

# MIP Coring Meeting

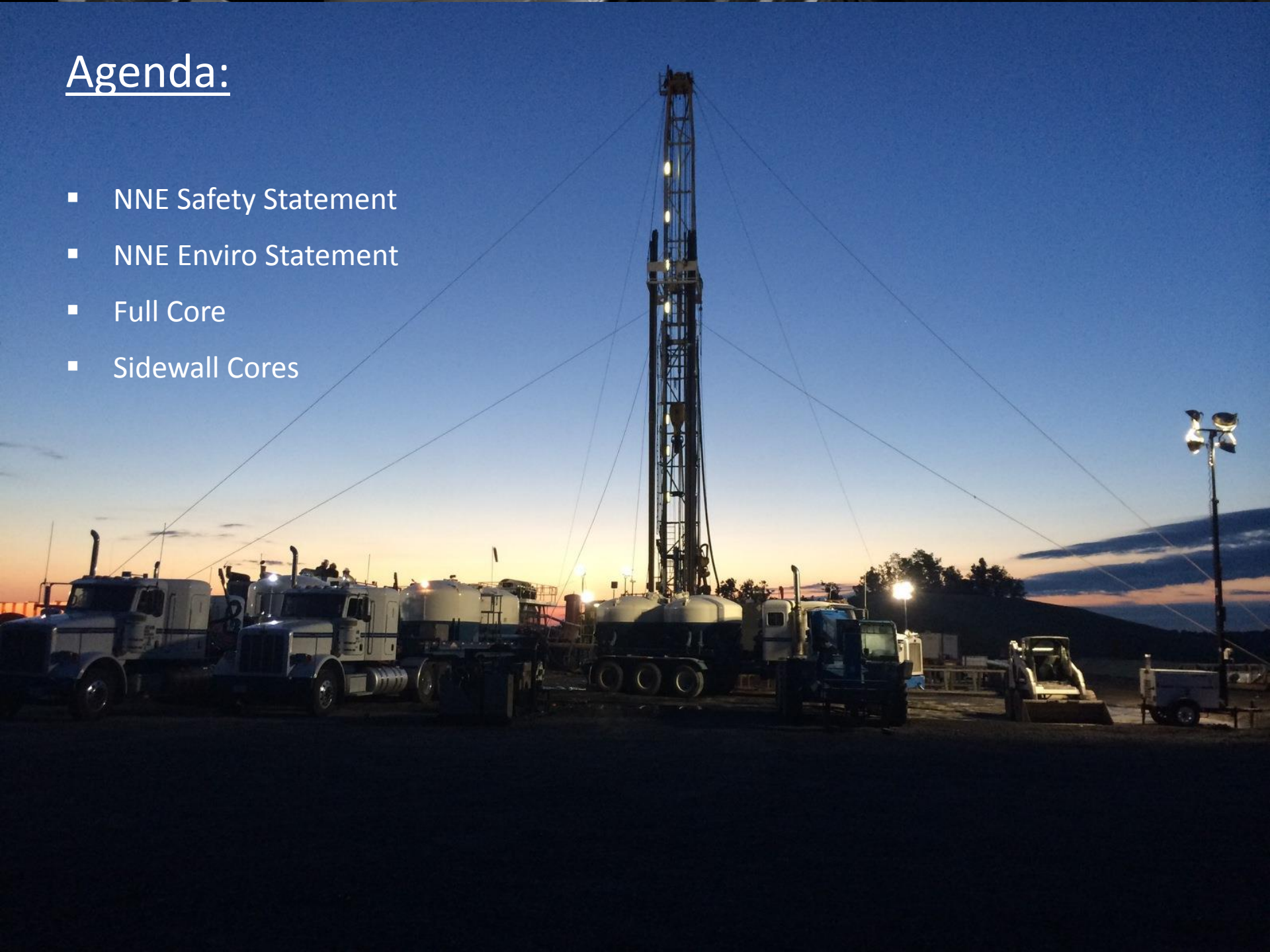


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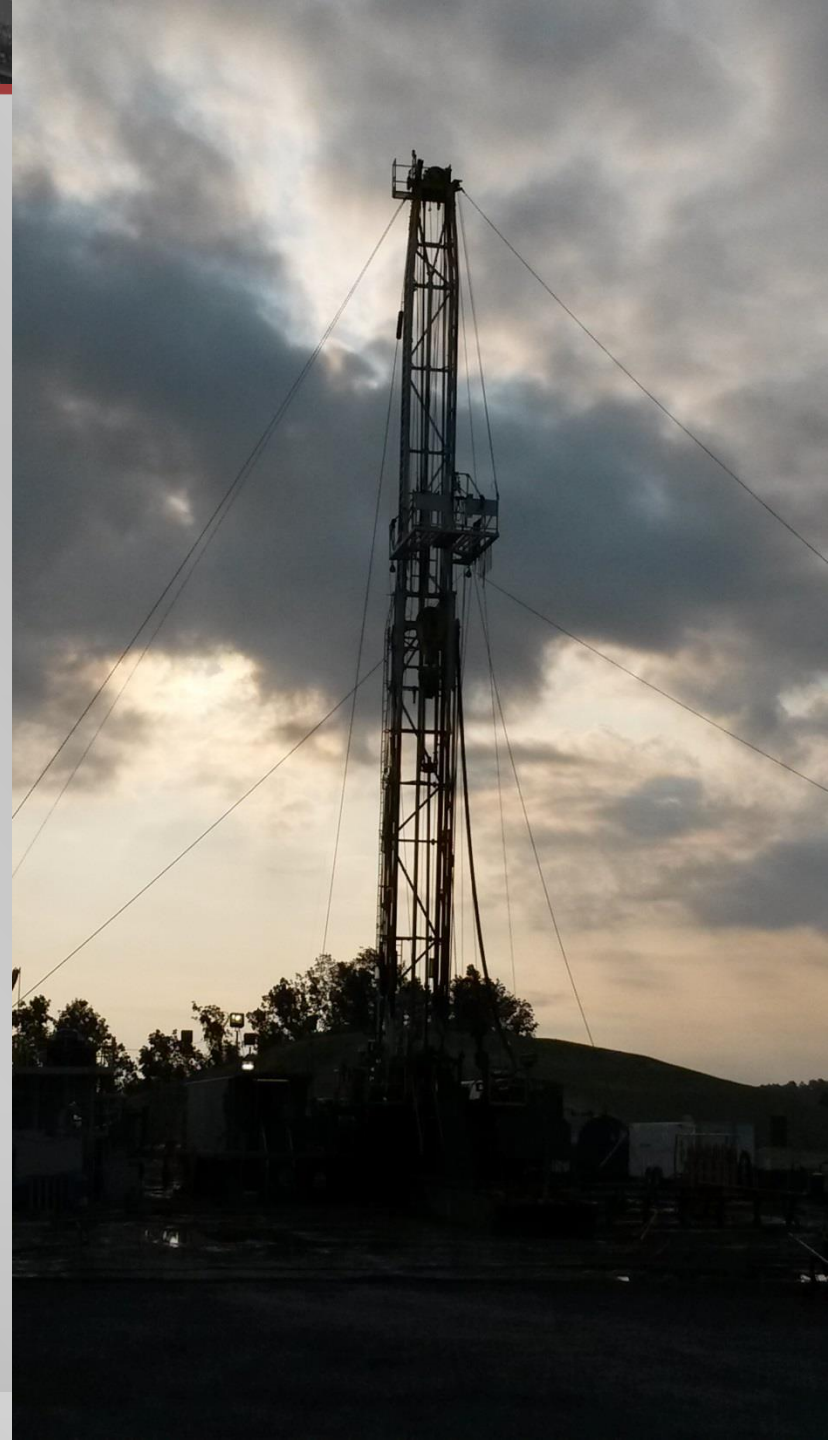


# Agenda:

- NNE Safety Statement
- NNE Enviro Statement
- Full Core
- Sidewall Cores



- NNE is dedicated to developing a safe and healthy environment for all employees and contractors through the combination of engineering design, practicality, and a hands on approach.





- NNE is committed to protecting the environment by maintaining a strong anti-pollution and spill prevention program in all areas where it operates



# Full Bore

- 4" core with a 6-3/4" HT Core Barrel for the 8-3/4" borehole
- 120'
- 6" outside
- Before , through and after Marcellus
- 49 Marcellus jobs
- 161 runs
- 73% retrieved more than 70% recovery



