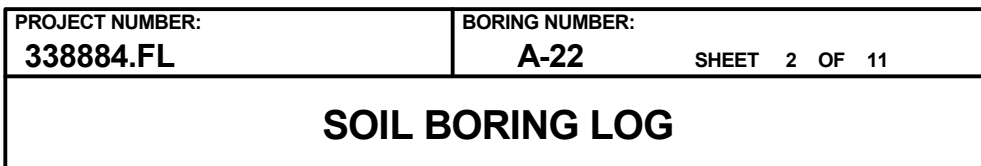




PROJECT NUMBER: 338884.FL	BORING NUMBER: A-22
SHEET 1 OF 11	
SOIL BORING LOG	

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1723199.8 N, 458088.0 E (NAD83)
 ELEVATION : 42.6 ft (NAVD88) DRILLING CONTRACTOR : Universal Engineering Sciences, Jacksonville, FL; Driller: D. Buchler
 DRILLING METHOD AND EQUIPMENT : CME 55 S/N 316625, mud rotary, auto hammer, AWJ rods, 2-7/8 tri-cone bit ORIENTATION : Vertical
 WATER LEVELS : 6.6 ft bgs on 3/23/07 START : 3/22/2007 END : 3/27/2007 LOGGER : N. Jarzyniecki

WATER LEVELS : 0.01005 ON 3/23/07			START : 3/22/2007		END : 3/27/2007		LOGGER : N. Gajzimecki		
DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)		STANDARD PENETRATION TEST RESULTS		SOIL DESCRIPTION		SYMBOLIC LOG	COMMENTS	
	RECOVERY (ft)	#TYPE	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY		DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION			
42.6								10:08 Begin drilling with 2-7/8" tri-cone bit	
	3.5							Soil sampling every 5' from 3.5' below ground surface	
5	5.0	0.9	SS-1	3-3-3 (6)	Poorly Graded Sand With Silt (SP-SM) 3.5-4.4' - moderate yellowish brown with dusky brown, (10YR 5/4 with 5YR 2/2), wet, loose, very fine to fine grained, 10% organics, 10-15% nonplastic fines, sand is silica				
37.6	8.5								
10	10.0	1.1	SS-2	12-16-13 (29)	Silt (ML) 8.5-9.6' - yellowish gray, (5Y 7/2), wet, very stiff, nonplastic, rapid dilatancy, moderate HCl reaction, 10% very fine sand-sized material, coarse gravel-size limestone fragments (white [N9] to yellowish gray [5Y 8/1] at top of sample, strong HCl reaction), all carbonate				
32.6	13.5								
15	14.5	0.9	SS-3	28-78/11.5 (82")	Silt With Sand (ML) 13.5-14.4' - Same as 8.5-9.6' except hard, 25% very fine to fine sand-sized material, one coarse gravel-sized limestone fragment				
27.6	18.5								
	18.9	0.2	SS-4	50/4.5 (50/4.5")	Limestone Fragments 18.5-18.7' - yellowish gray, (5Y 7/2), mild to moderate HCl reaction, fragments to 1/2", 25% silt- and sand-sized carbonate materials similar to 13.5-14.4'				
20									





PROJECT NUMBER: 338884.FL	BORING NUMBER: A-22
SHEET 3 OF 11	
SOIL BORING LOG	

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1723199.8 N, 458088.0 E (NAD83)
 ELEVATION : 42.6 ft (NAVD88) DRILLING CONTRACTOR : Universal Engineering Sciences, Jacksonville, FL; Driller: D. Buchler
 DRILLING METHOD AND EQUIPMENT : CME 55 S/N 316625, mud rotary, auto hammer, AWJ rods, 2-7/8 tri-cone bit ORIENTATION : Vertical
 WATER LEVELS : 6.6 ft bgs on 3/23/07 START : 3/22/2007 END : 3/27/2007 LOGGER : N. Jarzyniecki

