Gulf Pittsburg-Midway

Strat Well PM-3

HOLE NO.

DEPARTMENT OF THE ARMY

DIVISION

INSTALLATION

DRILLING LOG

1. PROJECT

SHEET OF

2. LOCATION (Coordinates or Station) SE SE SE Sec 36, T32S R21E

3. DRILLING AGENCY P+M Coal Company

4. HOLE NO. (As shown on drawing title and file No.) P+M #3

5. NAME OF DRILLER (Gulf Minerals)

6. DIRECTION OF HOLE: ☐ VERTICAL ☐ INCLINED; DEGREES WITH VERTICAL

7. THICKNESS OF OVER-BURDEN

8. DEPTH DRILLED INTO ROCK

9. TOTAL DEPTH OF HOLE

10. SIZE AND TYPE OF BIT

11. DATUM FOR ELEVATION SHOWN (TBM or MSL)

12. MANUFACTURER'S DESIGNATION OF DRILL

13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED; UNDISTURBED

14. TOTAL NO. CORE BOXES

15. ELEV. GROUND WATER

16. DATE HOLE: STARTED; COMPLETED

17. ELEV. TOP OF HOLE 830

18. TOTAL CORE RECOVERY FOR BORING (%)

19. SIGNATURE OF INSPECTOR

36 - 32 - 21e

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	40		Top of Hole		40'	(logged by John Harris)
			Mudshale, dkgy (N3) at base to med gy (N5) at top. mod. hard, parallel fracture, slightly silty, micaceous, thin horizontal laminae, abundant brachiopods and other marine fossil frags near base, some plant fragments near top, calcareous cement, sharp lower contact.	9.4'	# 1	
		T				
		1				
		T				
			mudstone - same as below,	4.2'		Underclay but no coal. Scammon coal horizon
	50					

ENG FORM 1 JUN 57 1836 (TRANSLUCENT) (EM 1110-2-1801) PREVIOUS EDITIONS ARE OBSOLETE

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2. LOCATION (Coordinates or Station)		
3. DRILLING AGENCY		
4. HOLE NO. (As shown on drawing title and file No.)	5. NAME OF DRILLER	

6. DIRECTION OF HOLE			7. THICKNESS OF OVER-BURDEN	8. DEPTH DRILLED INTO ROCK	9. TOTAL DEPTH OF HOLE
☐ VERTICAL	☐ INCLINED	DEGREES WITH VERTICAL			

10. SIZE AND TYPE OF BIT	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	12. MANUFACTURER'S DESIGNATION OF DRILL

13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN		14. TOTAL NO. CORE BOXES	15. ELEV. GROUND WATER	16. DATE HOLE	
DISTURBED	UNDISTURBED			STARTED	COMPLETED

17. ELEV. TOP OF HOLE	18. TOTAL CORE RECOVERY FOR BORING (%)	19. SIGNATURE OF INSPECTOR

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	50		mudstone - lt gy(N7), soft, blocky fracs, silty, massive, abundant large plant frags, irregular clay ironstone concretions, brown Fe oxide stains, gradational lower contact.	4.2'	#2	Underclay but no coal.
	55		siltshale - lt gy(N7), hard, parallel fracture, micaceous, thinly laminated, lenticular bedded at base to wavy bedded at top, few small plant frags, some sand sized authigenic siderite crystals, gradational lower contact.	10.4'		
	60					

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17. ELEV. TOP OF HOLE	18. TOTAL CORE RECOVERY FOR BORING (%)	19. SIGNATURE OF INSPECTOR

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	60		Silt-shale - same unit as above.		#2 61'	
				10.4'	#3	
			Mud-shale, same unit as below.			
	65			23.3		
	70					

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17. ELEV. TOP OF HOLE	18. TOTAL CORE RECOVERY FOR BORING (%)	19. SIGNATURE OF INSPECTOR

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	70		mud-shale – dk gy (N3) at base to med gy (N5) at top, hard, parallel fracture, silty, with silt content increasing upwards, thin horizontal laminae at base with lenticular bedding at top, very thin lenses, abundant plant fragments along bedding planes, some pyritized, clay ironstone bands up to 0.25' thick, sharp lower contact w/coal.		#3 71'	
					#4	
	75			23.3'		
	80					

