	800.0	800.0	800.0	1.7	1.7	180.00	-30.0	0.0	30.0	26.7	9.061	
900.0	900.0	900.0	900.0	1.9	1.9	180.00	-30.0	0.0	30.0	26.2	7.978	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	180.00	-30.0	0.0	30.0	25.8	7.126	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	180.00	-30.0	0.0	30.0	25.3	6.439	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	180.00	-30.0	0.0	30.0	24.9	5.872	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	180.00	-30.0	0.0	30.0	24.4	5.397	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	180.00	-30.0	0.0	30.0	24.0	4.993	
1,500.0	1,500.0	1,500.0	1,500.0	3.2	3.2	180.00	-30.0	0.0	30.0	23.5	4.646	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	180.00	-30.0	0.0	30.0	23.1	4.343	
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	180.00	-30.0	0.0	30.0	22.6	4.078	
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	180.00	-30.0	0.0	30.0	22.2	3.843	
1,900.0	1,900.0	1,900.0	1,900.0	4.1	4.1	180.00	-30.0	0.0	30.0	21.7	3.634	
2,000.0	2,000.0	2,000.0	2,000.0	4.4	4.4	180.00	-30.0	0.0	30.0	21.3	3.445	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #201 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	180.00	-30.0	0.0	30.0	20.8	3.277	
2,200.0	2,200.0	2,200.0	2,200.0	4.8	4.8	180.00	-30.0	0.0	30.0	20.4	3.124	
2,300.0	2,300.0	2,300.0	2,300.0	5.0	5.0	180.00	-30.0	0.0	30.0	19.9	2.984	
2,400.0	2,400.0	2,400.0	2,400.0	5.3	5.3	180.00	-30.0	0.0	30.0	19.5	2.856	
2,500.0	2,500.0	2,500.0	2,500.0	5.5	5.5	180.00	-30.0	0.0	30.0	19.0	2.739	
2,600.0	2,600.0	2,599.7	2,599.7	5.7	5.7	-67.90	-30.5	-1.6	29.9	18.5	2.630	
2,700.0	2,699.8	2,699.3	2,699.2	5.9	5.9	-67.71	-32.2	-6.6	29.6	17.8	2.517	
2,800.0	2,799.5	2,799.0	2,798.5	6.1	6.1	-67.38	-34.9	-14.8	29.0	16.9	2.390	
2,900.0	2,898.7	2,898.7	2,897.4	6.3	6.3	-66.90	-38.7	-26.3	28.3	15.7	2.251	
3,000.0	2,997.5	2,998.4	2,995.8	6.5	6.5	-66.24	-43.6	-41.1	27.3	14.3	2.099	
3,100.0	3,095.6	3,098.0	3,093.7	6.8	6.8	-65.37	-49.5	-59.1	26.1	12.6	1.937	
3,200.0	3,193.1	3,197.7	3,190.8	7.1	7.1	-64.24	-56.5	-80.3	24.7	10.7	1.765	
3,300.0	3,289.6	3,297.3	3,287.1	7.4	7.4	-62.77	-64.6	-104.7	23.2	8.6	1.586	
3,400.0	3,385.3	3,397.0	3,382.4	7.8	7.8	-60.85	-73.7	-132.3	21.4	6.2	1.404	Level 3
3,499.8	3,479.7	3,496.5	3,476.5	8.2	8.2	-58.30	-83.8	-162.9	19.5	3.6	1.223	Level 2
3,592.6	3,566.8	3,588.9	3,562.9	8.7	8.7	-51.31	-94.1	-194.1	18.5	2.1	1.126	Level 2, CC
3,600.0	3,573.8	3,596.3	3,569.7	8.7	8.7	-50.39	-95.0	-196.8	18.5	2.1	1.125	Level 2, ES, SF
3,700.0	3,667.8	3,695.7	3,661.2	9.2	9.3	-34.91	-107.1	-233.5	20.5	4.1	1.254	Level 3
3,800.0	3,761.7	3,794.6	3,751.0	9.7	9.9	-19.65	-120.2	-273.0	26.8	10.8	1.679	
3,900.0	3,855.7	3,892.8	3,838.5	10.3	10.6	-9.37	-134.1	-315.2	37.6	21.8	2.372	
4,000.0	3,949.7	3,990.0	3,923.8	10.9	11.4	-3.32	-148.9	-359.7	52.5	36.5	3.275	
4,078.2	4,023.1	4,065.3	3,988.6	11.4	12.1	-0.43	-160.9	-396.0	66.6	50.4	4.104	
4,100.0	4,043.7	4,086.2	4,006.4	11.5	12.3	0.18	-164.3	-406.4	71.1	54.8	4.359	
4,200.0	4,138.5	4,180.4	4,085.7	11.9	13.2	2.22	-180.2	-454.7	95.4	78.8	5.743	
4,300.0	4,234.3	4,271.9	4,161.1	12.4	14.1	3.35	-196.5	-503.9	126.3	109.4	7.463	
4,400.0	4,331.1	4,360.3	4,232.3	12.8	15.1	3.97	-212.9	-553.6	163.4	146.2	9.490	
4,500.0	4,428.7	4,445.1	4,299.0	13.2	16.2	4.31	-229.3	-603.2	206.5	189.0	11.802	
4,600.0	4,527.0	4,530.3	4,364.9	13.5	17.2	4.51	-246.3	-654.6	254.8	236.9	14.204	
4,700.0	4,625.9	4,616.0	4,431.0	13.8	18.3	4.62	-263.4	-706.4	306.3	287.8	16.577	
4,800.0	4,725.2	4,699.9	4,495.7	14.1	19.4	4.68	-280.2	-757.1	360.7	341.7	18.984	
4,900.0	4,824.9	4,781.8	4,558.9	14.4	20.5	4.72	-296.5	-806.6	418.0	398.5	21.423	
5,000.0	4,924.8	4,861.7	4,620.5	14.5	21.6	4.74	-312.5	-854.9	478.2	458.2	23.897	
5,078.0	5,002.8	4,922.5	4,667.4	14.7	22.4	-107.29	-324.6	-891.7	527.0	506.6	25.857	
5,100.0	5,024.8	4,939.5	4,680.5	14.7	22.6	-107.31	-328.0	-901.9	541.0	520.5	26.408	
5,200.0	5,124.8	5,016.6	4,740.0	14.9	23.7	-107.41	-343.4	-948.5	604.6	583.7	28.830	
5,300.0	5,224.8	5,093.8	4,799.5	15.0	24.7	-107.50	-358.8	-995.1	668.3	646.8	31.136	
5,400.0	5,324.8	5,170.9	4,859.0	15.2	25.8	-107.56	-374.2	-1,041.7	731.9	710.0	33.331	
5,500.0	5,424.8	5,248.0	4,918.5	15.4	26.8	-107.62	-389.6	-1,088.4	795.6	773.1	35.423	
5,600.0	5,524.8	5,325.2	4,978.0	15.5	27.9	-107.67	-405.0	-1,135.0	859.2	836.2	37.420	
5,700.0	5,624.8	5,402.3	5,037.5	15.7	29.0	-107.71	-420.4	-1,181.6	922.8	899.4	39.326	
5,800.0	5,724.8	5,479.4	5,097.0	15.9	30.1	-107.75	-435.8	-1,228.2	986.5	962.5	41.146	
5,900.0	5,824.8	5,556.6	5,156.5	16.0	31.1	-107.78	-451.2	-1,274.8	1,050.1	1,025.6	42.886	
6,000.0	5,924.8	5,633.7	5,216.0	16.2	32.2	-107.81	-466.6	-1,321.4	1,113.8	1,088.8	44.550	
6,100.0	6,024.8	5,710.8	5,275.5	16.4	33.3	-107.84	-482.0	-1,368.0	1,177.4	1,151.9	46.143	
6,200.0	6,124.8	5,788.0	5,334.9	16.6	34.4	-107.86	-497.4	-1,414.6	1,241.0	1,215.0	47.669	
6,300.0	6,224.8	5,865.1	5,394.4	16.7	35.5	-107.88	-512.8	-1,461.3	1,304.7	1,278.1	49.131	
6,400.0	6,324.8	5,954.4	5,463.4	16.9	36.7	-107.90	-530.6	-1,515.2	1,368.3	1,341.0	50.252	
6,500.0	6,424.8	6,109.5	5,586.5	17.1	38.5	-107.93	-560.2	-1,604.7	1,429.1	1,400.5	49.916	
6,600.0	6,524.8	6,277.8	5,725.7	17.3	40.3	-107.96	-589.9	-1,694.6	1,485.4	1,455.4	49.471	
6,700.0	6,624.8	6,459.8	5,882.0	17.4	42.1	-107.98	-619.1	-1,782.9	1,536.5	1,505.1	48.964	
6,800.0	6,724.8	6,655.4	6,056.4	17.6	43.7	-108.00	-646.9	-1,867.0	1,581.9	1,549.2	48.448	
6,900.0	6,824.8	6,864.3	6,248.7	17.8	45.2	-108.02	-672.4	-1,944.2	1,620.8	1,587.0	47.978	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #201 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
7,000.0	6,924.8	7,085.4	6,458.3	18.0	46.5	-108.03	-694.5	-2,011.2	1,652.8	1,618.0	47.604	
7,100.0	7,024.8	7,317.1	6,682.9	18.2	47.5	-108.04	-712.2	-2,064.7	1,677.1	1,641.7	47.375	
7,200.0	7,124.8	7,556.8	6,919.3	18.4	48.3	-108.04	-724.4	-2,101.7	1,693.4	1,657.6	47.329	
7,300.0	7,224.8	7,801.5	7,163.2	18.5	48.7	-108.05	-730.5	-2,120.0	1,701.3	1,665.4	47.484	
7,342.1	7,266.9	7,905.2	7,266.9	18.6	48.8	-108.05	-731.1	-2,121.8	1,702.0	1,666.3	47.619	
7,350.0	7,274.8	7,924.6	7,286.3	18.6	48.8	91.01	-731.0	-2,121.8	1,702.0	1,666.3	47.648	
7,351.7	7,276.5	7,883.5	7,245.2	18.6	48.8	90.99	-730.9	-2,121.4	1,701.9	1,666.0	47.403	
7,400.0	7,324.7	7,965.9	7,327.5	18.7	48.8	91.00	-733.8	-2,120.9	1,702.0	1,666.1	47.388	
7,450.0	7,374.3	8,018.4	7,379.5	18.8	48.9	90.99	-740.5	-2,118.5	1,702.0	1,666.0	47.190	
7,500.0	7,423.2	8,070.7	7,430.6	18.9	48.9	90.97	-751.3	-2,114.8	1,702.0	1,665.8	46.989	
7,550.0	7,471.1	8,123.1	7,480.5	19.0	48.9	90.95	-766.0	-2,109.8	1,702.0	1,665.6	46.779	
7,600.0	7,517.8	8,175.4	7,529.0	19.0	49.0	90.92	-784.4	-2,103.4	1,702.0	1,665.4	46.555	
7,650.0	7,562.9	8,227.5	7,575.6	19.1	49.0	90.88	-806.6	-2,095.8	1,702.0	1,665.2	46.308	
7,700.0	7,606.2	8,279.6	7,620.1	19.2	49.0	90.84	-832.2	-2,086.9	1,702.0	1,665.0	46.030	
7,750.0	7,647.4	8,331.6	7,662.1	19.3	49.0	90.79	-861.1	-2,076.9	1,701.9	1,664.7	45.712	
7,800.0	7,686.3	8,383.4	7,701.4	19.4	49.1	90.74	-893.0	-2,065.9	1,701.9	1,664.4	45.345	
7,850.0	7,722.6	8,435.1	7,737.7	19.6	49.1	90.69	-927.8	-2,053.9	1,701.9	1,664.0	44.923	
7,900.0	7,756.1	8,486.7	7,770.8	19.7	49.1	90.63	-965.1	-2,041.0	1,701.9	1,663.6	44.439	
7,950.0	7,786.5	8,538.1	7,800.6	19.9	49.2	90.56	-1,004.7	-2,027.3	1,701.9	1,663.1	43.891	
8,000.0	7,813.8	8,589.3	7,826.7	20.1	49.2	90.49	-1,046.3	-2,013.0	1,701.8	1,662.5	43.277	
8,050.0	7,837.7	8,640.3	7,849.2	20.4	49.3	90.42	-1,089.6	-1,998.0	1,701.8	1,661.9	42.599	
8,100.0	7,858.0	8,691.2	7,867.9	20.7	49.4	90.35	-1,134.3	-1,982.6	1,701.8	1,661.2	41.863	
8,150.0	7,874.8	8,741.9	7,882.7	21.0	49.5	90.28	-1,180.2	-1,966.8	1,701.8	1,660.4	41.076	
8,200.0	7,887.7	8,792.4	7,893.6	21.4	49.5	90.20	-1,226.8	-1,950.7	1,701.8	1,659.5	40.248	
8,250.0	7,896.9	8,842.7	7,900.5	21.8	49.6	90.12	-1,273.9	-1,934.4	1,701.8	1,658.6	39.389	
8,300.0	7,902.1	8,892.9	7,903.4	22.2	49.8	90.04	-1,321.2	-1,918.1	1,701.8	1,657.6	38.511	
8,342.1	7,903.5	8,935.0	7,903.5	22.6	49.9	90.00	-1,361.0	-1,904.3	1,701.8	1,656.7	37.761	
8,400.0	7,903.5	8,992.9	7,903.5	23.3	50.0	90.00	-1,415.7	-1,885.4	1,701.8	1,655.5	36.750	
8,500.0	7,903.5	9,092.9	7,903.5	24.4	50.3	90.00	-1,510.2	-1,852.8	1,701.8	1,653.1	34.998	
8,600.0	7,903.5	9,192.9	7,903.5	25.6	50.7	90.00	-1,604.7	-1,820.2	1,701.8	1,650.6	33.286	
8,700.0	7,903.5	9,292.9	7,903.5	26.9	51.1	90.00	-1,699.3	-1,787.5	1,701.8	1,648.0	31.640	
8,800.0	7,903.5	9,392.9	7,903.5	28.3	51.5	90.00	-1,793.8	-1,754.9	1,701.8	1,645.2	30.077	
8,900.0	7,903.5	9,492.9	7,903.5	29.8	52.1	90.00	-1,888.3	-1,722.3	1,701.8	1,642.3	28.605	
9,000.0	7,903.5	9,592.9	7,903.5	31.3	52.6	90.00	-1,982.8	-1,689.6	1,701.8	1,639.3	27.227	
9,100.0	7,903.5	9,692.9	7,903.5	32.8	53.3	90.00	-2,077.4	-1,657.0	1,701.8	1,636.2	25.941	
9,200.0	7,903.5	9,792.9	7,903.5	34.4	54.0	90.00	-2,171.9	-1,624.4	1,701.8	1,633.0	24.745	
9,300.0	7,903.5	9,892.9	7,903.5	36.1	54.7	90.00	-2,266.4	-1,591.7	1,701.8	1,629.8	23.632	
9,400.0	7,903.5	9,992.9	7,903.5	37.7	55.5	90.00	-2,360.9	-1,559.1	1,701.8	1,626.5	22.598	
9,500.0	7,903.5	10,092.9	7,903.5	39.4	56.4	90.00	-2,455.5	-1,526.5	1,701.8	1,623.1	21.637	
9,600.0	7,903.5	10,192.9	7,903.5	41.1	57.4	90.00	-2,550.0	-1,493.8	1,701.8	1,619.7	20.744	
9,700.0	7,903.5	10,292.9	7,903.5	42.8	58.3	90.00	-2,644.5	-1,461.2	1,701.8	1,616.3	19.912	
9,800.0	7,903.5	10,392.9	7,903.5	44.5	59.4	90.00	-2,739.0	-1,428.5	1,701.8	1,612.8	19.138	
9,900.0	7,903.5	10,492.9	7,903.5	46.3	60.5	90.00	-2,833.6	-1,395.9	1,701.8	1,609.4	18.415	
10,000.0	7,903.5	10,592.9	7,903.5	48.0	61.7	90.00	-2,928.1	-1,363.3	1,701.8	1,605.8	17.740	
10,100.0	7,903.5	10,692.9	7,903.5	49.8	62.9	90.00	-3,022.6	-1,330.6	1,701.8	1,602.3	17.108	
10,200.0	7,903.5	10,792.9	7,903.5	51.6	64.1	90.00	-3,117.1	-1,298.0	1,701.8	1,598.7	16.517	
10,300.0	7,903.5	10,892.9	7,903.5	53.4	65.4	90.00	-3,211.7	-1,265.4	1,701.8	1,595.2	15.962	
10,400.0	7,903.5	10,992.9	7,903.5	55.2	66.8	90.00	-3,306.2	-1,232.7	1,701.8	1,591.6	15.441	
10,500.0	7,903.5	11,092.9	7,903.5	57.0	68.1	90.00	-3,400.7	-1,200.1	1,701.8	1,587.9	14.950	
10,600.0	7,903.5	11,192.9	7,903.5	58.8	69.5	90.00	-3,495.2	-1,167.5	1,701.8	1,584.3	14.488	
10,700.0	7,903.5	11,292.9	7,903.5	60.6	71.0	90.00	-3,589.8	-1,134.8	1,701.8	1,580.7	14.052	
10,800.0	7,903.5	11,392.9	7,903.5	62.4	72.4	90.00	-3,684.3	-1,102.2	1,701.8	1,577.0	13.641	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #201 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD default

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
10,900.0	7,903.5	11,492.9	7,903.5	64.3	73.9	90.00	-3,778.8	-1,069.5	1,701.8	1,573.3	13.251	
11,000.0	7,903.5	11,592.9	7,903.5	66.1	75.5	90.00	-3,873.3	-1,036.9	1,701.8	1,569.7	12.883	
11,100.0	7,903.5	11,692.9	7,903.5	68.0	77.0	90.00	-3,967.9	-1,004.3	1,701.8	1,566.0	12.533	
11,200.0	7,903.5	11,792.9	7,903.5	69.8	78.6	90.00	-4,062.4	-971.6	1,701.8	1,562.3	12.201	
11,300.0	7,903.5	11,892.9	7,903.5	71.7	80.2	90.00	-4,156.9	-939.0	1,701.8	1,558.6	11.886	
11,400.0	7,903.5	11,992.9	7,903.5	73.5	81.8	90.00	-4,251.4	-906.4	1,701.8	1,554.9	11.586	
11,500.0	7,903.5	12,092.9	7,903.5	75.4	83.4	90.00	-4,346.0	-873.7	1,701.8	1,551.2	11.300	
11,600.0	7,903.5	12,192.9	7,903.5	77.2	85.0	90.00	-4,440.5	-841.1	1,701.8	1,547.4	11.027	
11,700.0	7,903.5	12,292.9	7,903.5	79.1	86.7	90.00	-4,535.0	-808.5	1,701.8	1,543.7	10.767	
11,800.0	7,903.5	12,392.9	7,903.5	81.0	88.3	90.00	-4,629.5	-775.8	1,701.8	1,540.0	10.519	
11,900.0	7,903.5	12,492.9	7,903.5	82.8	90.0	90.00	-4,724.1	-743.2	1,701.8	1,536.2	10.281	
12,000.0	7,903.5	12,592.9	7,903.5	84.7	91.7	90.00	-4,818.6	-710.6	1,701.8	1,532.5	10.054	
12,100.0	7,903.5	12,692.9	7,903.5	86.6	93.4	90.00	-4,913.1	-677.9	1,701.8	1,528.7	9.836	
12,200.0	7,903.5	12,792.9	7,903.5	88.4	95.1	90.00	-5,007.6	-645.3	1,701.8	1,525.0	9.628	
12,300.0	7,903.5	12,892.9	7,903.5	90.3	96.8	90.00	-5,102.2	-612.6	1,701.8	1,521.2	9.427	
12,400.0	7,903.5	12,992.9	7,903.5	92.2	98.6	90.00	-5,196.7	-580.0	1,701.8	1,517.5	9.235	
12,500.0	7,903.5	13,092.9	7,903.5	94.1	100.3	90.00	-5,291.2	-547.4	1,701.8	1,513.7	9.050	
12,600.0	7,903.5	13,192.9	7,903.5	96.0	102.0	90.00	-5,385.7	-514.7	1,701.8	1,510.0	8.873	
12,700.0	7,903.5	13,292.9	7,903.5	97.9	103.8	90.00	-5,480.2	-482.1	1,701.8	1,506.2	8.702	
12,800.0	7,903.5	13,392.9	7,903.5	99.7	105.6	90.00	-5,574.8	-449.5	1,701.8	1,502.4	8.537	
12,900.0	7,903.5	13,492.9	7,903.5	101.6	107.3	90.00	-5,669.3	-416.8	1,701.8	1,498.6	8.378	
13,000.0	7,903.5	13,592.9	7,903.5	103.5	109.1	90.00	-5,763.8	-384.2	1,701.8	1,494.9	8.225	
13,100.0	7,903.5	13,692.9	7,903.5	105.4	110.9	90.00	-5,858.3	-351.6	1,701.8	1,491.1	8.079	
13,200.0	7,903.5	13,792.9	7,903.5	107.3	112.7	90.00	-5,952.9	-318.9	1,701.8	1,487.3	7.936	
13,300.0	7,903.5	13,892.9	7,903.5	109.2	114.4	90.00	-6,047.4	-286.3	1,701.8	1,483.5	7.798	
13,400.0	7,903.5	13,992.9	7,903.5	111.1	116.2	90.00	-6,141.9	-253.6	1,701.7	1,479.7	7.665	
13,500.0	7,903.5	14,092.9	7,903.5	113.0	118.0	90.00	-6,236.4	-221.0	1,701.7	1,475.9	7.537	
13,600.0	7,903.5	14,192.9	7,903.5	114.9	119.8	90.00	-6,331.0	-188.4	1,701.7	1,472.2	7.412	
13,700.0	7,903.5	14,292.9	7,903.5	116.8	121.6	90.00	-6,425.5	-155.7	1,701.7	1,468.4	7.292	
13,800.0	7,903.5	14,392.9	7,903.5	118.7	123.5	90.00	-6,520.0	-123.1	1,701.7	1,464.6	7.175	
13,900.0	7,903.5	14,492.9	7,903.5	120.6	125.3	90.00	-6,614.5	-90.5	1,701.7	1,460.8	7.062	
14,000.0	7,903.5	14,592.9	7,903.5	122.5	127.1	90.00	-6,709.1	-57.8	1,701.7	1,457.0	6.953	
14,100.0	7,903.5	14,692.9	7,903.5	124.4	128.9	90.00	-6,803.6	-25.2	1,701.7	1,453.2	6.846	
14,200.0	7,903.5	14,792.9	7,903.5	126.3	130.7	90.00	-6,898.1	7.4	1,701.7	1,449.4	6.743	
14,300.0	7,903.5	14,892.9	7,903.5	128.2	132.6	90.00	-6,992.6	40.1	1,701.7	1,445.6	6.643	
14,400.0	7,903.5	14,992.9	7,903.5	130.1	134.4	90.00	-7,087.2	72.7	1,701.7	1,441.8	6.546	
14,500.0	7,903.5	15,092.9	7,903.5	132.0	136.2	90.00	-7,181.7	105.3	1,701.7	1,438.0	6.452	
14,600.0	7,903.5	15,192.9	7,903.5	133.9	138.1	90.00	-7,276.2	138.0	1,701.7	1,434.2	6.360	
14,700.0	7,903.5	15,292.9	7,903.5	135.8	139.9	90.00	-7,370.7	170.6	1,701.7	1,430.4	6.271	
14,800.0	7,903.5	15,392.9	7,903.5	137.7	141.7	90.00	-7,465.3	203.3	1,701.7	1,426.6	6.184	
14,900.0	7,903.5	15,492.9	7,903.5	139.6	143.6	90.00	-7,559.8	235.9	1,701.7	1,422.8	6.100	
15,000.0	7,903.5	15,592.9	7,903.5	141.5	145.4	90.00	-7,654.3	268.5	1,701.7	1,419.0	6.018	
15,100.0	7,903.5	15,692.9	7,903.5	143.4	147.3	90.00	-7,748.8	301.2	1,701.7	1,415.1	5.938	
15,200.0	7,903.5	15,792.9	7,903.5	145.3	149.1	90.00	-7,843.4	333.8	1,701.7	1,411.3	5.860	
15,300.0	7,903.5	15,892.9	7,903.5	147.2	151.0	90.00	-7,937.9	366.4	1,701.7	1,407.5	5.784	
15,400.0	7,903.5	15,992.9	7,903.5	149.1	152.8	90.00	-8,032.4	399.1	1,701.7	1,403.7	5.710	
15,500.0	7,903.5	16,092.9	7,903.5	151.0	154.7	90.00	-8,126.9	431.7	1,701.7	1,399.9	5.638	
15,600.0	7,903.5	16,192.9	7,903.5	152.9	156.5	90.00	-8,221.5	464.3	1,701.7	1,396.1	5.568	
15,700.0	7,903.5	16,292.9	7,903.5	154.8	158.4	90.00	-8,316.0	497.0	1,701.7	1,392.3	5.499	
15,800.0	7,903.5	16,392.9	7,903.5	156.7	160.3	90.00	-8,410.5	529.6	1,701.7	1,388.5	5.432	
15,900.0	7,903.5	16,492.9	7,903.5	158.6	162.1	90.00	-8,505.0	562.3	1,701.7	1,384.6	5.367	
16,000.0	7,903.5	16,592.9	7,903.5	160.5	164.0	90.00	-8,599.6	594.9	1,701.7	1,380.8	5.303	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #201 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
16,100.0	7,903.5	16,692.9	7,903.5	162.4	165.8	90.00	-8,694.1	627.5	1,701.7	1,377.0	5.241	
16,200.0	7,903.5	16,792.9	7,903.5	164.3	167.7	90.00	-8,788.6	650.2	1,701.7	1,373.2	5.180	
16,300.0	7,903.5	16,892.9	7,903.5	166.3	169.6	90.00	-8,883.1	692.8	1,701.7	1,369.4	5.120	
16,400.0	7,903.5	16,992.9	7,903.5	168.2	171.4	90.00	-8,977.7	725.4	1,701.7	1,365.6	5.062	
16,500.0	7,903.5	17,092.9	7,903.5	170.1	173.3	90.00	-9,072.2	758.1	1,701.7	1,361.7	5.005	
16,600.0	7,903.5	17,192.9	7,903.5	172.0	175.2	90.00	-9,166.7	790.7	1,701.7	1,357.9	4.950	
16,700.0	7,903.5	17,292.9	7,903.5	173.9	177.1	90.00	-9,261.2	823.3	1,701.7	1,354.1	4.895	
16,800.0	7,903.5	17,392.9	7,903.5	175.8	178.9	90.00	-9,355.8	856.0	1,701.7	1,350.3	4.842	
16,900.0	7,903.5	17,492.9	7,903.5	177.7	180.8	90.00	-9,450.3	888.6	1,701.7	1,346.5	4.790	
17,000.0	7,903.5	17,592.9	7,903.5	179.6	182.7	90.00	-9,544.8	921.2	1,701.7	1,342.6	4.739	
17,100.0	7,903.5	17,692.9	7,903.5	181.5	184.6	90.00	-9,639.3	953.9	1,701.7	1,338.8	4.689	
17,200.0	7,903.5	17,792.9	7,903.5	183.4	186.4	90.00	-9,733.9	986.5	1,701.7	1,335.0	4.640	
17,300.0	7,903.5	17,892.9	7,903.5	185.4	188.3	90.00	-9,828.4	1,019.2	1,701.7	1,331.2	4.592	
17,400.0	7,903.5	17,992.9	7,903.5	187.3	190.2	90.00	-9,922.9	1,051.8	1,701.7	1,327.4	4.545	
17,500.0	7,903.5	18,092.9	7,903.5	189.2	192.1	90.00	-10,017.4	1,084.4	1,701.7	1,323.5	4.500	
17,600.0	7,903.5	18,192.9	7,903.5	191.1	193.9	90.00	-10,112.0	1,117.1	1,701.7	1,319.7	4.454	
17,700.0	7,903.5	18,292.9	7,903.5	193.0	195.8	90.00	-10,206.5	1,149.7	1,701.7	1,315.9	4.410	
17,800.0	7,903.5	18,392.9	7,903.5	194.9	197.7	90.00	-10,301.0	1,182.3	1,701.7	1,312.1	4.367	
17,900.0	7,903.5	18,492.9	7,903.5	196.8	199.6	90.00	-10,395.5	1,215.0	1,701.7	1,308.2	4.325	
18,000.0	7,903.5	18,592.9	7,903.5	198.7	201.5	90.00	-10,490.1	1,247.6	1,701.7	1,304.4	4.283	
18,100.0	7,903.5	18,692.9	7,903.5	200.6	203.4	90.00	-10,584.6	1,280.2	1,701.7	1,300.6	4.242	
18,200.0	7,903.5	18,792.9	7,903.5	202.6	205.2	90.00	-10,679.1	1,312.9	1,701.7	1,296.8	4.202	
18,300.0	7,903.5	18,892.9	7,903.5	204.5	207.1	90.00	-10,773.6	1,345.5	1,701.7	1,292.9	4.163	
18,400.0	7,903.5	18,992.9	7,903.5	206.4	209.0	90.00	-10,868.1	1,378.1	1,701.7	1,289.1	4.124	
18,500.0	7,903.5	19,092.9	7,903.5	208.3	210.9	90.00	-10,962.7	1,410.8	1,701.7	1,285.3	4.086	
18,600.0	7,903.5	19,192.9	7,903.5	210.2	212.8	90.00	-11,057.2	1,443.4	1,701.7	1,281.4	4.049	
18,700.0	7,903.5	19,292.9	7,903.5	212.1	214.7	90.00	-11,151.7	1,476.1	1,701.7	1,277.6	4.012	
18,800.0	7,903.5	19,392.9	7,903.5	214.0	216.6	90.00	-11,246.2	1,508.7	1,701.7	1,273.8	3.977	
18,900.0	7,903.5	19,492.9	7,903.5	216.0	218.5	90.00	-11,340.8	1,541.3	1,701.7	1,270.0	3.941	
19,000.0	7,903.5	19,592.9	7,903.5	217.9	220.4	90.00	-11,435.3	1,574.0	1,701.7	1,266.1	3.907	
19,100.0	7,903.5	19,692.9	7,903.5	219.8	222.2	90.00	-11,529.8	1,606.6	1,701.7	1,262.3	3.873	
19,200.0	7,903.5	19,792.9	7,903.5	221.7	224.1	90.00	-11,624.3	1,639.2	1,701.7	1,258.5	3.839	
19,300.0	7,903.5	19,892.9	7,903.5	223.6	226.0	90.00	-11,718.9	1,671.9	1,701.7	1,254.6	3.806	
19,400.0	7,903.5	19,992.9	7,903.5	225.5	227.9	90.00	-11,813.4	1,704.5	1,701.7	1,250.8	3.774	
19,500.0	7,903.5	20,092.9	7,903.5	227.4	229.8	90.00	-11,907.9	1,737.1	1,701.7	1,247.0	3.742	
19,600.0	7,903.5	20,192.9	7,903.5	229.4	231.7	90.00	-12,002.4	1,769.8	1,701.7	1,243.2	3.711	
19,700.0	7,903.5	20,292.9	7,903.5	231.3	233.6	90.00	-12,097.0	1,802.4	1,701.7	1,239.3	3.680	
19,800.0	7,903.5	20,392.9	7,903.5	233.2	235.5	90.00	-12,191.5	1,835.1	1,701.7	1,235.5	3.650	
19,900.0	7,903.5	20,492.9	7,903.5	235.1	237.4	90.00	-12,286.0	1,867.7	1,701.7	1,231.7	3.620	
20,000.0	7,903.5	20,592.9	7,903.5	237.0	239.3	90.00	-12,380.5	1,900.3	1,701.7	1,227.8	3.591	
20,100.0	7,903.5	20,692.9	7,903.5	238.9	241.2	90.00	-12,475.1	1,933.0	1,701.7	1,224.0	3.562	
20,200.0	7,903.5	20,792.9	7,903.5	240.8	243.1	90.00	-12,569.6	1,965.6	1,701.7	1,220.2	3.534	
20,300.0	7,903.5	20,892.9	7,903.5	242.8	245.0	90.00	-12,664.1	1,998.2	1,701.7	1,216.3	3.506	
20,400.0	7,903.5	20,992.9	7,903.5	244.7	246.9	90.00	-12,758.6	2,030.9	1,701.7	1,212.5	3.479	
20,500.0	7,903.5	21,092.9	7,903.5	246.6	248.8	90.00	-12,853.2	2,063.5	1,701.7	1,208.7	3.451	
20,600.0	7,903.5	21,192.9	7,903.5	248.5	250.7	90.00	-12,947.7	2,096.1	1,701.7	1,204.8	3.425	
20,700.0	7,903.5	21,292.9	7,903.5	250.4	252.6	90.00	-13,042.2	2,128.8	1,701.7	1,201.0	3.399	
20,800.0	7,903.5	21,392.9	7,903.5	252.3	254.5	90.00	-13,136.7	2,161.4	1,701.7	1,197.2	3.373	
20,900.0	7,903.5	21,492.9	7,903.5	254.3	256.4	90.00	-13,231.3	2,194.0	1,701.7	1,193.3	3.347	
21,000.0	7,903.5	21,592.9	7,903.5	256.2	258.3	90.00	-13,325.8	2,226.7	1,701.7	1,189.5	3.322	
21,100.0	7,903.5	21,692.9	7,903.5	258.1	260.2	90.00	-13,420.3	2,259.3	1,701.7	1,185.7	3.298	
21,200.0	7,903.5	21,792.9	7,903.5	260.0	262.1	90.00	-13,514.8	2,292.0	1,701.7	1,181.9	3.273	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #201 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD default