## Baker Hughes Coring Marcellus Database

Well #	Run #	Location	Depth	Hole Size	Barrel Length, ft	Bit Type	Inner Barrel	Mud Type	Mud Weight	Cored, ft	Recovered, ft	Recovery, %	Efficiency, %	ROP	Comments
1	1	Susquehanna Co.,PA	6,578'	6 1/4"	60	BHC-406Z	Aluminum	KCl	8.6 ppg	60.0	60.0	100.0%	100.0%	17.1 ft/hr	
1	2	Susquehanna Co.,PA	6,638'	6 1/4"	90	BHC-406Z	Aluminum	KCl	8.6 ppg	92.0	92.0	100.0%	100.0%	36.8 ft/hr	
1	3	Susquehanna Co.,PA	6,730'	6 1/4"	90	BHC-406Z	Aluminum	KCl	8.6 ppg	92.0	92.0	100.0%	100.0%	15.3 ft/hr	
1	4	Susquehanna Co.,PA	6,822'	6 1/4"	90	BHC-406Z	Aluminum	KCl	8.6 ppg	44.0	42.4	47.1%	48.9%	22.0 ft/hr	
1	5	Susquehanna Co.,PA	6,866'	6 1/4"	90	BHC-406Z	Aluminum	KCl	8.7 ppg	92.0	92.0	100.0%	100.0%	20.4 ft/hr	
1	6	Susquehanna Co.,PA	6,958'	6 1/4"	90	BHC-406Z	Aluminum	KCl	8.7 ppg	92.0	91.5	100.0%	100.0%	16.7 ft/hr	
2	1	Susquehanna Co.,PA	6,284'	8 3/4"	90	BHC-406Z	Aluminum	KCl	9.9 ppg	90.0	90.0	100.0%	100.0%	7.1 ft/hr	
2	2	Susquehanna Co.,PA	6,374'	8 3/4"	120	BHC-406Z	Aluminum	KCl	9.4 ppg	120.0	120.0	100.0%	100.0%	10.9 ft/hr	
2	3	Susquehanna Co.,PA	6,494'	8 3/4"	120	BHC-406Z	Aluminum	KCl	9.6 ppg	120.0	120.0	100.0%	100.0%	15.0 ft/hr	
2	4	Susquehanna Co.,PA	6,614'	8 3/4"	120	BHC-406Z	Aluminum	KCl	9.6 ppg	70.0	70.0	100.0%	100.0%	15.6 ft/hr	Pulled on company orders
3	1	Susquehanna Co.,PA	6,509'	8 3/4"	90	BHC-406Z	Aluminum	KCl		86.0	85.8	95.3%	95.6%	20.2 ft/hr	
3	2	Susquehanna Co.,PA	6,594'	8 3/4"	90	BHC-406Z	Aluminum	KCl		90.0	90.0	100.0%	100.0%	26.9 ft/hr	
3	3	Susquehanna Co.,PA	6,684'	8 3/4"	90	BHC-406Z	Aluminum	KCl		90.0	90.0	100.0%	100.0%	24.3 ft/hr	
3	4	Susquehanna Co.,PA	6,774'	8 3/4"	90	BHC-406Z	Aluminum	KCl		90.0	90.0	100.0%	100.0%	21.8 ft/hr	
3	5	Susquehanna Co.,PA	6,864'	8 3/4"	90	BHC-406Z	Aluminum	KCl		90.0	90.0	100.0%	100.0%	25.4 ft/hr	
3	6	Susquehanna Co.,PA	6,954'	8 3/4"	90	BHC-406Z	Aluminum	KCl		90.0	90.0	100.0%	100.0%	26.0 ft/hr	
4	1	Bradford Co., PA	6,235'	8 1/2"	60	BHC-406Z	Aluminum	KCl	8.6 ppg	60.0	60.0	100.0%	100.0%	20.5 ft/hr	
4	2	Bradford Co., PA	6,295'	8 1/2"	60	BHC-406Z	Aluminum	KCl	8.6 ppg	60.0	60.0	100.0%	100.0%	22.0 ft/hr	
4	3	Bradford Co., PA	6,355'	8 1/2"	60	BHC-406Z	Aluminum	KCl	8.6 ppg	60.0	60.0	100.0%	100.0%	15.5 ft/hr	
4	4	Bradford Co., PA	6,415'	8 1/2"	60	BHC-406Z	Aluminum	KCl	8.6 ppg	60.0	60.0	100.0%	100.0%	16.9 ft/hr	
4	5	Bradford Co., PA	6,475'	8 1/2"	60	BHC-406Z	Aluminum	KCl	8.6 ppg	60.0	60.0	100.0%	100.0%	15.6 ft/hr	
5	1	Tioga Co., PA	5,950'	6 1/8"	60	BHC-306Z	Aluminum	KCl	9.4 ppg	60.0	60.3	100.0%	100.0%	13.8 ft/hr	
5	2	Tioga Co., PA	6,010'	6 1/8"	60	BHC-306Z	Aluminum	KCl	9.4 ppg	60.0	60.0	100.0%	100.0%	10.3 ft/hr	
6	1	Nichols Co., WV	7,604'	6 1/8"	60	BHC-406Z	Aluminum	KCl	8.5 ppg	27.0	26.5	44.2%	45.0%	9.0 ft/hr	16 degrees of angle
6	2	Nichols Co., WV	7,632'	6 1/8"	60	BHC-406Z	Aluminum	KCl	8.5 ppg	48.0	47.0	78.3%	80.0%	10.7 ft/hr	Jammed
6	3	Nichols Co., WV	7,679'	6 1/8"	60	BHC-306Z	Aluminum	KCl	8.5 ppg	28.0	27.0	45.0%	46.7%	14.0 ft/hr	Jammed
6	4	Nichols Co., WV	7,707'	6 1/8"	60	BHC-306Z	Aluminum	KCl	8.5 ppg	25.0	25.0	41.7%	41.7%	16.7 ft/hr	Jammed
6	5	Nichols Co., WV	7,732'	6 1/8"	60	BHC-406Z	Aluminum	KCl	8.7 ppg	55.0	55.0	91.7%	91.7%	12.2 ft/hr	Jammed