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	80		Mud-shale - same unit as below.		#4, 81'	
					#5	
				23.3'		
	85		Coal, blk(N1), hard banded, mod. bright, sulfate bloom, sharp contacts.	0.6'		Tebo coal
			Mudstone, lt gy(N7) mod hard, blocky fracs, silty, massive, abundant plant frags, clay ironstone nodules, brown Fe oxide stains, gradational lower contact.	2.1'		
			Siltstone - same unit as below.	10.7'		
	90					

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10. SIZE AND TYPE OF BIT	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	12. MANUFACTURER'S DESIGNATION OF DRILL

13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN		14. TOTAL NO. CORE BOXES	15. ELEV. GROUND WATER	16. DATE HOLE	
DISTURBED	UNDISTURBED			STARTED	COMPLETED

17. ELEV. TOP OF HOLE	18. TOTAL CORE RECOVERY FOR BORING (%)	19. SIGNATURE OF INSPECTOR

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	90		Siltstone, Hgy(N7) hard, blocky to parallel fracture, micaceous, abundant mud, wavy bedded, thinly laminated, few small plant frags, abundant sand sized authigenic siderite crystals. some bioturbation near top. gradational lower contact	10.7'	#5, 91'	
					#6	
	95					
	100		siltstone & sandstone - same as below	12.8'		

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17. ELEV. TOP OF HOLE	18. TOTAL CORE RECOVERY FOR BORING (%)	19. SIGNATURE OF INSPECTOR

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	100		Interbedded siltstone and sandstone, alternating vlt gy (N8) and lt gy (N7) laminae, sand layers up to 0.3'-thick. hard, blocky-parallel fracs, micaceous a quartz comp, wavy bedded, few small plant frags, sand sized authigenic siderite crystals, convolute bedding in upper 2.0', gradational lower contact.	12.8'	# 6 101'	
	105				# 7	Unnamed Sandstone
	110					

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10· SIZE AND TYPE OF BIT	11· DATUM FOR ELEVATION SHOWN (TBM or MSL)	12· MANUFACTURER'S DESIGNATION OF DRILL

13· TOTAL NO. OF OVERBURDEN SAMPLES TAKEN		14· TOTAL NO. CORE BOXES	15· ELEV. GROUND WATER	16· DATE HOLE	
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ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	110		Interbedded siltstone and sandstone, same unit as above.	128'	#7 111'	
					#8	
			Mud-shale - same unit as below.			
	115			12.7'		
	120					

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ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	120		Mud-shale, gyblk(N2) - dk gy(N3), hard, brittle, parallel fracture, slightly silty, micaceous, thin horizontal laminae with some lenticular bedding near top. few small pyritized plant frags, burrows near top, abundant calcareous concretions near base, cone in cone structure at 123', sharp lower contact.	12.7'	#8	
					122'	
					#9	
	125		Coal blk(N1) smut sharp contacts	0.1'		Weir-Pittsburg coal
			Mudstone, ltgy(N7), soft, blocky fracture, crumbled, silty, massive, abundant plant debris, some brown Fe oxide stains, lower contact not observed but is probably gradational.	3.7'		
	130		Core loss - 3.0' 129'-132' mudstone	3.0'		

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ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	130		Core loss 3.0' 129'-132' mudstone	3.0'	# 9 132'	
	135		Silt-shale – Hgy(N7)-Vltgy(N8), mod. hard, parallel – blocky fracs, micaceous, thinly laminated, with some lenticular and wavy bedding, non-fossiliferous, few sand sized authigenic siderite crystals, sharp lower contact.	5.0'	# 10	
	140		Mudshale – medgy(N5) – med dkgy(N4), hard, parallel fracs, silty, micaceous, thin horizontal laminae, small plant frags along bedding planes, clay ironstone bands to 0.1' thick, gradational lower contact	4.7'		

