



PROJECT NUMBER:

338884.FL

BORING NUMBER:

AD-04

SHEET 1 OF 16

ROCK CORE LOG

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1723034.6 N, 458030.5 E (NAD83)

ELEVATION : 42.6 ft (NAVD88)

DRILLING CONTRACTOR : Boart Longyear, Huntsville, AL; Driller: K. Heinrich, A. Anderson

CORING METHOD AND EQUIPMENT : Dietrich D-120 S/N 820; BL300T S/N 1517, mud rotary, HQ tools, HW casing

ORIENTATION : Vertical

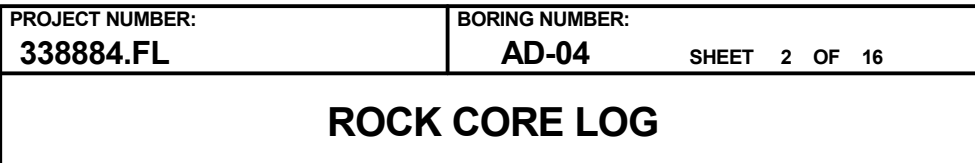
WATER LEVELS : 5.88 ft bgs on 9/13/07

START : 9/6/2007

END : 9/27/2007

LOGGER : R. Bitely, J. Townes, S. Roberti, K. Waikins

DEPTH BELOW SURFACE AND ELEVATION (ft)	CORE RUN LENGTH AND RECOVERY (%)	DISCONTINUITIES			SYMBOLIC LOG	LITHOLOGY	COMMENTS
		R Q D (%)	FRACTURES PER FOOT	DESCRIPTION			
				DEPTH, TYPE, ORIENTATION, ROUGHNESS, PLANARITY, INFILLING MATERIAL AND THICKNESS, SURFACE STAINING, AND TIGHTNESS		ROCK TYPE, COLOR, MINERALOGY, TEXTURE, WEATHERING, HARDNESS, AND ROCK MASS CHARACTERISTICS	SIZE AND DEPTH OF CASING, FLUID LOSS, CORING RATE AND SMOOTHNESS, CAVING ROD DROPS, TEST RESULTS, ETC.
-157.4						No Recovery 200.0-212.0'	Boring AD-4 blind drilled to approximately 200 feet below ground surface before beginning sampling/logging. "Water level is based on Ground Water Monitoring at LNP site (FSAR Table 2.4.12.08)" 8/26-8/29/07: Sonic casing at 200.0' below ground surface, attempt advancement of HQWL with only 2.5' of advancement, no recovery of material and two rock coring bits (#636) destroyed 9/5/07: Sonic rig setup on AD-4, advances sonic 4" core barrel from 202.5-207.5' below ground surface, no recovery of material due to broken HQWL bit plugging Sonic core barrel; no voids noted; HQWL bit removed, advance 207.5-213' below ground surface
205 -162.4							
210 -167.4							
212.0	R1-HQ 2 ft 50%	0	>10	212.0-213.0' - Fracture zone, rough, angular to undulating, limestone fragments, <2" diameter fracture zone		Limestone 212.0-213.0' - yellowish gray, (5Y 7/2), very fine to fine grained, strong HCl reaction, weak to strong (R2 to R4), voids <1/16" over 30% of surface, poorly fossiliferous with few fossils <1/4" diameter, no organics, no cavities	Advance Sonic 4" casing to 213' below ground surface; retrieve 5.0' of crushed limestone fragments and limestone core segments, 4" long each; no void space; set Sonic 6" casing to 210.0' below ground surface; R1: 13 minutes
214.0			NR				
215 -172.4	R2-HQ 2 ft 100%	33	2	214.8, 215.0' - Bedding plane (2), <10 deg, rough, undulating		No Recovery 213.0-214.0' 213.0-214.0'	9/6/07: Begin rock coring after advancing HWT casing to 2.38' below ground surface, 1.0' material inside casing to 212.0', core blockage at 214.0' bgs due to fragment locking in sample barrel; no further advancement for R1, limestone inside casing to 212.0'; SC-1 collected at 214.0-214.8' R2: 5 minutes
216.0			>10	215.25-215.85' - Fracture zone, rough, undulating, limestone fragments <2" diameter		Limestone 214.0-216.0' - yellowish gray, (5Y 7/2), very fine to fine grained, strong HCl reaction, weak to medium strong (R2 to R3), voids <1/16" over 10-40% of surface decreasing with depth, few cavities, poorly to moderately fossiliferous with fossil casts <1/4" diameter, trace laminated bedding	
			1	216.8-216.95' - Fracture zone, <10 deg and <20 deg, rough, undulating, limestone fragments <3" diameter, bedding plane fractures with high angle intersecting fractures			
	R3-HQ 5 ft 90%	56	3	217.25, 218.15, 218.25, 219.15, 219.4' - Bedding plane or mechanical break (5), <10 deg, rough, undulating			
			>10				
220							





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SHEET 3 OF 16

ROCK CORE LOG

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1723034.6 N, 458030.5 E (NAD83)

ELEVATION : 42.6 ft (NAVD88)

DRILLING CONTRACTOR : Boart Longyear, Huntsville, AL; Driller: K. Heinrich, A. Anderson

CORING METHOD AND EQUIPMENT : Dietrich D-120 S/N 820; BL300T S/N 1517, mud rotary, HQ tools, HW casing

ORIENTATION : Vertical

WATER LEVELS : 5.88 ft bgs on 9/13/07

START : 9/6/2007

END : 9/27/2007

LOGGER : R. Bitely, J. Townes, S. Roberti, K. Watkins

DEPTH BELOW SURFACE AND ELEVATION (ft)	CORE RUN LENGTH AND RECOVERY (%)	DISCONTINUITIES		SYMBOLIC LOG	LITHOLOGY	COMMENTS
		RQD (%)	DESCRIPTION			
			DEPTH, TYPE, ORIENTATION, ROUGHNESS, PLANARITY, INFILLING MATERIAL AND THICKNESS, SURFACE STAINING, AND TIGHTNESS			
-197.4						R7: 3 minutes
241.0						
	R8-HQ 5 ft 24%	0	241.0-242.2' - Fracture zone, multiple intersecting fractures with rock fragments up to 1-3/16" diameter		Limestone 241.0-242.2' - yellowish gray, (5Y 7/2), very fine to fine grained, moderate HCl reaction, weak to medium strong (R2 to R3), voids up to 3/32" cover 5% of rock surface, trace organics No Recovery 242.2-246.0'	Driller's Remark: Rapid, consistent drilling; potential cavity or silt infill washed out during drilling
245 -202.4						R8: 2 minutes
246.0						
	R9-HQ 5 ft 20%	0	246.0-247.0' - Fracture zone, multiple intersecting fractures with rock fragments up to 2" diameter		Limestone 246.0-247.0' - yellowish gray, (5Y 7/2), very fine to fine grained, weak to moderate HCl reaction, weak to medium strong (R2 to R3), voids up to 3/32" cover 1-2% of surface, poorly fossiliferous No Recovery 247.0-251.0'	Driller's Remark: Potential cavity at 246.0-250.0' or silt zone washed out-- consistent 50% circulation
250 -207.4						9/6/07: Complete drilling at 17:00, water level at surface 9/7/07: Re-spool 650.0' wireline, transmission down time for repair, start drilling at 12:15
251.0						
	R10-HQ 5 ft 50%	18	251.2' - Mechanical break or fracture, rough, undulating, angular rock fragment potentially fallen from above onto top of run, no discernible rock contact/fracture angle 251.85-252.05' - Fracture zone, rough, undulating, multiple intersecting fractures 252.5' - Fracture or mechanical break, 60-70 deg, rough, undulating, variable 252.6-253.5' - Fracture zone, rough, undulating, interbedding with silt seams		Limestone 251.0-251.2' - yellowish gray, (5Y 7/2), very fine to medium grained, strong (R4), no voids, cavities or fossil, light organic stain on <30% of surface 251.2-252.6' - yellowish gray, (5Y 7/2), strong HCl reaction, very weak to weak (R1 to R2), voids <1/16" over 20-30% of surface, poorly fossiliferous, trace laminated bedding 252.6-253.5' - yellowish gray, (5Y 7/2), extremely weak (R0), silt lenses interbedded No Recovery 253.5-256.0'	Driller's Remark: at 253.0- 254.0' light chatter; core blockage at 254.25'
255 -212.4						R10: 5 minutes
256.0						
	R11-HQ 5 ft 75%	15	256.0-257.5' - Fracture zone, rough, undulating, intersecting fractures and gravel sized fragments 3" diameter 258.3-258.5' - Fracture zone, rough, undulating, gravel sized fragments <2" diameter 258.5' - Mechanical break or fracture, 50 deg, rough, undulating		Limestone 256.0-259.75' - yellowish gray, (5Y 7/2), very fine to medium grained, strong HCl reaction, extremely weak to weak (R0 to R2), voids <1/16" over <10% of surface, poorly fossiliferous, trace organic staining/laminar from 256.0 to 257.0'; laminated bedding predominant from 258.8 to 259.75'	Driller's Remark: at 257.0- 259.0' light to moderate chatter, consistent drilling rate
260						