## Baker Hughes Coring Marcellus Database

Well #	Run #	Location	Depth	Hole Size	Barrel Length, ft	Bit Type	Inner Barrel	Mud Type	Mud Weight	Cored, ft	Recovered, ft	Recovery, %	Efficiency, %	ROP	Comments
7	1	Tioga Co., PA	7,740'	6 1/8"	60	BHC-306Z	Aluminum	KCI	8.9 ppg	60.0	60.0	100.0%	100.0%	30.0 ft/hr	
7	2	Tioga Co., PA	7,800'	6 1/8"	60	BHC-306Z	Aluminum	KCI	9. ppg	13.0	13.5	22.5%	21.7%	6.0 ft/hr	Circulating sub disc blown
7	3	Tioga Co., PA	7,813'	6 1/8"	60	BHC-306Z	Aluminum	KCI	9. ppg	60.0	59.5	99.2%	100.0%	20.0 ft/hr	
7	4	Tioga Co., PA	7,873'	6 1/8"	60	BHC-306Z	Aluminum	KCI	9. ppg	50.0	48.7	100.0%	100.0%	10.0 ft/hr	Pulled on company orders
8	1	Greenbriar Co., WV	7,890'	6 1/8"	60	BHC-406Z	Aluminum	KCI	8.7 ppg	21.0	15.0	25.0%	35.0%	14.0 ft/hr	Not in Marcellus
8	2	Greenbriar Co., WV	7,911'	6 1/8"	60	BHC-406Z	Aluminum	KCI	8.6 ppg	3.0	1.5	2.5%	5.0%	2.0 ft/hr	Jammed from the start. Vertical fractures.
8	3	Greenbriar Co., WV	7,914'	6 1/8"	60	BHC-406Z	Aluminum	KCI	8.6 ppg	16.0	10.7	17.8%	26.7%	5.3 ft/hr	Not in Marcellus
8	4	Greenbriar Co., WV	7,960'	6 1/8"	60	BHC-406Z	Aluminum	KCI	8.6 ppg	34.0	32.4	54.0%	56.7%	22.7 ft/hr	cellus Shale. Jammed at connection. Vert. fractu
8	5	Greenbriar Co., WV	7,994'	6 1/8"	60	BHC-406Z	Aluminum	KCI	8.6 ppg	60.0	58.0	96.7%	100.0%	10.0 ft/hr	Limestone
8	6	Greenbriar Co., WV	8,054'	6 1/8"	60	BHC-406Z	Aluminum	KCI	8.6 ppg	15.0	2.0	3.3%	25.0%	10.3 ft/hr	Onandaga
9	1	Lycoming Co., PA	7,160'	6 1/4"	60	BHC-306Z	Aluminum	KCI	8.9 ppg	31.0	0.0	0.0%	51.7%	15.5 ft/hr	Pulled off core
9	2	Lycoming Co., PA	7,190'	6 1/4"	60	BHC-306Z	Aluminum	KCI	9. ppg	61.0	61.6	100.0%	100.0%	24.4 ft/hr	
9	3	Lycoming Co., PA	7,251'	6 1/4"	60	BHC-306Z	Aluminum	KCI	9. ppg	54.0	23.4	39.0%	90.0%	19.6 ft/hr	Jammed
9	4	Lycoming Co., PA	7,305'	6 1/4"	60	BHC-306Z	Aluminum	KCI	9. ppg	31.0	7.0	11.7%	51.7%	20.7 ft/hr	Jammed
9	5	Lycoming Co., PA	7,336'	6 1/4"	30	BHC-306Z	Aluminum	KCI	9. ppg	30.0	20.7	69.1%	100.0%	15.0 ft/hr	
9	6	Lycoming Co., PA	7,366'	6 1/4"	60	BHC-406Z	Aluminum	KCI	9. ppg	33.0	14.4	23.9%	55.0%	18.9 ft/hr	Jammed
10	1	Susquehanna Co,PA	5,980'	8 3/4"	60	BHC-406Z	Aluminum	KCI	9.2 ppg	60.0	59.1	98.5%	100.0%	16.2 ft/hr	
10	2	Susquehanna Co,PA	6,040'	8 3/4"	60	BHC-406Z	Aluminum	KCI	9.2 ppg	60.0	59.3	98.8%	100.0%	21.4 ft/hr	
10	3	Susquehanna Co,PA	6,100'	8 3/4"	90	BHC-406Z	Aluminum	KCI	9.3 ppg	89.9	89.9	99.9%	99.9%	25.7 ft/hr	
10	4	Susquehanna Co,PA	6,190'	8 3/4"	90	BHC-406Z	Aluminum	KCI	9.3 ppg	89.8	89.8	99.8%	99.8%	16.7 ft/hr	
10	5	Susquehanna Co,PA	6,280'	8 3/4"	90	BHC-406Z	Aluminum	KCI	9.3 ppg	60.0	60.0	100.0%	100.0%	21.4 ft/hr	Pulled on company orders. Out of Marcellus
11	1	McKean Co., PA	5,530'	6 1/4"	60	BHC-306Z	Aluminum	KCI	9.1 ppg	29.0	23.3	38.8%	48.3%	23.2 ft/hr	Core underguaged
11	2	McKean Co., PA	5,559'	6 1/4"	60	BHC-306Z	Aluminum	KCI	9.1 ppg	30.0	21.5	35.8%	50.0%	20.0 ft/hr	Core underguaged
11	3	McKean Co., PA	5,589'	6 1/4"	60	BHC-406Z	Aluminum	KCI	9.1 ppg	58.0	59.0	98.3%	96.7%	16.6 ft/hr	
12	1	Elk Co., PA	5,578'	6 1/8"	60	BHC-406Z	Aluminum	KCI	9.1 ppg	60.0	59.0	98.3%	100.0%	20.1 ft/hr	
12	2	Elk Co., PA	5,638'	6 1/8"	60	BHC-406Z	Aluminum	KCI	9.1 ppg	60.0	60.0	100.0%	100.0%	26.8 ft/hr	
12	3	Elk Co., PA	5,698'	6 1/8"	60	BHC-406Z	Aluminum	KCI	9.1 ppg	60.0	60.0	100.0%	100.0%	32.6 ft/hr	