ENG FORM 1 JUN 57 **1836** (TRANSLUCENT) (EM 1110-2-1801) PREVIOUS EDITIONS ARE OBSOLETE

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	140		Mudshale - same unit as above.	4.7'	# 10	
			Siltshale - med ltgy (N6), hard, parallel - blocky fracs, micaceous, thinly laminated, plant frags, few burrows, brown Fe oxide stains, gradational lower contact.	2.8'	142' # 11	
	145		Mud-shale - med dk gy (N4) w ltgy (N7) silty laminae, hard, parallel fracs, silty micaceous, lenticular bedded with lenses increasing upwards, small plant frags, few thin clay ironstone bands, gradational lower contact.	2.5'		
			3.0' core loss, 147' - 150' probably dk gy clay shale	3.0'		
	150					

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	150		Clay-shale - dk gy(N3) hard, brittle, parallel fracs, micaceous, thin horizontal laminae, few small plant frags, clay ironstone bands to 1 cm thick, sharp lower contact w/ coal.		# 11	
				8.0'	155'	
	155				# 12	
			Coal, blk(N1), banded, mod. bright, sharp cont.	0.1'		~~Upper~~ "A" Bluejacket coal
			Mudstone - med lt gy(N6), soft, blocky fracs, silty massive, plant frags, irregular clay ironstone concretions, gradational lower contact.	2.8'		Underclay
	160					

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ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	160		Mudstone - same unit as above.	2.8'		
			Clay-shale - gy blk (N2) to dk gy (N3), hard, brittle, parallel fracs, micaceous, thin horizontal laminae, few pyritized plant frags, clay ironstone nodules to 0.15' thick, sharp lower contact w/ coal.	5.0'	# 12	
	165				165'	
			Coal blk (N1), banded mod. bright, sulfate bloom, sharp contacts,	0.15'	# 13	~~Upper~~ "B" Bluejacket coal
			Mudstone - med lt gy (N6), soft, blocky fracs, slightly silty, massive, plant debris, irregular clay ironst. concretions, gradational lower contact.	2.0'		
			Siltstone, lt gy (N7), hard, blocky frac, wavy bedded, few plant frags, biot ur bation, few sand sized authigenic siderite crystals, gradational lower contact,	3.6'		
	170					

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	170		Siltstone - same unit as above.	3.6'		
			Sandstone - lt brn gy (5YR6/1) to lt gy (N7), hard, blocky fracs. very fine to fine gr, abund. mud matrix, quartz, micaceous, wavy bedded, abundant plant fragments, some sand sized authigenic siderite crystals. gradational lower contact.		# 13	Coarsening upwards sequence ⇒ deltaic Upper Bluejacket Sandstone
	175				175'	
				6.7'	# 14	
			Siltstone, same unit as below.	7.2'		
	180					

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18. TOTAL CORE RECOVERY FOR BORING (%)
19. SIGNATURE OF INSPECTOR

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	180		Siltstone, lt gy(N7) to v lt gy(N8), hard, parallel-blocky fracture, wavy bedded, few very small plant fragments, some bioturbation in lower zones, few thin (1cm) clay ironstone bands, sharp lower contact.	7.2'	# 14	
	185		Clay shale- dk gy(N3) hard, brittle, parallel fracs, micaceous, thin horizontal laminae, non-fossiliferous, clay ironstone bands to 0.2' thick, sharp lower contact w/ limestone.	2.9'	# 15	
			Shaly Limestone - med dk gy(N4) at base to lt gy(N7) at top. abundant marine fossils, some mud, sharp lower contact.	1.0'		
			Coal, blk(N1) banded mod. bright, sharp contacts.	0.2'		~~Lower~~ "C" Bluejacket coal Underclay
	190		Mudstone - same as below	2.7'		

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DRILLING LOG

1. PROJECT | SHEET OF

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3. DRILLING AGENCY

4. HOLE NO. (As shown on drawing title and file No.)

5. NAME OF DRILLER

6. DIRECTION OF HOLE			7. THICKNESS OF OVER-BURDEN	8. DEPTH DRILLED INTO ROCK	9. TOTAL DEPTH OF HOLE
☐ VERTICAL	☐ INCLINED	DEGREES WITH VERTICAL			