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SHEET 4 OF 16

ROCK CORE LOG

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ELEVATION : 42.6 ft (NAVD88)

DRILLING CONTRACTOR : Boart Longyear, Huntsville, AL; Driller: K. Heinrich, A. Anderson

CORING METHOD AND EQUIPMENT : Dietrich D-120 S/N 820; BL300T S/N 1517, mud rotary, HQ tools, HW casing

ORIENTATION : Vertical

WATER LEVELS : 5.88 ft bgs on 9/13/07

START : 9/6/2007

END : 9/27/2007

LOGGER : R. Bitely, J. Townes, S. Roberti, K. Waikins

WATER LEVELS : 3.66 ft bgs on 9/19/07							START : 9/9/2007							END : 9/27/2007							LOGGER : K. Bilely, J. Townes, C. Robert, K. Watkins						
DEPTH BELOW SURFACE AND ELEVATION (ft)	CORE RUN, LENGTH, AND RECOVERY (%)	DISCONTINUITIES				SYMBOLIC LOG	LITHOLOGY		COMMENTS																		
		R Q D (%)	FRACTURES PER FOOT	DESCRIPTION			ROCK TYPE, COLOR, MINERALOGY, TEXTURE, WEATHERING, HARDNESS, AND ROCK MASS CHARACTERISTICS	SIZE AND DEPTH OF CASING, FLUID LOSS, CORING RATE AND SMOOTHNESS, CAVING ROD DROPS, TEST RESULTS, ETC.																			
				DEPTH, TYPE, ORIENTATION, ROUGHNESS, PLANARITY, INFILLING MATERIAL AND THICKNESS, SURFACE STAINING, AND TIGHTNESS																							
-217.4			NR	258.8-259.75' - Fracture zone, rough to smooth, undulating to planar, intersecting fractures and gravel sized fragments up to <2" diameter, rough to smooth transitioning with depth, bedding plane fractures with intersecting vertical fractures prevalent from 259.0-259.75'			No Recovery 259.75-261.0'		R11: 4 minutes																		
261.0							No Recovery 261.0-266.0'																				
	R12-HQ 5 ft 0%	0	NR				No Recovery 266.0-271.0'		Driller's Remark: Rapid advancement 262.0-265.0' below ground surface, possible voids or silt lens; continuous circulation (approximately 50% return) through run; minimum of pump pressure increasing intermittently through run indicating core/fluid blockage due to formation back pressure on equipment, likely silt/soil zone washed out to formation R12: 5 minutes Driller's Remark: Rapid advancement 266.0-271.0' below ground surface, as above, no recovery due to unconsolidated silt/soil concentration; pressure on flow increasing during drilling indicating back pressure from formation; HQ core barrel set on formation at 271.0' below ground surface with no free rod drop: material is present but not retrievable due to unconsolidated nature R13: 4 minutes K. Watkins and Robert logging Coring Equipment: BL 300T R14: No Time Recorded																		
265 -222.4																											
	R13-HQ 5 ft 0%	0	NR	271.0' - Fracture, rock limestone fragments up to 12" in size 271.0-271.1'			Limestone 271.1-271.25' - yellowish gray, (5Y 8/1), very fine to fine grained, moderate HCl reaction, very weak (R1), 5% small voids up to 1/16" No Recovery 271.25-274.0'																				
270 -227.4																											
	R14-HQ 3 ft 8%	0	NR				No Recovery 274.0-279.0'																				
274.0																											
275 -232.4									Driller's Remark: Slow drilling; used 300 gallons of muck with no recovery, decision to trip out rod and barrel to check bit, bit inspected and appears intact, hole tagged at 279.0', tripped back in to try another run R15: 20 minutes																		
	R15-HQ 5 ft 0%	0	NR																								
279.0																											
280	R16-HQ		4																								



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SHEET 5 OF 16

ROCK CORE LOG

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ELEVATION : 42.6 ft (NAVD88)

DRILLING CONTRACTOR : Boart Longyear, Huntsville, AL; Driller: K. Heinrich, A. Anderson

CORING METHOD AND EQUIPMENT : Dietrich D-120 S/N 820; BL300T S/N 1517, mud rotary, HQ tools, HW casing

ORIENTATION : Vertical

WATER LEVELS : 5.88 ft bgs on 9/13/07

START : 9/6/2007

END : 9/27/2007

LOGGER : R. Bitely, J. Townes, S. Roberti, K. Waikins

DEPTH BELOW SURFACE AND ELEVATION (ft)	CORE RUN LENGTH AND RECOVERY (%)	DISCONTINUITIES			SYMBOLIC LOG	LITHOLOGY	COMMENTS
		RQD (%)	FRACTURES PER FOOT	DESCRIPTION			
				DEPTH, TYPE, ORIENTATION, ROUGHNESS, PLANARITY, INFILLING MATERIAL AND THICKNESS, SURFACE STAINING, AND TIGHTNESS		ROCK TYPE, COLOR, MINERALOGY, TEXTURE, WEATHERING, HARDNESS, AND ROCK MASS CHARACTERISTICS	SIZE AND DEPTH OF CASING, FLUID LOSS, CORING RATE AND SMOOTHNESS, CAVING ROD DROPS, TEST RESULTS, ETC.
-237.4	2 ft 95%	21	>10	279.4, 279.6, 279.85, 279.9, 280.3, 280.4, 280.5, 280.65, 280.75' - Fractures, horizontal, smooth, planar to undulating, horizontal, clayey white infilling, open (1/5" pore)		Limestone 279.0-279.85' - yellowish gray, (5Y 7/2), medium grained, moderate HCl reaction, very weak (R1), <1% voids on surface, <1/32"	Driller's Remark: More pieces of bit recovered R16: 6 minutes
281.0	R17-HQ 2 ft 80%	0	NR	280.0-280.15' - clay infilling		279.85-280.0' - Same as 279.0-279.85' except yellowish gray, (5Y 8/1), with clayey striation	R17: 6 minutes Driller's Remark: Slow drilling
			>2	281.4, 281.5, 281.6' - Fractures (3), horizontal, rough, planar to undulating, 9/16" relief		280.0-280.3' - clay - white, soft, moderate HCl reaction	
			NR	281.6-281.75' - soft infill, clayey		280.3-280.9' - yellowish gray, (5Y 8/1), very fine grained, moderate HCl reaction, medium hard, 25% surface area voids 3/16"	
			2	281.9, 281.95, 282.0, 282.1, 282.3, 282.5, 282.6' - Fractures (7), horizontal, rough, stepped		No Recovery 280.9-281.0' Limestone 281.0-282.6' - light gray, (N7), fine to medium grained, mild to moderate HCl reaction, weak to medium strong (R2 to R3), abundantly fossiliferous, voids to 3/16" (molds)	
			1	283.0-238.5' - Fracture zone, broken/crushed		No Recovery 282.6-283.0' Limestone 283.0-283.5' - light gray to pale yellow brown, (N7 to 10YR 6/2), mild HCl reaction	SC-4 Collected at 287.3- 288.5' R18: 16 minutes
285 -242.4	R18-HQ 6 ft 100%	50	2	283.9' - Fracture, 85 deg, rough, stepped, 9/16" relief		283.5-285.0' - light gray, (N7), fine to medium grained, abundant fossils, voids to 9/16" over 100% (molds)	
			1	284.4, 285.0' - Fractures (2), horizontal, rough, 11-4/5" relief, infill, limestone		285.0-287.3' - loose fragments as in 283.0 to 283.5'	
			1	285.1-285.4' - Fracture zone		287.3-288.4' - light gray to very light gray, (N7 to N8), medium grained, mild to moderate HCl reaction, very weak to weak (R1 to R2), irregularly spaced voids to 9/16"; highly fossiliferous	
			0	285.5-287.3' - Fracture zone, infill of loose medium-grained limestone		289.0-293.7' - very light gray to very light bluish gray, (N8 to 5B 8/1), very fine grained, mild to moderate HCl reaction, very weak to weak (R1 to R2), some portions clayey, <5% voids (molds)	R19: 13 minutes
			1	288.5' - Mechanical break, horizontal, rough, stepped, 9/16" relief, across large 1" void		No Recovery 293.7-294.0' Limestone 294.0-295.5' - yellowish gray, (5Y 8/1), fine grained, weak (R2), poorly to moderately fossiliferous, <5% voids (molds) to 1/16" near 294.0'	
290 -247.4	R19-HQ 5 ft 94%	57	3	289.25, 289.5, 289.85' - Fractures (3), horizontal, rough, stepped, medium limestone, 9/16" relief		295.5-298.9' - very light gray to very light bluish gray, (N8 to 5B 8/1), mild to moderate HCl reaction, very weak to weak (R1 to R2), poorly to abundantly fossiliferous, voids to 3/4" (molds)	
			3	290.9, 291.4, 291.85, 292.25, 292.8, 293.0, 294.5, 294.7' - Fractures (8), horizontal, rough, stepped, infill, loose, broken		No Recovery 298.9-299.0'	R20: 11 minutes
			2				
			3				
			2				
			NR				
295 -252.4	R20-HQ 5 ft 98%	55	>10	294.0-295.2' - Bedding plane, smooth, undulating, slight (mt) metal oxide staining, parting on bedding planes			
			3				
			>10	295.8, 298.7' - Fractures (2), horizontal, rough, 9/16-1" relief			
			1				
			2				
			NR				
299.0			>10	299.0-304.0, 304.0-309.0' - Mechanical break (2)			
300							