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
21,300.0	7,903.5	21,892.9	7,903.5	261.9	264.0	90.00	-13,609.4	2,324.6	1,701.7	1,178.0	3.249	
21,400.0	7,903.5	21,992.9	7,903.5	263.8	265.9	90.00	-13,703.9	2,357.2	1,701.7	1,174.2	3.226	
21,500.0	7,903.5	22,092.9	7,903.5	265.8	267.8	90.00	-13,798.4	2,389.9	1,701.7	1,170.4	3.203	
21,600.0	7,903.5	22,192.9	7,903.5	267.7	269.7	90.00	-13,892.9	2,422.5	1,701.7	1,166.5	3.180	
21,700.0	7,903.5	22,292.9	7,903.5	269.6	271.6	90.00	-13,987.5	2,455.1	1,701.7	1,162.7	3.157	
21,800.0	7,903.5	22,392.9	7,903.5	271.5	273.5	90.00	-14,082.0	2,487.8	1,701.7	1,158.9	3.135	
21,900.0	7,903.5	22,492.9	7,903.5	273.4	275.4	90.00	-14,176.5	2,520.4	1,701.7	1,155.0	3.113	
22,000.0	7,903.5	22,592.9	7,903.5	275.3	277.3	90.00	-14,271.0	2,553.0	1,701.7	1,151.2	3.091	
22,002.5	7,903.5	22,595.3	7,903.5	275.4	277.3	90.00	-14,273.4	2,553.8	1,701.7	1,151.1	3.091	
22,100.0	7,903.5	22,595.3	7,903.5	277.3	277.3	90.00	-14,273.4	2,553.8	1,704.5	1,150.6	3.077	
22,200.0	7,903.5	22,595.3	7,903.5	279.2	277.3	90.00	-14,273.4	2,553.8	1,713.1	1,157.7	3.084	
22,300.0	7,903.5	22,595.3	7,903.5	281.1	277.3	90.00	-14,273.4	2,553.8	1,727.5	1,172.4	3.112	
22,400.0	7,903.5	22,595.3	7,903.5	283.0	277.3	90.00	-14,273.4	2,553.8	1,747.5	1,194.5	3.160	
22,500.0	7,903.5	22,595.3	7,903.5	284.9	277.3	90.00	-14,273.4	2,553.8	1,773.0	1,223.6	3.227	
22,600.0	7,903.5	22,595.3	7,903.5	286.8	277.3	90.00	-14,273.4	2,553.8	1,803.6	1,259.3	3.314	
22,700.0	7,903.5	22,595.3	7,903.5	288.8	277.3	90.00	-14,273.4	2,553.8	1,839.1	1,301.0	3.417	
22,800.0	7,903.5	22,595.3	7,903.5	290.7	277.3	90.00	-14,273.4	2,553.8	1,879.3	1,348.3	3.539	
22,901.3	7,903.5	22,595.3	7,903.5	292.6	277.3	90.00	-14,273.4	2,553.8	1,924.5	1,401.6	3.681	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #202 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	180.00	-15.0	0.0	15.0			
100.0	100.0	100.0	100.0	0.1	0.1	180.00	-15.0	0.0	15.0	14.8	91.419	
200.0	200.0	200.0	200.0	0.3	0.3	180.00	-15.0	0.0	15.0	14.4	24.445	
300.0	300.0	300.0	300.0	0.5	0.5	180.00	-15.0	0.0	15.0	13.9	14.109	
400.0	400.0	400.0	400.0	0.8	0.8	180.00	-15.0	0.0	15.0	13.5	9.916	
500.0	500.0	500.0	500.0	1.0	1.0	180.00	-15.0	0.0	15.0	13.0	7.644	
600.0	600.0	600.0	600.0	1.2	1.2	180.00	-15.0	0.0	15.0	12.6	6.220	
700.0	700.0	700.0	700.0	1.4	1.4	180.00	-15.0	0.0	15.0	12.1	5.242	
800.0	800.0	800.0	800.0	1.7	1.7	180.00	-15.0	0.0	15.0	11.7	4.531	
900.0	900.0	900.0	900.0	1.9	1.9	180.00	-15.0	0.0	15.0	11.2	3.989	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	180.00	-15.0	0.0	15.0	10.8	3.563	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	180.00	-15.0	0.0	15.0	10.3	3.219	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	180.00	-15.0	0.0	15.0	9.9	2.936	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	180.00	-15.0	0.0	15.0	9.4	2.699	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	180.00	-15.0	0.0	15.0	9.0	2.497	
1,500.0	1,500.0	1,500.0	1,500.0	3.2	3.2	180.00	-15.0	0.0	15.0	8.5	2.323	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	180.00	-15.0	0.0	15.0	8.1	2.172	
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	180.00	-15.0	0.0	15.0	7.6	2.039	
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	180.00	-15.0	0.0	15.0	7.2	1.922	
1,900.0	1,900.0	1,900.0	1,900.0	4.1	4.1	180.00	-15.0	0.0	15.0	6.7	1.817	
2,000.0	2,000.0	2,000.0	2,000.0	4.4	4.4	180.00	-15.0	0.0	15.0	6.3	1.723	
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	180.00	-15.0	0.0	15.0	5.8	1.638	
2,200.0	2,200.0	2,200.0	2,200.0	4.8	4.8	180.00	-15.0	0.0	15.0	5.4	1.562	
2,300.0	2,300.0	2,300.0	2,300.0	5.0	5.0	180.00	-15.0	0.0	15.0	4.9	1.492	Level 3
2,400.0	2,400.0	2,400.0	2,400.0	5.3	5.3	180.00	-15.0	0.0	15.0	4.5	1.428	Level 3
2,500.0	2,500.0	2,500.0	2,500.0	5.5	5.5	180.00	-15.0	0.0	15.0	4.0	1.370	Level 3
2,600.0	2,600.0	2,599.8	2,599.8	5.7	5.7	-67.85	-15.6	-1.6	14.9	3.5	1.312	Level 3
2,700.0	2,699.8	2,699.7	2,699.5	5.9	5.9	-67.51	-17.3	-6.6	14.7	2.9	1.248	Level 2
2,800.0	2,799.5	2,799.5	2,798.9	6.1	6.1	-66.91	-20.1	-14.8	14.2	2.1	1.171	Level 2
2,900.0	2,898.7	2,899.3	2,898.0	6.3	6.3	-66.01	-24.1	-26.3	13.6	1.1	1.085	Level 2
3,000.0	2,997.5	2,999.1	2,996.6	6.5	6.5	-64.74	-29.1	-41.0	12.8	-0.1	0.989	Level 1
3,100.0	3,095.6	3,099.0	3,094.6	6.8	6.8	-62.95	-35.3	-59.0	11.9	-1.5	0.885	Level 1
3,200.0	3,193.1	3,198.8	3,191.9	7.1	7.1	-60.46	-42.6	-80.2	10.8	-3.1	0.776	Level 1
3,300.0	3,289.6	3,298.6	3,288.3	7.4	7.4	-56.92	-51.0	-104.6	9.6	-4.9	0.665	Level 1
3,400.0	3,385.3	3,398.4	3,383.8	7.8	7.8	-51.70	-60.5	-132.1	8.3	-6.7	0.555	Level 1
3,499.8	3,479.7	3,498.1	3,478.0	8.2	8.2	-43.69	-71.1	-162.7	7.0	-8.4	0.454	Level 1
3,600.0	3,573.8	3,598.2	3,571.9	8.7	8.7	-28.15	-82.4	-195.6	6.4	-9.1	0.412	Level 1
3,652.7	3,623.3	3,650.9	3,621.3	9.0	9.0	-18.92	-88.4	-213.0	6.3	-9.1	0.408	Level 1, CC, ES, SF
3,700.0	3,667.8	3,698.2	3,665.6	9.2	9.2	-10.63	-93.8	-228.5	6.4	-9.1	0.412	Level 1
3,800.0	3,761.7	3,798.2	3,759.3	9.7	9.8	5.50	-105.1	-261.5	6.9	-8.9	0.437	Level 1
3,900.0	3,855.7	3,898.1	3,853.0	10.3	10.3	18.40	-116.5	-294.4	7.9	-8.8	0.473	Level 1
4,000.0	3,949.7	3,998.1	3,946.8	10.9	10.9	28.04	-127.8	-327.3	9.2	-8.7	0.513	Level 1
4,078.2	4,023.1	4,076.3	4,020.0	11.4	11.4	33.76	-136.7	-353.0	10.4	-8.6	0.546	Level 1
4,100.0	4,043.7	4,098.1	4,040.5	11.5	11.5	34.88	-139.2	-360.2	10.8	-8.5	0.559	Level 1
4,200.0	4,138.5	4,198.0	4,134.2	11.9	12.2	33.78	-150.5	-393.1	14.4	-5.5	0.725	Level 1
4,300.0	4,234.3	4,297.8	4,227.7	12.4	12.8	27.95	-161.8	-426.0	21.0	1.1	1.054	Level 2
4,400.0	4,331.1	4,397.3	4,320.9	12.8	13.5	22.26	-173.1	-458.7	31.0	11.0	1.548	
4,500.0	4,428.7	4,496.3	4,413.8	13.2	14.1	17.89	-184.4	-491.3	44.4	24.2	2.197	
4,600.0	4,527.0	4,594.8	4,506.1	13.5	14.8	14.71	-195.6	-523.8	61.2	40.7	2.989	
4,700.0	4,625.9	4,692.7	4,597.9	13.8	15.4	12.40	-206.7	-556.0	81.5	60.7	3.912	
4,800.0	4,725.2	4,789.8	4,688.9	14.1	16.1	10.67	-217.7	-588.0	105.3	84.0	4.955	
4,900.0	4,824.9	4,886.0	4,779.0	14.4	16.7	9.36	-228.6	-619.7	132.4	110.7	6.112	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #202 - Wellbore #1 - Design #1

Survey Program: 0-MWD default

Offset Site Error: 0.0 usft

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
5,000.0	4,924.8	4,981.2	4,868.3	14.5	17.4	8.34	-239.4	-651.0	162.9	140.8	7.373	
5,078.0	5,002.8	5,054.7	4,937.2	14.7	17.9	-104.35	-247.7	-675.2	189.0	166.6	8.428	
5,100.0	5,024.8	5,075.3	4,956.5	14.7	18.0	-104.53	-250.1	-682.0	196.6	174.1	8.731	
5,200.0	5,124.8	5,169.0	5,044.4	14.9	18.7	-105.21	-260.7	-712.9	231.4	208.4	10.073	
5,300.0	5,224.8	5,262.8	5,132.2	15.0	19.3	-105.70	-271.4	-743.7	266.1	242.7	11.359	
5,400.0	5,324.8	5,356.5	5,220.1	15.2	20.0	-106.09	-282.0	-774.6	300.9	277.0	12.593	
5,500.0	5,424.8	5,450.2	5,308.0	15.4	20.6	-106.39	-292.6	-805.5	335.7	311.4	13.777	
5,600.0	5,524.8	5,544.0	5,395.8	15.5	21.3	-106.64	-303.3	-836.3	370.5	345.7	14.914	
5,700.0	5,624.8	5,637.7	5,483.7	15.7	21.9	-106.84	-313.9	-867.2	405.3	380.0	16.007	
5,800.0	5,724.8	5,731.5	5,571.6	15.9	22.6	-107.02	-324.6	-898.0	440.1	414.3	17.057	
5,900.0	5,824.8	5,825.2	5,659.4	16.0	23.3	-107.16	-335.2	-928.9	474.9	448.7	18.068	
6,000.0	5,924.8	5,918.9	5,747.3	16.2	23.9	-107.29	-345.8	-959.8	509.8	483.0	19.040	
6,100.0	6,024.8	6,012.7	5,835.2	16.4	24.6	-107.40	-356.5	-990.6	544.6	517.3	19.977	
6,200.0	6,124.8	6,106.4	5,923.0	16.6	25.3	-107.50	-367.1	-1,021.5	579.4	551.6	20.880	
6,300.0	6,224.8	6,200.1	6,010.9	16.7	25.9	-107.58	-377.8	-1,052.4	614.2	586.0	21.750	
6,400.0	6,324.8	6,293.9	6,098.8	16.9	26.6	-107.66	-388.4	-1,083.2	649.0	620.3	22.590	
6,500.0	6,424.8	6,387.6	6,186.7	17.1	27.3	-107.73	-399.0	-1,114.1	683.9	654.6	23.400	
6,600.0	6,524.8	6,483.3	6,276.3	17.3	28.0	-107.79	-409.9	-1,145.6	718.7	688.9	24.166	
6,700.0	6,624.8	6,610.5	6,396.6	17.4	28.6	-107.86	-423.4	-1,184.7	751.2	720.6	24.622	
6,800.0	6,724.8	6,741.4	6,522.2	17.6	29.3	-107.92	-435.4	-1,219.6	779.3	748.1	24.964	
6,900.0	6,824.8	6,875.6	6,652.6	17.8	29.8	-107.97	-445.8	-1,249.7	803.1	771.2	25.203	
7,000.0	6,924.8	7,012.7	6,787.1	18.0	30.3	-108.00	-454.3	-1,274.4	822.2	789.7	25.351	
7,100.0	7,024.8	7,152.0	6,924.9	18.2	30.7	-108.02	-460.8	-1,293.3	836.5	803.6	25.418	
7,200.0	7,124.8	7,292.9	7,065.2	18.4	31.0	-108.04	-465.2	-1,305.9	846.0	812.7	25.408	
7,300.0	7,224.8	7,434.8	7,207.0	18.5	31.2	-108.05	-467.3	-1,312.1	850.6	817.0	25.328	
7,342.1	7,266.9	7,494.7	7,266.9	18.6	31.2	-108.05	-467.5	-1,312.7	851.0	817.4	25.273	
7,350.0	7,274.8	7,502.8	7,275.0	18.6	31.3	91.00	-467.5	-1,312.6	851.0	817.3	25.252	
7,400.0	7,324.7	7,554.0	7,326.1	18.7	31.3	91.00	-470.1	-1,311.8	851.0	817.2	25.128	
7,450.0	7,374.3	7,605.2	7,376.8	18.8	31.3	90.99	-476.5	-1,309.5	851.0	817.0	25.003	
7,500.0	7,423.2	7,656.4	7,426.8	18.9	31.4	90.97	-486.8	-1,306.0	851.0	816.8	24.876	
7,550.0	7,471.1	7,707.5	7,475.7	19.0	31.4	90.95	-500.8	-1,301.2	851.0	816.6	24.744	
7,600.0	7,517.8	7,758.6	7,523.3	19.0	31.5	90.92	-518.4	-1,295.1	851.0	816.4	24.604	
7,650.0	7,562.9	7,809.7	7,569.1	19.1	31.5	90.88	-539.6	-1,287.8	851.0	816.2	24.452	
7,700.0	7,606.2	7,860.7	7,613.0	19.2	31.6	90.84	-564.2	-1,279.3	851.0	815.9	24.282	
7,750.0	7,647.4	7,911.7	7,654.7	19.3	31.7	90.80	-592.0	-1,269.7	851.0	815.7	24.090	
7,800.0	7,686.3	7,962.6	7,693.8	19.4	31.7	90.75	-622.8	-1,259.0	851.0	815.3	23.872	
7,850.0	7,722.6	8,013.4	7,730.1	19.6	31.8	90.69	-656.4	-1,247.4	851.0	814.9	23.622	
7,900.0	7,756.1	8,064.2	7,763.4	19.7	31.9	90.63	-692.6	-1,234.9	851.0	814.5	23.339	
7,950.0	7,786.5	8,114.9	7,793.5	19.9	32.0	90.57	-731.1	-1,221.6	850.9	814.0	23.020	
8,000.0	7,813.8	8,165.5	7,820.3	20.1	32.1	90.50	-771.7	-1,207.6	850.9	813.4	22.666	
8,050.0	7,837.7	8,216.1	7,843.5	20.4	32.2	90.43	-814.2	-1,193.0	850.9	812.7	22.278	
8,100.0	7,858.0	8,266.5	7,863.1	20.7	32.3	90.36	-858.1	-1,177.8	850.9	812.0	21.859	
8,150.0	7,874.8	8,316.9	7,878.8	21.0	32.5	90.29	-903.3	-1,162.2	850.9	811.2	21.413	
8,200.0	7,887.7	8,367.2	7,890.8	21.4	32.7	90.21	-949.5	-1,146.3	850.9	810.3	20.947	
8,250.0	7,896.9	8,417.4	7,898.8	21.8	32.9	90.13	-996.3	-1,130.1	850.9	809.3	20.466	
8,300.0	7,902.1	8,467.5	7,902.9	22.2	33.2	90.05	-1,043.5	-1,113.8	850.9	808.3	19.976	
8,334.4	7,903.5	8,501.8	7,903.5	22.6	33.3	90.00	-1,076.0	-1,102.6	850.9	807.6	19.638	
8,342.1	7,903.5	8,509.6	7,903.5	22.6	33.4	90.00	-1,083.3	-1,100.1	850.9	807.4	19.562	
8,400.0	7,903.5	8,567.5	7,903.5	23.3	33.7	90.00	-1,138.0	-1,081.2	850.9	806.1	18.994	
8,500.0	7,903.5	8,667.5	7,903.5	24.4	34.3	90.00	-1,232.5	-1,048.5	850.9	803.7	18.029	
8,600.0	7,903.5	8,767.5	7,903.5	25.6	35.1	90.00	-1,327.0	-1,015.9	850.9	801.1	17.096	
8,700.0	7,903.5	8,867.5	7,903.5	26.9	35.9	90.00	-1,421.6	-983.3	850.9	798.4	16.206	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #202 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD default

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
8,800.0	7,903.5	8,967.5	7,903.5	28.3	36.8	90.00	-1,516.1	-950.6	850.9	795.5	15.367	
8,900.0	7,903.5	9,067.5	7,903.5	29.8	37.8	90.00	-1,610.6	-918.0	850.9	792.6	14.583	
9,000.0	7,903.5	9,167.5	7,903.5	31.3	38.9	90.00	-1,705.1	-885.3	850.9	789.5	13.853	
9,100.0	7,903.5	9,267.5	7,903.5	32.8	40.1	90.00	-1,799.7	-852.7	850.9	786.3	13.177	
9,200.0	7,903.5	9,367.5	7,903.5	34.4	41.3	90.00	-1,894.2	-820.1	850.9	783.1	12.549	
9,300.0	7,903.5	9,467.5	7,903.5	36.1	42.6	90.00	-1,988.7	-787.4	850.9	779.8	11.969	
9,400.0	7,903.5	9,567.5	7,903.5	37.7	44.0	90.00	-2,083.2	-754.8	850.9	776.5	11.432	
9,500.0	7,903.5	9,667.5	7,903.5	39.4	45.3	90.00	-2,177.8	-722.2	850.9	773.1	10.934	
9,600.0	7,903.5	9,767.5	7,903.5	41.1	46.8	90.00	-2,272.3	-689.5	850.9	769.7	10.473	
9,700.0	7,903.5	9,867.5	7,903.5	42.8	48.2	90.00	-2,366.8	-656.9	850.9	766.2	10.045	
9,800.0	7,903.5	9,967.5	7,903.5	44.5	49.8	90.00	-2,461.3	-624.3	850.9	762.7	9.647	
9,900.0	7,903.5	10,067.5	7,903.5	46.3	51.3	90.00	-2,555.9	-591.6	850.9	759.2	9.276	
10,000.0	7,903.5	10,167.5	7,903.5	48.0	52.9	90.00	-2,650.4	-559.0	850.9	755.6	8.931	
10,100.0	7,903.5	10,267.5	7,903.5	49.8	54.4	90.00	-2,744.9	-526.4	850.9	752.1	8.608	
10,200.0	7,903.5	10,367.5	7,903.5	51.6	56.1	90.00	-2,839.4	-493.7	850.9	748.5	8.307	
10,300.0	7,903.5	10,467.5	7,903.5	53.4	57.7	90.00	-2,934.0	-461.1	850.9	744.9	8.024	
10,400.0	7,903.5	10,567.5	7,903.5	55.2	59.4	90.00	-3,028.5	-428.5	850.9	741.2	7.759	
10,500.0	7,903.5	10,667.5	7,903.5	57.0	61.0	90.00	-3,123.0	-395.8	850.9	737.6	7.510	
10,600.0	7,903.5	10,767.5	7,903.5	58.8	62.7	90.00	-3,217.5	-363.2	850.9	733.9	7.276	
10,700.0	7,903.5	10,867.5	7,903.5	60.6	64.4	90.00	-3,312.1	-330.5	850.9	730.3	7.055	
10,800.0	7,903.5	10,967.5	7,903.5	62.4	66.1	90.00	-3,406.6	-297.9	850.9	726.6	6.846	
10,900.0	7,903.5	11,067.5	7,903.5	64.3	67.9	90.00	-3,501.1	-265.3	850.9	722.9	6.649	
11,000.0	7,903.5	11,167.5	7,903.5	66.1	69.6	90.00	-3,595.6	-232.6	850.9	719.2	6.462	
11,100.0	7,903.5	11,267.5	7,903.5	68.0	71.3	90.00	-3,690.2	-200.0	850.9	715.6	6.288	
11,200.0	7,903.5	11,367.5	7,903.5	69.8	73.1	90.00	-3,784.7	-167.4	850.9	711.8	6.119	
11,300.0	7,903.5	11,467.5	7,903.5	71.7	74.9	90.00	-3,879.2	-134.7	850.9	708.1	5.959	
11,400.0	7,903.5	11,567.5	7,903.5	73.5	76.6	90.00	-3,973.7	-102.1	850.9	704.4	5.808	
11,500.0	7,903.5	11,667.5	7,903.5	75.4	78.4	90.00	-4,068.3	-69.5	850.9	700.7	5.664	
11,600.0	7,903.5	11,767.5	7,903.5	77.2	80.2	90.00	-4,162.8	-36.8	850.9	696.9	5.526	
11,700.0	7,903.5	11,867.5	7,903.5	79.1	82.0	90.00	-4,257.3	-4.2	850.9	693.2	5.395	
11,800.0	7,903.5	11,967.5	7,903.5	81.0	83.8	90.00	-4,351.8	28.4	850.9	689.4	5.270	
11,900.0	7,903.5	12,067.5	7,903.5	82.8	85.6	90.00	-4,446.4	61.1	850.9	685.7	5.151	
12,000.0	7,903.5	12,167.5	7,903.5	84.7	87.4	90.00	-4,540.9	93.7	850.9	681.9	5.036	
12,100.0	7,903.5	12,267.5	7,903.5	86.6	89.2	90.00	-4,635.4	126.3	850.9	678.2	4.927	
12,200.0	7,903.5	12,367.5	7,903.5	88.4	91.0	90.00	-4,729.9	159.0	850.9	674.4	4.822	
12,300.0	7,903.5	12,467.5	7,903.5	90.3	92.9	90.00	-4,824.5	191.6	850.9	670.7	4.721	
12,400.0	7,903.5	12,567.5	7,903.5	92.2	94.7	90.00	-4,919.0	224.3	850.9	666.9	4.624	
12,500.0	7,903.5	12,667.5	7,903.5	94.1	96.5	90.00	-5,013.5	256.9	850.9	663.1	4.532	
12,600.0	7,903.5	12,767.5	7,903.5	96.0	98.3	90.00	-5,108.0	289.5	850.9	659.4	4.442	
12,700.0	7,903.5	12,867.5	7,903.5	97.9	100.2	90.00	-5,202.6	322.2	850.9	655.6	4.356	
12,800.0	7,903.5	12,967.5	7,903.5	99.7	102.0	90.00	-5,297.1	354.8	850.9	651.8	4.274	
12,900.0	7,903.5	13,067.5	7,903.5	101.6	103.9	90.00	-5,391.6	387.4	850.9	648.0	4.194	
13,000.0	7,903.5	13,167.5	7,903.5	103.5	105.7	90.00	-5,486.1	420.1	850.9	644.2	4.117	
13,100.0	7,903.5	13,267.5	7,903.5	105.4	107.6	90.00	-5,580.7	452.7	850.9	640.5	4.043	
13,200.0	7,903.5	13,367.5	7,903.5	107.3	109.4	90.00	-5,675.2	485.3	850.9	636.7	3.972	
13,300.0	7,903.5	13,467.5	7,903.5	109.2	111.3	90.00	-5,769.7	518.0	850.9	632.9	3.903	
13,400.0	7,903.5	13,567.5	7,903.5	111.1	113.1	90.00	-5,864.2	550.6	850.9	629.1	3.836	
13,500.0	7,903.5	13,667.5	7,903.5	113.0	115.0	90.00	-5,958.8	583.2	850.9	625.3	3.772	
13,600.0	7,903.5	13,767.5	7,903.5	114.9	116.9	90.00	-6,053.3	615.9	850.9	621.5	3.709	
13,700.0	7,903.5	13,867.5	7,903.5	116.8	118.7	90.00	-6,147.8	648.5	850.9	617.7	3.649	
13,800.0	7,903.5	13,967.5	7,903.5	118.7	120.6	90.00	-6,242.3	681.2	850.9	613.9	3.590	
13,900.0	7,903.5	14,067.5	7,903.5	120.6	122.4	90.00	-6,336.9	713.8	850.9	610.1	3.534	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #202 - Wellbore #1 - Design #1