10. SIZE AND TYPE OF BIT	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	12. MANUFACTURER'S DESIGNATION OF DRILL

13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN		14. TOTAL NO. CORE BOXES	15. ELEV. GROUND WATER	16. DATE HOLE	
DISTURBED	UNDISTURBED			STARTED	COMPLETED

17. ELEV. TOP OF HOLE	18. TOTAL CORE RECOVERY FOR BORING (%)	19. SIGNATURE OF INSPECTOR

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	190		mudstone- H gy(N7), mod-hard to soft, blocky fracture, silty, micaceous, massive, abundant plant debris, sand sized authigenic siderite crystals and irregular clay ironstone concretions, gradational lower contact.	2.7'		
			mud-shale, med dk gy (N4) w/ lt gy(N7) silty laminae, hard, parallel fracture, silty, micaceous, thinly laminated, some lenticular bedding w/ thick and thin lenses, silty lenses increase upwards, some convolute laminae near top, abundant crinoid stem plates, localized calcareous cement, bioturbation w/ horizontal burrows, some brown Fe oxide stains, sharp lower contact w/ coal,		# 15	
					194	
					# 16	
	195			1.23'		
	200					

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4. HOLE NO. (As shown on drawing title and file No.)	5. NAME OF DRILLER	
6. DIRECTION OF HOLE: ☐ VERTICAL ☐ INCLINED; DEGREES WITH VERTICAL	7. THICKNESS OF OVER-BURDEN	8. DEPTH DRILLED INTO ROCK / 9. TOTAL DEPTH OF HOLE
10. SIZE AND TYPE OF BIT	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	12. MANUFACTURER'S DESIGNATION OF DRILL
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED	14. TOTAL NO. CORE BOXES	15. ELEV. GROUND WATER / 16. DATE HOLE: STARTED / COMPLETED
17. ELEV. TOP OF HOLE	18. TOTAL CORE RECOVERY FOR BORING (%)	19. SIGNATURE OF INSPECTOR

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	200		Mud-shale, same unit as above.	12.3'	# 16	
					204'	"D" ~~Lower~~ Bluejacket coal
			Coal, blk (N1), bony, dull, massive, abund. plant debris & mud. sharp contacts.	0.4'		Bony coal
	205		Mudstone - ltgy(N7), mod. hard, blocky, frac. silty, massive, abund. plant debris, gradational lower contact.	1.1'	# 17	Underclay
			Siltstone - ltgy(N7) - v lt.gy(N8), wavy bedded, some ripples and convolute bedding, abundant plant frags, authigenic siderite crystals, gradational lower contact.	2.9'		
			Sandstone, med brn gy (5YR 5/1), very fine-fine gr., qtz, micaceous, rippled, occasional muddy lamine, plant debris, authigenic siderite xtals, sharp scoured contact w/ basal lag	2.4'		Lower Bluejacket Sandstone
	210					

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4· HOLE NO. (As shown on drawing title and file No.)	5· NAME OF DRILLER	

6· DIRECTION OF HOLE			7· THICKNESS OF OVER-BURDEN	8· DEPTH DRILLED INTO ROCK	9· TOTAL DEPTH OF HOLE
☐ VERTICAL	☐ INCLINED	DEGREES WITH VERTICAL			
10· SIZE AND TYPE OF BIT	11· DATUM FOR ELEVATION SHOWN (TBM or MSL)		12· MANUFACTURER'S DESIGNATION OF DRILL		

13· TOTAL NO. OF OVERBURDEN SAMPLES TAKEN		14· TOTAL NO. CORE BOXES	15· ELEV. GROUND WATER	16· DATE HOLE	
DISTURBED	UNDISTURBED			STARTED	COMPLETED
17· ELEV. TOP OF HOLE	18· TOTAL CORE RECOVERY FOR BORING (%)		19. SIGNATURE OF INSPECTOR		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	210		Sandstone, same unit as above.	2.4'		Sharp base + fining upwards sequence indicates a fluvial or distributary channel.
			scour w/basal lag.			
			Mud-shale- same unit as below.		# 17	
				19'	215'	
	215					
					# 18	
	220					