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ELEVATION : 42.6 ft (NAVD88)

DRILLING CONTRACTOR : Boart Longyear, Huntsville, AL; Driller: K. Heinrich, A. Anderson

CORING METHOD AND EQUIPMENT : Dietrich D-120 S/N 820; BL300T S/N 1517, mud rotary, HQ tools, HW casing

ORIENTATION : Vertical

WATER LEVELS : 5.88 ft bgs on 9/13/07

START : 9/6/2007

END : 9/27/2007

LOGGER : R. Bitely, J. Townes, S. Roberti, K. Waikins

DEPTH BELOW SURFACE AND ELEVATION (ft)	CORE RUN LENGTH AND RECOVERY (%)	DISCONTINUITIES			SYMBOLIC LOG	LITHOLOGY	COMMENTS
		RQD (%)	FRACTURES PER FOOT	DESCRIPTION			
				DEPTH, TYPE, ORIENTATION, ROUGHNESS, PLANARITY, INFILLING MATERIAL AND THICKNESS, SURFACE STAINING, AND TIGHTNESS			
-257.4	R21-HQ 5 ft 62%	0	>10			Limestone 299.0-301.0' - very light gray to very light bluish gray, (N8 to 5B 8/1), fine grained, mild to moderate HCl reaction, very weak to weak (R1 to R2), fossil molds, voids to 3/4" (less than 5%) Clayey Limestone 301.0-302.1' - light yellowish gray to light bluish gray, (5Y 7/2 to 5B 8/1), very fine grained, moderate HCl reaction, with layers of very weak (R1) dark olive silty clay No Recovery 302.1-304.0' Clayey Limestone 304.0-308.5' - light yellowish gray with bluish gray mottling, (5Y 7/2 with 5B 8/1), very fine grained, moderate HCl reaction, extremely weak (R0), very poorly unconsolidated, bioturbation filled with bluish gray infill; <5% voids No Recovery 308.5-309.0'	R21: 16 minutes
304.0			>10				
			NR				
305	R22-HQ 5 ft 90%	28	>10	309.0-310.8, 311.5-311.8, 312.6-312.8' - Mechanical break (3)		Limestone 309.0-310.0' - very light bluish gray with medium bluish gray mottling, (5B 8/1 with 5B 5/1), very fine grained, very weak (R1) 310.0-313.5' - yellowish gray with bluish gray streaking, (5Y 7/2 with 5B 8/1), very fine grained, strong HCl reaction, very weak to weak (R1 to R2), scarce voids (bioturbation) No Recovery 313.5-314.0' 314.0-318.6' - Same as 310.0-314.0'	R22: 15 minutes
-262.4			>10				
			>10				
			>10				
			>10				
			NR				
309.0	R23-HQ 5 ft 90%	43	>10	311.0, 312.2' - Fractures (2), <5 deg, smooth, planar to undulating, tight 312.6-312.8' - Mechanical break		No Recovery 318.6-319.0'	R23: 15 minutes
310			>10				
-267.4			>10				
			>10				
			>10				
			NR				
314.0	R24-HQ 5 ft 92%	17	>10	319.0-319.9, 320.8-322.9, 323.4-323.8' - Mechanical break (3)			R24: 15 minutes
315			>10				
-272.4			>10				
			>10				
			>10				
			NR				
319.0			>10				
320			>10				



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ROCK CORE LOG

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ELEVATION : 42.6 ft (NAVD88)

DRILLING CONTRACTOR : Boart Longyear, Huntsville, AL; Driller: K. Heinrich, A. Anderson

CORING METHOD AND EQUIPMENT : Dietrich D-120 S/N 820; BL300T S/N 1517, mud rotary, HQ tools, HW casing

ORIENTATION : Vertical

WATER LEVELS : 5.88 ft bgs on 9/13/07

START : 9/6/2007

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LOGGER : R. Bitely, J. Townes, S. Roberti, K. Waikins

DEPTH BELOW SURFACE AND ELEVATION (ft)	CORE RUN LENGTH AND RECOVERY (%)	DISCONTINUITIES			SYMBOLIC LOG	LITHOLOGY	COMMENTS
		RQD (%)	FRACTURES PER FOOT	DESCRIPTION			
				DEPTH, TYPE, ORIENTATION, ROUGHNESS, PLANARITY, INFILLING MATERIAL AND THICKNESS, SURFACE STAINING, AND TIGHTNESS			
-277.4	R25-HQ 5 ft 96%	30	>10	320.05, 320.3' - Mechanical break (2), <5 deg, smooth, undulating, tight to 1/4" open		Limestone 319.0-323.4' - yellowish gray, (5Y 7/2), medium grained, moderate HCl reaction, extremely weak to very weak (R0 to R1), friable, <5% voids (molds) at 322.0-323.0', otherwise <1%	R25: 15 minutes
			>10				
			>10				
			>10	320.5-320.8, 322.9-323.4' - Mechanical break or fracture zone (2), smooth, undulating			
324.0	R26-HQ 5 ft 95%	32	NR			No Recovery 323.4-324.0' Limestone 324.0-324.5' - light gray with bluish gray mottling, (N7 to 5B 8/1), moderate HCl reaction, weak (R2), brown organic peat staining 324.5-328.8' - yellowish gray, (5Y 7/2), medium grained, strong HCl reaction, very weak (R1), to unconsolidated	R26: 15 minutes
			>10	324.4-324.7' - Mechanical break, multiple breaks			
			>10				
			>10				
325 -282.4	R27-HQ 5 ft 74%	15	NR	329.0-330.0' - Fracture zone, loose		No Recovery 328.8-329.0' Limestone 329.0-330.0' - light yellowish gray, (5Y 7/2), medium grained, strong HCl reaction, extremely weak (R0), loose 330.0-330.2' - medium dark gray, (N4), medium strong (R3), very hard with calcite filled bioturbation voids Clayey Limestone 330.2-332.0' - yellowish gray, (5Y 8/1), medium grained, strong HCl reaction, extremely weak (R0), loose 332.0-332.7' - Same as 330.0-332.0' except very weak (R1) No Recovery 332.7-334.0'	Driller's Remark: 15:26 - pulling core
			>10	330.0-330.4' - Mechanical break, fracture/breakage zone across friable rocks 330.4-331.5' - Mechanical break			
			1				
			0	331.95' - Bedding plane, horizontal, smooth, undulating, tight to 1/4" open			
	R28-HQ 5 ft 100%	62	NR			Limestone 334.0-337.6' - yellowish gray, (5Y 7/2), medium grained, moderate HCl reaction, very weak to weak (R1 to R2), abundantly fossiliferous, <5% voids (molds) at 334.0-336.8', voids to 3/8"	R27: No Time Recorded
330 -287.4			3	334.6' - Mechanical break, 40 deg, rough, undulating, 3/8" relief (mechanical)			
			2	334.75' - Fracture, horizontal, rough, planar, 1/16" relief			
			1	335.1' - Fracture, horizontal, rough, 9/16" relief			
	R28-HQ 5 ft 100%	62	3	335.8, 336.7, 337.2' - Fractures (3), 30 deg, rough, undulating, 15 deg, and horizontal, 9/16" relief		SC-5 Collected at 335.9-336.6'	5.6' of recovery in R28 on 5' run; upper break point of core matches lower break point of R27 R28: 13 minutes
			>10	337.6' - Fracture, horizontal, rough, planar, loose infill			
			>10	337.8-339.2' - abundant breaks in very loose limestone			
335 -292.4			>10				
339.0			>10				
340			>10				



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ROCK CORE LOG

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ELEVATION : 42.6 ft (NAVD88)

DRILLING CONTRACTOR : Boart Longyear, Huntsville, AL; Driller: K. Heinrich, A. Anderson

CORING METHOD AND EQUIPMENT : Dietrich D-120 S/N 820; BL300T S/N 1517, mud rotary, HQ tools, HW casing

ORIENTATION : Vertical

WATER LEVELS : 5.88 ft bgs on 9/13/07

START : 9/6/2007

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LOGGER : R. Bitely, J. Townes, S. Roberti, K. Waikins