Survey Program: 0-MWD default

Offset Site Error: 0.0 usft

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
14,000.0	7,903.5	14,167.5	7,903.5	122.5	124.3	90.00	-6,431.4	746.4	850.9	606.3	3.479	
14,100.0	7,903.5	14,267.5	7,903.5	124.4	126.2	90.00	-6,525.9	779.1	850.9	602.5	3.426	
14,200.0	7,903.5	14,367.5	7,903.5	126.3	128.1	90.00	-6,620.4	811.7	850.9	598.7	3.374	
14,300.0	7,903.5	14,467.5	7,903.5	128.2	129.9	90.00	-6,715.0	844.3	850.9	594.9	3.324	
14,400.0	7,903.5	14,567.5	7,903.5	130.1	131.8	90.00	-6,809.5	877.0	850.9	591.1	3.275	
14,500.0	7,903.5	14,667.5	7,903.5	132.0	133.7	90.00	-6,904.0	909.6	850.9	587.3	3.228	
14,600.0	7,903.5	14,767.5	7,903.5	133.9	135.6	90.00	-6,998.5	942.2	850.9	583.5	3.182	
14,700.0	7,903.5	14,867.5	7,903.5	135.8	137.4	90.00	-7,093.1	974.9	850.9	579.7	3.137	
14,800.0	7,903.5	14,967.5	7,903.5	137.7	139.3	90.00	-7,187.6	1,007.5	850.9	575.9	3.094	
14,900.0	7,903.5	15,067.5	7,903.5	139.6	141.2	90.00	-7,282.1	1,040.1	850.9	572.1	3.051	
15,000.0	7,903.5	15,167.5	7,903.5	141.5	143.1	90.00	-7,376.6	1,072.8	850.9	568.2	3.010	
15,100.0	7,903.5	15,267.5	7,903.5	143.4	145.0	90.00	-7,471.2	1,105.4	850.9	564.4	2.970	
15,200.0	7,903.5	15,367.5	7,903.5	145.3	146.8	90.00	-7,565.7	1,138.0	850.9	560.6	2.931	
15,300.0	7,903.5	15,467.5	7,903.5	147.2	148.7	90.00	-7,660.2	1,170.7	850.9	556.8	2.893	
15,400.0	7,903.5	15,567.5	7,903.5	149.1	150.6	90.00	-7,754.7	1,203.3	850.9	553.0	2.856	
15,500.0	7,903.5	15,667.5	7,903.5	151.0	152.5	90.00	-7,849.3	1,236.0	850.9	549.2	2.820	
15,600.0	7,903.5	15,767.5	7,903.5	152.9	154.4	90.00	-7,943.8	1,268.6	850.9	545.4	2.785	
15,700.0	7,903.5	15,867.5	7,903.5	154.8	156.3	90.00	-8,038.3	1,301.2	850.9	541.5	2.751	
15,800.0	7,903.5	15,967.5	7,903.5	156.7	158.2	90.00	-8,132.8	1,333.9	850.9	537.7	2.717	
15,900.0	7,903.5	16,067.5	7,903.5	158.6	160.1	90.00	-8,227.4	1,366.5	850.9	533.9	2.684	
16,000.0	7,903.5	16,167.5	7,903.5	160.5	161.9	90.00	-8,321.9	1,399.1	850.9	530.1	2.652	
16,100.0	7,903.5	16,267.5	7,903.5	162.4	163.8	90.00	-8,416.4	1,431.8	850.9	526.3	2.621	
16,200.0	7,903.5	16,367.5	7,903.5	164.3	165.7	90.00	-8,510.9	1,464.4	850.9	522.5	2.591	
16,300.0	7,903.5	16,467.5	7,903.5	166.3	167.6	90.00	-8,605.5	1,497.0	850.9	518.6	2.561	
16,400.0	7,903.5	16,567.5	7,903.5	168.2	169.5	90.00	-8,700.0	1,529.7	850.9	514.8	2.532	
16,500.0	7,903.5	16,667.5	7,903.5	170.1	171.4	90.00	-8,794.5	1,562.3	850.9	511.0	2.503	
16,600.0	7,903.5	16,767.5	7,903.5	172.0	173.3	90.00	-8,889.0	1,594.9	850.9	507.2	2.475	
16,700.0	7,903.5	16,867.5	7,903.5	173.9	175.2	90.00	-8,983.6	1,627.6	850.9	503.3	2.448	
16,800.0	7,903.5	16,967.5	7,903.5	175.8	177.1	90.00	-9,078.1	1,660.2	850.9	499.5	2.422	
16,900.0	7,903.5	17,067.5	7,903.5	177.7	179.0	90.00	-9,172.6	1,692.9	850.9	495.7	2.396	
17,000.0	7,903.5	17,167.5	7,903.5	179.6	180.9	90.00	-9,267.1	1,725.5	850.9	491.9	2.370	
17,100.0	7,903.5	17,267.5	7,903.5	181.5	182.8	90.00	-9,361.6	1,758.1	850.9	488.1	2.345	
17,200.0	7,903.5	17,367.5	7,903.5	183.4	184.7	90.00	-9,456.2	1,790.8	850.9	484.2	2.321	
17,300.0	7,903.5	17,467.5	7,903.5	185.4	186.6	90.00	-9,550.7	1,823.4	850.9	480.4	2.297	
17,400.0	7,903.5	17,567.5	7,903.5	187.3	188.5	90.00	-9,645.2	1,856.0	850.9	476.6	2.273	
17,500.0	7,903.5	17,667.5	7,903.5	189.2	190.4	90.00	-9,739.7	1,888.7	850.9	472.8	2.250	
17,600.0	7,903.5	17,767.5	7,903.5	191.1	192.3	90.00	-9,834.3	1,921.3	850.9	468.9	2.228	
17,700.0	7,903.5	17,867.5	7,903.5	193.0	194.2	90.00	-9,928.8	1,953.9	850.9	465.1	2.206	
17,800.0	7,903.5	17,967.5	7,903.5	194.9	196.1	90.00	-10,023.3	1,986.6	850.9	461.3	2.184	
17,900.0	7,903.5	18,067.5	7,903.5	196.8	198.0	90.00	-10,117.8	2,019.2	850.9	457.5	2.163	
18,000.0	7,903.5	18,167.5	7,903.5	198.7	199.9	90.00	-10,212.4	2,051.8	850.9	453.6	2.142	
18,100.0	7,903.5	18,267.5	7,903.5	200.6	201.8	90.00	-10,306.9	2,084.5	850.9	449.8	2.121	
18,200.0	7,903.5	18,367.5	7,903.5	202.6	203.7	90.00	-10,401.4	2,117.1	850.9	446.0	2.101	
18,300.0	7,903.5	18,467.5	7,903.5	204.5	205.6	90.00	-10,495.9	2,149.7	850.9	442.1	2.082	
18,400.0	7,903.5	18,567.5	7,903.5	206.4	207.5	90.00	-10,590.5	2,182.4	850.9	438.3	2.062	
18,500.0	7,903.5	18,667.5	7,903.5	208.3	209.4	90.00	-10,685.0	2,215.0	850.9	434.5	2.043	
18,600.0	7,903.5	18,767.5	7,903.5	210.2	211.3	90.00	-10,779.5	2,247.7	850.9	430.7	2.025	
18,700.0	7,903.5	18,867.5	7,903.5	212.1	213.2	90.00	-10,874.0	2,280.3	850.9	426.8	2.007	
18,800.0	7,903.5	18,967.5	7,903.5	214.0	215.1	90.00	-10,968.6	2,312.9	850.9	423.0	1.989	
18,900.0	7,903.5	19,067.5	7,903.5	216.0	217.0	90.00	-11,063.1	2,345.6	850.9	419.2	1.971	
19,000.0	7,903.5	19,167.5	7,903.5	217.9	218.9	90.00	-11,157.6	2,378.2	850.9	415.3	1.954	
19,100.0	7,903.5	19,267.5	7,903.5	219.8	220.8	90.00	-11,252.1	2,410.8	850.9	411.5	1.937	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #202 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
19,200.0	7,903.5	19,367.5	7,903.5	221.7	222.7	90.00	-11,346.7	2,443.5	850.9	407.7	1.920	
19,300.0	7,903.5	19,467.5	7,903.5	223.6	224.6	90.00	-11,441.2	2,476.1	850.9	403.9	1.903	
19,400.0	7,903.5	19,567.5	7,903.5	225.5	226.5	90.00	-11,535.7	2,508.7	850.9	400.0	1.887	
19,500.0	7,903.5	19,667.5	7,903.5	227.4	228.4	90.00	-11,630.2	2,541.4	850.9	396.2	1.871	
19,600.0	7,903.5	19,767.5	7,903.5	229.4	230.3	90.00	-11,724.8	2,574.0	850.9	392.4	1.856	
19,700.0	7,903.5	19,867.5	7,903.5	231.3	232.3	90.00	-11,819.3	2,606.6	850.9	388.5	1.840	
19,800.0	7,903.5	19,967.5	7,903.5	233.2	234.2	90.00	-11,913.8	2,639.3	850.9	384.7	1.825	
19,900.0	7,903.5	20,067.5	7,903.5	235.1	236.1	90.00	-12,008.3	2,671.9	850.9	380.9	1.810	
20,000.0	7,903.5	20,167.5	7,903.5	237.0	238.0	90.00	-12,102.9	2,704.5	850.9	377.0	1.796	
20,100.0	7,903.5	20,267.5	7,903.5	238.9	239.9	90.00	-12,197.4	2,737.2	850.9	373.2	1.781	
20,200.0	7,903.5	20,367.5	7,903.5	240.8	241.8	90.00	-12,291.9	2,769.8	850.9	369.4	1.767	
20,300.0	7,903.5	20,467.5	7,903.5	242.8	243.7	90.00	-12,386.4	2,802.5	850.9	365.5	1.753	
20,400.0	7,903.5	20,567.5	7,903.5	244.7	245.6	90.00	-12,481.0	2,835.1	850.9	361.7	1.739	
20,500.0	7,903.5	20,667.5	7,903.5	246.6	247.5	90.00	-12,575.5	2,867.7	850.9	357.9	1.726	
20,600.0	7,903.5	20,767.5	7,903.5	248.5	249.4	90.00	-12,670.0	2,900.4	850.9	354.0	1.713	
20,700.0	7,903.5	20,867.5	7,903.5	250.4	251.3	90.00	-12,764.5	2,933.0	850.9	350.2	1.699	
20,800.0	7,903.5	20,967.5	7,903.5	252.3	253.2	90.00	-12,859.1	2,965.6	850.9	346.4	1.687	
20,900.0	7,903.5	21,067.5	7,903.5	254.3	255.1	90.00	-12,953.6	2,998.3	850.9	342.5	1.674	
21,000.0	7,903.5	21,167.5	7,903.5	256.2	257.1	90.00	-13,048.1	3,030.9	850.9	338.7	1.661	
21,100.0	7,903.5	21,267.5	7,903.5	258.1	259.0	90.00	-13,142.6	3,063.5	850.9	334.9	1.649	
21,200.0	7,903.5	21,367.5	7,903.5	260.0	260.9	90.00	-13,237.2	3,096.2	850.9	331.0	1.637	
21,300.0	7,903.5	21,467.5	7,903.5	261.9	262.8	90.00	-13,331.7	3,128.8	850.9	327.2	1.625	
21,400.0	7,903.5	21,567.5	7,903.5	263.8	264.7	90.00	-13,426.2	3,161.4	850.9	323.4	1.613	
21,500.0	7,903.5	21,667.5	7,903.5	265.8	266.6	90.00	-13,520.7	3,194.1	850.9	319.5	1.601	
21,600.0	7,903.5	21,767.5	7,903.5	267.7	268.5	90.00	-13,615.3	3,226.7	850.9	315.7	1.590	
21,700.0	7,903.5	21,867.5	7,903.5	269.6	270.4	90.00	-13,709.8	3,259.4	850.9	311.9	1.579	
21,800.0	7,903.5	21,967.5	7,903.5	271.5	272.3	90.00	-13,804.3	3,292.0	850.9	308.0	1.567	
21,900.0	7,903.5	22,067.5	7,903.5	273.4	274.3	90.00	-13,898.8	3,324.6	850.9	304.2	1.556	
21,900.0	7,903.5	22,067.5	7,903.5	273.4	274.3	90.00	-13,898.8	3,324.6	850.9	304.2	1.556	
22,000.0	7,903.5	22,136.9	7,903.5	275.3	275.6	90.00	-13,964.5	3,347.3	851.5	300.8	1.546	
22,100.0	7,903.5	22,136.9	7,903.5	277.3	275.6	90.00	-13,964.5	3,347.3	860.9	310.8	1.565	
22,200.0	7,903.5	22,136.9	7,903.5	279.2	275.6	90.00	-13,964.5	3,347.3	881.6	339.2	1.625	
22,300.0	7,903.5	22,136.9	7,903.5	281.1	275.6	90.00	-13,964.5	3,347.3	912.9	383.9	1.726	
22,400.0	7,903.5	22,136.9	7,903.5	283.0	275.6	90.00	-13,964.5	3,347.3	953.6	442.3	1.865	
22,500.0	7,903.5	22,136.9	7,903.5	284.9	275.6	90.00	-13,964.5	3,347.3	1,002.8	511.7	2.042	
22,600.0	7,903.5	22,136.9	7,903.5	286.8	275.6	90.00	-13,964.5	3,347.3	1,059.1	589.5	2.255	
22,700.0	7,903.5	22,136.9	7,903.5	288.8	275.6	90.00	-13,964.5	3,347.3	1,121.5	673.6	2.504	
22,800.0	7,903.5	22,136.9	7,903.5	290.7	275.6	90.00	-13,964.5	3,347.3	1,189.1	762.4	2.787	
22,901.3	7,903.5	22,136.9	7,903.5	292.6	275.6	90.00	-13,964.5	3,347.3	1,261.9	855.9	3.108	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #204 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	0.00	15.0	0.0	15.0			
100.0	100.0	100.0	100.0	0.1	0.1	0.00	15.0	0.0	15.0	14.8	91.419	
200.0	200.0	200.0	200.0	0.3	0.3	0.00	15.0	0.0	15.0	14.4	24.445	
300.0	300.0	300.0	300.0	0.5	0.5	0.00	15.0	0.0	15.0	13.9	14.109	
400.0	400.0	400.0	400.0	0.8	0.8	0.00	15.0	0.0	15.0	13.5	9.916	
500.0	500.0	500.0	500.0	1.0	1.0	0.00	15.0	0.0	15.0	13.0	7.644	
600.0	600.0	600.0	600.0	1.2	1.2	0.00	15.0	0.0	15.0	12.6	6.220	
700.0	700.0	700.0	700.0	1.4	1.4	0.00	15.0	0.0	15.0	12.1	5.242	
800.0	800.0	800.0	800.0	1.7	1.7	0.00	15.0	0.0	15.0	11.7	4.531	
900.0	900.0	900.0	900.0	1.9	1.9	0.00	15.0	0.0	15.0	11.2	3.989	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	0.00	15.0	0.0	15.0	10.8	3.563	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	0.00	15.0	0.0	15.0	10.3	3.219	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	0.00	15.0	0.0	15.0	9.9	2.936	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	0.00	15.0	0.0	15.0	9.4	2.699	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	0.00	15.0	0.0	15.0	9.0	2.497	
1,500.0	1,500.0	1,500.0	1,500.0	3.2	3.2	0.00	15.0	0.0	15.0	8.5	2.323	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	0.00	15.0	0.0	15.0	8.1	2.172	
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	0.00	15.0	0.0	15.0	7.6	2.039	
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	0.00	15.0	0.0	15.0	7.2	1.922	
1,900.0	1,900.0	1,900.0	1,900.0	4.1	4.1	0.00	15.0	0.0	15.0	6.7	1.817	
2,000.0	2,000.0	2,000.0	2,000.0	4.4	4.4	0.00	15.0	0.0	15.0	6.3	1.723	
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	0.00	15.0	0.0	15.0	5.8	1.638	
2,200.0	2,200.0	2,200.0	2,200.0	4.8	4.8	0.00	15.0	0.0	15.0	5.4	1.562	
2,300.0	2,300.0	2,300.0	2,300.0	5.0	5.0	0.00	15.0	0.0	15.0	4.9	1.492	Level 3
2,400.0	2,400.0	2,400.0	2,400.0	5.3	5.3	0.00	15.0	0.0	15.0	4.5	1.428	Level 3
2,500.0	2,500.0	2,500.0	2,500.0	5.5	5.5	0.00	15.0	0.0	15.0	4.0	1.370	Level 3, CC, ES, SF
2,600.0	2,600.0	2,599.8	2,599.8	5.7	5.7	123.85	15.3	1.7	16.3	4.9	1.430	Level 3
2,700.0	2,699.8	2,698.9	2,698.7	5.9	5.9	147.40	16.0	6.8	22.9	11.2	1.950	
2,800.0	2,799.5	2,796.6	2,796.0	6.1	6.1	163.93	17.2	15.2	37.8	25.7	3.124	
2,900.0	2,898.7	2,892.2	2,891.0	6.3	6.3	172.56	18.9	26.5	60.5	48.1	4.866	
3,000.0	2,997.5	2,985.2	2,982.9	6.5	6.5	177.17	20.9	40.6	90.3	77.5	7.075	
3,100.0	3,095.6	3,075.0	3,071.1	6.8	6.8	179.86	23.3	56.9	126.5	113.4	9.684	
3,200.0	3,193.1	3,161.1	3,155.3	7.1	7.0	-178.45	26.0	75.1	168.8	155.5	12.644	
3,300.0	3,289.6	3,243.3	3,235.0	7.4	7.3	-177.30	28.9	94.9	217.0	203.3	15.918	
3,400.0	3,385.3	3,327.8	3,316.6	7.8	7.6	-176.47	32.1	116.5	269.5	255.5	19.254	
3,499.8	3,479.7	3,410.8	3,396.8	8.2	7.9	-175.91	35.2	137.8	324.9	310.6	22.602	
3,600.0	3,573.8	3,493.1	3,476.3	8.7	8.2	-175.60	38.3	158.8	382.0	367.2	25.876	
3,700.0	3,667.8	3,575.3	3,555.7	9.2	8.5	-175.37	41.4	179.9	439.0	423.8	28.960	
3,800.0	3,761.7	3,657.5	3,635.1	9.7	8.9	-175.19	44.5	200.9	496.0	480.4	31.873	
3,900.0	3,855.7	3,751.5	3,726.0	10.3	9.2	-175.05	47.9	224.3	552.4	536.3	34.377	
4,000.0	3,949.7	3,856.9	3,828.8	10.9	9.5	-174.98	51.3	247.3	606.1	589.4	36.404	
4,078.2	4,023.1	3,942.7	3,913.1	11.4	9.8	-174.98	53.6	263.2	645.9	628.8	37.751	
4,100.0	4,043.7	3,967.2	3,937.3	11.5	9.9	-175.01	54.2	267.3	656.5	639.3	38.089	
4,200.0	4,138.5	4,083.9	4,052.8	11.9	10.2	-175.14	56.6	283.9	701.4	683.6	39.355	
4,300.0	4,234.3	4,207.0	4,175.2	12.4	10.5	-175.29	58.5	296.3	739.4	721.0	40.176	
4,400.0	4,331.1	4,335.6	4,303.6	12.8	10.8	-175.45	59.6	303.8	770.0	751.1	40.604	
4,500.0	4,428.7	4,460.7	4,428.7	13.2	11.0	-175.63	59.8	305.7	793.1	773.6	40.725	
4,600.0	4,527.0	4,559.0	4,527.0	13.5	11.2	-175.75	59.8	305.7	811.4	791.4	40.748	
4,700.0	4,625.9	4,657.9	4,625.9	13.8	11.4	-175.85	59.8	305.7	826.2	805.8	40.595	
4,800.0	4,725.2	4,757.3	4,725.2	14.1	11.6	-175.93	59.8	305.7	837.6	816.8	40.294	
4,900.0	4,824.9	4,856.9	4,824.9	14.4	11.7	-175.98	59.8	305.7	845.5	824.3	39.853	
5,000.0	4,924.8	4,956.8	4,924.8	14.5	11.9	-176.00	59.8	305.7	850.0	828.3	39.282	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #204 - Wellbore #1 - Design #1

Survey Program: 0-MWD default

Offset Site Error: 0.0 usft

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
5,078.0	5,002.8	5,034.8	5,002.8	14.7	12.1	71.95	59.8	305.7	851.0	829.1	38.763	
5,100.0	5,024.8	5,056.8	5,024.8	14.7	12.1	71.95	59.8	305.7	851.0	829.0	38.604	
5,200.0	5,124.8	5,156.8	5,124.8	14.9	12.3	71.95	59.8	305.7	851.0	828.6	37.876	
5,300.0	5,224.8	5,256.8	5,224.8	15.0	12.5	71.95	59.8	305.7	851.0	828.1	37.174	
5,400.0	5,324.8	5,356.8	5,324.8	15.2	12.7	71.95	59.8	305.7	851.0	827.7	36.496	
5,500.0	5,424.8	5,456.8	5,424.8	15.4	12.9	71.95	59.8	305.7	851.0	827.3	35.840	
5,600.0	5,524.8	5,556.8	5,524.8	15.5	13.1	71.95	59.8	305.7	851.0	826.9	35.207	
5,700.0	5,624.8	5,656.8	5,624.8	15.7	13.3	71.95	59.8	305.7	851.0	826.4	34.595	
5,800.0	5,724.8	5,756.8	5,724.8	15.9	13.5	71.95	59.8	305.7	851.0	826.0	34.002	
5,900.0	5,824.8	5,856.8	5,824.8	16.0	13.7	71.95	59.8	305.7	851.0	825.6	33.428	
6,000.0	5,924.8	5,956.8	5,924.8	16.2	14.0	71.95	59.8	305.7	851.0	825.1	32.873	
6,100.0	6,024.8	6,056.8	6,024.8	16.4	14.2	71.95	59.8	305.7	851.0	824.7	32.335	
6,200.0	6,124.8	6,156.8	6,124.8	16.6	14.4	71.95	59.8	305.7	851.0	824.3	31.814	
6,300.0	6,224.8	6,256.8	6,224.8	16.7	14.6	71.95	59.8	305.7	851.0	823.9	31.308	
6,400.0	6,324.8	6,356.8	6,324.8	16.9	14.8	71.95	59.8	305.7	851.0	823.4	30.818	
6,500.0	6,424.8	6,456.8	6,424.8	17.1	15.0	71.95	59.8	305.7	851.0	823.0	30.342	
6,600.0	6,524.8	6,556.8	6,524.8	17.3	15.2	71.95	59.8	305.7	851.0	822.6	29.880	
6,700.0	6,624.8	6,656.8	6,624.8	17.4	15.4	71.95	59.8	305.7	851.0	822.1	29.431	
6,800.0	6,724.8	6,756.8	6,724.8	17.6	15.6	71.95	59.8	305.7	851.0	821.7	28.996	
6,900.0	6,824.8	6,856.8	6,824.8	17.8	15.8	71.95	59.8	305.7	851.0	821.3	28.572	
7,000.0	6,924.8	6,956.8	6,924.8	18.0	16.0	71.95	59.8	305.7	851.0	820.8	28.161	
7,100.0	7,024.8	7,056.8	7,024.8	18.2	16.2	71.95	59.8	305.7	851.0	820.4	27.760	
7,200.0	7,124.8	7,156.8	7,124.8	18.4	16.4	71.95	59.8	305.7	851.0	819.9	27.371	
7,300.0	7,224.8	7,256.8	7,224.8	18.5	16.7	71.95	59.8	305.7	851.0	819.5	26.992	
7,342.1	7,266.9	7,298.9	7,266.9	18.6	16.7	71.95	59.8	305.7	851.0	819.3	26.835	
7,350.0	7,274.8	7,306.6	7,274.6	18.6	16.8	-89.00	59.8	305.7	851.0	819.3	26.810	
7,400.0	7,324.7	7,355.5	7,323.4	18.7	16.8	-89.00	57.5	306.5	851.0	819.1	26.661	
7,450.0	7,374.3	7,404.4	7,371.9	18.8	16.9	-89.01	51.6	308.5	851.0	818.9	26.509	
7,500.0	7,423.2	7,453.3	7,419.7	18.9	17.0	-89.03	42.2	311.7	851.0	818.7	26.354	
7,550.0	7,471.1	7,502.2	7,466.7	19.0	17.1	-89.05	29.4	316.2	851.0	818.5	26.193	
7,600.0	7,517.8	7,551.1	7,512.5	19.0	17.2	-89.08	13.2	321.7	851.0	818.3	26.021	
7,650.0	7,562.9	7,600.0	7,556.9	19.1	17.3	-89.11	-6.2	328.5	851.0	818.1	25.834	
7,700.0	7,606.2	7,649.1	7,599.6	19.2	17.5	-89.15	-28.9	336.3	851.0	817.8	25.626	
7,750.0	7,647.4	7,698.1	7,640.4	19.3	17.6	-89.19	-54.6	345.2	851.0	817.5	25.393	
7,800.0	7,686.3	7,747.2	7,679.0	19.4	17.8	-89.24	-83.3	355.1	851.0	817.1	25.129	
7,850.0	7,722.6	7,796.4	7,715.2	19.6	18.0	-89.30	-114.7	365.9	851.0	816.7	24.830	
7,900.0	7,756.1	7,845.6	7,748.8	19.7	18.2	-89.35	-148.7	377.7	851.0	816.2	24.494	
7,950.0	7,786.5	7,894.9	7,779.5	19.9	18.4	-89.41	-185.1	390.2	851.0	815.7	24.120	
8,000.0	7,813.8	7,944.2	7,807.2	20.1	18.7	-89.48	-223.7	403.6	850.9	815.0	23.707	
8,050.0	7,837.7	7,993.7	7,831.7	20.4	19.0	-89.55	-264.3	417.6	850.9	814.3	23.259	
8,100.0	7,858.0	8,043.2	7,852.8	20.7	19.4	-89.62	-306.6	432.2	850.9	813.6	22.779	
8,150.0	7,874.8	8,092.8	7,870.4	21.0	19.8	-89.69	-350.4	447.3	850.9	812.7	22.273	
8,200.0	7,887.7	8,142.4	7,884.4	21.4	20.3	-89.77	-395.5	462.9	850.9	811.8	21.746	
8,250.0	7,896.9	8,192.2	7,894.6	21.8	20.7	-89.84	-441.5	478.7	850.9	810.8	21.207	
8,300.0	7,902.1	8,242.0	7,901.0	22.2	21.3	-89.92	-488.2	494.9	850.9	809.7	20.662	
8,342.1	7,903.5	8,284.1	7,903.3	22.6	21.7	-89.99	-527.9	508.6	850.9	808.8	20.203	
8,400.0	7,903.5	8,342.0	7,903.5	23.3	22.4	-90.00	-582.6	527.5	850.9	807.4	19.574	
8,500.0	7,903.5	8,442.0	7,903.5	24.4	23.6	-90.00	-677.1	560.1	850.9	805.0	18.517	
8,600.0	7,903.5	8,542.0	7,903.5	25.6	24.9	-90.00	-771.7	592.7	850.9	802.3	17.504	
8,700.0	7,903.5	8,642.0	7,903.5	26.9	26.3	-90.00	-866.2	625.4	850.9	799.5	16.548	
8,800.0	7,903.5	8,742.0	7,903.5	28.3	27.7	-90.00	-960.7	658.0	850.9	796.5	15.654	
8,900.0	7,903.5	8,842.0	7,903.5	29.8	29.2	-90.00	-1,055.2	690.6	850.9	793.5	14.824	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #204 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
9,000.0	7,903.5	8,942.0	7,903.5	31.3	30.8	-90.00	-1,149.8	723.3	850.9	790.4	14.056	
9,100.0	7,903.5	9,042.0	7,903.5	32.8	32.4	-90.00	-1,244.3	755.9	850.9	787.2	13.348	
9,200.0	7,903.5	9,142.0	7,903.5	34.4	34.0	-90.00	-1,338.8	788.5	850.9	783.9	12.695	
9,300.0	7,903.5	9,242.0	7,903.5	36.1	35.6	-90.00	-1,433.3	821.2	850.9	780.5	12.093	
9,400.0	7,903.5	9,342.0	7,903.5	37.7	37.3	-90.00	-1,527.9	853.8	850.9	777.2	11.538	
9,500.0	7,903.5	9,442.0	7,903.5	39.4	39.0	-90.00	-1,622.4	886.5	850.9	773.7	11.026	
9,600.0	7,903.5	9,542.0	7,903.5	41.1	40.7	-90.00	-1,716.9	919.1	850.9	770.3	10.552	
9,700.0	7,903.5	9,642.0	7,903.5	42.8	42.5	-90.00	-1,811.4	951.7	850.9	766.8	10.113	
9,800.0	7,903.5	9,742.0	7,903.5	44.5	44.2	-90.00	-1,906.0	984.4	850.9	763.2	9.706	
9,900.0	7,903.5	9,842.0	7,903.5	46.3	46.0	-90.00	-2,000.5	1,017.0	850.9	759.7	9.328	
10,000.0	7,903.5	9,942.0	7,903.5	48.0	47.8	-90.00	-2,095.0	1,049.6	850.9	756.1	8.976	
10,100.0	7,903.5	10,042.0	7,903.5	49.8	49.6	-90.00	-2,189.5	1,082.3	850.9	752.5	8.648	
10,200.0	7,903.5	10,142.0	7,903.5	51.6	51.4	-90.00	-2,284.1	1,114.9	850.9	748.9	8.342	
10,300.0	7,903.5	10,242.0	7,903.5	53.4	53.2	-90.00	-2,378.6	1,147.5	850.9	745.3	8.055	
10,400.0	7,903.5	10,342.0	7,903.5	55.2	55.0	-90.00	-2,473.1	1,180.2	850.9	741.6	7.787	
10,500.0	7,903.5	10,442.0	7,903.5	57.0	56.8	-90.00	-2,567.6	1,212.8	850.9	738.0	7.535	
10,600.0	7,903.5	10,542.0	7,903.5	58.8	58.6	-90.00	-2,662.2	1,245.4	850.9	734.3	7.297	
10,700.0	7,903.5	10,642.0	7,903.5	60.6	60.5	-90.00	-2,756.7	1,278.1	850.9	730.6	7.074	
10,800.0	7,903.5	10,742.0	7,903.5	62.4	62.3	-90.00	-2,851.2	1,310.7	850.9	726.9	6.864	
10,900.0	7,903.5	10,842.0	7,903.5	64.3	64.1	-90.00	-2,945.7	1,343.3	850.9	723.2	6.665	
11,000.0	7,903.5	10,942.0	7,903.5	66.1	66.0	-90.00	-3,040.3	1,376.0	850.9	719.5	6.477	
11,100.0	7,903.5	11,042.0	7,903.5	68.0	67.8	-90.00	-3,134.8	1,408.6	850.9	715.8	6.299	
11,200.0	7,903.5	11,142.0	7,903.5	69.8	69.7	-90.00	-3,229.3	1,441.3	850.9	712.1	6.130	
11,300.0	7,903.5	11,242.0	7,903.5	71.7	71.6	-90.00	-3,323.8	1,473.9	850.9	708.4	5.969	
11,400.0	7,903.5	11,342.0	7,903.5	73.5	73.4	-90.00	-3,418.4	1,506.5	850.9	704.6	5.817	
11,500.0	7,903.5	11,442.0	7,903.5	75.4	75.3	-90.00	-3,512.9	1,539.2	850.9	700.9	5.672	
11,600.0	7,903.5	11,542.0	7,903.5	77.2	77.2	-90.00	-3,607.4	1,571.8	850.9	697.1	5.534	
11,700.0	7,903.5	11,642.0	7,903.5	79.1	79.0	-90.00	-3,701.9	1,604.4	850.9	693.4	5.402	
11,800.0	7,903.5	11,742.0	7,903.5	81.0	80.9	-90.00	-3,796.5	1,637.1	850.9	689.6	5.276	
11,900.0	7,903.5	11,842.0	7,903.5	82.8	82.8	-90.00	-3,891.0	1,669.7	850.9	685.9	5.156	
12,000.0	7,903.5	11,942.0	7,903.5	84.7	84.7	-90.00	-3,985.5	1,702.3	850.9	682.1	5.041	
12,100.0	7,903.5	12,042.0	7,903.5	86.6	86.5	-90.00	-4,080.0	1,735.0	850.9	678.3	4.931	
12,200.0	7,903.5	12,142.0	7,903.5	88.4	88.4	-90.00	-4,174.6	1,767.6	850.9	674.6	4.826	
12,300.0	7,903.5	12,242.0	7,903.5	90.3	90.3	-90.00	-4,269.1	1,800.2	850.9	670.8	4.725	
12,400.0	7,903.5	12,342.0	7,903.5	92.2	92.2	-90.00	-4,363.6	1,832.9	850.9	667.0	4.628	
12,500.0	7,903.5	12,442.0	7,903.5	94.1	94.1	-90.00	-4,458.1	1,865.5	850.9	663.3	4.535	
12,600.0	7,903.5	12,542.0	7,903.5	96.0	96.0	-90.00	-4,552.7	1,898.1	850.9	659.5	4.445	
12,700.0	7,903.5	12,642.0	7,903.5	97.9	97.8	-90.00	-4,647.2	1,930.8	850.9	655.7	4.359	
12,800.0	7,903.5	12,742.0	7,903.5	99.7	99.7	-90.00	-4,741.7	1,963.4	850.9	651.9	4.276	
12,900.0	7,903.5	12,842.0	7,903.5	101.6	101.6	-90.00	-4,836.2	1,996.0	850.9	648.1	4.196	
13,000.0	7,903.5	12,942.0	7,903.5	103.5	103.5	-90.00	-4,930.7	2,028.7	850.9	644.3	4.119	
13,100.0	7,903.5	13,042.0	7,903.5	105.4	105.4	-90.00	-5,025.3	2,061.3	850.9	640.5	4.045	
13,200.0	7,903.5	13,142.0	7,903.5	107.3	107.3	-90.00	-5,119.8	2,094.0	850.9	636.7	3.973	
13,300.0	7,903.5	13,242.0	7,903.5	109.2	109.2	-90.00	-5,214.3	2,126.6	850.9	632.9	3.904	
13,400.0	7,903.5	13,342.0	7,903.5	111.1	111.1	-90.00	-5,308.8	2,159.2	850.9	629.1	3.837	
13,500.0	7,903.5	13,442.0	7,903.5	113.0	113.0	-90.00	-5,403.4	2,191.9	850.9	625.4	3.773	
13,600.0	7,903.5	13,542.0	7,903.5	114.9	114.9	-90.00	-5,497.9	2,224.5	850.9	621.6	3.710	
13,700.0	7,903.5	13,642.0	7,903.5	116.8	116.8	-90.00	-5,592.4	2,257.1	850.9	617.8	3.650	
13,800.0	7,903.5	13,742.0	7,903.5	118.7	118.7	-90.00	-5,686.9	2,289.8	850.9	613.9	3.591	
13,900.0	7,903.5	13,842.0	7,903.5	120.6	120.6	-90.00	-5,781.5	2,322.4	850.9	610.1	3.534	
14,000.0	7,903.5	13,942.0	7,903.5	122.5	122.5	-90.00	-5,876.0	2,355.0	850.9	606.3	3.479	
14,100.0	7,903.5	14,042.0	7,903.5	124.4	124.4	-90.00	-5,970.5	2,387.7	850.9	602.5	3.426	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #204 - Wellbore #1 - Design #1