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10. SIZE AND TYPE OF BIT	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	12. MANUFACTURER'S DESIGNATION OF DRILL

13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN		14. TOTAL NO. CORE BOXES	15. ELEV. GROUND WATER	16. DATE HOLE	
DISTURBED	UNDISTURBED			STARTED	COMPLETED

17. ELEV. TOP OF HOLE	18. TOTAL CORE RECOVERY FOR BORING (%)	19. SIGNATURE OF INSPECTOR

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	220		Mud-shale, med lt gy (N6), mod. hard, parallel fracture, silty, micaceous, thin horizontal laminae, lenticular bedding w/ very thin lenses, some small plant fossils along bedding planes, abundant authigenic siderite crystals. few clay ironstone bands to 0.15' thick, sharp lower contact w/ coal.		# 18	
	225			19'	225	
					# 19	
	230					

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16. DATE HOLE: STARTED | COMPLETED
17. ELEV. TOP OF HOLE
18. TOTAL CORE RECOVERY FOR BORING (%)
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ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	230		mud-shale - same as above	1.9'		
			Coal, blk(N1), banded, mod. bright, sulfate bloom, sharp contacts.	0.3'		Drywood coal
			Mudstone - medgy(N5) to ltgy(N7), mod. hard-soft, blocky fracture, slightly silty, massive, abundant plant debris, few irregular clay ironstone concretions and authigenic siderite crystals, gradational lower contact.	2.8'	# 19	Underclay
			Clayshale - dkgy(N3), hard, parallel fracture, micaceous, thin horizontal laminae, non-fossiliferous, small amount of localized calcareous cement, few authigenic siderite crystals and irregular clay ironstone concretions, sharp lower contact with coal.	8.6'	234' # 20	
	235					
	240					

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3. DRILLING AGENCY		
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ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	240	T	Clay shale, dk gy (N3), same as above.	8.6'		
		1	Coal, blk (N1), hard, brittle, blocky frac, banded, mod. bright, sulfate bloom, sharp contacts.	0.7'	# 20	Rowe coal
			Mudstone - lt gy (N7), soft, blocky fracture, slightly silty, micaceous, massive, abundant plant fossils, irregular clay ironstone nodules 0.1' dia, gradational lower contact.	3.2'	246'	Underclay
	245					
			Mud-shale - same unit as below.	8'	# 21	
	250					

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ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	250		mud-shale - med dky gy(N4) at base to med ltgy (N6) at top. mod. hard, parallel fracture, silty, micaceous, thinly laminated with lenticular bedding, very thin lenses of silt, few very small plant fragments, small horizontal burrows sparse, abundant authigenic siderite crystals and nodules at top, lower gradational contact.	8'	# 21	
	255		Clay-shale - gybl k (N2), hard, brittle, parallel fracture, micaceous, thin horizontal laminae, nonfossiliferous, few clay ironstone bands to 0.15' thick near top, sharp lower contact	9.3'	256' # 22	
	260					

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ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	260		Clay-shale - Same unit as above.	9.3'	# 22	
	265		Mudstone - med ltgy (N6) ↓ to ltgy (N7) ↑, soft, blocky fracture, massive, few silty laminae at base, plant debris, auth. siderite crystals, gradational lower contact.	1.9'		Underclay but no coal. Neutral coal horizon
			Sandstone - medgy (N5) to v. ltgy (N8) near top, hard, blocky fracture, very fine-fine grained, qtz, micaceous, abundant mud matrix, wavy bedded at base to flaser bedded at top, few ripples, seem to be unidirectional, abundant plant debris, gradational lower contact.	6.6'	266' # 23	Light - moderate oil staining in more permeable zones. Upper Warner Sandstone
	270					

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	270		Sandstone - same unit as above.	6.6'		Coarsening upwards sequence, plant debris, sparse burrows, lenticular - flaser bedding and coal on top are indicative of a deltaic environment for this sequence.
					# 23	
			Siltstone, same unit as below.			
	275			15'		
					276'	Upper Warner Sandstone
					# 24	
	280					