WATER LEVELS : 0.011053 ON 3/23/07			START : 3/22/2007			END : 3/27/2007			LOGGER : N. JALZYMIECH		
DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)		STANDARD PENETRATION TEST RESULTS		SOIL DESCRIPTION		SYMBOLIC LOG	COMMENTS			
	RECOVERY (ft)	#TYPE	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY		DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION					
2.6					Silty Sand (SM) 38.5-40.0' - moderate olive brown, (5Y 4/4), wet, very dense, fine to coarse grained, mild to moderate HCl reaction, 20-25% low plastic fines, 10% fine gravel-sized material						
43.5											
44.5	1.0	SS-9	24-50/6 (74/12")		Silt With Sand And Limestone (ML) 43.5-44.5' - dusky yellow, (5Y 6/4), wet, hard, low plasticity, rapid dilatancy, mild to moderate HCl reaction, 10-25% fine to coarse sand-sized grains (varies throughout sample), limestone lens at 43.8-43.9', organic lens 1/8" thick at 43.65'						
45 -2.4											
48.5											
49.5	1.0	SS-10	22-9-2 (11)		Silty Sand With Limestone (SM) 48.5-50.0' - moderate yellowish brown, (10YR 6/4), wet, medium dense, fine to coarse grained, mild to moderate HCl reaction, 37% low plastic fines, limestone lenses at 48.6', 48.8', 49.3'						
50 -7.4											
53.5											
55	1.5	SS-11	19-34-48 (82)		Sandy Silt (ML) 53.5-55.0' - moderate olive brown, (5Y 4/4), wet, hard, low plasticity, slow to rapid dilatancy, mild HCl reaction, 35-40% fine to coarse sand-sized grains, all carbonate, organic lenses (olive gray [5Y 3/4]) at 54.5-55.0'						
55 -12.4											
58.6											
58.6	0.1	SS-12	50/2 (50/2")		Sandy Silt (ML) 58.5-58.7' - Same as 53.5-55.0' except with organics						
60											



PROJECT NUMBER:

338884.FL

BORING NUMBER:

A-22

SHEET 4 OF 11

SOIL BORING LOG

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1723199.8 N, 458088.0 E (NAD83)

ELEVATION : 42.6 ft (NAVD88)

DRILLING CONTRACTOR : Universal Engineering Sciences, Jacksonville, FL; Driller: D. Buchler

DRILLING METHOD AND EQUIPMENT : CME 55 S/N 316625, mud rotary, auto hammer, AWJ rods, 2-7/8 tri-cone bit

ORIENTATION : Vertical

WATER LEVELS : 6.6 ft bgs on 3/23/07

START : 3/22/2007

END : 3/27/2007

LOGGER : N. Jarzyniecki

WATER LEVELS : 6.6' BGS ON 3/23/07							START : 3/22/2007		END : 3/27/2007		LOGGER : N. Salzman	
DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)		STANDARD PENETRATION TEST RESULTS		SOIL DESCRIPTION		SYMBOLIC LOG	COMMENTS				
			RECOVERY (ft)	#TYPE	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY		DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION				
-17.4												
	63.5											
	64.5	0.8	SS-13	40-50/5.5 (90/11.5")	Silt With Sand (ML) 63.5-64.3' - yellowish gray, (5Y 7/2), wet, hard, nonplastic, rapid dilatancy, mild to moderate HCl reaction, 15-25% fine to coarse sand-sized grains, light olive gray (5Y 5/2) laminations at 64.1-64.2'							
65 -22.4												
	68.5											
	68.5	0.0	SS-14	50/1.5 (50/1.5")	No Recovery 68.5'							4" HW casing set to 70' below ground surface
70 -27.4												16:56 Resume drilling, clearing hole
	73.5											3/22/07 End drilling for the day at 73.5'
	73.8	0.3	SS-15	50/4 (50/4")	Elastic Silt (MH) 73.5-73.6' - yellowish gray to light olive gray, (5Y 7/2 to 5Y 5/2), wet, soft, low to medium plasticity, slow to rapid dilatancy, mild HCl reaction, trace fine to medium sand-sized material, white carbonate clay stringers throughout Silty Sand With Limestone (SM) 73.6-73.8' - yellowish gray to light olive gray, (5Y 7/2 to 5Y 5/2), wet, dense, fine to coarse grained, mild HCl reaction, 32% low plastic fines, limestone lens at 73.6', all carbonate						3/23/07, 07:58 Water level 6.6' below ground surface	
75 -32.4												08:17 Resume drilling by bringing up 73.5' sample
	78.5											
	78.8	0.1	SS-16	50/3 (50/3")	Limestone Fragments 78.5-78.6' - dusky yellow, (5Y 6/4), mild HCl reaction, fragments to 1/2", voids over 50% of surface							
80												



PROJECT NUMBER:

338884.FL

BORING NUMBER:

A-22

SHEET 5 OF 11

SOIL BORING LOG

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1723199.8 N, 458088.0 E (NAD83)

ELEVATION : 42.6 ft (NAVD88)

DRILLING CONTRACTOR : Universal Engineering Sciences, Jacksonville, FL; Driller: D. Buchler

DRILLING METHOD AND EQUIPMENT : CME 55 S/N 316625, mud rotary, auto hammer, AWJ rods, 2-7/8 tri-cone bit