DEPTH BELOW SURFACE AND ELEVATION (ft)	CORE RUN LENGTH AND RECOVERY (%)	DISCONTINUITIES			SYMBOLIC LOG	LITHOLOGY	COMMENTS
		RQD (%)	FRACTURES PER FOOT	DESCRIPTION			
				DEPTH, TYPE, ORIENTATION, ROUGHNESS, PLANARITY, INFILLING MATERIAL AND THICKNESS, SURFACE STAINING, AND TIGHTNESS		ROCK TYPE, COLOR, MINERALOGY, TEXTURE, WEATHERING, HARDNESS, AND ROCK MASS CHARACTERISTICS	SIZE AND DEPTH OF CASING, FLUID LOSS, CORING RATE AND SMOOTHNESS, CAVING ROD DROPS, TEST RESULTS, ETC.
-297.4	R29-HQ 5 ft 96%	0	>10			Limestone 339.0-343.8' - yellowish gray, (5Y 7/2), medium grained, mild to moderate HCl reaction, extremely weak to very weak (R0 to R1), voids 1/32-1/16" throughout; friable	R29: 15 minutes
			>10				
			>10	342.4' - Fracture, smooth, undulating, brown organic staining, tight, ~1/8" thick			
			>10				
344.0	R30-HQ 5 ft 96%	75	NR			No Recovery 343.8-344.0' Limestone 344.0-348.8' - light bluish gray with medium bluish gray mottling, (5B 7/1 with 5B 5/1), very fine grained, strong HCl reaction, very weak (R1), clayey, voids (bioturbation); otherwise <1% voids	SC-6 Collected at 347.0-347.9' R30: 10 minutes
			1	344.7' - Mechanical break or bedding plane, 10 deg, smooth, undulating, 1/16" relief			
			>10	345.0-345.7' - Fracture zone, large angular, brittle limestone			
			1	346.6' - Mechanical break, rough, planar, along bedding plane			
			1	347.0' - Fracture, horizontal, rough, undulating, 3/16" relief			
			1	348.0, 348.8' - Fractures or bedding plane (2), horizontal, rough			
349.0	R31-HQ 5 ft 96%	42	NR			No Recovery 348.8-349.0 Limestone 349.0-353.5' - bluish white with light bluish gray mottling, (5B 9/1 with 5B 7/1), very fine grained, strong HCl reaction, very weak to weak (R1 to R2), friable, <1% visible voids	R31: 8 minutes
			1	349.1, 350.0, 351.5, 351.7, 352.0, 352.2, 352.3, 352.8' - Bedding plane (8), horizontal, smooth, undulating, tight to 1/4" open, bedding planes			
			1	349.8, 349.9' - Fractures (2), 60 deg, smooth, undulating, tight			
			>10	350.35' - Mechanical break, <5 deg, rough, stepped, tight			
			5	351.0-351.5' - Fracture zone			
			1	352.2' - Fracture, vertical, smooth, undulating, 1.1' long fracture, tight			
354.0	R32-HQ 5 ft 100%	48	NR			No Recovery 353.5-354.0 Limestone 355.7-356.5' - yellowish gray, (5Y 8/1), medium grained, moderate to strong HCl reaction, weak (R2), abundantly fossiliferous, primarily foraminiferous <1/32" molded voids (forams) throughout; brown organic silt partings 356.5-359.0' - Same as 349.0-355.7' except bluish white to yellowish gray, (5B 9/1 to 5Y 8/1), scarce bioturbation	R32: 10 minutes
			1	353.5' - Mechanical break, <5 deg, rough, undulating, tight			
			3	353.6' - Fracture, vertical, smooth, undulating, 4" long fracture, tight			
			3	354.8' - Fractures (2), 40 deg, smooth, undulating, two intersecting fractures, tight			
			>10	354.9' - Fractures (2), vertical, smooth, undulating, two 2-7/16" fractures, tight			
			2	355.05, 355.55, 355.8, 355.91, 356.05, 356.2, 357.85' - Bedding plane (7), horizontal, smooth, planar to undulating, tight to 1/4" open			
			1	356.2-357.2' - Fracture zone, fragments, 3" diameter			
			2	358.2' - Fractures (2), 10 deg and 40 deg, rough, undulating, broken up there, force not tight, broken at 1" fossil cast			
			2	359.2' - Fracture, 60 deg, smooth, undulating, tight to 1/4" open, 4-3/16" long			
360							



PROJECT NUMBER:

338884.FL

BORING NUMBER:

AD-04

SHEET 9 OF 16

ROCK CORE LOG

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1723034.6 N, 458030.5 E (NAD83)

ELEVATION : 42.6 ft (NAVD88)

DRILLING CONTRACTOR : Boart Longyear, Huntsville, AL; Driller: K. Heinrich, A. Anderson

CORING METHOD AND EQUIPMENT : Dietrich D-120 S/N 820; BL300T S/N 1517, mud rotary, HQ tools, HW casing

ORIENTATION : Vertical

WATER LEVELS : 5.88 ft bgs on 9/13/07

START : 9/6/2007

END : 9/27/2007

LOGGER : R. Bitely, J. Townes, S. Roberti, K. Waikins

DEPTH BELOW SURFACE AND ELEVATION (ft)	CORE RUN LENGTH AND RECOVERY (%)	DISCONTINUITIES			SYMBOLIC LOG	LITHOLOGY	COMMENTS
		RQD (%)	FRACTURES PER FOOT	DESCRIPTION			
				DEPTH, TYPE, ORIENTATION, ROUGHNESS, PLANARITY, INFILLING MATERIAL AND THICKNESS, SURFACE STAINING, AND TIGHTNESS		ROCK TYPE, COLOR, MINERALOGY, TEXTURE, WEATHERING, HARDNESS, AND ROCK MASS CHARACTERISTICS	SIZE AND DEPTH OF CASING, FLUID LOSS, CORING RATE AND SMOOTHNESS, CAVING ROD DROPS, TEST RESULTS, ETC.
-317.4	R33-HQ 5 ft 100%	50	>10	359.9, 360.2, 360.45, 360.6, 362.15, 362.35, 362.55, 362.65, 363.45' - Bedding plane (9), horizontal, smooth, undulating, tight to 1/4" open		Limestone 359.0-365.5' - yellowish gray, (5Y 7/2), medium grained, mild to moderate HCl reaction, very weak to weak (R1 to R2), moderately to abundantly fossiliferous, forams, pelecypods, bryozoa; <1/32" voids and foraminiferous molds ~ 50% bioturbated and finer grained, 359.0 to 360.2' and 363.0 to 365.5'	R33: 12 minutes
			>10	360.6-360.95, 361.25-362.15, 362.55-362.65' - Fracture zone (3), fragments 3" diameter			
			>10				
364.0	R34-HQ 5 ft 100%	60	2	363.75' - Fracture, vertical, smooth, undulating, 6" long, tight		Limestone 365.5-366.8' - yellowish gray, (5Y 8/1), fine grained, mild to moderate HCl reaction, weak (R2), friable, silty, voids over <5% 366.8-367.7' - pale yellow gray to very light gray, (5Y 7/2 to N8), weak to medium strong (R2 to R3), >50% bioturbated with voids over 60% of sample, abundantly fossiliferous 367.7-369.0' - yellowish gray, (5Y 7/2), very fine to fine grained, mild to moderate HCl reaction, abundantly fossiliferous (pelecypods, forams) voids, molds up to 1/16" >50% bioturbated 369.0-370.3' - yellowish gray, (5Y 7/2), fine to medium fine grained, mild HCl reaction, very weak to weak (R1 to R2), <1/32" voids (primarily foraminifera molds), friable, silty 370.3-373.7' - very light gray, (N8), with <5% light bluish gray mottling, moderate to strong HCl reaction, abundantly fossiliferous (primarily foraminifera), molds <1/32-3/16", >50% bioturbated No Recovery 373.7-374.0' Limestone 374.0-374.9' - yellowish gray, (5Y 8/1), strong HCl reaction, very weak to weak (R1 to R2), voids to 3/16"; friable and very weak rock (R1) rock at 374.0-374.3' 374.9-376.8' - yellowish gray, (5Y 8/1), strong HCl reaction, weak (R2), friable, as at 374-374.3' above, but with occasional olive gray organic streaks No Recovery 376.8-378.0'	SC-7 Collected at 366.8- 367.7' R34: 12 minutes
365			2	364.6, 365.6, 364.9, 366.0' - Bedding plane (4), horizontal, smooth, undulating, tight to 1/4" open			
-322.4			2	365.0' - Fracture or mechanical break, 20 deg, rough, undulating, open, fragment missing			
			1	365.4' - Fracture or mechanical break, 30 deg, rough, undulating to stepped, missing fragments, tight to 1" open			
			1	366.5-366.8' - Fracture zone, fragments to 1-2"			
369.0	R35-HQ 5 ft 88%	35	2	368.05-368.6' - Fracture zone, fragments to 2-3" rock weakened by fossiliferous zone			R35: 12 minutes
370			4	369.2' - Bedding plane, horizontal, moderately smooth, planar, 1/16-3/16" open (typ)			
-327.4			3	369.4, 369.6, 369.8, 370.1, 370.3' - Bedding plane (5), horizontal, moderately smooth, planar, 1/16-3/16" open (typ)			
			3	370.3-370.7' - Fracture zone, lithology change			
			1	371.1' - Fracture, rough, undulating, 9/16" relief, break across void			
	R36-HQ 4 ft 70%	10	1	371.5, 371.8, 371.9, 373.0' - Bedding plane (4), 0-10 deg, rough, undulating, 3/16-3/4" open			Driller's Remark: Hard rocks lodged in inner core, only advanced 4' R36: 15 minutes
374.0			NR				
375			2	374.3, 374.6, 375.1' - Fractures (3), horizontal, rough, undulating, 3/16-9/16" open			
-332.4			>10	375.5-376.8' - fragments, silty limestone			
			>10				
			NR				
378.0			NR				
			1	378.6, 379.3' - Fractures (2), horizontal, rough, undulating, poorly fit 3/16-9/16" open			
380			2				