## Baker Hughes Coring Marcellus Database

Well #	Run #	Location	Depth	Hole Size	Barrel Length, ft	Bit Type	Inner Barrel	Mud Type	Mud Weight	Cored, ft	Recovered, ft	Recovery, %	Efficiency, %	ROP	Comments
21	1	Fayette Co., PA	7,655'	8 3/4"	60	BHC-409Z	Aluminum	WBM	10.6 ppg	60.0	60.0	100.0%	100.0%	9.1 ft/hr	LaserCut Liner System
21	2	Fayette Co., PA	7,715'	8 3/4"	60	BHC-409Z	Aluminum	WBM	10.6 ppg	60.0	59.7	99.5%	100.0%	6.7 ft/hr	
21	3	Fayette Co., PA	7,775'	8 3/4"	60	BHC-406Z	Aluminum	WBM	10.6 ppg	21.0	21.0	100.0%	100.0%	6.9 ft/hr	Pulled on company orders. Out of zone of interest
22	1	Preston Co., WV	7,779'	8 1/2"	60	BHC-406Z	Aluminum	WBM	10.7 ppg	54.0	54.3	90.5%	90.0%	4'/hr.	Laser Cut Liner System
22	2	Preston Co., WV	7,833'	8 1/2"	60	BHC-406Z	Aluminum	WBM	10.6 ppg	60.0	60.0	100.0%	100.0%	7'/hr.	
22	3	Preston Co., WV	7,893'	8 1/2"	60	BHC-406Z	Aluminum	WBM	10.8 ppg	29.0	28.6	100.0%	100.0%	9.9'/hr.	Pulled on CO orders
23	1	Lycoming Co., PA	7,450'	7 7/8"	90	BHC-406Z	Aluminum	Synth	13.2 ppg	78.0	78.8	87.6%	86.7%	10.5'/hr	Oriented-Pump went down-Jammed
23	2	Lycoming Co., PA	7,528'	7 7/8"	90	BHC-406Z	Aluminum	Synth	13.2 ppg	90.0	90.0	100.0%	100.0%	7.5'/hr	Oriented
24	1	Brooks Co., WV	5,670'	8 3/4"	90	BHC-406	Aluminum	OBM	12.6 ppg	90.0	90.0	100.0%	100.0%	14.2'/hr	Laser cut liners
24	2	Brooks Co., WV	5,760'	8 3/4"	90	BHC-406	Aluminum	OBM		87.0	87.0	96.7%	96.7%	8'/hr	Laser cut liners
25	1	Brooks Co., WV	7,580'	8 3/4"	90	BHC-406	Aluminum	OBM	11.5 ppg	90.0	90.0	100.0%	100.0%	20'/Hr	Laser Cut Liners
25	2	Brooks Co., WV	7,670'	8 3/4"	90	BHC-406	Aluminum	OBM		56.0	48.6	54.0%	62.2%	10.2'/HR	Laser cut liners--Jammed in lime
26	1	Lawrence Co., PA	8,211'	8 3/4"	180	BHC-406	Aluminum	WBM	9.9 ppg	38.0	37.5	20.8%	21.1%	14.6'/hr	Jammed-Utica Shale-JamBuster
26	2	Lawrence Co., PA	8,249'	8 3/4"	180	BHC-406Z	Aluminum	WBM		126.0	102.3	56.8%	70.0%	14.8'/hr	Pumping LCM sweep
26	3	Lawrence Co., PA	8,375'	8 3/4"	180	BHC-406Z	Aluminum	WBM		80.0	80.0	100.0%	100.0%	13'/hr	Pulled on Co orders
26	4	Lawrence Co., PA	8,455'	8 1/2"	180	BHC-406Z	Aluminum	WBM		180.0	180.0	100.0%	100.0%	11.1'/hr	Longest barrel run in area.
27	1	Susquehanna Co., PA	7,400'	8 3/4"	120	BHC-406Z	Aluminum	WBM	8.5 ppg	121.0	121.0	100.0%	100.0%	30'/hr	Laser-Cut Liners
27	2	Susquehanna Co., PA	7,521'	8 3/4"	120	BHC-406Z	Aluminum	WBM		65.0	65.0	54.2%	54.2%	12.1'/hr	Laser-Cut Liners
27	3	Susquehanna Co., PA	7,856'	8 1/2"	120	BHC-406Z	Aluminum	WBM	8.5 ppg	120.0	120.0	100.0%	100.0%	20'/hr	Laser-cut Liners
27	4	Susquehanna Co., PA	7,977'	8 3/4"	120	BHC-406Z	Aluminum	WBM	9. ppg	120.0	120.0	100.0%	100.0%	24'/hr	Laser-cut Liners
28	1	Clinton Co, PA	6,940'	7 7/8"	90	BHC-406Z	Aluminum	Synth		89.0	88.6	98.4%	98.9%	19.9'/hr	Geneseo- Oriented core
28	2	Clinton Co, PA	7,029'	7 7/8"	90	BHC-406Z	Aluminum	Synth	13.5 ppg	90.0	90.0	100.0%	100.0%	16.5'/hr	Tully-Oriented core
29	1	Ritchie Co., WV	5,790'	8 3/4"	120	BHC-406	Aluminum		9.2 ppg	120.0	120.7	100.0%	100.0%	33.4'/hr	
29	2	Ritchie Co., WV	5,910'	8 3/4"	120	BHC-406	Aluminum		9.2 ppg	42.0	41.0	34.2%	35.0%	15.4'/hr	Jammed barrel
29	3	Ritchie Co., WV	5,952'	8 3/4"	60	BHC-406	Aluminum		9.2 ppg	43.0	41.0	100.0%	100.0%	7.6'/hr	Pulled on co. orders
30	1	Tioga Co., PA	3,890'	8 1/2"	180	BHC-406Z	Aluminum	WBM	10.9 ppg	185.0	186.0	100.0%	100.0%	7.7'/hr	Burkett & Tully
30	2	Tioga Co., PA	4,753'	8 1/2"	180	BHC-406Z	Aluminum	WBM	11.3 ppg	180.0	180.0	100.0%	100.0%	7.8'/hr	Marcellus & Onondaga