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13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN		14. TOTAL NO. CORE BOXES	15. ELEV. GROUND WATER	16. DATE HOLE	
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17. ELEV. TOP OF HOLE	18. TOTAL CORE RECOVERY FOR BORING (%)	19. SIGNATURE OF INSPECTOR			

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	280		Siltstone, w/ occasional interbedded sand, med gy (N5) to med lt gy (N6), hard, parallel fracture, abundant mud, lenticular bedded, few thin sand beds, abundant plant and organic debris, few small horizontal burrows, few 1cm thick clay ironstone bands, Fe oxide stains, more permeable sandy layers lightly oil stained, sharp, scoured lower contact,	15'	# 24	
	285				286'	
			Mudstone - med. H.gy. (N6) - Lt gy (N7), soft blocky fracture, massive, abundant plant frags, brown Fe oxide stains, gradational lower contact.	1.6'	# 25	Underclay but no coal Unnamed coal horizon
			Clay-shale - dk gy (N3), soft, parallel frac., crumbled, thin horizontal laminae, clay ironstone nodules to 0.1' thick, gradational lower contact.	23'		
	290					

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13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN		14. TOTAL NO. CORE BOXES	15. ELEV. GROUND WATER	16. DATE HOLE	
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17. ELEV. TOP OF HOLE	18. TOTAL CORE RECOVERY FOR BORING (%)	19. SIGNATURE OF INSPECTOR			

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	290		Clay-shale - same unit as above.	2.3'		
		⊥ T ⊥ T ⊥ T	Fossiliferous shale, med H gy(N6), mud stone, silty, micaceous, hard, blocky - parallel fracture, abundant brachiopods, crinoid plates, bryozoa, and other fossil fragments. Some brownish Fe oxide stains, gradational lower contact.	2.8'	# 25	
	295		Mud-shale - med. lt. gy. (N6), hard, parallel fracture, abundant silt, micaceous, lenticular bedded with very thin lenses, thin horizontal laminae, abundant finely divided plant debris, some pyritized, abundant bioturbation increasing upwards, few thin (1 cm) clay ironstone bands and brown Fe oxide stains, sharp lower contact w/coal.	7.5'	297' # 26	
	300					

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10. SIZE AND TYPE OF BIT	11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	12. MANUFACTURER'S DESIGNATION OF DRILL			

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DISTURBED	UNDISTURBED			STARTED	COMPLETED
17. ELEV. TOP OF HOLE	18. TOTAL CORE RECOVERY FOR BORING (%)	19. SIGNATURE OF INSPECTOR			

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	300		mud-shale- same unit as above.	7.5'		Unnamed "A" coal
			Coal, blk (N1), banded, mod. bright, sulfate bloom, sharp contacts	0.25'		
			Mudstone - med dk gy (N4) at base to med lt gy (N6) at top, soft, massive, blocky fracture, silty, plant frags, gradational lower contact	1.4'	# 26	
			Mud-shale - dk gy (N3), mod. hard, parallel fractures, silty, with thin lt gy silty laminae increasing upwards, thin horizontal laminae with some convolute laminae near top, small horizontal burrows 3mm dia., silt filled, clay ironstone nodules to 0.1' thick., sharp lower contact with coal.	5.8'	306	
	305				# 27	
			Coal, blk (N1), banded, mod. bright, sulfate bloom, sharp contacts,	0.8'		"A" "B" coal
	310		Mudstone - same as below	1.1'		

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DISTURBED	UNDISTURBED			STARTED	COMPLETED
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	310		mudstone, med ltgy (N6), soft, blocky frac, plant frags, gradational contact.	1.1'		Underclay
			Mudshale – same unit as below.	1.8'		
	315		3.0' core loss gy-blk shale. 312.5' – 315.5'	3.0'	# 27	
			Mud-shale, dk gy (N3), soft, crumbled, parallel fracture, slightly silty with very thin silty laminae, thin horizontal laminae, abundant plant fragments, few small burrows, sharp lower contact.	2.7'		
			Coal, blk (N1), banded, mod. bright, sulfate bloom, sharp contacts thin underclay.	0.6'	319'	"B" Coal ~~Unnamed~~ coal?
			Mudshale – same unit as below.	2.4'	# 28	
	320					