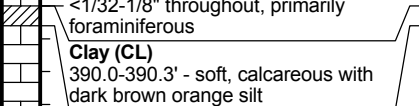
PROJECT NUMBER: 338884.FL	BORING NUMBER: AD-04	SHEET 10 OF 16
ROCK CORE LOG		

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1723034.6 N, 458030.5 E (NAD83)

ELEVATION : 42.6 ft (NAVD88) DRILLING CONTRACTOR : Boart Longyear, Huntsville, AL; Driller: K. Heinrich, A. Anderson

CORING METHOD AND EQUIPMENT : Dietrich D-120 S/N 820; BL300T S/N 1517, mud rotary, HQ tools, HW casing ORIENTATION : Vertical

WATER LEVELS : 5.88 ft bgs on 9/13/07 START : 9/6/2007 END : 9/27/2007 LOGGER : R. Bitely, J. Townes, S. Roberti, K. Waikins

WATER LEVELS - 3.06 ft bgs on 9/13/07				START - 9/12/07		END - 9/27/2007		LOGGER - R. Ditty, J. Townes, S. Robert, R. Wainis	
DEPTH BELOW SURFACE AND ELEVATION (ft)	CORE RUN LENGTH AND RECOVERY (%)	DISCONTINUITIES				SYMBOLIC LOG	LITHOLOGY	COMMENTS	
		R Q D (%)	FRACTURES PER FOOT	DESCRIPTION	ROCK TYPE, COLOR, MINERALOGY, TEXTURE, WEATHERING, HARDNESS, AND ROCK MASS CHARACTERISTICS		SIZE AND DEPTH OF CASING, FLUID LOSS, CORING RATE AND SMOOTHNESS, CAVING ROD DROPS, TEST RESULTS, ETC.		
								DEPTH, TYPE, ORIENTATION, ROUGHNESS, PLANARITY, INFILLING MATERIAL AND THICKNESS, SURFACE STAINING, AND TIGHTNESS	
-337.4	R37-HQ 6 ft 78%	39	3	379.6, 380.0, 380.1, 380.2, 380.7' - Bedding plane (5), horizontal, tightly fill 1/16-3/16" relief		378.0-379.5' - very light gray, (N8), very fine grained, moderate HCl reaction, weak (R2), >50% voids <1/32" wide and bioturbated	R37: 16 minutes		
			>10	380.9-382.7' - Fracture zone		379.5-382.6' - yellowish gray, (5Y 7/2), fine grained, moderate HCl reaction, very weak to weak (R1 to R2), friable, silty, voids <1/32", well distributed but <5%			
			>10			382.6-382.9' - pale yellowish gray, (5Y 8/1), strong HCl reaction, weak to medium strong (R2 to R3), bioturbated, voids 1/8" wide			
			NR			No Recovery 382.9-384.0'			
384.0			>10	384.0-384.3' - Fracture zone, fragments to 4"x2"			384.0-385.7' - Same as 379.5-382.6' except 3/8" single very extensive void across sample 385.2-385.7'	R38: 10 minutes	
-385			3	384.3, 384.5, 384.8, 385.3, 387.85' - Bedding plane (5), 0-5 deg, smooth, undulating, tight to 1/2" open			385.7-388.5' - Same as 384.0-385.7'		
-342.4	R38-HQ 5 ft 100%	55	1	385.5' - Fracture, rough, undulating, 4-3/16" void					
			2	385.65' - Mechanical break, <5 deg, rough, undulating, tight					
			>10	387.5' - Mechanical break, 20 deg, rough, undulating, tight					
389.0			2	388.4-388.8' - Fracture zone, fragments to 2"x2"			388.5-390.0' - light gray, (N7), fine to medium grained, moderate HCl reaction, weak to medium strong (R2 to R3), hard, abundant voids <1/32-1/8" throughout, primarily foraminiferous	R39: 10 minutes	
390			0	389.4' - Fracture, 80 deg, rough, undulating, open, missing face			Clay (CL)		
-347.4	R39-HQ 5 ft 100%	0	>10	389.6' - Mechanical break, <5 deg, rough, undulating, tight			390.0-390.3' - soft, calcareous with dark brown orange silt		
			>10	389.8' - Bedding plane, horizontal, smooth, planar to undulating		Limestone			
			>10	389.9-394.0' - Fracture zone, some brown organic staining on fractures, various fragments of all orientation within limestone; mechanical		390.3-394.0' - yellowish gray, (5Y 7/2), moderate HCl reaction, very weak to weak (R1 to R2), friable, organic staining within many fractures <1/32-3/16" voids	R40: 9 minutes		
394.0			3	394.2, 394.3, 394.5, 394.9' - Mechanical break or bedding plane (4), horizontal and 10 deg, rough, undulating, organic staining at 394.5', 3/16 to 3/8" relief		394.0-399.0' - yellowish gray, (5Y 8/1), very fine to fine grained, strong HCl reaction, very weak to weak (R1 to R2), voids <1/32-3/16" (molds and casts) 394.0-395.0' bioturbated			
395			>10	395.3-395.8' - Fracture zone, 3/4 to 1-1/2" blocky fragments					
-352.4	R40-HQ 5 ft 90%	53	2	396.4, 396.9' - Mechanical break (2), horizontal, rough, undulating, 1-3/16" relief					
			0				R40: 9 minutes		
			0						
			NR						
399.0			3	399.3, 399.7, 400.1' - Bedding plane (3), horizontal, smooth		No Recovery 398.5-399.0'			
400									



PROJECT NUMBER:

338884.FL

BORING NUMBER:

AD-04

SHEET 11 OF 16

ROCK CORE LOG

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1723034.6 N, 458030.5 E (NAD83)

ELEVATION : 42.6 ft (NAVD88)

DRILLING CONTRACTOR : Boart Longyear, Huntsville, AL; Driller: K. Heinrich, A. Anderson

CORING METHOD AND EQUIPMENT : Dietrich D-120 S/N 820; BL300T S/N 1517, mud rotary, HQ tools, HW casing