## Baker Hughes Coring Marcellus Database

Well #	Run #	Location	Depth	Hole Size	Barrel Length, ft	Bit Type	Inner Barrel	Mud Type	Mud Weight	Cored, ft	Recovered, ft	Recovery, %	Efficiency, %	ROP	Comments
31	1	Tioga Co., PA	4,254'	8 1/2"	120	BHC-409Z	Aluminum	WBM	11.2 ppg	96.0	96.0	80.0%	80.0%	3.9'/hr	Burkett-Jambuster
31	2	Tioga Co., PA	4,350'	8 1/2"	120	BHC-406	Aluminum	WBM	11.2 ppg	94.0	94.0	78.3%	78.3%	12.6'/hr	Burkett-Jambuster
31	3	Tioga Co., PA	4,444'	8 1/2"	120	BHC-406	Aluminum	WBM	11.2 ppg	96.0	96.0	80.0%	80.0%	22.7'/hr	
31	4	Tioga Co., PA	5,422'	8 1/2"	120	BHC-406	Aluminum	WBM	11.2 ppg	96.0	96.0	80.0%	80.0%	13.8'/hr	Marcellus-Jambuster
31	5	Tioga Co., PA	5,518'	8 1/2"	120	BHC-406	Aluminum	WBM	11.2 ppg	67.0	67.0	55.8%	55.8%	9.1'/hr	Marcellus-Jambuster-Jammed
31	6	Tioga Co., PA	5,585'	8 1/2"	120	BHC-406	Aluminum	WBM	11.2 ppg	96.0	96.0	80.0%	80.0%	14.6'/hr	
31	7	Tioga Co., PA	5,681'	8 1/2"	120	BHC-406	Aluminum	WBM	11.2 ppg	50.0	50.0	100.0%	100.0%	5.1'/hr	Pulled on Company orders
32	1	Monongalia Co., WV	7,350'	8 3/4"	90	BHC-406Z	Aluminum	OBM	12.5 ppg	90.0	89.3	99.2%	100.0%	20.8'/hr	Marcellus
32	2	Monongalia Co., WV	7,440'	8 3/4"	90	BHC-406Z	Aluminum	OBM	12.5 ppg	90.0	90.2	100.0%	100.0%	31.8'/hr	
32	3	Monongalia Co., WV	7,530'	8 3/4"	90	BHC-406Z	Aluminum	OBM	12.5 ppg	90.0	90.0	100.0%	100.0%	24'/hr	
32	4	Monongalia Co., WV	7,620'	8 3/4"	90	BHC-406Z	Aluminum	OBM	12.5 ppg	90.0	90.0	100.0%	100.0%	24'/hr	
32	5	Monongalia Co., WV	7,710'	8 3/4"	90	BHC-406Z	Aluminum	OBM	12.5 ppg	90.0	90.0	100.0%	100.0%	14'/hr	
32	6	Monongalia Co., WV	7,800'	8 3/4"	90	BHC-406Z	Aluminum	OBM	12.7 ppg	77.0	77.0	85.6%	85.6%	14.7'/hr	Jammed
32	7	Monongalia Co., WV	7,877'	8 3/4"	90	BHC-406Z	Aluminum	OBM	12.7 ppg	85.0	82.3	91.4%	94.4%	7.1'/hr	Jammed
32	8	Monongalia Co., WV	7,966'	8 3/4"	90	BHC-406Z	Aluminum	OBM	12.7 ppg	47.0	41.5	46.1%	52.2%	3.9'/hr	Jammed
32	9	Monongalia Co., WV	8,013'	8 3/4"	90	BHC-406Z	Aluminum	OBM	12.7 ppg	41.0	39.5	43.9%	45.6%	4.7'/hr	Jammed
33	1	Marshall Co., WV	6,669'	8 3/4"	90	BHC-406Z	Aluminum	OBM	12.5 ppg	4.0	4.0	4.4%	4.4%	40'/hr	jammed
33	2	Marshall Co., WV	6,673'	8 3/4"	90	BHC-406Z	Aluminum	OBM	12.6 ppg	43.0	42.4	47.1%	47.8%	13.7'/hr	DBR Core head
34	1	Tyler Co., WV	5,950'	8 3/4"	90	BHC-406Z	Aluminum	OBM	12.5 ppg	90.0	91.0	100.0%	100.0%	22.5'/hr	Laser-cut
34	2	Tyler Co., WV	6,040'	8 3/4"	90	BHC-406Z	Aluminum	OBM	12.5 ppg	90.0	90.0	100.0%	100.0%	12.4'/hr	Laser-cut
34	3	Tyler Co., WV	6,130'	8 3/4"	90	BHC-406Z	Aluminum	OBM	12.5 ppg	81.0	81.0	90.0%	90.0%	9.5'/hr	
35	1	Preston Co., WV	7,580'	8 3/4"	90	BHC-406Z	Aluminum	OBM	11.5 ppg	90.0	90.0	100.0%	100.0%	20.0 ft/hr	Laser-cut
35	2	Preston Co., WV	7,670'	8 3/4"	90	BHC-406Z	Aluminum	OBM	11.5 ppg	56.0	49.0	100.0%	100.0%	10.2 ft/hr	Laser-cut/POOH on company orders
36	1	Green Co, WV	7,635'	8 3/4"	90	BHC-406Z	Aluminum	OBM	12. ppg	82.0	85.0	94.4%	91.1%	18.2 ft/hr	Laser-cut
36	2	Green Co, WV	7,720'	8 3/4"	90	BHC-406Z	Aluminum	OBM	12. ppg	90.0	89.0	98.9%	100.0%	24.0 ft/hr	Laser-cut
36	3	Green Co, WV	7,810'	8 3/4"	90	BHC-406Z	Aluminum	OBM	12. ppg	90.0	93.0	100.0%	100.0%	18.0 ft/hr	Laser-cut
36	4	Green Co, WV	7,903'	8 3/4"	90	BHC-406Z	Aluminum	OBM	12. ppg	90.0	90.0	100.0%	100.0%	14.5 ft/hr	Laser-cut