Survey Program: 0-MWD default

Offset Site Error: 0.0 usft

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
14,200.0	7,903.5	14,142.0	7,903.5	126.3	126.3	-90.00	-6,065.0	2,420.3	850.9	598.7	3.374	
14,300.0	7,903.5	14,242.0	7,903.5	128.2	128.2	-90.00	-6,159.6	2,452.9	850.9	594.9	3.324	
14,400.0	7,903.5	14,342.0	7,903.5	130.1	130.1	-90.00	-6,254.1	2,485.6	850.9	591.1	3.275	
14,500.0	7,903.5	14,442.0	7,903.5	132.0	132.0	-90.00	-6,348.6	2,518.2	850.9	587.3	3.228	
14,600.0	7,903.5	14,542.0	7,903.5	133.9	133.9	-90.00	-6,443.1	2,550.8	850.9	583.5	3.182	
14,700.0	7,903.5	14,642.0	7,903.5	135.8	135.8	-90.00	-6,537.7	2,583.5	850.9	579.7	3.137	
14,800.0	7,903.5	14,742.0	7,903.5	137.7	137.7	-90.00	-6,632.2	2,616.1	850.9	575.9	3.094	
14,900.0	7,903.5	14,842.0	7,903.5	139.6	139.6	-90.00	-6,726.7	2,648.8	850.9	572.0	3.052	
15,000.0	7,903.5	14,942.0	7,903.5	141.5	141.5	-90.00	-6,821.2	2,681.4	850.9	568.2	3.010	
15,100.0	7,903.5	15,042.0	7,903.5	143.4	143.4	-90.00	-6,915.8	2,714.0	850.9	564.4	2.970	
15,200.0	7,903.5	15,142.0	7,903.5	145.3	145.3	-90.00	-7,010.3	2,746.7	850.9	560.6	2.931	
15,300.0	7,903.5	15,242.0	7,903.5	147.2	147.2	-90.00	-7,104.8	2,779.3	850.9	556.8	2.893	
15,400.0	7,903.5	15,342.0	7,903.5	149.1	149.2	-90.00	-7,199.3	2,811.9	850.9	553.0	2.856	
15,500.0	7,903.5	15,442.0	7,903.5	151.0	151.1	-90.00	-7,293.9	2,844.6	850.9	549.1	2.820	
15,600.0	7,903.5	15,542.0	7,903.5	152.9	153.0	-90.00	-7,388.4	2,877.2	850.9	545.3	2.785	
15,700.0	7,903.5	15,642.0	7,903.5	154.8	154.9	-90.00	-7,482.9	2,909.8	850.9	541.5	2.750	
15,800.0	7,903.5	15,742.0	7,903.5	156.7	156.8	-90.00	-7,577.4	2,942.5	850.9	537.7	2.717	
15,900.0	7,903.5	15,842.0	7,903.5	158.6	158.7	-90.00	-7,672.0	2,975.1	850.9	533.9	2.684	
16,000.0	7,903.5	15,942.0	7,903.5	160.5	160.6	-90.00	-7,766.5	3,007.7	850.9	530.0	2.652	
16,100.0	7,903.5	16,042.0	7,903.5	162.4	162.5	-90.00	-7,861.0	3,040.4	850.9	526.2	2.621	
16,200.0	7,903.5	16,142.0	7,903.5	164.3	164.4	-90.00	-7,955.5	3,073.0	850.9	522.4	2.590	
16,300.0	7,903.5	16,242.0	7,903.5	166.3	166.3	-90.00	-8,050.1	3,105.6	850.9	518.6	2.561	
16,400.0	7,903.5	16,342.0	7,903.5	168.2	168.2	-90.00	-8,144.6	3,138.3	850.9	514.8	2.531	
16,500.0	7,903.5	16,442.0	7,903.5	170.1	170.2	-90.00	-8,239.1	3,170.9	850.9	510.9	2.503	
16,600.0	7,903.5	16,542.0	7,903.5	172.0	172.1	-90.00	-8,333.6	3,203.6	850.9	507.1	2.475	
16,700.0	7,903.5	16,642.0	7,903.5	173.9	174.0	-90.00	-8,428.2	3,236.2	850.9	503.3	2.448	
16,800.0	7,903.5	16,742.0	7,903.5	175.8	175.9	-90.00	-8,522.7	3,268.8	850.9	499.5	2.421	
16,900.0	7,903.5	16,842.0	7,903.5	177.7	177.8	-90.00	-8,617.2	3,301.5	850.9	495.6	2.395	
17,000.0	7,903.5	16,942.0	7,903.5	179.6	179.7	-90.00	-8,711.7	3,334.1	850.9	491.8	2.370	
17,100.0	7,903.5	17,042.0	7,903.5	181.5	181.6	-90.00	-8,806.3	3,366.7	850.9	488.0	2.345	
17,200.0	7,903.5	17,142.0	7,903.5	183.4	183.5	-90.00	-8,900.8	3,399.4	850.9	484.2	2.320	
17,300.0	7,903.5	17,242.0	7,903.5	185.4	185.4	-90.00	-8,995.3	3,432.0	850.9	480.3	2.296	
17,400.0	7,903.5	17,342.0	7,903.5	187.3	187.4	-90.00	-9,089.8	3,464.6	850.9	476.5	2.273	
17,500.0	7,903.5	17,442.0	7,903.5	189.2	189.3	-90.00	-9,184.4	3,497.3	850.9	472.7	2.250	
17,600.0	7,903.5	17,542.0	7,903.5	191.1	191.2	-90.00	-9,278.9	3,529.9	850.9	468.9	2.227	
17,700.0	7,903.5	17,642.0	7,903.5	193.0	193.1	-90.00	-9,373.4	3,562.5	850.9	465.0	2.205	
17,800.0	7,903.5	17,742.0	7,903.5	194.9	195.0	-90.00	-9,467.9	3,595.2	850.9	461.2	2.184	
17,900.0	7,903.5	17,842.0	7,903.5	196.8	196.9	-90.00	-9,562.5	3,627.8	850.9	457.4	2.162	
18,000.0	7,903.5	17,942.0	7,903.5	198.7	198.8	-90.00	-9,657.0	3,660.4	850.9	453.5	2.141	
18,100.0	7,903.5	18,042.0	7,903.5	200.6	200.8	-90.00	-9,751.5	3,693.1	850.9	449.7	2.121	
18,200.0	7,903.5	18,142.0	7,903.5	202.6	202.7	-90.00	-9,846.0	3,725.7	850.9	445.9	2.101	
18,300.0	7,903.5	18,242.0	7,903.5	204.5	204.6	-90.00	-9,940.6	3,758.3	850.9	442.1	2.081	
18,400.0	7,903.5	18,342.0	7,903.5	206.4	206.5	-90.00	-10,035.1	3,791.0	850.9	438.2	2.062	
18,500.0	7,903.5	18,442.0	7,903.5	208.3	208.4	-90.00	-10,129.6	3,823.6	850.9	434.4	2.043	
18,600.0	7,903.5	18,542.0	7,903.5	210.2	210.3	-90.00	-10,224.1	3,856.3	850.9	430.6	2.024	
18,700.0	7,903.5	18,642.0	7,903.5	212.1	212.2	-90.00	-10,318.7	3,888.9	850.9	426.7	2.006	
18,800.0	7,903.5	18,742.0	7,903.5	214.0	214.2	-90.00	-10,413.2	3,921.5	850.9	422.9	1.988	
18,900.0	7,903.5	18,842.0	7,903.5	216.0	216.1	-90.00	-10,507.7	3,954.2	850.9	419.1	1.971	
19,000.0	7,903.5	18,942.0	7,903.5	217.9	218.0	-90.00	-10,602.2	3,986.8	850.9	415.2	1.953	
19,100.0	7,903.5	19,042.0	7,903.5	219.8	219.9	-90.00	-10,696.8	4,019.4	850.9	411.4	1.936	
19,200.0	7,903.5	19,142.0	7,903.5	221.7	221.8	-90.00	-10,791.3	4,052.1	850.9	407.6	1.919	
19,300.0	7,903.5	19,242.0	7,903.5	223.6	223.7	-90.00	-10,885.8	4,084.7	850.9	403.7	1.903	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #204 - Wellbore #1 - Design #1

Survey Program: 0-MWD default

Offset Site Error: 0.0 usft

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
19,400.0	7,903.5	19,342.0	7,903.5	225.5	225.6	-90.00	-10,980.3	4,117.3	850.9	399.9	1.887	
19,500.0	7,903.5	19,442.0	7,903.5	227.4	227.6	-90.00	-11,074.9	4,150.0	850.9	396.1	1.871	
19,600.0	7,903.5	19,542.0	7,903.5	229.4	229.5	-90.00	-11,169.4	4,182.6	850.9	392.2	1.855	
19,700.0	7,903.5	19,642.0	7,903.5	231.3	231.4	-90.00	-11,263.9	4,215.2	850.9	388.4	1.840	
19,800.0	7,903.5	19,742.0	7,903.5	233.2	233.3	-90.00	-11,358.4	4,247.9	850.9	384.6	1.825	
19,900.0	7,903.5	19,842.0	7,903.5	235.1	235.2	-90.00	-11,453.0	4,280.5	850.9	380.7	1.810	
20,000.0	7,903.5	19,942.0	7,903.5	237.0	237.1	-90.00	-11,547.5	4,313.1	850.9	376.9	1.795	
20,100.0	7,903.5	20,042.0	7,903.5	238.9	239.1	-90.00	-11,642.0	4,345.8	850.9	373.1	1.781	
20,200.0	7,903.5	20,142.0	7,903.5	240.8	241.0	-90.00	-11,736.5	4,378.4	850.9	369.2	1.767	
20,300.0	7,903.5	20,242.0	7,903.5	242.8	242.9	-90.00	-11,831.1	4,411.1	850.9	365.4	1.753	
20,400.0	7,903.5	20,342.0	7,903.5	244.7	244.8	-90.00	-11,925.6	4,443.7	850.9	361.6	1.739	
20,500.0	7,903.5	20,442.0	7,903.5	246.6	246.7	-90.00	-12,020.1	4,476.3	850.9	357.7	1.725	
20,600.0	7,903.5	20,542.0	7,903.5	248.5	248.6	-90.00	-12,114.6	4,509.0	850.9	353.9	1.712	
20,700.0	7,903.5	20,642.0	7,903.5	250.4	250.6	-90.00	-12,209.2	4,541.6	850.9	350.1	1.699	
20,800.0	7,903.5	20,742.0	7,903.5	252.3	252.5	-90.00	-12,303.7	4,574.2	850.9	346.2	1.686	
20,900.0	7,903.5	20,842.0	7,903.5	254.3	254.4	-90.00	-12,398.2	4,606.9	850.9	342.4	1.673	
21,000.0	7,903.5	20,942.0	7,903.5	256.2	256.3	-90.00	-12,492.7	4,639.5	850.9	338.6	1.661	
21,100.0	7,903.5	21,042.0	7,903.5	258.1	258.2	-90.00	-12,587.3	4,672.1	850.9	334.7	1.649	
21,200.0	7,903.5	21,142.0	7,903.5	260.0	260.1	-90.00	-12,681.8	4,704.8	850.9	330.9	1.636	
21,300.0	7,903.5	21,242.0	7,903.5	261.9	262.1	-90.00	-12,776.3	4,737.4	850.9	327.1	1.624	
21,400.0	7,903.5	21,342.0	7,903.5	263.8	264.0	-90.00	-12,870.8	4,770.0	850.9	323.2	1.613	
21,424.1	7,903.5	21,366.0	7,903.5	264.3	264.4	-90.00	-12,893.6	4,777.9	850.9	322.3	1.610	
21,500.0	7,903.5	21,368.6	7,903.5	265.8	264.5	-90.00	-12,896.0	4,778.7	854.0	326.2	1.618	
21,600.0	7,903.5	21,368.6	7,903.5	267.7	264.5	-90.00	-12,896.0	4,778.7	868.4	347.7	1.668	
21,700.0	7,903.5	21,368.6	7,903.5	269.6	264.5	-90.00	-12,896.0	4,778.7	893.7	386.2	1.761	
21,800.0	7,903.5	21,368.6	7,903.5	271.5	264.5	-90.00	-12,896.0	4,778.7	929.2	439.5	1.898	
21,900.0	7,903.5	21,368.6	7,903.5	273.4	264.5	-90.00	-12,896.0	4,778.7	973.7	504.9	2.077	
22,000.0	7,903.5	21,368.6	7,903.5	275.3	264.5	-90.00	-12,896.0	4,778.7	1,026.0	579.7	2.299	
22,100.0	7,903.5	21,368.6	7,903.5	277.3	264.5	-90.00	-12,896.0	4,778.7	1,085.1	661.7	2.563	
22,200.0	7,903.5	21,368.6	7,903.5	279.2	264.5	-90.00	-12,896.0	4,778.7	1,149.8	748.9	2.868	
22,300.0	7,903.5	21,368.6	7,903.5	281.1	264.5	-90.00	-12,896.0	4,778.7	1,219.4	839.9	3.214	
22,400.0	7,903.5	21,368.6	7,903.5	283.0	264.5	-90.00	-12,896.0	4,778.7	1,292.9	933.8	3.600	
22,500.0	7,903.5	21,368.6	7,903.5	284.9	264.5	-90.00	-12,896.0	4,778.7	1,369.7	1,029.6	4.027	
22,600.0	7,903.5	21,368.6	7,903.5	286.8	264.5	-90.00	-12,896.0	4,778.7	1,449.4	1,126.8	4.492	
22,700.0	7,903.5	21,368.6	7,903.5	288.8	264.5	-90.00	-12,896.0	4,778.7	1,531.5	1,225.0	4.997	
22,800.0	7,903.5	21,368.6	7,903.5	290.7	264.5	-90.00	-12,896.0	4,778.7	1,615.6	1,324.0	5.540	
22,901.3	7,903.5	21,368.6	7,903.5	292.6	264.5	-90.00	-12,896.0	4,778.7	1,702.6	1,424.8	6.129	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #205 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	0.00	30.0	0.0	30.0			
100.0	100.0	100.0	100.0	0.1	0.1	0.00	30.0	0.0	30.0	29.8	182.838	
200.0	200.0	200.0	200.0	0.3	0.3	0.00	30.0	0.0	30.0	29.4	48.891	
300.0	300.0	300.0	300.0	0.5	0.5	0.00	30.0	0.0	30.0	28.9	28.218	
400.0	400.0	400.0	400.0	0.8	0.8	0.00	30.0	0.0	30.0	28.5	19.832	
500.0	500.0	500.0	500.0	1.0	1.0	0.00	30.0	0.0	30.0	28.0	15.289	
600.0	600.0	600.0	600.0	1.2	1.2	0.00	30.0	0.0	30.0	27.6	12.439	
700.0	700.0	700.0	700.0	1.4	1.4	0.00	30.0	0.0	30.0	27.1	10.485	
800.0	800.0	800.0	800.0	1.7	1.7	0.00	30.0	0.0	30.0	26.7	9.061	
900.0	900.0	900.0	900.0	1.9	1.9	0.00	30.0	0.0	30.0	26.2	7.978	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	0.00	30.0	0.0	30.0	25.8	7.126	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	0.00	30.0	0.0	30.0	25.3	6.439	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	0.00	30.0	0.0	30.0	24.9	5.872	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	0.00	30.0	0.0	30.0	24.4	5.397	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	0.00	30.0	0.0	30.0	24.0	4.993	
1,500.0	1,500.0	1,500.0	1,500.0	3.2	3.2	0.00	30.0	0.0	30.0	23.5	4.646	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	0.00	30.0	0.0	30.0	23.1	4.343	
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	0.00	30.0	0.0	30.0	22.6	4.078	
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	0.00	30.0	0.0	30.0	22.2	3.843	
1,900.0	1,900.0	1,900.0	1,900.0	4.1	4.1	0.00	30.0	0.0	30.0	21.7	3.634	
2,000.0	2,000.0	2,000.0	2,000.0	4.4	4.4	0.00	30.0	0.0	30.0	21.3	3.446	
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	0.00	30.0	0.0	30.0	20.8	3.277	
2,200.0	2,200.0	2,200.0	2,200.0	4.8	4.8	0.00	30.0	0.0	30.0	20.4	3.124	
2,300.0	2,300.0	2,300.0	2,300.0	5.0	5.0	0.00	30.0	0.0	30.0	19.9	2.984	
2,400.0	2,400.0	2,400.0	2,400.0	5.3	5.3	0.00	30.0	0.0	30.0	19.5	2.856	
2,500.0	2,500.0	2,500.0	2,500.0	5.5	5.5	0.00	30.0	0.0	30.0	19.0	2.739	CC, ES, SF
2,600.0	2,600.0	2,599.6	2,599.6	5.7	5.7	118.05	30.4	1.7	31.3	19.9	2.750	
2,700.0	2,699.8	2,698.5	2,698.3	5.9	5.9	132.74	31.8	6.6	36.8	25.1	3.131	
2,800.0	2,799.5	2,796.0	2,795.5	6.1	6.1	148.03	33.9	14.8	49.6	37.5	4.089	
2,900.0	2,898.7	2,891.4	2,890.2	6.3	6.3	159.05	36.8	25.8	70.5	58.1	5.658	
3,000.0	2,997.5	2,984.1	2,981.8	6.5	6.5	166.05	40.4	39.5	99.2	86.4	7.754	
3,100.0	3,095.6	3,073.7	3,069.8	6.8	6.8	170.47	44.6	55.4	134.7	121.6	10.293	
3,200.0	3,193.1	3,159.6	3,153.8	7.1	7.0	173.37	49.2	73.1	176.7	163.3	13.209	
3,300.0	3,289.6	3,241.5	3,233.2	7.4	7.3	175.35	54.3	92.3	224.7	211.0	16.455	
3,400.0	3,385.3	3,319.1	3,308.0	7.8	7.6	176.75	59.6	112.5	278.1	264.2	19.992	
3,499.8	3,479.7	3,392.1	3,377.7	8.2	7.8	177.78	65.1	133.2	336.6	322.4	23.779	
3,600.0	3,573.8	3,461.7	3,443.7	8.7	8.1	178.61	70.7	154.6	398.7	384.3	27.704	
3,700.0	3,667.8	3,528.5	3,506.6	9.2	8.5	179.25	76.5	176.6	462.6	448.0	31.643	
3,800.0	3,761.7	3,600.0	3,573.2	9.7	8.8	179.81	83.1	201.7	528.3	513.4	35.378	
3,900.0	3,855.7	3,654.6	3,623.6	10.3	9.1	-179.83	88.4	222.0	595.6	580.5	39.560	
4,000.0	3,949.7	3,714.1	3,678.1	10.9	9.5	-179.48	94.5	245.1	664.5	649.2	43.539	
4,078.2	4,023.1	3,761.1	3,720.8	11.4	9.8	-179.23	99.5	264.1	719.3	703.9	46.570	
4,100.0	4,043.7	3,776.7	3,734.9	11.5	9.9	-179.16	101.2	270.5	734.6	719.1	47.310	
4,200.0	4,138.5	3,849.2	3,800.6	11.9	10.4	-178.88	109.0	300.1	803.4	787.5	50.481	
4,300.0	4,234.3	3,924.1	3,868.5	12.4	10.9	-178.65	117.1	330.7	869.5	853.2	53.299	
4,400.0	4,331.1	4,001.3	3,938.5	12.8	11.4	-178.45	125.4	362.3	933.1	916.3	55.779	
4,500.0	4,428.7	4,080.6	4,010.4	13.2	12.0	-178.28	133.9	394.7	993.9	976.7	57.934	
4,600.0	4,527.0	4,162.1	4,084.1	13.5	12.6	-178.13	142.7	428.0	1,051.9	1,034.3	59.791	
4,700.0	4,625.9	4,245.4	4,159.7	13.8	13.3	-177.99	151.7	462.1	1,107.0	1,088.9	61.369	
4,800.0	4,725.2	4,330.7	4,237.0	14.1	13.9	-177.86	160.8	496.9	1,159.2	1,140.7	62.686	
4,900.0	4,824.9	4,417.7	4,315.8	14.4	14.6	-177.73	170.2	532.5	1,208.4	1,189.4	63.761	
5,000.0	4,924.8	4,506.3	4,396.2	14.5	15.3	-177.61	179.7	568.7	1,254.5	1,235.1	64.611	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #205 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD default

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
5,078.0	5,002.8	4,576.6	4,459.8	14.7	15.9	70.44	187.3	597.4	1,288.3	1,268.6	65.145	
5,100.0	5,024.8	4,596.5	4,477.9	14.7	16.1	70.48	189.4	605.6	1,297.6	1,277.7	65.275	
5,200.0	5,124.8	4,687.1	4,560.0	14.9	16.8	70.63	199.2	642.6	1,339.8	1,319.4	65.796	
5,300.0	5,224.8	4,777.8	4,642.2	15.0	17.6	70.77	208.9	679.7	1,381.9	1,361.1	66.283	
5,400.0	5,324.8	4,868.4	4,724.3	15.2	18.3	70.90	218.7	716.7	1,424.1	1,402.7	66.738	
5,500.0	5,424.8	4,959.0	4,806.4	15.4	19.1	71.03	228.4	753.7	1,466.3	1,444.4	67.165	
5,600.0	5,524.8	5,049.6	4,888.6	15.5	19.8	71.14	238.2	790.8	1,508.4	1,486.1	67.566	
5,700.0	5,624.8	5,140.3	4,970.7	15.7	20.6	71.26	247.9	827.8	1,550.6	1,527.8	67.942	
5,800.0	5,724.8	5,260.7	5,080.1	15.9	21.6	71.39	260.8	876.6	1,592.6	1,569.0	67.572	
5,900.0	5,824.8	5,472.4	5,276.6	16.0	22.9	71.59	280.8	952.7	1,629.7	1,604.7	65.363	
6,000.0	5,924.8	5,695.9	5,489.7	16.2	24.0	71.74	297.9	1,017.5	1,659.7	1,633.5	63.396	
6,100.0	6,024.8	5,929.3	5,717.2	16.4	25.0	71.85	311.1	1,067.8	1,681.9	1,654.7	61.706	
6,200.0	6,124.8	6,170.0	5,955.4	16.6	25.6	71.92	319.8	1,100.8	1,696.1	1,668.0	60.315	
6,300.0	6,224.8	6,414.8	6,199.7	16.7	26.1	71.95	323.4	1,114.4	1,701.8	1,673.1	59.228	
6,400.0	6,324.8	6,539.9	6,324.8	16.9	26.2	71.95	323.5	1,114.7	1,702.0	1,672.8	58.413	
6,500.0	6,424.8	6,639.9	6,424.8	17.1	26.3	71.95	323.5	1,114.7	1,702.0	1,672.4	57.622	
6,600.0	6,524.8	6,739.9	6,524.8	17.3	26.4	71.95	323.5	1,114.7	1,702.0	1,672.0	56.849	
6,700.0	6,624.8	6,839.9	6,624.8	17.4	26.5	71.95	323.5	1,114.7	1,702.0	1,671.6	56.095	
6,800.0	6,724.8	6,939.9	6,724.8	17.6	26.7	71.95	323.5	1,114.7	1,702.0	1,671.2	55.358	
6,900.0	6,824.8	7,039.9	6,824.8	17.8	26.8	71.95	323.5	1,114.7	1,702.0	1,670.8	54.638	
7,000.0	6,924.8	7,139.9	6,924.8	18.0	26.9	71.95	323.5	1,114.7	1,702.0	1,670.4	53.934	
7,100.0	7,024.8	7,239.9	7,024.8	18.2	27.0	71.95	323.5	1,114.7	1,702.0	1,670.0	53.247	
7,200.0	7,124.8	7,339.9	7,124.8	18.4	27.2	71.95	323.5	1,114.7	1,702.0	1,669.6	52.575	
7,300.0	7,224.8	7,439.9	7,224.8	18.5	27.3	71.95	323.5	1,114.7	1,702.0	1,669.2	51.918	
7,342.1	7,266.9	7,482.0	7,266.9	18.6	27.3	71.95	323.5	1,114.7	1,702.0	1,669.0	51.646	
7,350.0	7,274.8	7,489.6	7,274.4	18.6	27.3	-89.00	323.4	1,114.7	1,702.0	1,669.0	51.599	
7,400.0	7,324.7	7,537.3	7,322.1	18.7	27.4	-89.00	321.2	1,115.5	1,702.0	1,668.8	51.323	
7,450.0	7,374.3	7,585.1	7,369.5	18.8	27.5	-89.01	315.6	1,117.4	1,702.0	1,668.6	51.044	
7,500.0	7,423.2	7,632.9	7,416.4	18.9	27.5	-89.03	306.7	1,120.5	1,702.0	1,668.4	50.755	
7,550.0	7,471.1	7,680.8	7,462.5	19.0	27.6	-89.05	294.4	1,124.8	1,701.9	1,668.2	50.451	
7,600.0	7,517.8	7,728.7	7,507.4	19.0	27.7	-89.08	278.9	1,130.1	1,701.9	1,668.0	50.127	
7,650.0	7,562.9	7,776.7	7,551.1	19.1	27.7	-89.11	260.2	1,136.6	1,701.9	1,667.7	49.773	
7,700.0	7,606.2	7,824.7	7,593.3	19.2	27.8	-89.15	238.4	1,144.1	1,701.9	1,667.4	49.381	
7,750.0	7,647.4	7,872.8	7,633.6	19.3	27.9	-89.19	213.6	1,152.7	1,701.9	1,667.1	48.942	
7,800.0	7,686.3	7,921.0	7,671.9	19.4	28.0	-89.24	186.0	1,162.2	1,701.9	1,666.7	48.446	
7,850.0	7,722.6	7,969.3	7,708.0	19.6	28.1	-89.29	155.6	1,172.7	1,701.8	1,666.3	47.888	
7,900.0	7,756.1	8,017.8	7,741.6	19.7	28.3	-89.35	122.7	1,184.1	1,701.8	1,665.8	47.261	
7,950.0	7,786.5	8,066.3	7,772.6	19.9	28.4	-89.41	87.3	1,196.3	1,701.8	1,665.3	46.562	
8,000.0	7,813.8	8,115.0	7,800.6	20.1	28.6	-89.47	49.7	1,209.2	1,701.8	1,664.6	45.789	
8,050.0	7,837.7	8,163.9	7,825.7	20.4	28.8	-89.54	10.1	1,222.9	1,701.8	1,663.9	44.941	
8,100.0	7,858.0	8,212.8	7,847.4	20.7	29.0	-89.61	-31.3	1,237.2	1,701.8	1,663.2	44.103	
8,150.0	7,874.8	8,262.0	7,865.9	21.0	29.2	-89.68	-74.4	1,252.1	1,701.7	1,662.3	43.157	
8,200.0	7,887.7	8,311.3	7,880.8	21.4	29.5	-89.76	-118.8	1,267.4	1,701.7	1,661.4	42.179	
8,250.0	7,896.9	8,360.8	7,892.0	21.8	29.8	-89.83	-164.3	1,283.1	1,701.7	1,660.4	41.177	
8,300.0	7,902.1	8,410.4	7,899.5	22.2	30.2	-89.91	-210.7	1,299.2	1,701.7	1,659.3	40.163	
8,342.1	7,903.5	8,452.4	7,902.8	22.6	30.5	-89.98	-250.3	1,312.8	1,701.7	1,658.4	39.308	
8,368.2	7,903.5	8,478.5	7,903.5	22.9	30.7	-90.00	-274.9	1,321.3	1,701.7	1,657.8	38.775	
8,400.0	7,903.5	8,510.2	7,903.5	23.3	30.9	-90.00	-304.9	1,331.7	1,701.7	1,657.1	38.137	
8,500.0	7,903.5	8,610.2	7,903.5	24.4	31.8	-90.00	-399.5	1,364.3	1,701.7	1,654.6	36.149	
8,600.0	7,903.5	8,710.2	7,903.5	25.6	32.7	-90.00	-494.0	1,397.0	1,701.7	1,652.0	34.236	
8,700.0	7,903.5	8,810.2	7,903.5	26.9	33.8	-90.00	-588.5	1,429.6	1,701.7	1,649.2	32.423	
8,800.0	7,903.5	8,910.2	7,903.5	28.3	34.9	-90.00	-683.0	1,462.2	1,701.7	1,646.3	30.722	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #205 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
8,900.0	7,903.5	9,010.2	7,903.5	29.8	36.1	-90.00	-777.6	1,494.9	1,701.7	1,643.3	29.136	
9,000.0	7,903.5	9,110.2	7,903.5	31.3	37.3	-90.00	-872.1	1,527.5	1,701.7	1,640.2	27.664	
9,100.0	7,903.5	9,210.2	7,903.5	32.8	38.6	-90.00	-966.6	1,560.1	1,701.7	1,637.0	26.302	
9,200.0	7,903.5	9,310.2	7,903.5	34.4	40.0	-90.00	-1,061.1	1,592.8	1,701.7	1,633.8	25.042	
9,300.0	7,903.5	9,410.2	7,903.5	36.1	41.4	-90.00	-1,155.7	1,625.4	1,701.7	1,630.4	23.878	
9,400.0	7,903.5	9,510.2	7,903.5	37.7	42.9	-90.00	-1,250.2	1,658.0	1,701.7	1,627.1	22.802	
9,500.0	7,903.5	9,610.2	7,903.5	39.4	44.3	-90.00	-1,344.7	1,690.7	1,701.7	1,623.7	21.806	
9,600.0	7,903.5	9,710.2	7,903.5	41.1	45.9	-90.00	-1,439.2	1,723.3	1,701.7	1,620.2	20.884	
9,700.0	7,903.5	9,810.2	7,903.5	42.8	47.4	-90.00	-1,533.8	1,756.0	1,701.7	1,616.8	20.028	
9,800.0	7,903.5	9,910.2	7,903.5	44.5	49.0	-90.00	-1,628.3	1,788.6	1,701.7	1,613.2	19.234	
9,900.0	7,903.5	10,010.2	7,903.5	46.3	50.6	-90.00	-1,722.8	1,821.2	1,701.7	1,609.7	18.494	
10,000.0	7,903.5	10,110.2	7,903.5	48.0	52.2	-90.00	-1,817.3	1,853.9	1,701.7	1,606.1	17.805	
10,100.0	7,903.5	10,210.2	7,903.5	49.8	53.9	-90.00	-1,911.9	1,886.5	1,701.7	1,602.6	17.162	
10,200.0	7,903.5	10,310.2	7,903.5	51.6	55.6	-90.00	-2,006.4	1,919.1	1,701.7	1,599.0	16.561	
10,300.0	7,903.5	10,410.2	7,903.5	53.4	57.2	-90.00	-2,100.9	1,951.8	1,701.7	1,595.3	15.998	
10,400.0	7,903.5	10,510.2	7,903.5	55.2	58.9	-90.00	-2,195.4	1,984.4	1,701.7	1,591.7	15.469	
10,500.0	7,903.5	10,610.2	7,903.5	57.0	60.6	-90.00	-2,290.0	2,017.0	1,701.7	1,588.1	14.973	
10,600.0	7,903.5	10,710.2	7,903.5	58.8	62.4	-90.00	-2,384.5	2,049.7	1,701.7	1,584.4	14.506	
10,700.0	7,903.5	10,810.2	7,903.5	60.6	64.1	-90.00	-2,479.0	2,082.3	1,701.7	1,580.7	14.066	
10,800.0	7,903.5	10,910.2	7,903.5	62.4	65.8	-90.00	-2,573.5	2,114.9	1,701.7	1,577.1	13.651	
10,900.0	7,903.5	11,010.2	7,903.5	64.3	67.6	-90.00	-2,668.1	2,147.6	1,701.7	1,573.4	13.258	
11,000.0	7,903.5	11,110.2	7,903.5	66.1	69.4	-90.00	-2,762.6	2,180.2	1,701.7	1,569.7	12.887	
11,100.0	7,903.5	11,210.2	7,903.5	68.0	71.1	-90.00	-2,857.1	2,212.8	1,701.7	1,566.0	12.535	
11,200.0	7,903.5	11,310.2	7,903.5	69.8	72.9	-90.00	-2,951.6	2,245.5	1,701.7	1,562.2	12.201	
11,300.0	7,903.5	11,410.2	7,903.5	71.7	74.7	-90.00	-3,046.2	2,278.1	1,701.7	1,558.5	11.884	
11,400.0	7,903.5	11,510.2	7,903.5	73.5	76.5	-90.00	-3,140.7	2,310.8	1,701.7	1,554.8	11.582	
11,500.0	7,903.5	11,610.2	7,903.5	75.4	78.3	-90.00	-3,235.2	2,343.4	1,701.7	1,551.1	11.295	
11,600.0	7,903.5	11,710.2	7,903.5	77.2	80.1	-90.00	-3,329.7	2,376.0	1,701.7	1,547.3	11.022	
11,700.0	7,903.5	11,810.2	7,903.5	79.1	81.9	-90.00	-3,424.3	2,408.7	1,701.7	1,543.6	10.761	
11,800.0	7,903.5	11,910.2	7,903.5	81.0	83.7	-90.00	-3,518.8	2,441.3	1,701.7	1,539.8	10.512	
11,900.0	7,903.5	12,010.2	7,903.5	82.8	85.6	-90.00	-3,613.3	2,473.9	1,701.7	1,536.1	10.274	
12,000.0	7,903.5	12,110.2	7,903.5	84.7	87.4	-90.00	-3,707.8	2,506.6	1,701.7	1,532.3	10.046	
12,100.0	7,903.5	12,210.2	7,903.5	86.6	89.2	-90.00	-3,802.4	2,539.2	1,701.7	1,528.6	9.828	
12,200.0	7,903.5	12,310.2	7,903.5	88.4	91.0	-90.00	-3,896.9	2,571.8	1,701.7	1,524.8	9.619	
12,300.0	7,903.5	12,410.2	7,903.5	90.3	92.9	-90.00	-3,991.4	2,604.5	1,701.7	1,521.0	9.418	
12,400.0	7,903.5	12,510.2	7,903.5	92.2	94.7	-90.00	-4,085.9	2,637.1	1,701.7	1,517.3	9.226	
12,500.0	7,903.5	12,610.2	7,903.5	94.1	96.6	-90.00	-4,180.5	2,669.7	1,701.7	1,513.5	9.041	
12,600.0	7,903.5	12,710.2	7,903.5	96.0	98.4	-90.00	-4,275.0	2,702.4	1,701.7	1,509.7	8.863	
12,700.0	7,903.5	12,810.2	7,903.5	97.9	100.3	-90.00	-4,369.5	2,735.0	1,701.7	1,505.9	8.692	
12,800.0	7,903.5	12,910.2	7,903.5	99.7	102.1	-90.00	-4,464.0	2,767.7	1,701.7	1,502.1	8.527	
12,900.0	7,903.5	13,010.2	7,903.5	101.6	104.0	-90.00	-4,558.6	2,800.3	1,701.7	1,498.4	8.368	
13,000.0	7,903.5	13,110.2	7,903.5	103.5	105.8	-90.00	-4,653.1	2,832.9	1,701.7	1,494.6	8.216	
13,100.0	7,903.5	13,210.2	7,903.5	105.4	107.7	-90.00	-4,747.6	2,865.6	1,701.7	1,490.8	8.068	
13,200.0	7,903.5	13,310.2	7,903.5	107.3	109.5	-90.00	-4,842.1	2,898.2	1,701.7	1,487.0	7.926	
13,300.0	7,903.5	13,410.2	7,903.5	109.2	111.4	-90.00	-4,936.7	2,930.8	1,701.7	1,483.2	7.788	
13,400.0	7,903.5	13,510.2	7,903.5	111.1	113.3	-90.00	-5,031.2	2,963.5	1,701.7	1,479.4	7.655	
13,500.0	7,903.5	13,610.2	7,903.5	113.0	115.1	-90.00	-5,125.7	2,996.1	1,701.7	1,475.6	7.527	
13,600.0	7,903.5	13,710.2	7,903.5	114.9	117.0	-90.00	-5,220.2	3,028.7	1,701.7	1,471.8	7.402	
13,700.0	7,903.5	13,810.2	7,903.5	116.8	118.9	-90.00	-5,314.7	3,061.4	1,701.7	1,468.0	7.282	
13,800.0	7,903.5	13,910.2	7,903.5	118.7	120.8	-90.00	-5,409.3	3,094.0	1,701.7	1,464.2	7.166	
13,900.0	7,903.5	14,010.2	7,903.5	120.6	122.6	-90.00	-5,503.8	3,126.6	1,701.7	1,460.4	7.053	
14,000.0	7,903.5	14,110.2	7,903.5	122.5	124.5	-90.00	-5,598.3	3,159.3	1,701.7	1,456.6	6.943	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #205 - Wellbore #1 - Design #1