ORIENTATION : Vertical

WATER LEVELS : 5.88 ft bgs on 9/13/07

START : 9/6/2007

END : 9/27/2007

LOGGER : R. Bitely, J. Townes, S. Roberti, K. Waikins

DEPTH BELOW SURFACE AND ELEVATION (ft)	CORE RUN LENGTH AND RECOVERY (%)	DISCONTINUITIES		SYMBOLIC LOG	LITHOLOGY	COMMENTS
		RQD (%)	DESCRIPTION			
			DEPTH, TYPE, ORIENTATION, ROUGHNESS, PLANARITY, INFILLING MATERIAL AND THICKNESS, SURFACE STAINING, AND TIGHTNESS			
-357.4	R41-HQ 5 ft 96%	53	2	400.1-400.3' - Fracture zone	Limestone 399.0-404.0' - yellowish gray, (5Y 8/1), very fine to fine grained, strong HCl reaction, very weak to weak (R1 to R2), mold and casts over 20% of rock, foraminifera, gastropods, pelycypods, bioturbated 400.0-401.0'	R41: 9 minutes Finished at 15:15 on 9/20/07 Started at 07:30 on 9/21/07
			2	401.1' - Fracture, 30 deg, rough, 3/16-9/16" relief, mechanical		
			2	401.7, 402.1, 402.4, 402.6, 403.2' - Fractures (5), 0-20 deg, planar, tight		
			3			
404.0	R42-HQ 5 ft 99%	40	NR	404.1, 404.3, 404.5, 404.6, 404.8, 405.3, 405.7' - Mechanical break (7), horizontal and 30 deg, rough, planar to undulating, poorly fit, >9/16" open	No Recovery 403.8-404.0' Limestone 404.0-409.0' - Same as 399.0-404.0' except molds and casts 1/16-3/16" between 405.0-407.0'	R42: 11 minutes
405			5			
-362.4			3			
			2	406.0, 406.5, 406.8' - Mechanical break (3), 0-20 deg, rough, undulating, tightly fit to 3/8" open		
	R43-HQ 5 ft 80%	27	1	407.5, 408.2' - Mechanical break (2), 30 deg, very rough, planar, tightly fit	No Recovery 408.95-409.0' Limestone 409.0-411.3' - light yellowish gray, (5Y 9/1), fine grained, moderate HCl reaction, very weak (R1), voids to 1/4", fine black needle form mineral throughout 5% (possibly phosphate or organic)	R43: 14 minutes
			3	408.5-408.8' - Mechanical break, vertical		
409.0			NR	408.9' - Mechanical break, horizontal, planar to undulating		
410			2	409.1, 409.2' - Mechanical break (2), horizontal, smooth, undulating, poorly fit		
-367.4	R44-HQ 5 ft 96%	50	2	410.3' - Mechanical break, horizontal, very rough, stepped, tightly fit, 3/4" relief	Clay (CL) 411.3-411.7' - light gray calcareous silty clay Limestone 411.7-413.0' - Same as 409.0-411.3' except medium strong (R3) No Recovery 413.0-414.0' Limestone 414.0-416.5' - yellowish gray, (5Y 8/1), moderate HCl reaction, medium strong (R3), finely crystalline; 415.0-416.5' medium strong (R3); 414.0-415.0' very weak; 414.7-414.9' very weak (R1), dark brown organics 416.5-418.7' - yellowish gray, (5Y 8/1), fine grained, very weak to weak (R1 to R2), >5% fossiliferous casts and molds (foraminifera, echinoderma, pelycypods, gastropods), occasional black mineral growth in voids, very soft, voids <1/32-3/16" Clayey Silt (ML) 418.7-418.8' - greenish black	R44: 13 minutes
			0	410.7' - Fracture, 30 deg, smooth, planar, 1/16" open		
			3	411.1, 411.3' - Mechanical break (2), horizontal, very poorly fill, 1-3/16" open		
			NR	411.6-411.9' - Fracture zone, through consolidated limestone		
414.0	R44-HQ 5 ft 96%	50	5	412.2' - Mechanical break, 30 deg, break through unconsolidated limestone		
415			1	412.7, 412.8' - Mechanical break (2), horizontal		
-372.4			1	414.25, 414.4' - Mechanical break (2), planar to undulating, poorly fit		
			1	414.6' - Fracture, horizontal, undulating, poorly fit with (Mt) oxide staining evident		
	R44-HQ 5 ft 96%	50	1	415.0' - Fracture, 40 deg, discontinuity between hard fossiliferous limestone and dark organic silt clay		
			3	415.7, 416.5, 417.2, 417.7, 418.0, 418.3' - Mechanical break (6), horizontal, planar		
			2			
419.0			NR	418.7' - Fracture, horizontal, rough, planar, contact: hard fossiliferous limestone over dark brown silty clay. mt oxide staining on limestone surface		
420			2			



PROJECT NUMBER:

338884.FL

BORING NUMBER:

AD-04

SHEET 12 OF 16

ROCK CORE LOG

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1723034.6 N, 458030.5 E (NAD83)

ELEVATION : 42.6 ft (NAVD88)

DRILLING CONTRACTOR : Boart Longyear, Huntsville, AL; Driller: K. Heinrich, A. Anderson

CORING METHOD AND EQUIPMENT : Dietrich D-120 S/N 820; BL300T S/N 1517, mud rotary, HQ tools, HW casing

ORIENTATION : Vertical

WATER LEVELS : 5.88 ft bgs on 9/13/07

START : 9/6/2007

END : 9/27/2007

LOGGER : R. Bitely, J. Townes, S. Roberti, K. Waikins

DEPTH BELOW SURFACE AND ELEVATION (ft)	CORE RUN, LENGTH, AND RECOVERY (%)	DISCONTINUITIES			SYMBOLIC LOG	LITHOLOGY		COMMENTS
		R Q D (%)	FRACTURES PER FOOT	DESCRIPTION		ROCK TYPE, COLOR, MINERALOGY, TEXTURE, WEATHERING, HARDNESS, AND ROCK MASS CHARACTERISTICS		
				DEPTH, TYPE, ORIENTATION, ROUGHNESS, PLANARITY, INFILLING MATERIAL AND THICKNESS, SURFACE STAINING, AND TIGHTNESS				
-377.4	R45-HQ 5 ft 100%	61	0	419.3' - Bedding plane, 10 deg, contact: black orange clayey silt over limestone, unbroken		No Recovery 418.8-419.0' Clayey Silt (ML) 419.0-419.2' - greenish black, organic Limestone 419.2-421.5' - yellowish gray, (5Y 8/1), weak (R2), >5% casts and molds (foraminiferons, tortella, pelycypods), voids of various size throughout 421.5-423.0' - pale yellowish brown, (10YR 6/2), very fine grained, strong HCl reaction, weak (R2) 423.0-424.5' - pale yellowish brown, (10YR 6/2), very dense, mild to moderate HCl reaction, very strong (R5), crystalline, <1/32" voids throughout Clay (CL) 424.5-425.2' - brownish gray, soft, carbonate Limestone 425.2-427.0' - light olive gray, (5Y 6/1), strong HCl reaction, very weak to weak (R1 to R2), limestone fragments No Recovery 427.0-429.0' Limestone 429.0-433.0' - light yellowish gray, (5Y 9/1), dense, strong HCl reaction, medium strong (R3), microcrystalline, no visible voids, medium strong (can be carved with a knife) organic, silty bedding planes, last 4" very soft and clayey No Recovery 433.0-434.0'	R45: No Time Recorded	
			3	419.9' - Mechanical break, horizontal, rough, planar, 3/8" relief, 1/16" open, tight				
			4	421.5' - Bedding plane, horizontal, undulating, horizontal undulating break along bedding, <1/16" infill (organic)				
			1	421.8-422.3' - Mechanical break, vertical 422.8' - Bedding plane, smooth, undulating, break along bedding, tight fit, organic staining				
424.0	R46-HQ 5 ft 58%	12	1			Clayey Silt/ Silt (ML) 434.0-435.4' - greenish black, (5GY 2/1), organic soft Peat/organics 435.4-435.9' - greenish black, (5GY 2/1), moderate HCl reaction, extremely weak to very weak (R0 to R1), >50% organic material Limestone 435.9-438.0' - grayish orange, (10YR 7/4), fine grained, strong HCl reaction, very weak to weak (R1 to R2)	Bit drops at 424.5'	
425			NA					
-382.4			>10					
			>10					
	R47-HQ 5 ft 78%	27	NR			Clayey Silt/ Silt (ML) 434.0-435.4' - greenish black, (5GY 2/1), organic soft Peat/organics 435.4-435.9' - greenish black, (5GY 2/1), moderate HCl reaction, extremely weak to very weak (R0 to R1), >50% organic material Limestone 435.9-438.0' - grayish orange, (10YR 7/4), fine grained, strong HCl reaction, very weak to weak (R1 to R2)	Various bit drops between 427-429' (void depths unknown) R46: 15 minutes	
429.0			4	429.2, 429.5, 429.8, 429.9, 430.0' - Fractures (5), 10-30 deg, planar, tight, 1/16-1/16" relief, thin organic silty infill <1/32"				
430			1	430.0-432.5' - Mechanical break, horizontal, smooth, planar, tight to 1/8" open				
-387.4			1					
	R48-HQ 4 ft 100%	0	3	432.7' - Fracture, rough, undulating break, disconformity, limestone over friable organic silt		Clayey Silt/ Silt (ML) 434.0-435.4' - greenish black, (5GY 2/1), organic soft Peat/organics 435.4-435.9' - greenish black, (5GY 2/1), moderate HCl reaction, extremely weak to very weak (R0 to R1), >50% organic material Limestone 435.9-438.0' - grayish orange, (10YR 7/4), fine grained, strong HCl reaction, very weak to weak (R1 to R2)	R47: 15 minutes	
			NR					
434.0			NA					
			NA					
435	R48-HQ 4 ft 100%	0	0	435.4-438.0' - Fracture zone, hard limestone with angular fragments		Clayey Silt/ Silt (ML) 434.0-435.4' - greenish black, (5GY 2/1), organic soft Peat/organics 435.4-435.9' - greenish black, (5GY 2/1), moderate HCl reaction, extremely weak to very weak (R0 to R1), >50% organic material Limestone 435.9-438.0' - grayish orange, (10YR 7/4), fine grained, strong HCl reaction, very weak to weak (R1 to R2)	SC-8S Collected at 434.0- 435.4' (soft soil sample)	
-392.4			>10					
			>10					
			>10					
			1	438.5' - Mechanical break, horizontal, rough, undulating, 3/16" open		Clayey Silt/ Silt (ML) 434.0-435.4' - greenish black, (5GY 2/1), organic soft Peat/organics 435.4-435.9' - greenish black, (5GY 2/1), moderate HCl reaction, extremely weak to very weak (R0 to R1), >50% organic material Limestone 435.9-438.0' - grayish orange, (10YR 7/4), fine grained, strong HCl reaction, very weak to weak (R1 to R2)	R48: 16 minutes	
			>10					
440							SC-9 Collected at 438.5- 439.4'	