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13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED	14. TOTAL NO. CORE BOXES	15. ELEV. GROUND WATER / 16. DATE HOLE: STARTED / COMPLETED
17. ELEV. TOP OF HOLE	18. TOTAL CORE RECOVERY FOR BORING (%)	19. SIGNATURE OF INSPECTOR

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	320		Mud-shale, dkgy(N3), hard, parallel frac. slightly silty, micaceous, thin horizontal laminae, few pyritized plant fragments along bedding planes, small amounts of localized calcareous cement, few clay ironstone bands up to 0.15' thick, sharp lower contact.		# 28	
	325			12.4		
	330				329' # 29	

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DRILLING LOG

1. PROJECT | SHEET OF

2. LOCATION (Coordinates or Station)

3. DRILLING AGENCY

4. HOLE NO. (As shown on drawing title and file No.)

5. NAME OF DRILLER

6. DIRECTION OF HOLE			7. THICKNESS OF OVER-BURDEN	8. DEPTH DRILLED INTO ROCK	9. TOTAL DEPTH OF HOLE
☐ VERTICAL	☐ INCLINED	DEGREES WITH VERTICAL			

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17. ELEV. TOP OF HOLE	18. TOTAL CORE RECOVERY FOR BORING (%)	19. SIGNATURE OF INSPECTOR

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	330		Mud-shale, same unit as above.	12.4'	#29	
			Mudstone - Hgy (N7) to med ltgy (N6), soft, blocky-fracture, slightly silty, massive, abundant plant debris, abundant brown Fe oxide stains and clay ironstone concretions, gradational lower contact.	5.5'		Underclay but no coal. "C" coal horizon?
	335					
			Mud-shale - same unit as below.	18'		
	340				340'	

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	340		mud-shale, same unit as below	18'	340'	
	345				# 30	
	350				350'	

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	350		Mudshale - meddk gy(N4) at base to dkgy(N3) at top, hard, blocky to parallel fracture, silty, micaceous, thin horizontal laminae, lenticular bedding with very thin lenses, few small plant fragments, abundant bioturbation, silt content decreases upwards, gradational lower contact.	18'	350'	
	355				# 31	
		T	Mudshale, dkgy(N3), hard, parallel fracture, silty, micaceous, thin horizontal laminae, abundant brachiopods and other marine fossils, calcareous cement, sharp lower contact w/ coal,	5.8'		
		T				
		⊥				
		T				
	360				360'	

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	360		Mudshale, same unit as above	5.8'	360' # 32	
			Coal with mud or shale partings - coal blk(N1), partings from med lt gy(N6) to dk gy(N3), coal banded, mod. bright, sulfate bloom, abundant plant debris in shale partings, upper parting darker colored, sharp contacts.	0.3' / 0.4' / 0.3' / 1.3' / 1.1'		May represent 2 separate coal developments, D? coal Riverton?
	365		Mudstone - med gy(N5), mod. hard, parallel - blocky frac, massive, abundant plant fragments, gradational lower contact.	2.3'		
			Mud-shale - same unit as below.	16.5'		
	370				370'	

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	370		Mud-shale — same unit as described below.		# 33	
				16.5'		
	375					
					# 34	
	380					

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	380		Mud-shale, Hgy (N7) to med ltgy (N6), mod. hard, parallel fracture, silty, micaceous, thin horizontal laminae, occasional silty laminae, sparse burrowing, abundant plant fragments, abundant pyrite and clay ironstone nodules, lower contact not observed. some convolute laminae	16.5'	# 34	
	385		8' core loss, 384'-392', may have included Riverton coal.	8'		
	390					

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	390		8' core lost or ground away 384'-392', may have included coal.	8'	# 34	8' core loss probably includes Riverton coal.
			Limestone, lt gy (N7) to ul t gy (N8), hard, blocky fracture, mudstone, calcareous, non-fossiliferous, massive, top is extensively fractured with oil stains along fracs. abundant pyrite nodules to 1 cm dia. lower contact not observed. Upper contact destroyed by core loss but is unconformable. Bottom of Core	5.0'	391'	Mississippian Limestone
	395					
	406					