## Baker Hughes Coring Marcellus Database

Well #	Run #	Location	Depth	Hole Size	Barrel Length, ft	Bit Type	Inner Barrel	Mud Type	Mud Weight	Cored, ft	Recovered, ft	Recovery, %	Efficiency, %	ROP	Comments
37	1	Tioga Co., PA	4,303'	8 1/2"	180	BHC-406C	Aluminum	WBM	11. ppg	115.0	115.0	63.9%	63.9%	5.0 ft/hr	Middle Burket/Jambuster
37	2	Tioga Co., PA	4,418'	8 1/2"	180	BHC-406C	Aluminum	WBM	11. ppg	70.0	70.0	38.9%	38.9%	5.1 ft/hr	Middle Burket/Jambuster
37	3	Tioga Co., PA	5,450'	8 1/2"	180	BHC-406C	Aluminum	WBM	11. ppg	180.0	180.0	100.0%	100.0%	6.2 ft/hr	Middle Burket/Jambuster
37	4	Tioga Co., PA	5,630'	8 1/2"	90	BHC-406C	Aluminum	WBM	11. ppg	90.0	90.0	100.0%	100.0%	6.5 ft/hr	Middle Burket/Jambuster
38	1	Mason Co., WV	6,984'	8 1/2"	30	BHC-406Z	Aluminum	WBM	9.1 ppg	30.0	30.0	100.0%	100.0%	15.0 ft/hr	Black River Formation/Oriented
38	2	Mason Co., WV	8,328'	8 1/2"	90	BHC-406Z	Aluminum	WBM	9.1 ppg	15.0	9.0	10.0%	16.7%	1.9 ft/hr	Black River Formation/Oriented
38	3	Mason Co., WV	8,343'	8 1/2"	90	BHC-406Z	Aluminum	WBM	9.1 ppg	23.0	13.0	14.4%	25.6%	3.0 ft/hr	Black River Formation/Oriented
38	4	Mason Co., WV	8,366'	8 1/2"	90	BHC-406Z	Aluminum	WBM	9.1 ppg	90.0	90.0	100.0%	100.0%	8.7 ft/hr	Black River Formation/Oriented
38	5	Mason Co., WV	8,456'	8 1/2"	90	BHC-406Z	Aluminum	WBM	9.1 ppg	90.0	90.0	100.0%	100.0%	7.4 ft/hr	Black River Formation/Oriented
38	6	Mason Co., WV	8,546'	8 1/2"	90	BHC-406Z	Aluminum	WBM	9.1 ppg	68.0	67.0	74.4%	75.6%	8.0 ft/hr	Black River Formation/Oriented
39	1	Greenbriar Co., WV	8,100'	8 1/2"	60	BHC-406C	Aluminum	WBM	8.5 ppg	11.0	11.0	18.3%	18.3%	4.8 ft/hr	
39	2	Greenbriar Co., WV	8,111'	8 1/2"	60	BHC-406C	Aluminum	WBM	8.7 ppg	3.0	3.0	5.0%	5.0%	3.0 ft/hr	
40	1	Lawrence Co.,PA	4,305'	8 1/2"	180	BHC-406C	Aluminum	Brine	9.9 ppg	180.0	180.0	100.0%	100.0%	18.0 ft/hr	Rhinestreet shale/Jambuster
40	2	Lawrence Co.,PA	4,485'	8 1/2"	180	BHC-406C	Aluminum	Brine	9.9 ppg	180.0	180.0	100.0%	100.0%	13.3 ft/hr	Middlesex/Jambuster
40	3	Lawrence Co.,PA	4,665'	8 1/2"	180	BHC-406C	Aluminum	Brine	9.9 ppg	180.0	180.0	100.0%	100.0%	16.4 ft/hr	Burkett,Tulley,Hamilton/Jambuster
40	4	Lawrence Co.,PA	4,845'	8 1/2"	90	BHC-406C	Aluminum	Brine	9.9 ppg	50.0	50.0	100.0%	100.0%	18.2 ft/hr	Marcellus, Olindaga/JB/POOH on co orders
41	1	Fayette Co., PA	8,060'	7 7/8"	90	BHC-406Z	Aluminum	OBM	12.4 ppg	36.0	35.0	38.9%	40.0%	13.0 ft/hr	Laser cut liners
41	2	Fayette Co., PA	8,096'	7 7/8"	90	BHC-308Z	Aluminum	OBM	12.5 ppg	66.0	60.0	66.7%	73.3%	4.1 ft/hr	Laser cut liners
41	3	Fayette Co., PA	8,175'	7 7/8"	90	BHC-308Z	Aluminum	OBM	12.6 ppg	90.0	90.0	100.0%	100.0%	7.0 ft/hr	Laser cut liners
42	1	Westmoreland Co., PA	7,973'	7 7/8"	90	BHC-406Z	Aluminum	Synth	12.5 ppg	90.0	71.0	78.9%	100.0%	20.0 ft/hr	Laser cut liners
42	2	Westmoreland Co., PA	8,063'	7 7/8"	90	BHC-406Z	Aluminum	Synth	12.5 ppg	49.0	49.0	54.4%	54.4%	10.7 ft/hr	Laser cut liners
42	3	Westmoreland Co., PA	8,112'	7 7/8"	90	BHC-406Z	Aluminum	Synth	12.5 ppg	67.0	67.0	74.4%	74.4%	14.1 ft/hr	Laser cut liners
43	1	Marshall Co.,WV	6,530'	8 3/4"	120	BHC-406Z	Aluminum	OBM	8.6 ppg	120.0	120.0	100.0%	100.0%	39.1 ft/hr	
43	2	Marshall Co.,WV	6,650'	8 3/4"	120	BHC-406Z	Aluminum	OBM	8.6 ppg	120.0	120.0	100.0%	100.0%	42.9 ft/hr	