PROJECT NUMBER:

338884.FL

BORING NUMBER:

AD-04

SHEET 13 OF 16

ROCK CORE LOG

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1723034.6 N, 458030.5 E (NAD83)

ELEVATION : 42.6 ft (NAVD88)

DRILLING CONTRACTOR : Boart Longyear, Huntsville, AL; Driller: K. Heinrich, A. Anderson

CORING METHOD AND EQUIPMENT : Dietrich D-120 S/N 820; BL300T S/N 1517, mud rotary, HQ tools, HW casing

ORIENTATION : Vertical

WATER LEVELS : 5.88 ft bgs on 9/13/07

START : 9/6/2007

END : 9/27/2007

LOGGER : R. Bitely, J. Townes, S. Roberti, K. Waikins

DEPTH BELOW SURFACE AND ELEVATION (ft)	CORE RUN LENGTH AND RECOVERY (%)	DISCONTINUITIES			SYMBOLIC LOG	LITHOLOGY	COMMENTS
		RQD (%)	FRACTURES PER FOOT	DESCRIPTION			
				DEPTH, TYPE, ORIENTATION, ROUGHNESS, PLANARITY, INFILLING MATERIAL AND THICKNESS, SURFACE STAINING, AND TIGHTNESS		ROCK TYPE, COLOR, MINERALOGY, TEXTURE, WEATHERING, HARDNESS, AND ROCK MASS CHARACTERISTICS	SIZE AND DEPTH OF CASING, FLUID LOSS, CORING RATE AND SMOOTHNESS, CAVING ROD DROPS, TEST RESULTS, ETC.
-397.4	R49-HQ 6 ft 43%	14	>10	439.4-440.6' - Fracture zone, through soft material		438.0-439.4' - yellowish gray, (5Y 7/2), very fine grained, moderate HCl reaction, medium strong (R3), abundant voids to 1/8" with some voids filled with organic silt, <5% fossils, primarily molds 439.4-440.6' - dusky yellow, (5Y 6/4), strong HCl reaction, very weak (R1), friable silt No Recovery 440.6-444.0'	R49: 18 minutes
444.0			NR				
445			2	444.5' - Fracture, 15 deg, very rough		Limestone 444.0-446.0' - moderate yellowish brown, (10YR 5/4), fine to very fine grained, mild HCl reaction, very weak to weak (R1 to R2), dolomite, crystalline friables, >5% voids up to 1/16"	
-402.4			1	445.0' - Fracture, possible void			
	R50-HQ 5 ft 56%	20	NR	445.6' - Mechanical break, notched medium fit 1/16" open 446.0' - Fracture, bit dropped, assumed void location		446.0-447.8' - missing	Driller's Remark: Bit drop 2.0 ft into run, interpreted as void
			1	447.6' - Fracture, 60 deg, break across void			R50: 9 minutes
449.0			NR				
450			NR	449.0' - Fracture, void		447.8-448.6' - dusky yellowish brown to pale yellow brown, (10YR 2/2 to 10YR 4/2), fine grained, strong HCl reaction, crystalline, calcite, large voids to 1-1/4" with calcite rhombic crystals and clean hexagonal quartz crystals other voids filled with silty friable dolomite No Recovery 448.6-449.0' No Recovery 449.0-451.0' Limestone 451.0-452.0' - pale yellowish brown, (10YR 6/2), medium strong to strong (R3 to R4), crystalline >5%, of voids (molds) voids up to 1/8", dolomite No Recovery 452.0-454.0'	Driller's Remark: Void at top of run, 1.0' of drilling in middle of void near bottom, (based on bit drop)
-407.4	R51-HQ 5 ft 32%	0	>10	451.0-452.0' - Fracture zone, limestone (dolomite)			R51: No Time Recorded
			NR	452.0' - Fracture, void			
454.0			>10	454.0-456.0' - Mechanical break, large angular fractures at all angles		Limestone 454.0-455.9' - pale yellowish brown, (10YR 6/2), fine grained, <5% voids to 3/16", poorly fossiliferous	
455			>10				
-412.4	R52-HQ 5 ft 76%	7	4	456.2, 456.3, 456.6, 456.7' - Fractures (4), horizontal, smooth, planar to undulating, tight		455.9-457.0' - light olive gray to pale olive, (5Y 5/2 to 10Y 6/2), fine grained, mild HCl reaction, very weak to weak (R1 to R2), friable, silty 457.0-457.8' - Same as 454.0-455.9' except first 3" are amber brown, dolomite No Recovery 457.8-459.0'	R52: No Time Recorded
			5	457.3-457.7' - shattered dolomite, large angular fragment			Finished drilling on 9/21/07 at 459.0'
459.0			NR				
			>10	459.0-459.5' - Fracture zone, 1"-3" rock fragments of hard dolomite			Start drilling on 9/22/07
460							



PROJECT NUMBER:

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SHEET 14 OF 16

ROCK CORE LOG

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1723034.6 N, 458030.5 E (NAD83)

ELEVATION : 42.6 ft (NAVD88)

DRILLING CONTRACTOR : Boart Longyear, Huntsville, AL; Driller: K. Heinrich, A. Anderson

CORING METHOD AND EQUIPMENT : Dietrich D-120 S/N 820; BL300T S/N 1517, mud rotary, HQ tools, HW casing

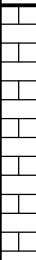
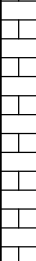
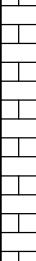
ORIENTATION : Vertical

WATER LEVELS : 5.88 ft bgs on 9/13/07

START : 9/6/2007

END : 9/27/2007

LOGGER : R. Bitely, J. Townes, S. Roberti, K. Waikins

DEPTH BELOW SURFACE AND ELEVATION (ft)	CORE RUN, LENGTH, AND RECOVERY (%)	DISCONTINUITIES			SYMBOLIC LOG	LITHOLOGY		COMMENTS
		R Q D (%)	FRACTURES PER FOOT	DESCRIPTION		ROCK TYPE, COLOR, MINERALOGY, TEXTURE, WEATHERING, HARDNESS, AND ROCK MASS CHARACTERISTICS	SIZE AND DEPTH OF CASING, FLUID LOSS, CORING RATE AND SMOOTHNESS, CAVING ROD DROPS, TEST RESULTS, ETC.	
				DEPTH, TYPE, ORIENTATION, ROUGHNESS, PLANARITY, INFILLING MATERIAL AND THICKNESS, SURFACE STAINING, AND TIGHTNESS				
-417.4	R53-HQ 5 ft 100%	25	3	460.0, 462.7' - Fracture (2), 75 deg, planar, fracture through hard dolomite, 3/16" relief		Limestone 459.0-460.2' - moderate brown to grayish brown, (5YR 3/4 to 5YR 3/2), dense, fine to medium grained, mild HCl reaction, medium strong to strong (R3 to R4), crystalline, dolomite; <1/32" voids over 70% of surface	R53: 13 minutes	
>10			460.4' - Fracture or mechanical break, 30 deg, rough, planar	460.2-462.2' - fine to medium grained, mild HCl reaction, very weak (R1), friable breaks on bedding planes				
5			460.6, 460.8, 461.2, 461.3' - Bedding plane or mechanical break (4), horizontal, planar, 3/16" relief					
>10			461.7-462.3' - Fracture zone, horizontal, undulating, dolomite, poorly fit					
464.0	R54-HQ 5 ft 60%	0	>10	463.4-463.8' - Fracture zone		462.2-464.0' - Same as 459.0-460.2' except moderate brown to grayish brown, (5YR 3/4 to 5YR 3/2), dolomite Limestone 464.0-466.5' - Same as 462.2-464.0'	R54: 12 minutes	
>10			464.0-466.3' - Fracture zone, large fragments of blocky to angular dolomite	466.5-467.0' - yellowish brown, (10YR 5/4), moderate HCl reaction, friable, silty, streaks of organic staining on bedding No Recovery 467.0-469.0'				
>10			466.5' - Fracture or mechanical break, 45 deg, across hard dolomite over friable dolomite below, tightly fit					
NR			466.7' - Fracture, horizontal, planar, 3/16-3/8" relief, contact between hard dolomite and friable dolomite below					
469.0	R55-HQ 5 ft 60%	13	>10	469.0-470.2, 471.0-471.4' - Fracture zone (2), hard, dolomite		Limestone 469.0-472.0' - moderate yellowish brown, (10YR 5/4), mild HCl reaction, very weak to weak (R1 to R2), finely crystalline, dolomite, voids throughout variable 1/16-3/4" No Recovery 472.0-474.0'	R55: 12 minutes	
1			470.6' - Fracture, horizontal, rough, planar, break tensely fit, 9/16" relief	474.0-478.0' - moderate yellowish brown, (10YR 5/4), mild HCl reaction, very weak to weak (R1 to R2), extensive voids throughout 1/16-3/4", finely crystalline dolomite, few of the voids with clean hexagonal quartz crystals (1/8") No Recovery 478.0-479.0'				
>10			471.8-472.0' - Fracture zone					
NR								
474.0	R56-HQ 5 ft 80%	27	>10	474.0-475.1' - Fracture zone		Limestone 474.0-478.0' - moderate yellowish brown, (10YR 5/4), mild HCl reaction, very weak to weak (R1 to R2), extensive voids throughout 1/16-3/4", finely crystalline dolomite, few of the voids with clean hexagonal quartz crystals (1/8") No Recovery 478.0-479.0'	R56: 14 minutes	
1			475.5' - Fracture or mechanical break, 50 deg, very rough, undulating, tight					
3			476.5' - Mechanical break, 45 deg, tightly fit					
>10			476.7' - Mechanical break, 10 deg, planar, tight 477.3' - Mechanical break, horizontal, undulating, tight					
NR								
479.0			2	479.0-479.3' - Fracture zone, hard dolomite 479.3' - Fracture, 45 deg, rough, irregular break across voids				
480								