Survey Program: 0-MWD default

Offset Site Error: 0.0 usft

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
14,100.0	7,903.5	14,210.2	7,903.5	124.4	126.4	-90.00	-5,692.8	3,191.9	1,701.7	1,452.8	6.837	
14,200.0	7,903.5	14,310.2	7,903.5	126.3	128.3	-90.00	-5,787.4	3,224.5	1,701.7	1,449.0	6.734	
14,300.0	7,903.5	14,410.2	7,903.5	128.2	130.1	-90.00	-5,881.9	3,257.2	1,701.7	1,445.2	6.634	
14,400.0	7,903.5	14,510.2	7,903.5	130.1	132.0	-90.00	-5,976.4	3,289.8	1,701.7	1,441.4	6.537	
14,500.0	7,903.5	14,610.2	7,903.5	132.0	133.9	-90.00	-6,070.9	3,322.5	1,701.7	1,437.6	6.443	
14,600.0	7,903.5	14,710.2	7,903.5	133.9	135.8	-90.00	-6,165.5	3,355.1	1,701.7	1,433.8	6.351	
14,700.0	7,903.5	14,810.2	7,903.5	135.8	137.7	-90.00	-6,260.0	3,387.7	1,701.7	1,430.0	6.262	
14,800.0	7,903.5	14,910.2	7,903.5	137.7	139.5	-90.00	-6,354.5	3,420.4	1,701.7	1,426.2	6.176	
14,900.0	7,903.5	15,010.2	7,903.5	139.6	141.4	-90.00	-6,449.0	3,453.0	1,701.7	1,422.4	6.092	
15,000.0	7,903.5	15,110.2	7,903.5	141.5	143.3	-90.00	-6,543.6	3,485.6	1,701.7	1,418.5	6.010	
15,100.0	7,903.5	15,210.2	7,903.5	143.4	145.2	-90.00	-6,638.1	3,518.3	1,701.7	1,414.7	5.930	
15,200.0	7,903.5	15,310.2	7,903.5	145.3	147.1	-90.00	-6,732.6	3,550.9	1,701.7	1,410.9	5.852	
15,300.0	7,903.5	15,410.2	7,903.5	147.2	149.0	-90.00	-6,827.1	3,583.5	1,701.7	1,407.1	5.776	
15,400.0	7,903.5	15,510.2	7,903.5	149.1	150.9	-90.00	-6,921.7	3,616.2	1,701.7	1,403.3	5.702	
15,500.0	7,903.5	15,610.2	7,903.5	151.0	152.8	-90.00	-7,016.2	3,648.8	1,701.7	1,399.5	5.630	
15,600.0	7,903.5	15,710.2	7,903.5	152.9	154.7	-90.00	-7,110.7	3,681.4	1,701.7	1,395.7	5.560	
15,700.0	7,903.5	15,810.2	7,903.5	154.8	156.5	-90.00	-7,205.2	3,714.1	1,701.7	1,391.8	5.492	
15,800.0	7,903.5	15,910.2	7,903.5	156.7	158.4	-90.00	-7,299.8	3,746.7	1,701.7	1,388.0	5.425	
15,900.0	7,903.5	16,010.2	7,903.5	158.6	160.3	-90.00	-7,394.3	3,779.4	1,701.7	1,384.2	5.360	
16,000.0	7,903.5	16,110.2	7,903.5	160.5	162.2	-90.00	-7,488.8	3,812.0	1,701.7	1,380.4	5.296	
16,100.0	7,903.5	16,210.2	7,903.5	162.4	164.1	-90.00	-7,583.3	3,844.6	1,701.7	1,376.6	5.234	
16,200.0	7,903.5	16,310.2	7,903.5	164.3	166.0	-90.00	-7,677.9	3,877.3	1,701.7	1,372.7	5.173	
16,300.0	7,903.5	16,410.2	7,903.5	166.3	167.9	-90.00	-7,772.4	3,909.9	1,701.7	1,368.9	5.113	
16,400.0	7,903.5	16,510.2	7,903.5	168.2	169.8	-90.00	-7,866.9	3,942.5	1,701.7	1,365.1	5.055	
16,500.0	7,903.5	16,610.2	7,903.5	170.1	171.7	-90.00	-7,961.4	3,975.2	1,701.7	1,361.3	4.999	
16,600.0	7,903.5	16,710.2	7,903.5	172.0	173.6	-90.00	-8,056.0	4,007.8	1,701.7	1,357.5	4.943	
16,700.0	7,903.5	16,810.2	7,903.5	173.9	175.5	-90.00	-8,150.5	4,040.4	1,701.7	1,353.6	4.889	
16,800.0	7,903.5	16,910.2	7,903.5	175.8	177.4	-90.00	-8,245.0	4,073.1	1,701.7	1,349.8	4.836	
16,900.0	7,903.5	17,010.2	7,903.5	177.7	179.3	-90.00	-8,339.5	4,105.7	1,701.7	1,346.0	4.784	
17,000.0	7,903.5	17,110.2	7,903.5	179.6	181.2	-90.00	-8,434.1	4,138.3	1,701.7	1,342.2	4.733	
17,100.0	7,903.5	17,210.2	7,903.5	181.5	183.1	-90.00	-8,528.6	4,171.0	1,701.7	1,338.3	4.683	
17,200.0	7,903.5	17,310.2	7,903.5	183.4	185.0	-90.00	-8,623.1	4,203.6	1,701.7	1,334.5	4.634	
17,300.0	7,903.5	17,410.2	7,903.5	185.4	186.9	-90.00	-8,717.6	4,236.2	1,701.7	1,330.7	4.587	
17,400.0	7,903.5	17,510.2	7,903.5	187.3	188.8	-90.00	-8,812.2	4,268.9	1,701.7	1,326.9	4.540	
17,500.0	7,903.5	17,610.2	7,903.5	189.2	190.7	-90.00	-8,906.7	4,301.5	1,701.7	1,323.0	4.494	
17,600.0	7,903.5	17,710.2	7,903.5	191.1	192.6	-90.00	-9,001.2	4,334.2	1,701.7	1,319.2	4.449	
17,700.0	7,903.5	17,810.2	7,903.5	193.0	194.5	-90.00	-9,095.7	4,366.8	1,701.7	1,315.4	4.405	
17,800.0	7,903.5	17,910.2	7,903.5	194.9	196.4	-90.00	-9,190.3	4,399.4	1,701.7	1,311.6	4.362	
17,900.0	7,903.5	18,010.2	7,903.5	196.8	198.3	-90.00	-9,284.8	4,432.1	1,701.7	1,307.7	4.319	
18,000.0	7,903.5	18,110.2	7,903.5	198.7	200.2	-90.00	-9,379.3	4,464.7	1,701.7	1,303.9	4.278	
18,100.0	7,903.5	18,210.2	7,903.5	200.6	202.1	-90.00	-9,473.8	4,497.3	1,701.7	1,300.1	4.237	
18,200.0	7,903.5	18,310.2	7,903.5	202.6	204.0	-90.00	-9,568.4	4,530.0	1,701.7	1,296.2	4.197	
18,300.0	7,903.5	18,410.2	7,903.5	204.5	205.9	-90.00	-9,662.9	4,562.6	1,701.7	1,292.4	4.158	
18,400.0	7,903.5	18,510.2	7,903.5	206.4	207.8	-90.00	-9,757.4	4,595.2	1,701.7	1,288.6	4.119	
18,500.0	7,903.5	18,610.2	7,903.5	208.3	209.8	-90.00	-9,851.9	4,627.9	1,701.7	1,284.8	4.081	
18,600.0	7,903.5	18,710.2	7,903.5	210.2	211.7	-90.00	-9,946.5	4,660.5	1,701.7	1,280.9	4.044	
18,700.0	7,903.5	18,810.2	7,903.5	212.1	213.6	-90.00	-10,041.0	4,693.1	1,701.7	1,277.1	4.008	
18,800.0	7,903.5	18,910.2	7,903.5	214.0	215.5	-90.00	-10,135.5	4,725.8	1,701.7	1,273.3	3.972	
18,900.0	7,903.5	19,010.2	7,903.5	216.0	217.4	-90.00	-10,230.0	4,758.4	1,701.7	1,269.4	3.937	
19,000.0	7,903.5	19,110.2	7,903.5	217.9	219.3	-90.00	-10,324.6	4,791.1	1,701.7	1,265.6	3.902	
19,100.0	7,903.5	19,210.2	7,903.5	219.8	221.2	-90.00	-10,419.1	4,823.7	1,701.7	1,261.8	3.868	
19,200.0	7,903.5	19,310.2	7,903.5	221.7	223.1	-90.00	-10,513.6	4,856.3	1,701.7	1,258.0	3.835	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #205 - Wellbore #1 - Design #1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD default

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
19,300.0	7,903.5	19,410.2	7,903.5	223.6	225.0	-90.00	-10,608.1	4,889.0	1,701.7	1,254.1	3.802	
19,400.0	7,903.5	19,510.2	7,903.5	225.5	226.9	-90.00	-10,702.7	4,921.6	1,701.7	1,250.3	3.770	
19,500.0	7,903.5	19,610.2	7,903.5	227.4	228.8	-90.00	-10,797.2	4,954.2	1,701.7	1,246.5	3.738	
19,600.0	7,903.5	19,710.2	7,903.5	229.4	230.7	-90.00	-10,891.7	4,986.9	1,701.7	1,242.6	3.707	
19,700.0	7,903.5	19,810.2	7,903.5	231.3	232.6	-90.00	-10,986.2	5,019.5	1,701.7	1,238.8	3.676	
19,800.0	7,903.5	19,910.2	7,903.5	233.2	234.5	-90.00	-11,080.8	5,052.1	1,701.7	1,235.0	3.646	
19,900.0	7,903.5	20,010.2	7,903.5	235.1	236.5	-90.00	-11,175.3	5,084.8	1,701.7	1,231.1	3.616	
20,000.0	7,903.5	20,110.2	7,903.5	237.0	238.4	-90.00	-11,269.8	5,117.4	1,701.7	1,227.3	3.587	
20,100.0	7,903.5	20,210.2	7,903.5	238.9	240.3	-90.00	-11,364.3	5,150.0	1,701.7	1,223.5	3.558	
20,200.0	7,903.5	20,310.2	7,903.5	240.8	242.2	-90.00	-11,458.9	5,182.7	1,701.7	1,219.6	3.530	
20,300.0	7,903.5	20,410.2	7,903.5	242.8	244.1	-90.00	-11,553.4	5,215.3	1,701.7	1,215.8	3.502	
20,400.0	7,903.5	20,510.2	7,903.5	244.7	246.0	-90.00	-11,647.9	5,247.9	1,701.7	1,212.0	3.475	
20,500.0	7,903.5	20,610.2	7,903.5	246.6	247.9	-90.00	-11,742.4	5,280.6	1,701.7	1,208.1	3.448	
20,600.0	7,903.5	20,710.2	7,903.5	248.5	249.8	-90.00	-11,837.0	5,313.2	1,701.7	1,204.3	3.421	
20,700.0	7,903.5	20,810.2	7,903.5	250.4	251.7	-90.00	-11,931.5	5,345.9	1,701.7	1,200.5	3.395	
20,800.0	7,903.5	20,910.2	7,903.5	252.3	253.6	-90.00	-12,026.0	5,378.5	1,701.7	1,196.6	3.369	
20,900.0	7,903.5	21,010.2	7,903.5	254.3	255.6	-90.00	-12,120.5	5,411.1	1,701.7	1,192.8	3.344	
21,000.0	7,903.5	21,110.2	7,903.5	256.2	257.5	-90.00	-12,215.1	5,443.8	1,701.7	1,189.0	3.319	
21,100.0	7,903.5	21,210.2	7,903.5	258.1	259.4	-90.00	-12,309.6	5,476.4	1,701.7	1,185.1	3.294	
21,200.0	7,903.5	21,310.2	7,903.5	260.0	261.3	-90.00	-12,404.1	5,509.0	1,701.7	1,181.3	3.270	
21,300.0	7,903.5	21,410.2	7,903.5	261.9	263.2	-90.00	-12,498.6	5,541.7	1,701.7	1,177.5	3.246	
21,400.0	7,903.5	21,510.2	7,903.5	263.8	265.1	-90.00	-12,593.2	5,574.3	1,701.7	1,173.6	3.222	
21,500.0	7,903.5	21,610.2	7,903.5	265.8	267.0	-90.00	-12,687.7	5,606.9	1,701.7	1,169.8	3.199	
21,600.0	7,903.5	21,710.2	7,903.5	267.7	268.9	-90.00	-12,782.2	5,639.6	1,701.7	1,166.0	3.176	
21,700.0	7,903.5	21,810.2	7,903.5	269.6	270.8	-90.00	-12,876.7	5,672.2	1,701.7	1,162.1	3.154	
21,800.0	7,903.5	21,910.2	7,903.5	271.5	272.8	-90.00	-12,971.3	5,704.8	1,701.7	1,158.3	3.132	
21,900.0	7,903.5	22,010.2	7,903.5	273.4	274.7	-90.00	-13,065.8	5,737.5	1,701.7	1,154.5	3.110	
22,000.0	7,903.5	22,110.2	7,903.5	275.3	276.6	-90.00	-13,160.3	5,770.1	1,701.7	1,150.6	3.088	
22,100.0	7,903.5	22,210.2	7,903.5	277.3	278.5	-90.00	-13,254.8	5,802.8	1,701.7	1,146.8	3.067	
22,200.0	7,903.5	22,310.2	7,903.5	279.2	280.4	-90.00	-13,349.4	5,835.4	1,701.7	1,143.0	3.046	
22,300.0	7,903.5	22,410.2	7,903.5	281.1	282.3	-90.00	-13,443.9	5,868.0	1,701.7	1,139.1	3.025	
22,383.8	7,903.5	22,494.1	7,903.5	282.7	283.9	-90.00	-13,523.1	5,895.4	1,701.7	1,135.9	3.008	
22,400.0	7,903.5	22,494.2	7,903.5	283.0	283.9	-90.00	-13,523.3	5,895.4	1,701.8	1,135.6	3.006	
22,500.0	7,903.5	22,494.2	7,903.5	284.9	283.9	-90.00	-13,523.3	5,895.4	1,705.7	1,138.2	3.006	
22,600.0	7,903.5	22,494.2	7,903.5	286.8	283.9	-90.00	-13,523.3	5,895.4	1,715.4	1,148.5	3.026	
22,700.0	7,903.5	22,494.2	7,903.5	288.8	283.9	-90.00	-13,523.3	5,895.4	1,730.8	1,166.4	3.067	
22,800.0	7,903.5	22,494.2	7,903.5	290.7	283.9	-90.00	-13,523.3	5,895.4	1,751.8	1,191.6	3.127	
22,901.3	7,903.5	22,494.2	7,903.5	292.6	283.9	-90.00	-13,523.3	5,895.4	1,778.6	1,224.3	3.209	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #206 - Wellbore #1 - Design #1 — Offset Site Error: 0.0 usft

Survey Program: 0-MWD default — Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	0.00	45.0	0.0	45.0			
100.0	100.0	100.0	100.0	0.1	0.1	0.00	45.0	0.0	45.0	44.8	274.257	
200.0	200.0	200.0	200.0	0.3	0.3	0.00	45.0	0.0	45.0	44.4	73.336	
300.0	300.0	300.0	300.0	0.5	0.5	0.00	45.0	0.0	45.0	43.9	42.327	
400.0	400.0	400.0	400.0	0.8	0.8	0.00	45.0	0.0	45.0	43.5	29.749	
500.0	500.0	500.0	500.0	1.0	1.0	0.00	45.0	0.0	45.0	43.0	22.933	
600.0	600.0	600.0	600.0	1.2	1.2	0.00	45.0	0.0	45.0	42.6	18.659	
700.0	700.0	700.0	700.0	1.4	1.4	0.00	45.0	0.0	45.0	42.1	15.727	
800.0	800.0	800.0	800.0	1.7	1.7	0.00	45.0	0.0	45.0	41.7	13.592	
900.0	900.0	900.0	900.0	1.9	1.9	0.00	45.0	0.0	45.0	41.2	11.967	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	0.00	45.0	0.0	45.0	40.8	10.689	
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.3	0.00	45.0	0.0	45.0	40.3	9.658	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	0.00	45.0	0.0	45.0	39.9	8.808	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	0.00	45.0	0.0	45.0	39.4	8.096	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	0.00	45.0	0.0	45.0	39.0	7.490	
1,500.0	1,500.0	1,500.0	1,500.0	3.2	3.2	0.00	45.0	0.0	45.0	38.5	6.969	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	0.00	45.0	0.0	45.0	38.1	6.515	
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	0.00	45.0	0.0	45.0	37.6	6.117	
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	0.00	45.0	0.0	45.0	37.2	5.765	
1,900.0	1,900.0	1,900.0	1,900.0	4.1	4.1	0.00	45.0	0.0	45.0	36.7	5.451	
2,000.0	2,000.0	2,000.0	2,000.0	4.4	4.4	0.00	45.0	0.0	45.0	36.3	5.169	
2,100.0	2,100.0	2,100.0	2,100.0	4.6	4.6	0.00	45.0	0.0	45.0	35.8	4.915	
2,200.0	2,200.0	2,200.0	2,200.0	4.8	4.8	0.00	45.0	0.0	45.0	35.4	4.685	
2,300.0	2,300.0	2,300.0	2,300.0	5.0	5.0	0.00	45.0	0.0	45.0	34.9	4.476	
2,400.0	2,400.0	2,400.0	2,400.0	5.3	5.3	0.00	45.0	0.0	45.0	34.5	4.284	
2,500.0	2,500.0	2,500.0	2,500.0	5.5	5.5	0.00	45.0	0.0	45.0	34.0	4.109	CC, ES
2,600.0	2,600.0	2,599.5	2,599.4	5.7	5.7	116.07	45.5	1.7	46.2	34.9	4.066	SF
2,700.0	2,699.8	2,698.2	2,698.0	5.9	5.9	126.65	46.9	6.6	51.2	39.4	4.354	
2,800.0	2,799.5	2,795.5	2,795.0	6.1	6.1	139.56	49.1	14.7	62.4	50.3	5.145	
2,900.0	2,898.7	2,890.8	2,889.6	6.3	6.3	150.74	52.2	25.6	81.6	69.1	6.535	
3,000.0	2,997.5	2,983.4	2,981.1	6.5	6.5	158.89	56.0	39.2	108.7	95.9	8.487	
3,100.0	3,095.6	3,072.8	3,069.0	6.8	6.8	164.48	60.5	54.9	143.3	130.1	10.921	
3,200.0	3,193.1	3,158.6	3,152.8	7.1	7.0	168.33	65.4	72.5	184.5	171.1	13.762	
3,300.0	3,289.6	3,240.3	3,232.1	7.4	7.3	171.02	70.8	91.6	231.9	218.2	16.952	
3,400.0	3,385.3	3,317.8	3,306.8	7.8	7.6	172.96	76.4	111.6	284.9	271.0	20.448	
3,499.8	3,479.7	3,390.7	3,376.4	8.2	7.8	174.39	82.3	132.2	343.1	328.9	24.202	
3,600.0	3,573.8	3,460.2	3,442.3	8.7	8.1	175.59	88.2	153.4	405.0	390.6	28.101	
3,700.0	3,667.8	3,527.0	3,505.1	9.2	8.5	176.52	94.4	175.3	468.7	454.1	32.020	
3,800.0	3,761.7	3,591.2	3,565.0	9.7	8.8	177.25	100.7	197.6	534.2	519.4	35.958	
3,900.0	3,855.7	3,653.0	3,622.1	10.3	9.1	177.84	107.1	220.3	601.4	586.4	39.906	
4,000.0	3,949.7	3,712.3	3,676.5	10.9	9.5	178.34	113.5	243.2	670.2	654.9	43.872	
4,078.2	4,023.1	3,757.1	3,717.2	11.4	9.8	178.67	118.6	261.3	725.0	709.6	46.974	
4,100.0	4,043.7	3,769.4	3,728.3	11.5	9.8	178.76	120.1	266.3	740.4	724.9	47.839	
4,200.0	4,138.5	3,825.7	3,778.9	11.9	10.2	179.15	126.7	290.0	810.3	794.6	51.711	
4,300.0	4,234.3	3,881.7	3,828.8	12.4	10.6	179.48	133.6	314.6	879.1	863.2	55.433	
4,400.0	4,331.1	3,937.5	3,878.0	12.8	11.1	179.76	140.8	339.9	946.7	930.7	59.007	
4,500.0	4,428.7	4,000.0	3,932.4	13.2	11.6	-179.97	149.1	369.4	1,013.3	997.0	62.152	
4,600.0	4,527.0	4,048.5	3,974.2	13.5	12.0	-179.78	155.8	393.1	1,078.7	1,062.3	65.767	
4,700.0	4,625.9	4,100.0	4,018.1	13.8	12.5	-179.61	163.1	419.0	1,142.9	1,126.4	69.161	
4,800.0	4,725.2	4,159.9	4,068.5	14.1	13.0	-179.42	171.8	450.0	1,205.9	1,189.1	72.011	
4,900.0	4,824.9	4,239.0	4,134.8	14.4	13.8	-179.19	183.6	491.7	1,266.8	1,249.6	73.718	
5,000.0	4,924.8	4,320.3	4,202.9	14.5	14.7	-178.99	195.6	534.4	1,325.0	1,307.4	75.139	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #206 - Wellbore #1 - Design #1

Survey Program: 0-MWD default

Offset Site Error: 0.0 usft

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
5,078.0	5,002.8	4,385.0	4,257.1	14.7	15.3	69.11	205.2	568.5	1,368.4	1,350.4	76.081	
5,100.0	5,024.8	4,403.4	4,272.5	14.7	15.5	69.16	207.9	576.1	1,380.4	1,362.3	76.319	
5,200.0	5,124.8	4,487.2	4,342.6	14.9	16.4	69.35	220.3	622.2	1,434.9	1,416.3	77.293	
5,300.0	5,224.8	4,570.9	4,412.8	15.0	17.3	69.53	232.8	666.2	1,489.4	1,470.3	78.195	
5,400.0	5,324.8	4,654.7	4,482.9	15.2	18.2	69.70	245.2	710.3	1,543.9	1,524.4	79.034	
5,500.0	5,424.8	4,738.4	4,553.0	15.4	19.2	69.86	257.6	754.3	1,598.4	1,578.4	79.814	
5,600.0	5,524.8	4,822.1	4,623.2	15.5	20.1	70.00	270.0	798.4	1,653.0	1,632.5	80.542	
5,700.0	5,624.8	4,905.9	4,693.3	15.7	21.0	70.14	282.4	842.4	1,707.5	1,686.5	81.220	
5,800.0	5,724.8	4,989.6	4,763.4	15.9	22.0	70.26	294.8	886.5	1,762.1	1,740.6	81.852	
5,900.0	5,824.8	5,073.4	4,833.6	16.0	22.9	70.38	307.3	930.6	1,816.7	1,794.6	82.442	
6,000.0	5,924.8	5,157.1	4,903.7	16.2	23.9	70.50	319.7	974.6	1,871.2	1,848.7	82.995	
6,100.0	6,024.8	5,240.9	4,973.8	16.4	24.8	70.60	332.1	1,018.7	1,925.8	1,902.7	83.514	
6,200.0	6,124.8	5,324.6	5,044.0	16.6	25.8	70.71	344.5	1,062.7	1,980.4	1,956.8	84.002	
6,300.0	6,224.8	5,408.4	5,114.1	16.7	26.7	70.80	356.9	1,106.8	2,034.9	2,010.8	84.461	
6,400.0	6,324.8	5,492.1	5,184.2	16.9	27.7	70.89	369.3	1,150.8	2,089.5	2,064.9	84.892	
6,500.0	6,424.8	5,575.9	5,254.4	17.1	28.7	70.98	381.7	1,194.9	2,144.1	2,119.0	85.298	
6,600.0	6,524.8	5,659.6	5,324.5	17.3	29.7	71.06	394.2	1,238.9	2,198.7	2,173.0	85.681	
6,700.0	6,624.8	5,743.3	5,394.6	17.4	30.6	71.14	406.6	1,283.0	2,253.3	2,227.1	86.044	
6,800.0	6,724.8	5,827.1	5,464.8	17.6	31.6	71.21	419.0	1,327.0	2,307.9	2,281.2	86.387	
6,900.0	6,824.8	5,910.8	5,534.9	17.8	32.6	71.28	431.4	1,371.1	2,362.5	2,335.2	86.711	
7,000.0	6,924.8	5,994.6	5,605.0	18.0	33.6	71.35	443.8	1,415.1	2,417.1	2,389.3	87.019	
7,100.0	7,024.8	6,078.3	5,675.2	18.2	34.5	71.41	456.2	1,459.2	2,471.7	2,443.4	87.310	
7,200.0	7,124.8	6,461.8	6,007.6	18.4	38.1	71.65	507.9	1,642.6	2,522.0	2,490.9	80.902	
7,300.0	7,224.8	7,383.9	6,886.0	18.5	42.9	71.93	580.3	1,899.3	2,550.1	2,514.9	72.545	
7,342.1	7,266.9	7,765.9	7,266.9	18.6	43.5	71.95	587.2	1,923.8	2,552.9	2,517.5	72.092	
7,343.6	7,268.4	7,738.0	7,239.1	18.6	43.5	-89.00	587.1	1,923.5	2,552.7	2,517.3	72.031	
7,350.0	7,274.8	7,744.4	7,245.5	18.6	43.5	-89.00	587.1	1,923.5	2,552.8	2,517.4	71.988	
7,400.0	7,324.7	7,820.0	7,320.9	18.7	43.5	-89.01	585.0	1,924.5	2,552.9	2,517.3	71.694	
7,450.0	7,374.3	7,866.7	7,367.3	18.8	43.6	-89.02	579.6	1,926.4	2,552.9	2,517.1	71.343	
7,500.0	7,423.2	7,913.5	7,413.2	18.9	43.6	-89.03	571.0	1,929.3	2,552.9	2,516.9	70.978	
7,550.0	7,471.1	7,960.4	7,458.4	19.0	43.6	-89.05	559.3	1,933.4	2,552.9	2,516.7	70.593	
7,600.0	7,517.8	8,007.3	7,502.6	19.0	43.7	-89.08	544.4	1,938.5	2,552.8	2,516.5	70.181	
7,650.0	7,562.9	8,054.3	7,545.6	19.1	43.7	-89.11	526.5	1,944.7	2,552.8	2,516.2	69.731	
7,700.0	7,606.2	8,100.0	7,585.9	19.2	43.8	-89.15	506.2	1,951.7	2,552.8	2,515.9	69.233	
7,724.7	7,626.9	8,124.7	7,607.0	19.3	43.8	-89.17	494.1	1,955.9	2,552.8	2,515.8	68.954	
7,750.0	7,647.4	8,148.6	7,627.0	19.3	43.8	-89.19	481.7	1,960.2	2,552.8	2,515.6	68.673	
7,800.0	7,686.3	8,195.9	7,665.0	19.4	43.9	-89.24	455.0	1,969.4	2,552.7	2,515.2	68.041	
7,850.0	7,722.6	8,243.4	7,700.9	19.6	44.0	-89.29	425.6	1,979.5	2,552.7	2,514.8	67.329	
7,900.0	7,756.1	8,291.1	7,734.5	19.7	44.1	-89.34	393.7	1,990.5	2,552.7	2,514.3	66.530	
7,950.0	7,786.5	8,338.9	7,765.6	19.9	44.2	-89.40	359.4	2,002.4	2,552.7	2,513.8	65.640	
8,000.0	7,813.8	8,386.9	7,794.0	20.1	44.3	-89.47	322.8	2,015.0	2,552.6	2,513.1	64.661	
8,050.0	7,837.7	8,435.1	7,819.5	20.4	44.4	-89.53	284.2	2,028.4	2,552.6	2,512.5	63.595	
8,100.0	7,858.0	8,483.6	7,841.9	20.7	44.5	-89.60	243.6	2,042.4	2,552.6	2,511.7	62.451	
8,150.0	7,874.8	8,532.2	7,861.1	21.0	44.7	-89.67	201.3	2,057.0	2,552.6	2,510.9	61.239	
8,200.0	7,887.7	8,581.1	7,876.9	21.4	44.9	-89.75	157.6	2,072.1	2,552.5	2,510.0	59.973	
8,250.0	7,896.9	8,630.3	7,889.1	21.8	45.1	-89.82	112.6	2,087.6	2,552.5	2,509.0	58.667	
8,300.0	7,902.1	8,679.7	7,897.7	22.2	45.3	-89.90	66.6	2,103.5	2,552.5	2,508.0	57.337	
8,342.1	7,903.5	8,721.5	7,902.0	22.6	45.5	-89.97	27.3	2,117.0	2,552.5	2,507.1	56.202	
8,400.0	7,903.5	8,779.3	7,903.5	23.3	45.7	-90.00	-27.3	2,135.9	2,552.5	2,505.8	54.632	
8,407.1	7,903.5	8,786.4	7,903.5	23.3	45.8	-90.00	-34.0	2,138.2	2,552.5	2,505.7	54.491	
8,500.0	7,903.5	8,879.3	7,903.5	24.4	46.3	-90.00	-121.8	2,168.5	2,552.5	2,503.5	52.090	
8,600.0	7,903.5	8,979.3	7,903.5	25.6	46.9	-90.00	-216.3	2,201.2	2,552.5	2,500.9	49.462	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #206 - Wellbore #1 - Design #1 — **Offset Site Error:** 0.0 usft