## Baker Hughes Coring Marcellus Database

Well #	Run #	Location	Depth	Hole Size	Barrel Length, ft	Bit Type	Inner Barrel	Mud Type	Mud Weight	Cored, ft	Recovered, ft	Recovery, %	Efficiency, %	ROP	Comments
44	1	Tioga Co., PA	6,527'	8 3/4"	180	BHC-406C	Aluminum	Synth	12.2 ppg	180	182.6	100.0%	100.0%	4.0 ft/hr	Hamilton, Marcellus/Jambuster
44	2	Tioga Co., PA	6,709'	8 3/4"	180	BHC-406C	Aluminum	Synth	12.2 ppg	194	194	100.0%	100.0%	4.3 ft/hr	Hamilton, Marcellus/Jambuster
45	1	Venango Co., PA	4890'	8 1/2"	90	BHC-406C	Aluminum	Synth	12.5 ppg	3.0	2.7	3.0%	3.3%	4.6 ft/hr	Marcellus/ Jam
45	2	Venango Co., PA	4900'	8 1/2"	90	BHC-406C	Aluminum	Synth	12.5 ppg	87.0	87.9	97.7%	96.7%	26.5 ft/hr	
45	3	Venango Co., PA	4987'	8 1/2"	90	BHC-406C	Aluminum	Synth	12.5 ppg	23.0	23.0	25.6%	25.6%	14.6 ft/hr	
46	1	Allegheny Co., PA	7590'	8 1/2"	90	BHC-406C	Aluminum	Brine	12.8 ppg	90.0	90.0	100.0%	100.0%	6.0 ft/hr	Marcellus
46	2	Allegheny Co., PA	7680'	8 1/2"	60	BHC-406C	Aluminum	Brine	12.5 ppg	60.0	59.6	99.3%	100.0%	8.0 ft/hr	Marcellus
46	3	Allegheny Co., PA	7740'	8 1/2"	90	BHC-406C	Aluminum	Brine	12.8 ppg	60.0	60.0	66.7%	66.7%	12.0 ft/hr	Marcellus
47	1	Lycoming Co., PA	7440'	7 7/8"	90	BHC-406C	Aluminum		8.5 ppg	90.0	90.7	100.0%	100.0%	15.8 ft/hr	Genesee shale
47	2	Lycoming Co., PA	7530'	7 7/8"	90	BHC-406C	Aluminum		8.5 ppg	90.0	90.0	100.0%	100.0%	25.0 ft/hr	Genesee shale
48	1	Butler Co., PA	7,513'	8 3/4"	90	BHC-406Z	Aluminum		10. ppg	86.0	86.0	95.6%	95.6%	13.5 ft/hr	Marcellus
48	2	Butler Co., PA	7,599'	8 3/4"	90	BHC-406Z	Aluminum		10. ppg	39.0	40.5	100.0%	100.0%	9.3 ft/hr	Marcellus/Got all the footage needed
49	1	Marshall Co., WV	6,121'	12 1/4"	90	BHC-406C	Aluminum	KCl	8.8 ppg	91.0	91.6	100.0%	100.0%	13.0 ft/hr	Marcellus/Laser Liner
49	2	Marshall Co., WV	6,212'	12 1/4"	90	BHC-406C	Aluminum	KCl	8.8 ppg	90.0	90.8	100.0%	100.0%	15.0 ft/hr	Marcellus/Laser Liner
49	3	Marshall Co., WV	6,302'	12 1/4"	90	BHC-406C	Aluminum	KCl	8.8 ppg	91.0	90.8	100.0%	100.0%	19.0 ft/hr	Marcellus/Laser Liner



# Sidewall Cores

- 60 total cores
- 60 one run capacity
- 1.5" diameter
- 2.5" long