PROJECT NUMBER:

338884.FL

BORING NUMBER:

AD-04

SHEET 15 OF 16

ROCK CORE LOG

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1723034.6 N, 458030.5 E (NAD83)

ELEVATION : 42.6 ft (NAVD88)

DRILLING CONTRACTOR : Boart Longyear, Huntsville, AL; Driller: K. Heinrich, A. Anderson

CORING METHOD AND EQUIPMENT : Dietrich D-120 S/N 820; BL300T S/N 1517, mud rotary, HQ tools, HW casing

ORIENTATION : Vertical

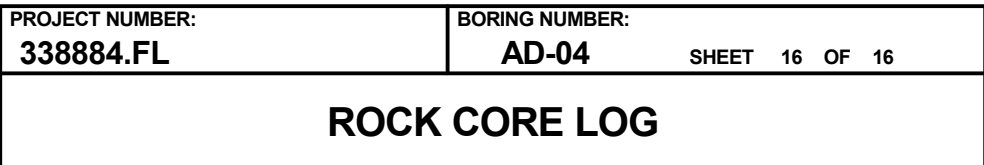
WATER LEVELS : 5.88 ft bgs on 9/13/07

START : 9/6/2007

END : 9/27/2007

LOGGER : R. Bitely, J. Townes, S. Roberti, K. Waikins

DEPTH BELOW SURFACE AND ELEVATION (ft)	CORE RUN LENGTH AND RECOVERY (%)	DISCONTINUITIES			SYMBOLIC LOG	LITHOLOGY	COMMENTS
		RQD (%)	FRACTURES PER FOOT	DESCRIPTION			
				DEPTH, TYPE, ORIENTATION, ROUGHNESS, PLANARITY, INFILLING MATERIAL AND THICKNESS, SURFACE STAINING, AND TIGHTNESS		ROCK TYPE, COLOR, MINERALOGY, TEXTURE, WEATHERING, HARDNESS, AND ROCK MASS CHARACTERISTICS	SIZE AND DEPTH OF CASING, FLUID LOSS, CORING RATE AND SMOOTHNESS, CAVING ROD DROPS, TEST RESULTS, ETC.
-437.4	R57-HQ 5 ft 88%	48	2	480.0-480.3' - Fracture zone, through dolomite		Limestone 479.0-481.7' - yellowish orange, (10YR 7/4), very weak to weak (R1 to R2), finely crystalline, dolomite, voids throughout to 3/4"	SC-10 Collected at 481.7-483.3' R57: 14 minutes
			6	480.8' - Fracture, horizontal, rough, undulating, horizontal break through voids		481.7-483.4' - grayish orange, (10YR 7/4), dolomite with calcareous infill voids; 482.6": portion of gray infilled limestone 3" thick	
			0	481.0-481.4' - Fracture zone, through friable dolomite			
			0	481.4-481.7' - Fracture, 60 deg, through hard dolomite			
	R58-HQ 5 ft 90%	38	NR	481.7' - Fracture, horizontal, very rough, undulating, Mt oxide staining		No Recovery 483.4-484.0'	R58: 12 minutes
484.0							
			4	484.2-484.5' - Mechanical break, 45 deg and horizontal, undulating, poorly fit		Limestone 484.0-487.0' - yellowish gray, (5Y 7/2), moderate HCl reaction, weak to medium strong (R2 to R3), finely crystalline dolomite, voids to <1/16-3/16"; many filled with amber calcite	
485			1				
-442.4			2	485.7' - Mechanical break, horizontal, undulating, across void, tightly fit		487.0-488.5' - dusky yellow, (5Y 6/4), very weak (R1), very friable, finely crystalline dolomite	
			>10	486.4' - Fracture zone, irregular			
	R59-HQ 5 ft 92%	50	>10	487.0, 487.3' - Mechanical break (2), horizontal, planar, very poorly fit across friable dolomite		No Recovery 488.5-489.0'	R59: 14 minutes
			>10	487.3-488.5' - Fracture zone, friable to unconsolidated dolomite			
489.0			NR				
			>10	489.0-489.8' - Fracture zone, large angular block, limestone fragments		Limestone 489.0-489.3' - yellowish gray, (5Y 8/1), very fine grained, very strong HCl reaction, weak to medium strong (R2 to R3), <1/32" void over 10%, 1" thick layer of soft calcareous clay	
490			6	490.0-490.1' - Fracture, horizontal, smooth, undulating, discontinuity with 1" white clay infill		489.3-493.6' - pale grayish orange to dusky yellow, (10YR 7/4 to 5Y 6/4), fine grained, moderate HCl reaction, weak to medium strong (R2 to R3), >8% voids throughout <1/32-1/16", many voids with amber calcite fill, finely crystalline	
-447.4			2	490.1, 490.3' - Mechanical break (2), horizontal, planar, poorly fit		No Recovery 493.6-494.0'	
			2	490.6' - Mechanical break, 15 deg, rough, planar, tightly fit		Limestone 494.0-499.7' - grayish orange, (10YR 7/4), moderate HCl reaction, medium strong (R3), dolomite, weak to medium strong (R1-R2) through areas of bedding plane discontinuities; voids <1/32-1/8", uniformly distributed, some voids filled with amber calcite, numerous open voids to 1.5" with amber, calcite crystal growth, finely crystalline	
			0	490.8-491.0' - Mechanical break, 85 deg, fracture between 2 horizontal bedding plane breaks		496.0-496.9' - moderate yellowish brown to grayish brown, (10YR 5/4 to 10YR 7/4), mild HCl reaction, finely crystalline dolomite, well-distributed 1/32-1/16" voids, some filled with crystals, black organics, white calcareous clay	
	R60-HQ 6 ft 95%	47	NR	491.7' - Mechanical break, undulating, 1/16-3/16" open			SC-11 Collected at 496.0-496.9' R60: 14 minutes
			4	492.4-492.5' - Mechanical break (2), planar, 3/16-5/16" open			
495			3	494.4, 494.7, 494.9, 495.0' - Mechanical break (4), 0-15 deg, rough, poorly fit			
-452.4			>10	495.8' - Fractures (2), horizontal, light brown clay infill (1"), poorly fit			
			2	495.9' - Fracture (2), horizontal, light brown clay infill (1"), poorly fit			
			4	497.7-498.3' - Mechanical break or bedding plane (4), horizontal, planar, through friable dolomite			
	500	500.0	3	498.8, 498.9, 499.0, 499.3, 499.5, 499.6' - Bedding plane (6), horizontal, poorly fit, friable dolomite			
			NR				



LOGGER : R. Bitely, J. Townes, S. Roberti, K. Waikins

DEPTH BELOW SURFACE AND ELEVATION (ft)	CORE RUN, LENGTH, AND RECOVERY (%)	DISCONTINUITIES			SYMBOLIC LOG	LITHOLOGY	COMMENTS
		R Q D (%)	FRACTURES PER FOOT	DESCRIPTION		ROCK TYPE, COLOR, MINERALOGY, TEXTURE, WEATHERING, HARDNESS, AND ROCK MASS CHARACTERISTICS	SIZE AND DEPTH OF CASING, FLUID LOSS, CORING RATE AND SMOOTHNESS, CAVING ROD DROPS, TEST RESULTS, ETC.
				DEPTH, TYPE, ORIENTATION, ROUGHNESS, PLANARITY, INFILLING MATERIAL AND THICKNESS, SURFACE STAINING, AND TIGHTNESS			
						No Recovery 499.7-500.0' Bottom of Boring at 500.0 ft bgs on 9/27/2007	