Survey Program: 0-MWD default — **Offset Well Error:** 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
8,700.0	7,903.5	9,079.3	7,903.5	26.9	47.6	-90.00	-310.9	2,233.8	2,552.5	2,498.2	46.988	
8,800.0	7,903.5	9,179.3	7,903.5	28.3	48.3	-90.00	-405.4	2,266.4	2,552.5	2,495.3	44.651	
8,900.0	7,903.5	9,279.3	7,903.5	29.8	49.1	-90.00	-499.9	2,299.1	2,552.5	2,492.4	42.458	
9,000.0	7,903.5	9,379.3	7,903.5	31.3	50.0	-90.00	-594.4	2,331.7	2,552.5	2,489.3	40.410	
9,100.0	7,903.5	9,479.3	7,903.5	32.8	50.9	-90.00	-689.0	2,364.4	2,552.5	2,486.2	38.502	
9,200.0	7,903.5	9,579.3	7,903.5	34.4	51.9	-90.00	-783.5	2,397.0	2,552.5	2,483.0	36.729	
9,300.0	7,903.5	9,679.3	7,903.5	36.1	52.9	-90.00	-878.0	2,429.6	2,552.5	2,479.8	35.082	
9,400.0	7,903.5	9,779.3	7,903.5	37.7	54.0	-90.00	-972.5	2,462.3	2,552.5	2,476.4	33.552	
9,500.0	7,903.5	9,879.3	7,903.5	39.4	55.2	-90.00	-1,067.1	2,494.9	2,552.5	2,473.1	32.132	
9,600.0	7,903.5	9,979.3	7,903.5	41.1	56.3	-90.00	-1,161.6	2,527.5	2,552.5	2,469.7	30.811	
9,700.0	7,903.5	10,079.3	7,903.5	42.8	57.6	-90.00	-1,256.1	2,560.2	2,552.5	2,466.2	29.582	
9,800.0	7,903.5	10,179.3	7,903.5	44.5	58.8	-90.00	-1,350.6	2,592.8	2,552.5	2,462.7	28.437	
9,900.0	7,903.5	10,279.3	7,903.5	46.3	60.1	-90.00	-1,445.2	2,625.4	2,552.5	2,459.2	27.369	
10,000.0	7,903.5	10,379.3	7,903.5	48.0	61.5	-90.00	-1,539.7	2,658.1	2,552.5	2,455.7	26.371	
10,100.0	7,903.5	10,479.3	7,903.5	49.8	62.9	-90.00	-1,634.2	2,690.7	2,552.5	2,452.2	25.437	
10,200.0	7,903.5	10,579.3	7,903.5	51.6	64.3	-90.00	-1,728.7	2,723.3	2,552.5	2,448.6	24.563	
10,300.0	7,903.5	10,679.3	7,903.5	53.4	65.7	-90.00	-1,823.3	2,756.0	2,552.5	2,445.0	23.742	
10,400.0	7,903.5	10,779.3	7,903.5	55.2	67.2	-90.00	-1,917.8	2,788.6	2,552.5	2,441.4	22.971	
10,500.0	7,903.5	10,879.3	7,903.5	57.0	68.6	-90.00	-2,012.3	2,821.2	2,552.5	2,437.8	22.246	
10,600.0	7,903.5	10,979.3	7,903.5	58.8	70.1	-90.00	-2,106.8	2,853.9	2,552.5	2,434.1	21.562	
10,700.0	7,903.5	11,079.3	7,903.5	60.6	71.7	-90.00	-2,201.4	2,886.5	2,552.5	2,430.5	20.918	
10,800.0	7,903.5	11,179.3	7,903.5	62.4	73.2	-90.00	-2,295.9	2,919.2	2,552.5	2,426.8	20.308	
10,900.0	7,903.5	11,279.3	7,903.5	64.3	74.8	-90.00	-2,390.4	2,951.8	2,552.5	2,423.1	19.732	
11,000.0	7,903.5	11,379.3	7,903.5	66.1	76.4	-90.00	-2,484.9	2,984.4	2,552.5	2,419.5	19.186	
11,100.0	7,903.5	11,479.3	7,903.5	68.0	78.0	-90.00	-2,579.5	3,017.1	2,552.5	2,415.8	18.668	
11,200.0	7,903.5	11,579.3	7,903.5	69.8	79.6	-90.00	-2,674.0	3,049.7	2,552.5	2,412.1	18.176	
11,300.0	7,903.5	11,679.3	7,903.5	71.7	81.2	-90.00	-2,768.5	3,082.3	2,552.5	2,408.4	17.709	
11,400.0	7,903.5	11,779.3	7,903.5	73.5	82.9	-90.00	-2,863.0	3,115.0	2,552.5	2,404.7	17.264	
11,500.0	7,903.5	11,879.3	7,903.5	75.4	84.5	-90.00	-2,957.6	3,147.6	2,552.5	2,400.9	16.841	
11,600.0	7,903.5	11,979.3	7,903.5	77.2	86.2	-90.00	-3,052.1	3,180.2	2,552.5	2,397.2	16.437	
11,700.0	7,903.5	12,079.3	7,903.5	79.1	87.9	-90.00	-3,146.6	3,212.9	2,552.5	2,393.5	16.051	
11,800.0	7,903.5	12,179.3	7,903.5	81.0	89.6	-90.00	-3,241.1	3,245.5	2,552.5	2,389.7	15.683	
11,900.0	7,903.5	12,279.3	7,903.5	82.8	91.3	-90.00	-3,335.7	3,278.1	2,552.5	2,386.0	15.330	
12,000.0	7,903.5	12,379.3	7,903.5	84.7	93.0	-90.00	-3,430.2	3,310.8	2,552.5	2,382.3	14.993	
12,100.0	7,903.5	12,479.3	7,903.5	86.6	94.7	-90.00	-3,524.7	3,343.4	2,552.5	2,378.5	14.670	
12,200.0	7,903.5	12,579.3	7,903.5	88.4	96.4	-90.00	-3,619.2	3,376.0	2,552.5	2,374.8	14.360	
12,300.0	7,903.5	12,679.3	7,903.5	90.3	98.2	-90.00	-3,713.8	3,408.7	2,552.5	2,371.0	14.063	
12,400.0	7,903.5	12,779.3	7,903.5	92.2	99.9	-90.00	-3,808.3	3,441.3	2,552.5	2,367.2	13.777	
12,500.0	7,903.5	12,879.3	7,903.5	94.1	101.7	-90.00	-3,902.8	3,474.0	2,552.5	2,363.5	13.503	
12,600.0	7,903.5	12,979.3	7,903.5	96.0	103.4	-90.00	-3,997.3	3,506.6	2,552.5	2,359.7	13.239	
12,700.0	7,903.5	13,079.3	7,903.5	97.9	105.2	-90.00	-4,091.8	3,539.2	2,552.5	2,355.9	12.985	
12,800.0	7,903.5	13,179.3	7,903.5	99.7	107.0	-90.00	-4,186.4	3,571.9	2,552.5	2,352.2	12.741	
12,900.0	7,903.5	13,279.3	7,903.5	101.6	108.7	-90.00	-4,280.9	3,604.5	2,552.5	2,348.4	12.505	
13,000.0	7,903.5	13,379.3	7,903.5	103.5	110.5	-90.00	-4,375.4	3,637.1	2,552.5	2,344.6	12.278	
13,100.0	7,903.5	13,479.3	7,903.5	105.4	112.3	-90.00	-4,469.9	3,669.8	2,552.5	2,340.8	12.058	
13,200.0	7,903.5	13,579.3	7,903.5	107.3	114.1	-90.00	-4,564.5	3,702.4	2,552.5	2,337.0	11.847	
13,300.0	7,903.5	13,679.3	7,903.5	109.2	115.9	-90.00	-4,659.0	3,735.0	2,552.5	2,333.3	11.642	
13,400.0	7,903.5	13,779.3	7,903.5	111.1	117.7	-90.00	-4,753.5	3,767.7	2,552.5	2,329.5	11.445	
13,500.0	7,903.5	13,879.3	7,903.5	113.0	119.5	-90.00	-4,848.0	3,800.3	2,552.5	2,325.7	11.253	
13,600.0	7,903.5	13,979.3	7,903.5	114.9	121.3	-90.00	-4,942.6	3,832.9	2,552.5	2,321.9	11.068	
13,700.0	7,903.5	14,079.3	7,903.5	116.8	123.1	-90.00	-5,037.1	3,865.6	2,552.5	2,318.1	10.889	
13,800.0	7,903.5	14,179.3	7,903.5	118.7	124.9	-90.00	-5,131.6	3,898.2	2,552.5	2,314.3	10.716	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #206 - Wellbore #1 - Design #1

Survey Program: 0-MWD default

Offset Site Error: 0.0 usft

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
13,900.0	7,903.5	14,279.3	7,903.5	120.6	126.7	-90.00	-5,226.1	3,930.8	2,552.5	2,310.5	10.548	
14,000.0	7,903.5	14,379.3	7,903.5	122.5	128.5	-90.00	-5,320.7	3,963.5	2,552.5	2,306.7	10.385	
14,100.0	7,903.5	14,479.3	7,903.5	124.4	130.3	-90.00	-5,415.2	3,996.1	2,552.5	2,302.9	10.227	
14,200.0	7,903.5	14,579.3	7,903.5	126.3	132.2	-90.00	-5,509.7	4,028.8	2,552.5	2,299.1	10.074	
14,300.0	7,903.5	14,679.3	7,903.5	128.2	134.0	-90.00	-5,604.2	4,061.4	2,552.5	2,295.3	9.925	
14,400.0	7,903.5	14,779.3	7,903.5	130.1	135.8	-90.00	-5,698.8	4,094.0	2,552.5	2,291.5	9.780	
14,500.0	7,903.5	14,879.3	7,903.5	132.0	137.7	-90.00	-5,793.3	4,126.7	2,552.5	2,287.7	9.640	
14,600.0	7,903.5	14,979.3	7,903.5	133.9	139.5	-90.00	-5,887.8	4,159.3	2,552.5	2,283.9	9.503	
14,700.0	7,903.5	15,079.3	7,903.5	135.8	141.3	-90.00	-5,982.3	4,191.9	2,552.5	2,280.1	9.370	
14,800.0	7,903.5	15,179.3	7,903.5	137.7	143.2	-90.00	-6,076.9	4,224.6	2,552.5	2,276.3	9.241	
14,900.0	7,903.5	15,279.3	7,903.5	139.6	145.0	-90.00	-6,171.4	4,257.2	2,552.5	2,272.5	9.116	
15,000.0	7,903.5	15,379.3	7,903.5	141.5	146.9	-90.00	-6,265.9	4,289.8	2,552.5	2,268.7	8.993	
15,100.0	7,903.5	15,479.3	7,903.5	143.4	148.7	-90.00	-6,360.4	4,322.5	2,552.5	2,264.9	8.874	
15,200.0	7,903.5	15,579.3	7,903.5	145.3	150.6	-90.00	-6,455.0	4,355.1	2,552.5	2,261.1	8.758	
15,300.0	7,903.5	15,679.3	7,903.5	147.2	152.4	-90.00	-6,549.5	4,387.7	2,552.5	2,257.2	8.645	
15,400.0	7,903.5	15,779.3	7,903.5	149.1	154.3	-90.00	-6,644.0	4,420.4	2,552.5	2,253.4	8.535	
15,500.0	7,903.5	15,879.3	7,903.5	151.0	156.1	-90.00	-6,738.5	4,453.0	2,552.5	2,249.6	8.427	
15,600.0	7,903.5	15,979.3	7,903.5	152.9	158.0	-90.00	-6,833.1	4,485.6	2,552.5	2,245.8	8.323	
15,700.0	7,903.5	16,079.3	7,903.5	154.8	159.8	-90.00	-6,927.6	4,518.3	2,552.5	2,242.0	8.220	
15,800.0	7,903.5	16,179.3	7,903.5	156.7	161.7	-90.00	-7,022.1	4,550.9	2,552.5	2,238.2	8.121	
15,900.0	7,903.5	16,279.3	7,903.5	158.6	163.5	-90.00	-7,116.6	4,583.6	2,552.5	2,234.4	8.023	
16,000.0	7,903.5	16,379.3	7,903.5	160.5	165.4	-90.00	-7,211.2	4,616.2	2,552.5	2,230.5	7.928	
16,100.0	7,903.5	16,479.3	7,903.5	162.4	167.3	-90.00	-7,305.7	4,648.8	2,552.5	2,226.7	7.835	
16,200.0	7,903.5	16,579.3	7,903.5	164.3	169.1	-90.00	-7,400.2	4,681.5	2,552.5	2,222.9	7.744	
16,300.0	7,903.5	16,679.3	7,903.5	166.3	171.0	-90.00	-7,494.7	4,714.1	2,552.5	2,219.1	7.656	
16,400.0	7,903.5	16,779.3	7,903.5	168.2	172.9	-90.00	-7,589.3	4,746.7	2,552.5	2,215.3	7.569	
16,500.0	7,903.5	16,879.3	7,903.5	170.1	174.7	-90.00	-7,683.8	4,779.4	2,552.5	2,211.4	7.484	
16,600.0	7,903.5	16,979.3	7,903.5	172.0	176.6	-90.00	-7,778.3	4,812.0	2,552.5	2,207.6	7.401	
16,700.0	7,903.5	17,079.3	7,903.5	173.9	178.5	-90.00	-7,872.8	4,844.6	2,552.5	2,203.8	7.320	
16,800.0	7,903.5	17,179.3	7,903.5	175.8	180.3	-90.00	-7,967.4	4,877.3	2,552.5	2,200.0	7.241	
16,900.0	7,903.5	17,279.3	7,903.5	177.7	182.2	-90.00	-8,061.9	4,909.9	2,552.5	2,196.2	7.163	
17,000.0	7,903.5	17,379.3	7,903.5	179.6	184.1	-90.00	-8,156.4	4,942.5	2,552.5	2,192.3	7.087	
17,100.0	7,903.5	17,479.3	7,903.5	181.5	186.0	-90.00	-8,250.9	4,975.2	2,552.5	2,188.5	7.013	
17,200.0	7,903.5	17,579.3	7,903.5	183.4	187.8	-90.00	-8,345.5	5,007.8	2,552.5	2,184.7	6.940	
17,300.0	7,903.5	17,679.3	7,903.5	185.4	189.7	-90.00	-8,440.0	5,040.4	2,552.5	2,180.9	6.869	
17,400.0	7,903.5	17,779.3	7,903.5	187.3	191.6	-90.00	-8,534.5	5,073.1	2,552.5	2,177.1	6.799	
17,500.0	7,903.5	17,879.3	7,903.5	189.2	193.5	-90.00	-8,629.0	5,105.7	2,552.5	2,173.2	6.730	
17,600.0	7,903.5	17,979.3	7,903.5	191.1	195.3	-90.00	-8,723.6	5,138.4	2,552.5	2,169.4	6.663	
17,700.0	7,903.5	18,079.3	7,903.5	193.0	197.2	-90.00	-8,818.1	5,171.0	2,552.5	2,165.6	6.597	
17,800.0	7,903.5	18,179.3	7,903.5	194.9	199.1	-90.00	-8,912.6	5,203.6	2,552.5	2,161.8	6.533	
17,900.0	7,903.5	18,279.3	7,903.5	196.8	201.0	-90.00	-9,007.1	5,236.3	2,552.5	2,157.9	6.469	
18,000.0	7,903.5	18,379.3	7,903.5	198.7	202.9	-90.00	-9,101.7	5,268.9	2,552.5	2,154.1	6.407	
18,100.0	7,903.5	18,479.3	7,903.5	200.6	204.7	-90.00	-9,196.2	5,301.5	2,552.5	2,150.3	6.346	
18,200.0	7,903.5	18,579.3	7,903.5	202.6	206.6	-90.00	-9,290.7	5,334.2	2,552.5	2,146.5	6.286	
18,300.0	7,903.5	18,679.3	7,903.5	204.5	208.5	-90.00	-9,385.2	5,366.8	2,552.5	2,142.6	6.228	
18,400.0	7,903.5	18,779.3	7,903.5	206.4	210.4	-90.00	-9,479.8	5,399.4	2,552.5	2,138.8	6.170	
18,500.0	7,903.5	18,879.3	7,903.5	208.3	212.3	-90.00	-9,574.3	5,432.1	2,552.5	2,135.0	6.113	
18,600.0	7,903.5	18,979.3	7,903.5	210.2	214.2	-90.00	-9,668.8	5,464.7	2,552.5	2,131.1	6.058	
18,700.0	7,903.5	19,079.3	7,903.5	212.1	216.1	-90.00	-9,763.3	5,497.3	2,552.5	2,127.3	6.003	
18,800.0	7,903.5	19,179.3	7,903.5	214.0	217.9	-90.00	-9,857.9	5,530.0	2,552.5	2,123.5	5.950	
18,900.0	7,903.5	19,279.3	7,903.5	216.0	219.8	-90.00	-9,952.4	5,562.6	2,552.5	2,119.7	5.897	
19,000.0	7,903.5	19,379.3	7,903.5	217.9	221.7	-90.00	-10,046.9	5,595.2	2,552.5	2,115.8	5.845	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Offset Design Johnson TFP40 Pad - Johnson TFP40 #206 - Wellbore #1 - Design #1

Survey Program: 0-MWD default

Offset Site Error: 0.0 usft

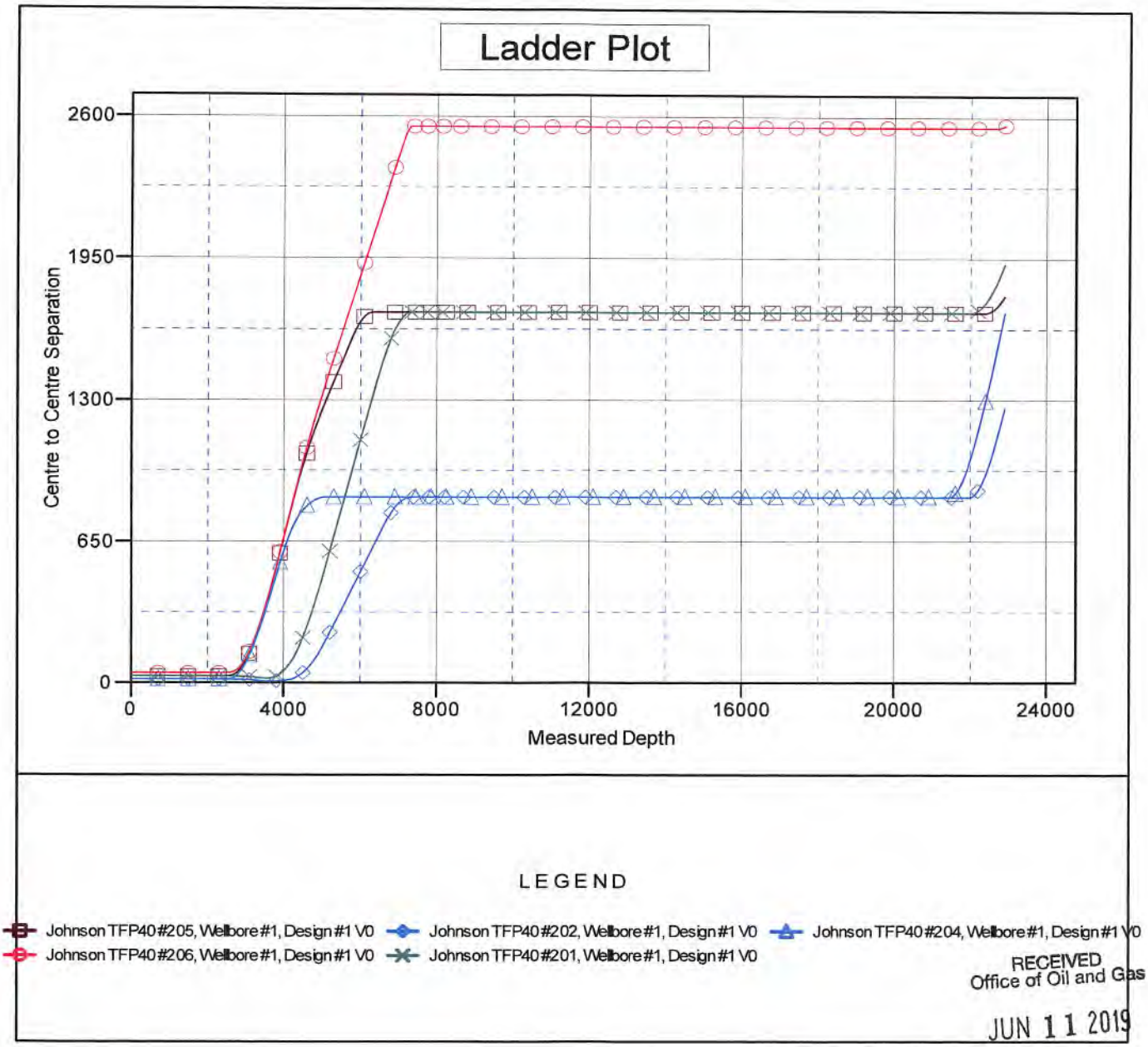
Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
19,100.0	7,903.5	19,479.3	7,903.5	219.8	223.6	-90.00	-10,141.4	5,627.9	2,552.5	2,112.0	5.795	
19,200.0	7,903.5	19,579.3	7,903.5	221.7	225.5	-90.00	-10,236.0	5,660.5	2,552.5	2,108.2	5.745	
19,300.0	7,903.5	19,679.3	7,903.5	223.6	227.4	-90.00	-10,330.5	5,693.1	2,552.5	2,104.3	5.696	
19,400.0	7,903.5	19,779.3	7,903.5	225.5	229.3	-90.00	-10,425.0	5,725.8	2,552.5	2,100.5	5.647	
19,500.0	7,903.5	19,879.3	7,903.5	227.4	231.2	-90.00	-10,519.5	5,758.4	2,552.5	2,096.7	5.600	
19,600.0	7,903.5	19,979.3	7,903.5	229.4	233.1	-90.00	-10,614.1	5,791.1	2,552.5	2,092.9	5.553	
19,700.0	7,903.5	20,079.3	7,903.5	231.3	235.0	-90.00	-10,708.6	5,823.7	2,552.5	2,089.0	5.507	
19,800.0	7,903.5	20,179.3	7,903.5	233.2	236.8	-90.00	-10,803.1	5,856.3	2,552.5	2,085.2	5.462	
19,900.0	7,903.5	20,279.3	7,903.5	235.1	238.7	-90.00	-10,897.6	5,889.0	2,552.5	2,081.4	5.418	
20,000.0	7,903.5	20,379.3	7,903.5	237.0	240.6	-90.00	-10,992.2	5,921.6	2,552.5	2,077.5	5.374	
20,100.0	7,903.5	20,479.3	7,903.5	238.9	242.5	-90.00	-11,086.7	5,954.2	2,552.5	2,073.7	5.331	
20,200.0	7,903.5	20,579.3	7,903.5	240.8	244.4	-90.00	-11,181.2	5,986.9	2,552.5	2,069.9	5.289	
20,300.0	7,903.5	20,679.3	7,903.5	242.8	246.3	-90.00	-11,275.7	6,019.5	2,552.5	2,066.0	5.247	
20,400.0	7,903.5	20,779.3	7,903.5	244.7	248.2	-90.00	-11,370.3	6,052.1	2,552.5	2,062.2	5.206	
20,500.0	7,903.5	20,879.3	7,903.5	246.6	250.1	-90.00	-11,464.8	6,084.8	2,552.5	2,058.4	5.166	
20,600.0	7,903.5	20,979.3	7,903.5	248.5	252.0	-90.00	-11,559.3	6,117.4	2,552.5	2,054.5	5.126	
20,700.0	7,903.5	21,079.3	7,903.5	250.4	253.9	-90.00	-11,653.8	6,150.0	2,552.5	2,050.7	5.087	
20,800.0	7,903.5	21,179.3	7,903.5	252.3	255.8	-90.00	-11,748.4	6,182.7	2,552.5	2,046.9	5.048	
20,900.0	7,903.5	21,279.3	7,903.5	254.3	257.7	-90.00	-11,842.9	6,215.3	2,552.5	2,043.0	5.010	
21,000.0	7,903.5	21,379.3	7,903.5	256.2	259.6	-90.00	-11,937.4	6,247.9	2,552.5	2,039.2	4.973	
21,100.0	7,903.5	21,479.3	7,903.5	258.1	261.5	-90.00	-12,031.9	6,280.6	2,552.5	2,035.4	4.936	
21,200.0	7,903.5	21,579.3	7,903.5	260.0	263.4	-90.00	-12,126.5	6,313.2	2,552.5	2,031.5	4.900	
21,300.0	7,903.5	21,679.3	7,903.5	261.9	265.3	-90.00	-12,221.0	6,345.9	2,552.5	2,027.7	4.864	
21,400.0	7,903.5	21,779.3	7,903.5	263.8	267.2	-90.00	-12,315.5	6,378.5	2,552.5	2,023.9	4.829	
21,500.0	7,903.5	21,879.3	7,903.5	265.8	269.1	-90.00	-12,410.0	6,411.1	2,552.5	2,020.0	4.794	
21,600.0	7,903.5	21,979.3	7,903.5	267.7	271.0	-90.00	-12,504.6	6,443.8	2,552.5	2,016.2	4.760	
21,700.0	7,903.5	22,079.3	7,903.5	269.6	272.9	-90.00	-12,599.1	6,476.4	2,552.5	2,012.4	4.726	
21,800.0	7,903.5	22,179.3	7,903.5	271.5	274.8	-90.00	-12,693.6	6,509.0	2,552.5	2,008.5	4.693	
21,900.0	7,903.5	22,279.3	7,903.5	273.4	276.7	-90.00	-12,788.1	6,541.7	2,552.5	2,004.7	4.660	
22,000.0	7,903.5	22,379.3	7,903.5	275.3	278.6	-90.00	-12,882.7	6,574.3	2,552.5	2,000.9	4.627	
22,100.0	7,903.5	22,479.3	7,903.5	277.3	280.5	-90.00	-12,977.2	6,606.9	2,552.5	1,997.0	4.595	
22,200.0	7,903.5	22,579.3	7,903.5	279.2	282.4	-90.00	-13,071.7	6,639.6	2,552.5	1,993.2	4.564	
22,300.0	7,903.5	22,679.3	7,903.5	281.1	284.3	-90.00	-13,166.2	6,672.2	2,552.5	1,989.4	4.533	
22,400.0	7,903.5	22,779.3	7,903.5	283.0	286.2	-90.00	-13,260.8	6,704.8	2,552.5	1,985.5	4.502	
22,500.0	7,903.5	22,879.3	7,903.5	284.9	288.1	-90.00	-13,355.3	6,737.5	2,552.5	1,981.7	4.472	
22,600.0	7,903.5	22,979.3	7,903.5	286.8	290.0	-90.00	-13,449.8	6,770.1	2,552.5	1,977.9	4.442	
22,662.1	7,903.5	23,041.4	7,903.5	288.0	291.2	-90.00	-13,508.5	6,790.4	2,552.5	1,975.5	4.424	
22,700.0	7,903.5	23,043.5	7,903.5	288.8	291.2	-90.00	-13,510.5	6,791.1	2,552.7	1,974.7	4.416	
22,800.0	7,903.5	23,043.5	7,903.5	290.7	291.2	-90.00	-13,510.5	6,791.1	2,556.1	1,975.8	4.405	
22,901.3	7,903.5	23,043.5	7,903.5	292.6	291.2	-90.00	-13,510.5	6,791.1	2,563.5	1,981.9	4.408	

Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Reference Depths are relative to Well @ 1359.5usft
Offset Depths are relative to Offset Datum
Central Meridian is 79° 30' 0.000 W

Coordinates are relative to: Johnson TFP40 #203
Coordinate System is US State Plane 1983, West Virginia Northern Zone
Grid Convergence at Surface is: -0.43°

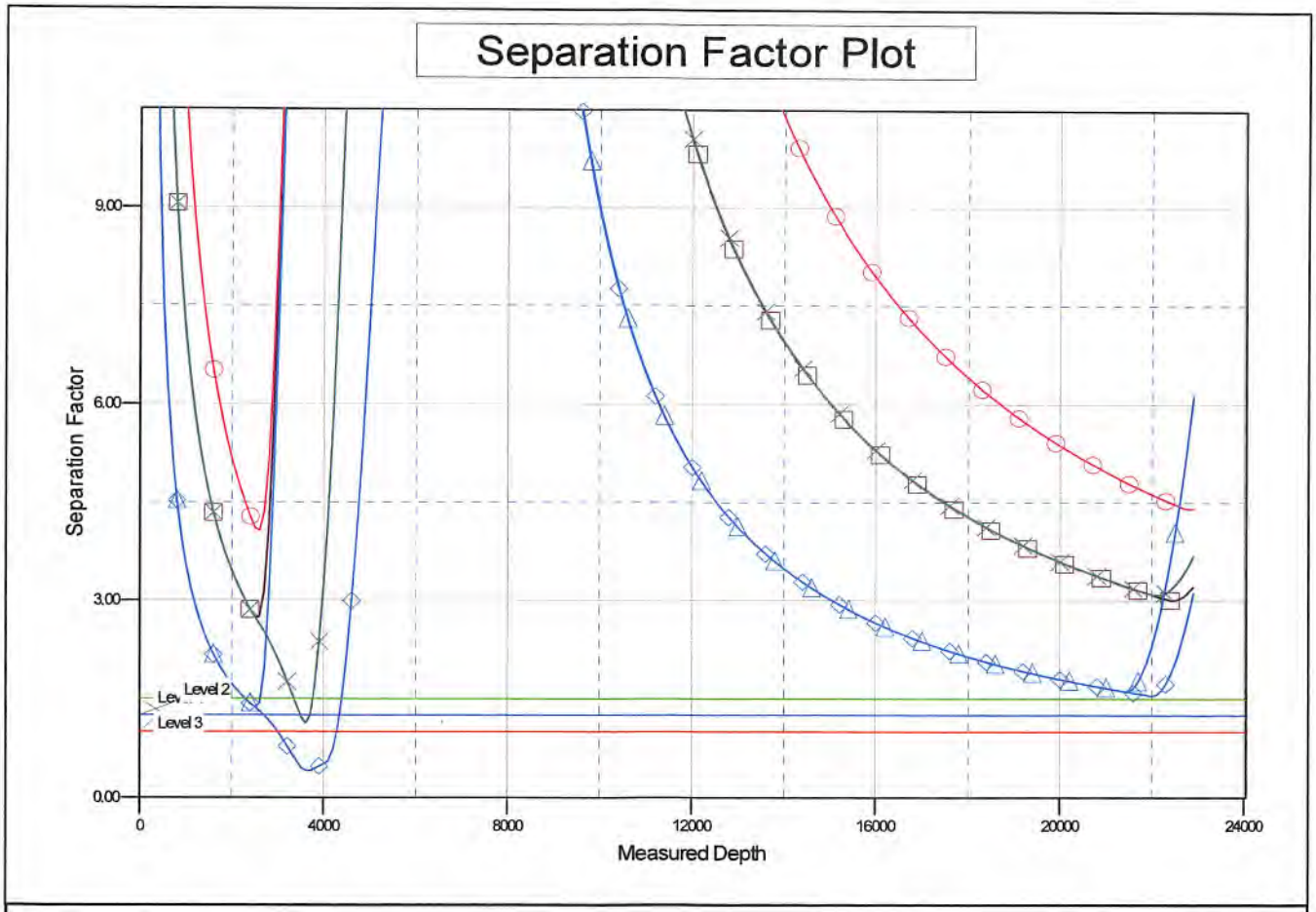


Company:	Arsenal Resources	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Project:	Taylor County, West Virginia	**TVD Reference:**	Well @ 1359.5usft
Reference Site:	Johnson TFP40 Pad	**MD Reference:**	Well @ 1359.5usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.1 Single User Db
Reference Design:	Design #1	**Offset TVD Reference:**	Reference Datum

Reference Depths are relative to Well @ 1359.5usft
Offset Depths are relative to Offset Datum
Central Meridian is 79° 30' 0.000 W

Coordinates are relative to: Johnson TFP40 #203
Coordinate System is US State Plane 1983, West Virginia Northern Zone
Grid Convergence at Surface is: -0.43°

Separation Factor Plot



LEGEND

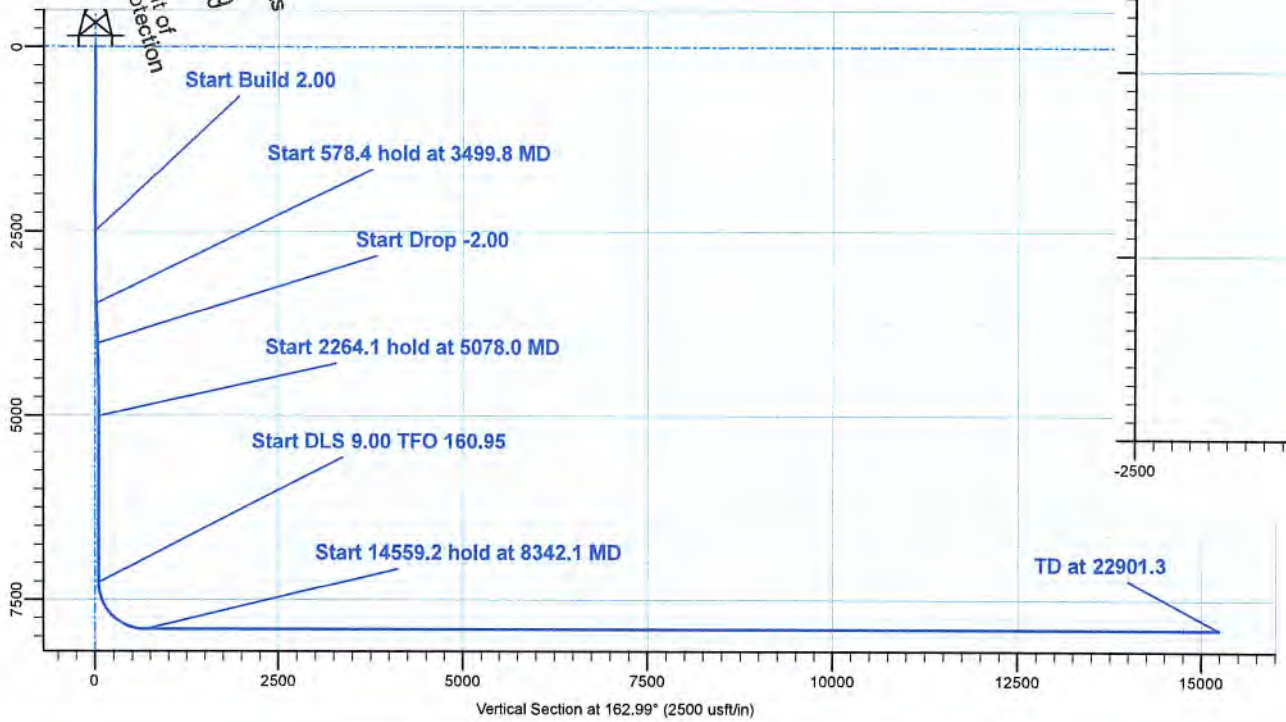
Johnson TFP40 #205, Wellbore #1, Design #1 V0
Johnson TFP40 #202, Wellbore #1, Design #1 V0
Johnson TFP40 #204, Wellbore #1, Design #1 V0
Johnson TFP40 #206, Wellbore #1, Design #1 V0
Johnson TFP40 #201, Wellbore #1, Design #1 V0

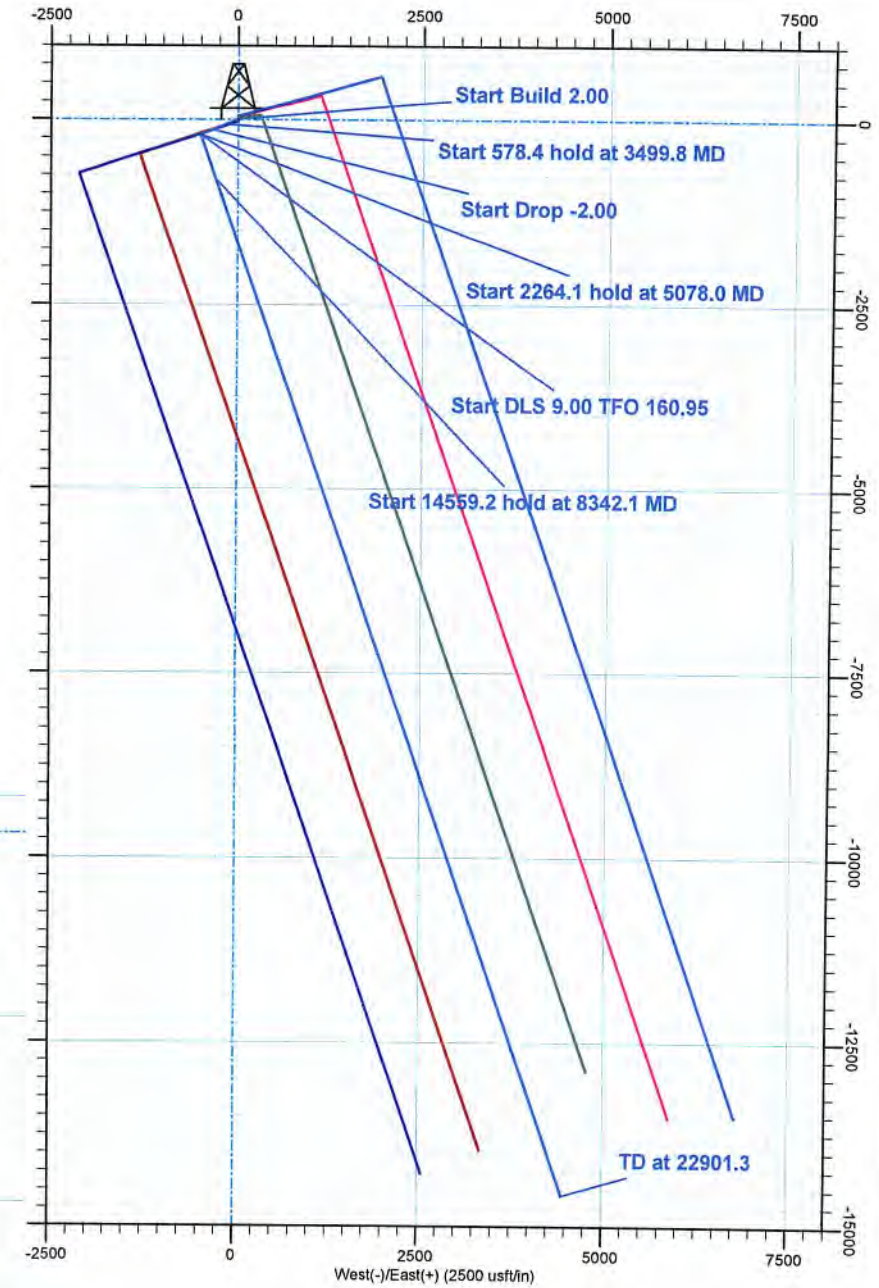
ARSENAL RESOURCES QES

Arsenal Resources
Taylor County, West Virginia
Johnson TFP40 Pad
Johnson TFP40 #203
Design #1

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
2500.0	0.00	0.00	2500.0	0.0	0.0	0.0	0.0	Start Build 2.00
3499.8	20.00	247.96	3479.7	-64.8	-160.1	15.1	172.7	Start 578.4 hold at 3499.8 MD
4078.2	20.00	247.96	4023.1	-139.0	-343.4	32.5	370.5	Start Drop -2.00
5078.0	0.00	360.00	5002.8	-203.8	-503.5	47.6	543.2	Start 2264.1 hold at 5078.0 MD
7342.1	0.00	0.00	7266.9	-203.8	-503.5	47.6	543.2	Start DLS 9.00 TFO 160.95
8342.1	90.00	160.95	7903.5	-805.6	-295.7	683.9	1179.8	Start 14559.2 hold at 8342.1 MD
22901.3	90.00	160.95	7903.5	-14567.6	4455.7	15233.8	15739.0	TD at 22901.3





Arsenal Resources

Taylor County, West Virginia
Johnson TFP40 Pad
Johnson TFP40 #203

Wellbore #1

Plan: Design #1

QES Well Planning Report

17 October, 2018

QES
DIRECTIONAL DRILLING

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Company:	Arsenal Resources	**TVD Reference:**	Well @ 1359.5usft
Project:	Taylor County, West Virginia	**MD Reference:**	Well @ 1359.5usft
Site:	Johnson TFP40 Pad	**North Reference:**	Grid
Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project Taylor County, West Virginia

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	West Virginia Northern Zone		

Site Johnson TFP40 Pad

Site Position:		**Northing:**	277,046.72 usft	**Latitude:**	39° 15' 31.338 N
From:	Map	**Easting:**	1,779,051.66 usft	**Longitude:**	80° 10' 8.622 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.43 °

Well Johnson TFP40 #203

Well Position	**+N/-S**	-45.0 usft	**Northing:**	277,001.72 usft	**Latitude:**	39° 15' 30.894 N
	+E/-W	0.0 usft	**Easting:**	1,779,051.66 usft	**Longitude:**	80° 10' 8.617 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**		**Ground Level:**	1,332.5 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/16/2018	-8.98	66.35	51,687.84379781

Design Design #1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	162.99

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
3,499.8	20.00	247.96	3,479.7	-64.8	-160.1	2.00	2.00	0.00	247.96	
4,078.2	20.00	247.96	4,023.1	-139.0	-343.4	0.00	0.00	0.00	0.00	
5,078.0	0.00	360.00	5,002.8	-203.8	-503.5	2.00	-2.00	0.00	180.00	VP Johnson TFP40
7,342.1	0.00	360.00	7,266.9	-203.8	-503.5	0.00	0.00	0.00	360.00	
8,342.1	90.00	160.95	7,903.5	-805.6	-295.7	9.00	9.00	16.10	160.95	
22,901.3	90.00	160.95	7,903.5	-14,567.6	4,455.7	0.00	0.00	0.00	0.00	PBHL Johnson TFF

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Company:	Arsenal Resources	**TVD Reference:**	Well @ 1359.5usft
Project:	Taylor County, West Virginia	**MD Reference:**	Well @ 1359.5usft
Site:	Johnson TFP40 Pad	**North Reference:**	Grid
Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 2.00									
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	2.00	247.96	2,600.0	-0.7	-1.6	0.2	2.00	2.00	0.00
2,700.0	4.00	247.96	2,699.8	-2.6	-6.5	0.6	2.00	2.00	0.00
2,800.0	6.00	247.96	2,799.5	-5.9	-14.5	1.4	2.00	2.00	0.00
2,900.0	8.00	247.96	2,898.7	-10.5	-25.8	2.4	2.00	2.00	0.00
3,000.0	10.00	247.96	2,997.5	-16.3	-40.3	3.8	2.00	2.00	0.00
3,100.0	12.00	247.96	3,095.6	-23.5	-58.0	5.5	2.00	2.00	0.00
3,200.0	14.00	247.96	3,193.1	-31.9	-78.9	7.5	2.00	2.00	0.00
3,300.0	16.00	247.96	3,289.6	-41.6	-102.9	9.7	2.00	2.00	0.00
3,400.0	18.00	247.96	3,385.3	-52.6	-130.0	12.3	2.00	2.00	0.00
Start 578.4 hold at 3499.8 MD									
3,499.8	20.00	247.96	3,479.7	-64.8	-160.1	15.1	2.00	2.00	0.00
3,600.0	20.00	247.96	3,573.8	-77.7	-191.8	18.2	0.00	0.00	0.00
3,700.0	20.00	247.96	3,667.8	-90.5	-223.5	21.2	0.00	0.00	0.00
3,800.0	20.00	247.96	3,761.7	-103.3	-255.2	24.2	0.00	0.00	0.00
3,900.0	20.00	247.96	3,855.7	-116.2	-286.9	27.1	0.00	0.00	0.00
4,000.0	20.00	247.96	3,949.7	-129.0	-318.6	30.1	0.00	0.00	0.00
Start Drop -2.00									
4,078.2	20.00	247.96	4,023.1	-139.0	-343.4	32.5	0.00	0.00	0.00
4,100.0	19.56	247.96	4,043.7	-141.8	-350.3	33.1	2.00	-2.00	0.00
4,200.0	17.56	247.96	4,138.5	-153.7	-379.8	35.9	2.00	-2.00	0.00
4,300.0	15.56	247.96	4,234.3	-164.4	-406.2	38.4	2.00	-2.00	0.00
4,400.0	13.56	247.96	4,331.1	-173.9	-429.5	40.6	2.00	-2.00	0.00
4,500.0	11.56	247.96	4,428.7	-182.0	-449.6	42.5	2.00	-2.00	0.00
4,600.0	9.56	247.96	4,527.0	-188.9	-466.6	44.2	2.00	-2.00	0.00
4,700.0	7.56	247.96	4,625.9	-194.5	-480.4	45.5	2.00	-2.00	0.00
4,800.0	5.56	247.96	4,725.2	-198.8	-491.0	46.5	2.00	-2.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Company:	Arsenal Resources	**TVD Reference:**	Well @ 1359.5usft
Project:	Taylor County, West Virginia	**MD Reference:**	Well @ 1359.5usft
Site:	Johnson TFP40 Pad	**North Reference:**	Grid
Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,900.0	3.56	247.96	4,824.9	-201.7	-498.4	47.2	2.00	-2.00	0.00
5,000.0	1.56	247.96	4,924.8	-203.4	-502.5	47.5	2.00	-2.00	0.00
Start 2264.1 hold at 5078.0 MD									
5,078.0	0.00	360.00	5,002.8	-203.8	-503.5	47.6	2.00	-2.00	0.00
5,100.0	0.00	0.00	5,024.8	-203.8	-503.5	47.6	0.00	0.00	0.00
5,200.0	0.00	0.00	5,124.8	-203.8	-503.5	47.6	0.00	0.00	0.00
5,300.0	0.00	0.00	5,224.8	-203.8	-503.5	47.6	0.00	0.00	0.00
5,400.0	0.00	0.00	5,324.8	-203.8	-503.5	47.6	0.00	0.00	0.00
5,500.0	0.00	0.00	5,424.8	-203.8	-503.5	47.6	0.00	0.00	0.00
5,600.0	0.00	0.00	5,524.8	-203.8	-503.5	47.6	0.00	0.00	0.00
5,700.0	0.00	0.00	5,624.8	-203.8	-503.5	47.6	0.00	0.00	0.00
5,800.0	0.00	0.00	5,724.8	-203.8	-503.5	47.6	0.00	0.00	0.00
5,900.0	0.00	0.00	5,824.8	-203.8	-503.5	47.6	0.00	0.00	0.00
6,000.0	0.00	0.00	5,924.8	-203.8	-503.5	47.6	0.00	0.00	0.00
6,100.0	0.00	0.00	6,024.8	-203.8	-503.5	47.6	0.00	0.00	0.00
6,200.0	0.00	0.00	6,124.8	-203.8	-503.5	47.6	0.00	0.00	0.00
6,300.0	0.00	0.00	6,224.8	-203.8	-503.5	47.6	0.00	0.00	0.00
6,400.0	0.00	0.00	6,324.8	-203.8	-503.5	47.6	0.00	0.00	0.00
6,500.0	0.00	0.00	6,424.8	-203.8	-503.5	47.6	0.00	0.00	0.00
6,600.0	0.00	0.00	6,524.8	-203.8	-503.5	47.6	0.00	0.00	0.00
6,700.0	0.00	0.00	6,624.8	-203.8	-503.5	47.6	0.00	0.00	0.00
6,800.0	0.00	0.00	6,724.8	-203.8	-503.5	47.6	0.00	0.00	0.00
6,900.0	0.00	0.00	6,824.8	-203.8	-503.5	47.6	0.00	0.00	0.00
7,000.0	0.00	0.00	6,924.8	-203.8	-503.5	47.6	0.00	0.00	0.00
7,100.0	0.00	0.00	7,024.8	-203.8	-503.5	47.6	0.00	0.00	0.00
7,200.0	0.00	0.00	7,124.8	-203.8	-503.5	47.6	0.00	0.00	0.00
7,300.0	0.00	0.00	7,224.8	-203.8	-503.5	47.6	0.00	0.00	0.00
Start DLS 9.00 TFO 160.95									
7,342.1	0.00	0.00	7,266.9	-203.8	-503.5	47.6	0.00	0.00	0.00
7,350.0	0.71	160.95	7,274.8	-203.9	-503.5	47.7	9.00	9.00	0.00
7,400.0	5.21	160.95	7,324.7	-206.3	-502.6	50.3	9.00	9.00	0.00
7,450.0	9.71	160.95	7,374.3	-212.4	-500.5	56.8	9.00	9.00	0.00
7,500.0	14.21	160.95	7,423.2	-222.2	-497.1	67.1	9.00	9.00	0.00
7,550.0	18.71	160.95	7,471.1	-235.6	-492.5	81.3	9.00	9.00	0.00
7,600.0	23.21	160.95	7,517.8	-252.5	-486.7	99.1	9.00	9.00	0.00
7,650.0	27.71	160.95	7,562.9	-272.8	-479.7	120.6	9.00	9.00	0.00
7,700.0	32.21	160.95	7,606.2	-296.4	-471.5	145.6	9.00	9.00	0.00
7,750.0	36.71	160.95	7,647.4	-323.2	-462.3	173.8	9.00	9.00	0.00
7,800.0	41.21	160.95	7,686.3	-352.9	-452.0	205.2	9.00	9.00	0.00
7,850.0	45.71	160.95	7,722.6	-385.4	-440.8	239.6	9.00	9.00	0.00
7,900.0	50.21	160.95	7,756.1	-420.5	-428.7	276.7	9.00	9.00	0.00
7,950.0	54.71	160.95	7,786.5	-457.9	-415.8	316.3	9.00	9.00	0.00
8,000.0	59.21	160.95	7,813.8	-497.5	-402.1	358.2	9.00	9.00	0.00
8,050.0	63.71	160.95	7,837.7	-539.1	-387.8	402.1	9.00	9.00	0.00
8,100.0	68.21	160.95	7,858.0	-582.2	-372.9	447.7	9.00	9.00	0.00
8,150.0	72.71	160.95	7,874.8	-626.7	-357.5	494.8	9.00	9.00	0.00
8,200.0	77.21	160.95	7,887.7	-672.4	-341.7	543.0	9.00	9.00	0.00
8,250.0	81.71	160.95	7,896.9	-718.8	-325.7	592.1	9.00	9.00	0.00
8,300.0	86.21	160.95	7,902.1	-765.8	-309.5	641.8	9.00	9.00	0.00
Start 14559.2 hold at 8342.1 MD									
8,342.1	90.00	160.95	7,903.5	-805.6	-295.7	683.9	9.00	9.00	0.00
8,400.0	90.00	160.95	7,903.5	-860.3	-276.9	741.7	0.00	0.00	0.00
8,500.0	90.00	160.95	7,903.5	-954.8	-244.2	841.6	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Company:	Arsenal Resources	**TVD Reference:**	Well @ 1359.5usft
Project:	Taylor County, West Virginia	**MD Reference:**	Well @ 1359.5usft
Site:	Johnson TFP40 Pad	**North Reference:**	Grid
Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,600.0	90.00	160.95	7,903.5	-1,049.4	-211.6	941.6	0.00	0.00	0.00
8,700.0	90.00	160.95	7,903.5	-1,143.9	-178.9	1,041.5	0.00	0.00	0.00
8,800.0	90.00	160.95	7,903.5	-1,238.4	-146.3	1,141.5	0.00	0.00	0.00
8,900.0	90.00	160.95	7,903.5	-1,332.9	-113.7	1,241.4	0.00	0.00	0.00
9,000.0	90.00	160.95	7,903.5	-1,427.5	-81.0	1,341.3	0.00	0.00	0.00
9,100.0	90.00	160.95	7,903.5	-1,522.0	-48.4	1,441.3	0.00	0.00	0.00
9,200.0	90.00	160.95	7,903.5	-1,616.5	-15.8	1,541.2	0.00	0.00	0.00
9,300.0	90.00	160.95	7,903.5	-1,711.0	16.9	1,641.1	0.00	0.00	0.00
9,400.0	90.00	160.95	7,903.5	-1,805.5	49.5	1,741.1	0.00	0.00	0.00
9,500.0	90.00	160.95	7,903.5	-1,900.1	82.1	1,841.0	0.00	0.00	0.00
9,600.0	90.00	160.95	7,903.5	-1,994.6	114.8	1,940.9	0.00	0.00	0.00
9,700.0	90.00	160.95	7,903.5	-2,089.1	147.4	2,040.9	0.00	0.00	0.00
9,800.0	90.00	160.95	7,903.5	-2,183.6	180.0	2,140.8	0.00	0.00	0.00
9,900.0	90.00	160.95	7,903.5	-2,278.2	212.7	2,240.8	0.00	0.00	0.00
10,000.0	90.00	160.95	7,903.5	-2,372.7	245.3	2,340.7	0.00	0.00	0.00
10,100.0	90.00	160.95	7,903.5	-2,467.2	278.0	2,440.6	0.00	0.00	0.00
10,200.0	90.00	160.95	7,903.5	-2,561.7	310.6	2,540.6	0.00	0.00	0.00
10,300.0	90.00	160.95	7,903.5	-2,656.3	343.2	2,640.5	0.00	0.00	0.00
10,400.0	90.00	160.95	7,903.5	-2,750.8	375.9	2,740.4	0.00	0.00	0.00
10,500.0	90.00	160.95	7,903.5	-2,845.3	408.5	2,840.4	0.00	0.00	0.00
10,600.0	90.00	160.95	7,903.5	-2,939.8	441.1	2,940.3	0.00	0.00	0.00
10,700.0	90.00	160.95	7,903.5	-3,034.4	473.8	3,040.2	0.00	0.00	0.00
10,800.0	90.00	160.95	7,903.5	-3,128.9	506.4	3,140.2	0.00	0.00	0.00
10,900.0	90.00	160.95	7,903.5	-3,223.4	539.0	3,240.1	0.00	0.00	0.00
11,000.0	90.00	160.95	7,903.5	-3,317.9	571.7	3,340.1	0.00	0.00	0.00
11,100.0	90.00	160.95	7,903.5	-3,412.5	604.3	3,440.0	0.00	0.00	0.00
11,200.0	90.00	160.95	7,903.5	-3,507.0	636.9	3,539.9	0.00	0.00	0.00
11,300.0	90.00	160.95	7,903.5	-3,601.5	669.6	3,639.9	0.00	0.00	0.00
11,400.0	90.00	160.95	7,903.5	-3,696.0	702.2	3,739.8	0.00	0.00	0.00
11,500.0	90.00	160.95	7,903.5	-3,790.6	734.8	3,839.7	0.00	0.00	0.00
11,600.0	90.00	160.95	7,903.5	-3,885.1	767.5	3,939.7	0.00	0.00	0.00
11,700.0	90.00	160.95	7,903.5	-3,979.6	800.1	4,039.6	0.00	0.00	0.00
11,800.0	90.00	160.95	7,903.5	-4,074.1	832.8	4,139.5	0.00	0.00	0.00
11,900.0	90.00	160.95	7,903.5	-4,168.7	865.4	4,239.5	0.00	0.00	0.00
12,000.0	90.00	160.95	7,903.5	-4,263.2	898.0	4,339.4	0.00	0.00	0.00
12,100.0	90.00	160.95	7,903.5	-4,357.7	930.7	4,439.4	0.00	0.00	0.00
12,200.0	90.00	160.95	7,903.5	-4,452.2	963.3	4,539.3	0.00	0.00	0.00
12,300.0	90.00	160.95	7,903.5	-4,546.8	995.9	4,639.2	0.00	0.00	0.00
12,400.0	90.00	160.95	7,903.5	-4,641.3	1,028.6	4,739.2	0.00	0.00	0.00
12,500.0	90.00	160.95	7,903.5	-4,735.8	1,061.2	4,839.1	0.00	0.00	0.00
12,600.0	90.00	160.95	7,903.5	-4,830.3	1,093.8	4,939.0	0.00	0.00	0.00
12,700.0	90.00	160.95	7,903.5	-4,924.9	1,126.5	5,039.0	0.00	0.00	0.00
12,800.0	90.00	160.95	7,903.5	-5,019.4	1,159.1	5,138.9	0.00	0.00	0.00
12,900.0	90.00	160.95	7,903.5	-5,113.9	1,191.7	5,238.9	0.00	0.00	0.00
13,000.0	90.00	160.95	7,903.5	-5,208.4	1,224.4	5,338.8	0.00	0.00	0.00
13,100.0	90.00	160.95	7,903.5	-5,303.0	1,257.0	5,438.7	0.00	0.00	0.00
13,200.0	90.00	160.95	7,903.5	-5,397.5	1,289.7	5,538.7	0.00	0.00	0.00
13,300.0	90.00	160.95	7,903.5	-5,492.0	1,322.3	5,638.6	0.00	0.00	0.00
13,400.0	90.00	160.95	7,903.5	-5,586.5	1,354.9	5,738.5	0.00	0.00	0.00
13,500.0	90.00	160.95	7,903.5	-5,681.1	1,387.6	5,838.5	0.00	0.00	0.00
13,600.0	90.00	160.95	7,903.5	-5,775.6	1,420.2	5,938.4	0.00	0.00	0.00
13,700.0	90.00	160.95	7,903.5	-5,870.1	1,452.8	6,038.3	0.00	0.00	0.00
13,800.0	90.00	160.95	7,903.5	-5,964.6	1,485.5	6,138.3	0.00	0.00	0.00
13,900.0	90.00	160.95	7,903.5	-6,059.2	1,518.1	6,238.2	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Company:	Arsenal Resources	**TVD Reference:**	Well @ 1359.5usft
Project:	Taylor County, West Virginia	**MD Reference:**	Well @ 1359.5usft
Site:	Johnson TFP40 Pad	**North Reference:**	Grid
Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,000.0	90.00	160.95	7,903.5	-6,153.7	1,550.7	6,338.2	0.00	0.00	0.00
14,100.0	90.00	160.95	7,903.5	-6,248.2	1,583.4	6,438.1	0.00	0.00	0.00
14,200.0	90.00	160.95	7,903.5	-6,342.7	1,616.0	6,538.0	0.00	0.00	0.00
14,300.0	90.00	160.95	7,903.5	-6,437.3	1,648.6	6,638.0	0.00	0.00	0.00
14,400.0	90.00	160.95	7,903.5	-6,531.8	1,681.3	6,737.9	0.00	0.00	0.00
14,500.0	90.00	160.95	7,903.5	-6,626.3	1,713.9	6,837.8	0.00	0.00	0.00
14,600.0	90.00	160.95	7,903.5	-6,720.8	1,746.5	6,937.8	0.00	0.00	0.00
14,700.0	90.00	160.95	7,903.5	-6,815.4	1,779.2	7,037.7	0.00	0.00	0.00
14,800.0	90.00	160.95	7,903.5	-6,909.9	1,811.8	7,137.6	0.00	0.00	0.00
14,900.0	90.00	160.95	7,903.5	-7,004.4	1,844.5	7,237.6	0.00	0.00	0.00
15,000.0	90.00	160.95	7,903.5	-7,098.9	1,877.1	7,337.5	0.00	0.00	0.00
15,100.0	90.00	160.95	7,903.5	-7,193.5	1,909.7	7,437.5	0.00	0.00	0.00
15,200.0	90.00	160.95	7,903.5	-7,288.0	1,942.4	7,537.4	0.00	0.00	0.00
15,300.0	90.00	160.95	7,903.5	-7,382.5	1,975.0	7,637.3	0.00	0.00	0.00
15,400.0	90.00	160.95	7,903.5	-7,477.0	2,007.6	7,737.3	0.00	0.00	0.00
15,500.0	90.00	160.95	7,903.5	-7,571.6	2,040.3	7,837.2	0.00	0.00	0.00
15,600.0	90.00	160.95	7,903.5	-7,666.1	2,072.9	7,937.1	0.00	0.00	0.00
15,700.0	90.00	160.95	7,903.5	-7,760.6	2,105.5	8,037.1	0.00	0.00	0.00
15,800.0	90.00	160.95	7,903.5	-7,855.1	2,138.2	8,137.0	0.00	0.00	0.00
15,900.0	90.00	160.95	7,903.5	-7,949.7	2,170.8	8,236.9	0.00	0.00	0.00
16,000.0	90.00	160.95	7,903.5	-8,044.2	2,203.4	8,336.9	0.00	0.00	0.00
16,100.0	90.00	160.95	7,903.5	-8,138.7	2,236.1	8,436.8	0.00	0.00	0.00
16,200.0	90.00	160.95	7,903.5	-8,233.2	2,268.7	8,536.8	0.00	0.00	0.00
16,300.0	90.00	160.95	7,903.5	-8,327.8	2,301.4	8,636.7	0.00	0.00	0.00
16,400.0	90.00	160.95	7,903.5	-8,422.3	2,334.0	8,736.6	0.00	0.00	0.00
16,500.0	90.00	160.95	7,903.5	-8,516.8	2,366.6	8,836.6	0.00	0.00	0.00
16,600.0	90.00	160.95	7,903.5	-8,611.3	2,399.3	8,936.5	0.00	0.00	0.00
16,700.0	90.00	160.95	7,903.5	-8,705.9	2,431.9	9,036.4	0.00	0.00	0.00
16,800.0	90.00	160.95	7,903.5	-8,800.4	2,464.5	9,136.4	0.00	0.00	0.00
16,900.0	90.00	160.95	7,903.5	-8,894.9	2,497.2	9,236.3	0.00	0.00	0.00
17,000.0	90.00	160.95	7,903.5	-8,989.4	2,529.8	9,336.3	0.00	0.00	0.00
17,100.0	90.00	160.95	7,903.5	-9,084.0	2,562.4	9,436.2	0.00	0.00	0.00
17,200.0	90.00	160.95	7,903.5	-9,178.5	2,595.1	9,536.1	0.00	0.00	0.00
17,300.0	90.00	160.95	7,903.5	-9,273.0	2,627.7	9,636.1	0.00	0.00	0.00
17,400.0	90.00	160.95	7,903.5	-9,367.5	2,660.3	9,736.0	0.00	0.00	0.00
17,500.0	90.00	160.95	7,903.5	-9,462.1	2,693.0	9,835.9	0.00	0.00	0.00
17,600.0	90.00	160.95	7,903.5	-9,556.6	2,725.6	9,935.9	0.00	0.00	0.00
17,700.0	90.00	160.95	7,903.5	-9,651.1	2,758.2	10,035.8	0.00	0.00	0.00
17,800.0	90.00	160.95	7,903.5	-9,745.6	2,790.9	10,135.7	0.00	0.00	0.00
17,900.0	90.00	160.95	7,903.5	-9,840.2	2,823.5	10,235.7	0.00	0.00	0.00
18,000.0	90.00	160.95	7,903.5	-9,934.7	2,856.2	10,335.6	0.00	0.00	0.00
18,100.0	90.00	160.95	7,903.5	-10,029.2	2,888.8	10,435.6	0.00	0.00	0.00
18,200.0	90.00	160.95	7,903.5	-10,123.7	2,921.4	10,535.5	0.00	0.00	0.00
18,300.0	90.00	160.95	7,903.5	-10,218.3	2,954.1	10,635.4	0.00	0.00	0.00
18,400.0	90.00	160.95	7,903.5	-10,312.8	2,986.7	10,735.4	0.00	0.00	0.00
18,500.0	90.00	160.95	7,903.5	-10,407.3	3,019.3	10,835.3	0.00	0.00	0.00
18,600.0	90.00	160.95	7,903.5	-10,501.8	3,052.0	10,935.2	0.00	0.00	0.00
18,700.0	90.00	160.95	7,903.5	-10,596.3	3,084.6	11,035.2	0.00	0.00	0.00
18,800.0	90.00	160.95	7,903.5	-10,690.9	3,117.2	11,135.1	0.00	0.00	0.00
18,900.0	90.00	160.95	7,903.5	-10,785.4	3,149.9	11,235.0	0.00	0.00	0.00
19,000.0	90.00	160.95	7,903.5	-10,879.9	3,182.5	11,335.0	0.00	0.00	0.00
19,100.0	90.00	160.95	7,903.5	-10,974.4	3,215.1	11,434.9	0.00	0.00	0.00
19,200.0	90.00	160.95	7,903.5	-11,069.0	3,247.8	11,534.9	0.00	0.00	0.00
19,300.0	90.00	160.95	7,903.5	-11,163.5	3,280.4	11,634.8	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Company:	Arsenal Resources	**TVD Reference:**	Well @ 1359.5usft
Project:	Taylor County, West Virginia	**MD Reference:**	Well @ 1359.5usft
Site:	Johnson TFP40 Pad	**North Reference:**	Grid
Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
19,400.0	90.00	160.95	7,903.5	-11,258.0	3,313.1	11,734.7	0.00	0.00	0.00
19,500.0	90.00	160.95	7,903.5	-11,352.5	3,345.7	11,834.7	0.00	0.00	0.00
19,600.0	90.00	160.95	7,903.5	-11,447.1	3,378.3	11,934.6	0.00	0.00	0.00
19,700.0	90.00	160.95	7,903.5	-11,541.6	3,411.0	12,034.5	0.00	0.00	0.00
19,800.0	90.00	160.95	7,903.5	-11,636.1	3,443.6	12,134.5	0.00	0.00	0.00
19,900.0	90.00	160.95	7,903.5	-11,730.6	3,476.2	12,234.4	0.00	0.00	0.00
20,000.0	90.00	160.95	7,903.5	-11,825.2	3,508.9	12,334.3	0.00	0.00	0.00
20,100.0	90.00	160.95	7,903.5	-11,919.7	3,541.5	12,434.3	0.00	0.00	0.00
20,200.0	90.00	160.95	7,903.5	-12,014.2	3,574.1	12,534.2	0.00	0.00	0.00
20,300.0	90.00	160.95	7,903.5	-12,108.7	3,606.8	12,634.2	0.00	0.00	0.00
20,400.0	90.00	160.95	7,903.5	-12,203.3	3,639.4	12,734.1	0.00	0.00	0.00
20,500.0	90.00	160.95	7,903.5	-12,297.8	3,672.0	12,834.0	0.00	0.00	0.00
20,600.0	90.00	160.95	7,903.5	-12,392.3	3,704.7	12,934.0	0.00	0.00	0.00
20,700.0	90.00	160.95	7,903.5	-12,486.8	3,737.3	13,033.9	0.00	0.00	0.00
20,800.0	90.00	160.95	7,903.5	-12,581.4	3,769.9	13,133.8	0.00	0.00	0.00
20,900.0	90.00	160.95	7,903.5	-12,675.9	3,802.6	13,233.8	0.00	0.00	0.00
21,000.0	90.00	160.95	7,903.5	-12,770.4	3,835.2	13,333.7	0.00	0.00	0.00
21,100.0	90.00	160.95	7,903.5	-12,864.9	3,867.9	13,433.6	0.00	0.00	0.00
21,200.0	90.00	160.95	7,903.5	-12,959.5	3,900.5	13,533.6	0.00	0.00	0.00
21,300.0	90.00	160.95	7,903.5	-13,054.0	3,933.1	13,633.5	0.00	0.00	0.00
21,400.0	90.00	160.95	7,903.5	-13,148.5	3,965.8	13,733.5	0.00	0.00	0.00
21,500.0	90.00	160.95	7,903.5	-13,243.0	3,998.4	13,833.4	0.00	0.00	0.00
21,600.0	90.00	160.95	7,903.5	-13,337.6	4,031.0	13,933.3	0.00	0.00	0.00
21,700.0	90.00	160.95	7,903.5	-13,432.1	4,063.7	14,033.3	0.00	0.00	0.00
21,800.0	90.00	160.95	7,903.5	-13,526.6	4,096.3	14,133.2	0.00	0.00	0.00
21,900.0	90.00	160.95	7,903.5	-13,621.1	4,128.9	14,233.1	0.00	0.00	0.00
22,000.0	90.00	160.95	7,903.5	-13,715.7	4,161.6	14,333.1	0.00	0.00	0.00
22,100.0	90.00	160.95	7,903.5	-13,810.2	4,194.2	14,433.0	0.00	0.00	0.00
22,200.0	90.00	160.95	7,903.5	-13,904.7	4,226.8	14,533.0	0.00	0.00	0.00
22,300.0	90.00	160.95	7,903.5	-13,999.2	4,259.5	14,632.9	0.00	0.00	0.00
22,400.0	90.00	160.95	7,903.5	-14,093.8	4,292.1	14,732.8	0.00	0.00	0.00
22,500.0	90.00	160.95	7,903.5	-14,188.3	4,324.8	14,832.8	0.00	0.00	0.00
22,600.0	90.00	160.95	7,903.5	-14,282.8	4,357.4	14,932.7	0.00	0.00	0.00
22,700.0	90.00	160.95	7,903.5	-14,377.3	4,390.0	15,032.6	0.00	0.00	0.00
22,800.0	90.00	160.95	7,903.5	-14,471.9	4,422.7	15,132.6	0.00	0.00	0.00
TD at 22901.3									
22,901.3	90.00	160.95	7,903.5	-14,567.6	4,455.7	15,233.8	0.00	0.00	0.00

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL Johnson TFP4(- plan hits target center - Point	0.00	360.00	7,903.5	-14,567.6	4,455.7	262,434.09	1,783,507.38	39° 13' 7.235 N	80° 9' 10.624 W
LP Johnson TFP40 #2 - plan hits target center - Point	0.00	0.00	7,903.5	-805.6	-295.7	276,196.13	1,778,755.92	39° 15' 22.910 N	80° 10' 12.301 W

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well Johnson TFP40 #203
Company:	Arsenal Resources	**TVD Reference:**	Well @ 1359.5usft
Project:	Taylor County, West Virginia	**MD Reference:**	Well @ 1359.5usft
Site:	Johnson TFP40 Pad	**North Reference:**	Grid
Well:	Johnson TFP40 #203	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
2,500.0	2,500.0	0.0	0.0	Start Build 2.00
3,499.8	3,479.7	-64.8	-160.1	Start 578.4 hold at 3499.8 MD
4,078.2	4,023.1	-139.0	-343.4	Start Drop -2.00
5,078.0	5,002.8	-203.8	-503.5	Start 2264.1 hold at 5078.0 MD
7,342.1	7,266.9	-203.8	-503.5	Start DLS 9.00 TFO 160.95
8,342.1	7,903.5	-805.6	-295.7	Start 14559.2 hold at 8342.1 MD
22,901.3	7,903.5	-14,567.6	4,455.7	TD at 22901.3

ARSENAL RESOURCES

Purpose

The purpose of this pad-specific Hydraulic Fracturing Monitoring Plan is to identify and notify conventional well operators near Arsenal Resources hydraulic fracturing in Taylor County, WV prior to hydraulic fracturing at Johnson TFP40 and Well Number 203.

Due to the apparent presence of unique geological conditions, the potential for communication between deep geologic zones exists in this area. This potential communication, via natural gas, water, or both, may occur between hydraulically fractured wells in the Marcellus formation (approximately 7,910' TVD) and existing conventional natural gas wells in the partially-depleted, relatively high permeability Benson formations (approximately 5,100' TVD).
The plan is being implemented as an additional safety measure to be utilized in conjunction with best management practices and emergency action plans for this site. These additional measures include pre-notification of conventional well operators of the timing and location of the hydraulic fracturing, establishment of measures conventional well operators should implement, and assurance that the Division of Oil and Gas is notified of the timeline, as well as any issues that may arise during fracturing.

1. Communications with Conventional Operators.

Arsenal Resources, using available data (WV Geological Survey, WVDEP Website, and IHS data service), has identified all known conventional wells and well operators within 500 feet of this pad and the lateral sections. A map showing these wells along with a list of the wells and operators is included in Attachment A.
Upon approval of this plan, Arsenal Resources will notify these operators, via letter, of the hydraulic fracturing schedule for these wells. A copy of this letter is included in Attachment B.
The letter provides recommendations to these conventional operators to 1) increase their monitoring of their wells during that time period, 2) ensure that their well head equipment is sound, and 3) provide immediate notification to Arsenal Resources and the OOG in the event of any changes in their well conditions.
Specifically, the letter recommends that conventional well operators conduct the following activities during and after fracturing operations:

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

ARSENAL
RESOURCES

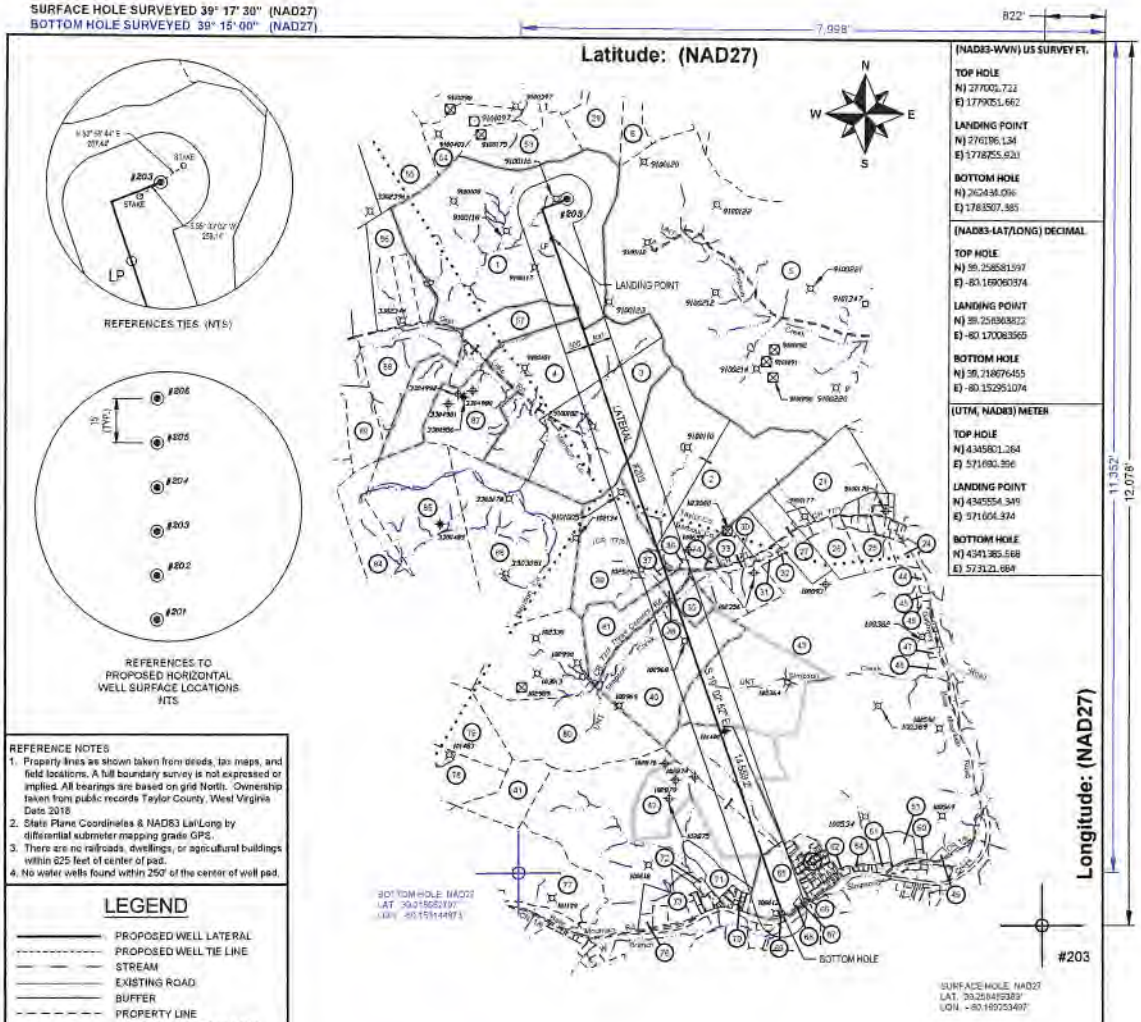
2. Reporting

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

Area of Review Report - __Johnson TFP40_____ Pad, ____203___ Lateral, _____Taylor_____County, WV

Well Name	API Number	Operator Name / Address	Well Type	Latitude	Longitude	Total Depth	Perforated Formation(s)	Producing Zones not Perforated
Goodwin 2	091-00116	Alliance Petroleum Corporation	Existing	39.25858	-80.169849	4560	Benson	NA
Goodwin 3	091-00117	Alliance Petroleum Corporation	Existing	39.254729	-80.171316	2581	Gordon, Benson	NA
Goff-Arnold 2	091-00182	Greylock Conventional, LLC	Existing	39.245897	-80.167017	4580	Benson	NA
Stewart 2A	091-01005	Alliance Petroleum Corporation	Existing	39.242262	-80.164901	4955	Fourth, Benson	NA
LL Moss 1A	001-02526	Alliance Petroleum Corporation	Existing	39.237911	-80.163406	4657	Benson	NA
Mosesso 437-CH	001-00968	Alliance Petroleum Corporation	Existing	39.233889	-80.160206	4695	Riley, Benson	NA
Mosesso 1573	001-01400	Union Drilling	Plugged-4/10/1985	39.228912	-80.157245	5080	Big Injun(Grnbr), Riley, Benson	NA
Mosesso 1/282-CH	001-00613	Alliance Petroleum Corporation	Existing	39.218672	-80.153374	4750	Riley, Benson	NA

SURFACE HOLE SURVEYED 39° 17' 30" (NAD27)
BOTTOM HOLE SURVEYED 39° 15' 00" (NAD27)



REFERENCE NOTES
1. Property lines as shown taken from deeds, tax maps, and field locations. A full boundary survey is not expressed or implied. All bearings are based on grid North. Ownership taken from public records Taylor County, West Virginia Date 2018
2. State Plane Coordinates & NAD83 Lat/Long by differential submeter mapping grade GPS.
3. There are no railroads, dwellings, or agricultural buildings within 625 feet of center of pad.
4. No water wells found within 250' of the center of well pad.

LEGEND

- PROPOSED WELL LATERAL
- PROPOSED WELL TIE LINE
- STREAM
- EXISTING ROAD
- BUFFER
- PROPERTY LINE
- MINERAL TRACT BOUNDARY
- COUNTY BOUNDARY LINE
- PROPOSED WELL HEAD
- EXISTING WELL HEAD (Active)
- EXISTING WELL HEAD (Flagged)
- EXISTING WELL HEAD (Abandoned)
- EXISTING WELL HEAD (Never Drilled)
- EXISTING WELL HEAD (Future Drill)
- LANDING POINT/BOTTOM HOLE
- SURFACE OWNER

FILE#: 17078-007
SHEET#: 1 of 2
SCALE: 1" = 3000'
TICK SCALE: 1" = 2000'
MINIMUM DEGREE OF ACCURACY: 1/200
PROVEN SOURCE OF ELEVATION: WV-RTN CORS STATION

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.

Signed: 6-3-2019
P.S. #2361: Herbert L. Parsons, III P.S.

HERBERT L PARSONS III REGISTERED No. 2361 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

BOTTOM HOLE SURVEYED 80° 07' 30" (NAD27)
SURFACE HOLE SURVEYED 80° 10' 00" (NAD27)

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25304

DATE: JUNE 3, 2019
JOHNSON TFP-40
OPERATOR'S WELL #: # 203
API WELL #: 47 (STATE) 091 (COUNTY) 01354 (PERMIT)

Well Type: ☐ Oil ☐ Waste Disposal ☒ Production ☐ Deep
☒ Gas ☐ Liquid Injection ☐ Storage ☒ Shallow

WATERSHED: SIMPSON CREEK
ELEVATION: 1,332.5'
COUNTY / DISTRICT: TAYLOR CO. FLEMINGTON DISTRICT
QUADRANGLE: ROSEMONT, WV
SURFACE OWNER: RENEE JOHNSON
ACREAGE: 284 ±
OIL & GAS ROYALTY OWNER: HEIRS & ASSIGNS OF EARL LAWSON, HEIRS & ASSIGNS OF DULCIE STARKEY, HEIRS & ASSIGNS OF MARTHA ROBERTS, HEIRS & ASSIGNS OF VIRGIE BARTLETT, HEIRS & ASSIGNS OF BLANCHE WATSON, HEIRS & ASSIGNS OF DEZZIE BUTTS, AND HEIRS & ASSIGNS OF HASSEL LAWSON
ACREAGE: 284 ±

☒ DRILL ☐ CONVERT ☐ DRILL DEEPER ☐ REDRILL ☒ FRACTURE OR STIMULATE
☐ PLUG OFF FORMATION ☐ PERFORATE NEW FORMATION ☐ PLUG & ABANDON
☐ CLEAN OUT & REPLUG ☐ OTHER CHANGE SPECIFY:

TARGET FORMATION: MARCELLUS
ESTIMATED DEPTH: TVD: 7,903.5' TMD: 22,901.3'

WELL OPERATOR: ARSENAL RESOURCES
ADDRESS: 6031 WALLACE ROAD EXTENSION # 300
CITY: WEXFORD STATE: PA ZIP: 15090

DESIGNATED AGENT: WILLIAM VEIGEL
ADDRESS: 65 PROFESSIONAL PLACE SUITE 200
CITY: BRIDGEPORT STATE: WV ZIP: 26330

RECEIVED
Office of Oil and Gas
JUN 11 2019
WV Department of Environmental Protection

AOR - Attachment "A"

SURFACE PARCEL OWNER INFORMATION

ID#	PARCEL NUMBER	OWNER NAME
1	033-15-331-27	JOHNSON RENEE
57	033-15-351-10	RENEE JOHNSON
4	033-15-351-12	EIP III WEST VIRGINIA LLC
3	033-15-351-13	EIP III WEST VIRGINIA LLC
2	001-09-9-2	STEWART FARM LLC
39	001-09-9-1	STEWART FARM LLC
37	001-09-9-2.1	BOARD OF EDUCATION
38	001-09-9-3	STEWART FARM LLC
35	091-09-9-20.1	SMALLWOOD RUSSELL & ANGELA WRS
40	001-09-9-20	SEESE ROBERT & BRENDA HWS
43	001-09-9-22	WOLFE LARRY, ROBERT WOLFE & STANLEY WOLFE ET UXES,
42	001-09-12-2	POLINO ENTERPRISES INC
65	001-09-12-27	WOLFE LARRY MICHAEL
69	001-09-12-28	WOLFE LARRY M & ELLEN S HWS

ADJOINER PARCEL OWNER INFORMATION

ID#	PARCEL NUMBER	OWNER NAME
5	091-04-11-1	CFS FARMS LIMITED LIABILITY CO
6	091-04-8-22	GRIPPIN JAMES S & ELAINE M
21	091-04-11-5.5	BECKWITH LUMBER COMPANY
24	091-04-11-7.5	NELSON HELEN L HURST MARY M
25	091-04-11-6	RAVIS JERRY LEE ESTATE
26	091-04-11-5.1	RAVIS JERRY L ESTATE
27	091-04-11-3	PROPST PAUL
29	091-04-8-21	CARLYLE G MILLARD
30	091-04-11-2	PROPST PAUL
31	001-09-9-8	CLEAVENGER LEONARD D
32	001-09-9-8.2	CLEAVENGER LEONARD D
33	001-09-9-7	CROUSE ORLAN, JR
34	001-09-9-6	STEWART FARM LLC
36	001-09-9-4	STEWART FARM LLC
41	001-09-12-1	POLINO ENTERPRISES INC
44	001-09-9-17.1	MADDIX MICHAEL R ET UX
45	001-09-9-11	SALTIS STEVE JR & AMY HWS
46	001-09-9-12	SALTIS STEVE JR & AMY R HWS
47	001-09-9-13	MURPHY GEORGE H JR & TAMELA J, HWS
48	001-09-9-22.2	WOLFE MICHAEL B
49	001-09-12-4.2	KNOTTS TERRY & DONETTA
50	001-09-12-14	MOSESSO JOHN A TRUST
51	001-09-9-22.3	KRIZNER FRANK A & RENEE B HWS
52		CLEAVENGER PLAT
53	091-04-7-9	CEQUEL COMMUNICATIONS LLC
54	091-04-7-27	CEQUEL COMMUNICATIONS LLC
55	091-04-7-8	SHIRLEY A FRUM, CLINTON A FRUM, ET UX
56	033-15-351-9	RENEE JOHNSON
61	001-09-12-4	SWIGER ARGYLE C
62	001-09-12A-9	ELMOND MUREL L (L/E)
64	001-09-12A-91	DELANEY V GRACE & KRISTI J FREEMAN, WROS
66	001-09-12-26	WOLFE STANLEY,ROBERT&LARRY
67	001-09-12-27.2	WOLFE LARRY MATTHEW &RACHELLE L HWS
68	001-09-12-27.1	HURTADO SUZANNE
70		BROWNTON PLAN OF LOTS
71	001-09-12.61	CHARLTON RANDALL L & CAROLYN,
72	001-09-12.60	SCHIMANSKY STEVEN & DEBRA HWS
73	001-09-12.42	FOSTER ROGER & ETHEL
76	001-09-12.41	TRADER PAUL & LORETTA
77	001-09-11-1.2	BECKWITH LUMBER CO INC
78	033-15-371-3	EIP III WEST VIRGINIA LLC
79	033-15-371-6	EIP III WEST VIRGINIA LLC
80	001-09-10.2	SMITH JO ANN V
81	001-09-9-19	STEWART FARM LLC
84	033-15-351-22	EIP III WEST VIRGINIA LLC
85	033-15-351-23	EIP III WEST VIRGINIA LLC
86	033-15-351-24	EIP III WEST VIRGINIA LLC
87	033-15-351-11	EIP III WEST VIRGINIA LLC
88	033-15-351-9	JOHNSON RENEE
89	033-15-351-7	WARDER ORAN LEE & JANICE L

REFERENCE NOTES
1. Property lines as shown taken from deeds, tax maps, and field locations. A full boundary survey is not expressed or implied. All bearings are based on grid North. Ownership taken from public records Taylor County, West Virginia Date 2018
2. State Plane Coordinates & NAD83 Lat/Long by differential submeter mapping grade GPS.
3. There are no railroads, dwellings, or agricultural buildings within 625 feet of center of pad.
4. No water wells found within 250' of the center of well pad.

LEGEND

- PROPOSED WELL LATERAL
- PROPOSED WELL TIE LINE
- STREAM
- EXISTING ROAD
- BUFFER
- PROPERTY LINE
- MINERAL TRACT BOUNDARY
- COUNTY BOUNDARY LINE
- PROPOSED WELL HEAD
- EXISTING WELL HEAD (Active)
- EXISTING WELL HEAD (Plugged)
- EXISTING WELL HEAD (Abandoned)
- EXISTING WELL HEAD (Never Drilled)
- EXISTING WELL HEAD (Future Drill)
- LANDING POINT/BOTTOM HOLE
- SURFACE OWNER

FILE#: 17078-007
SHEET#: 2 of 2
SCALE: 1" = 3000'
TICK SCALE: 1" = 2000'
MINIMUM DEGREE OF ACCURACY: 1/200
PROVEN SOURCE OF ELEVATION: WV-RTN CORS STATION

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.

Signed: 6-3-2019
P.S. #2361: Herbert L. Parsons, III P.S.

HERBERT L PARSONS III REGISTERED No. 2361 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25304

DATE: JUNE 3, 2019
OPERATOR'S WELL #: JOHNSON TFP-40 # 203
API WELL #: 47 (STATE) 091 (COUNTY) 01354 (PERMIT)

RECEIVED
Office of Oil and Gas
JUN 11 2019
WV Department of Environmental Protection

Well Type: ☐ Oil ☐ Waste Disposal ☒ Production ☐ Deep
☒ Gas ☐ Liquid Injection ☐ Storage ☒ Shallow

WATERSHED: SIMPSON CREEK
COUNTY / DISTRICT: TAYLOR CO. FLEMINGTON DISTRICT
SURFACE OWNER: RENEE JOHNSON
OIL & GAS ROYALTY OWNER: HEIRS & ASSIGNS OF EARL LAWSON, HEIRS & ASSIGNS OF DULCIE STARKEY, HEIRS & ASSIGNS OF MARTHA ROBERTS, HEIRS & ASSIGNS OF VIRGIE BARTLETT, HEIRS & ASSIGNS OF BLANCHE WATSON, HEIRS & ASSIGNS OF DEZZIE BUTTS, AND HEIRS & ASSIGNS OF HASSEL LAWSON

ELEVATION: 1,332.5'
QUADRANGLE: ROSEMONT, WV
ACREAGE: 284 ±
ACREAGE: 284 ±

☒ DRILL ☐ CONVERT ☐ DRILL DEEPER ☐ REDRILL ☒ FRACTURE OR STIMULATE
☐ PLUG OFF FORMATION ☐ PERFORATE NEW FORMATION ☐ PLUG & ABANDON
☐ CLEAN OUT & REPLUG ☐ OTHER CHANGE SPECIFY:

TARGET FORMATION: MARCELLUS
ESTIMATED DEPTH: TVD: 7,903.5' TMD: 22,901.3'

WELL OPERATOR: ARSENAL RESOURCES
ADDRESS: 6031 WALLACE ROAD EXTENSION # 300
CITY: WEXFORD STATE: PA ZIP: 15090

DESIGNATED AGENT: WILLIAM VEIGEL
ADDRESS: 65 PROFESSIONAL PLACE SUITE 200
CITY: BRIDGEPORT STATE: WV ZIP: 26330

AOR Attachment "A"

ARSENAL RESOURCES

Click or tap to enter a date.

Greylock Conventional, LLC
Address
State

RE: Johnson TFP40 Pad

Dear Sir/Madam,

Arsenal Resources has developed a Marcellus pad, Johnson TFP40, well #203, located in Taylor County, WV. As an owner or operator of conventional natural gas wells in this area, we are requesting your assistance in this matter.

Due to the apparent presence of unique geological conditions, the potential for communication between deep geologic zones exists in this area. This potential communication, via natural gas, water, or both, may occur between hydraulically fractured wells in the Marcellus formation (approximately 7,910 TVD) and existing conventional natural gas wells included in the attached well list for which you are believed to be the operator.

Arsenal Resources anticipates conducting hydraulic fracturing at the Johnson TFP40 pad, well #203, during the Quarter of 2019. We have identified conventional natural gas wells operated by your company within 500' (lateral distance) of our newly planned wells. Plats for each well on this pad are attached.

We recommend that conventional well operators conduct the following activities before, during and after fracturing operations:

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

Please feel free to contact me at 724-940-1218 with any questions or comments. You may also contact the WV Office of Oil and Gas at 304-926-0499.

Sincerely,

Kelly Davis
Permitting Specialist

6031 Wallace Road Extension, Suite 300, Wexford, PA 15090 Phone (724) 940-1100 eFax 1-800-428-0981

AOR - Attachment "B"