ORIENTATION : Vertical

WATER LEVELS : 6.6 ft bgs on 3/23/07

START : 3/22/2007

END : 3/27/2007

LOGGER : N. Jarzyniecki

WATER LEVELS : 0.011055 ft 9/23/07			START : 9/22/2007		END : 9/27/2007		LOGGER : N. Salzman	
DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)		STANDARD PENETRATION TEST RESULTS	SOIL DESCRIPTION		SYMBOLIC LOG	COMMENTS	
	RECOVERY (ft)	#TYPE		6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY		DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION	
-37.4								Driller's Remark: Slight chatter during drilling
83.5								
83.7	0.1	SS-17	50/2 (50/2")	Limestone Fragments	83.5-83.6' - Same as 78.5-78.6'			
85								
-42.4								
					</			



PROJECT NUMBER:

338884.FL

BORING NUMBER:

A-22

SHEET 6 OF 11

SOIL BORING LOG

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1723199.8 N, 458088.0 E (NAD83)

ELEVATION : 42.6 ft (NAVD88)

DRILLING CONTRACTOR : Universal Engineering Sciences, Jacksonville, FL; Driller: D. Buchler

DRILLING METHOD AND EQUIPMENT : CME 55 S/N 316625, mud rotary, auto hammer, AWJ rods, 2-7/8 tri-cone bit

ORIENTATION : Vertical

WATER LEVELS : 6.6 ft bgs on 3/23/07

START : 3/22/2007

END : 3/27/2007

LOGGER : N. Jarzyniecki

WATER LEVELS : 0.0 ft bgs on 3/23/07			START : 3/22/2007			END : 3/27/2007			LOGGERS : N. Jaiszimecki		
DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft)		STANDARD PENETRATION TEST RESULTS		SOIL DESCRIPTION		SYMBOLIC LOG	COMMENTS			
	RECOVERY (ft)	#TYPE	6"-6"-6" (N)	SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY		DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION					
-57.4					Limestone With Silty Sand 98.5-99.5' - pale yellowish brown to moderate yellowish brown, (10YR 6/2 to 10YR 5/4), mild to moderate HCl reaction, fine to coarse gravel-sized fragments to 1-1/2", soil fraction is fine to medium sand-sized grains with 32% nonplastic fines (varies in sample), limestone lens from 98.5-98.8', all carbonate		Casing advanced to 100'				
	103.5							Driller's Remark: Slight loss of circulation at 102'			
		1.5	SS-21	11-14-6 (20)	Silty Sand With Limestone (SM) 103.5-105.0' - moderate yellowish brown to dark yellowish brown, (10YR 5/4 to 10YR 4/2), wet, medium dense, fine to coarse grained, mild HCl reaction, 20% nonplastic fines, 30% fine to coarse gravel-sized limestone fragments, all carbonate		Advancing casing to 105'				
105 -62.4	105.0										
	108.5										
		0.0	SS-22	50/1.5 (50/1.5")	No Recovery 108.5' Begin Rock Coring at 109.0 ft bgs See the next sheet for the rock core log		3/23/07, 15:10 End soil sampling at 108.5' 3/23/07, 15:46 Preparing for rock coring				
110 -67.4											
					</						



PROJECT NUMBER:

338884.FL

BORING NUMBER:

A-22

SHEET 7 OF 11

ROCK CORE LOG

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1723199.8 N, 458088.0 E (NAD83)

ELEVATION : 42.6 ft (NAVD88)

DRILLING CONTRACTOR : Universal Engineering Sciences, Jacksonville, FL; Driller: D. Buchler

CORING METHOD AND EQUIPMENT : CME 55 S/N 316625, mud rotary, NQ tools, HW casing

ORIENTATION : Vertical

WATER LEVELS : 6.6 ft bgs on 3/23/07

START : 3/22/2007

END : 3/27/2007

LOGGER : N. Jarzyniecki

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.
110 -67.4	R1-NQ 2.5 ft 96%	28	1	109.3' - Fracture, vertical, rough, undulating		Limestone 109.0-111.4' - light olive gray, (5Y 5/2), very fine grained, moderate HCl reaction, weak to medium strong (R2 to R3), poorly fossiliferous, voids up to 1/16" over 15-20% of surface, larger cavities/fossil molds up to 1/4" x 1/2" over <5% of surface, <5% fine black inclusions No Recovery 111.4-111.5' Limestone 111.5-114.9' - Same as 109.0-111.4' except medium strong (R3), with increasing fossil content, voids up to 1/16" over 20-25% of surface, fossil molds up to 1/4" x 1/8" on 5-10% of surface 114.9-115.0' - Same as 111.5-114.9' except extremely weak to medium strong (R0 to R3), limestone has moderate HCl reaction, silts have delayed mild HCl reaction No Recovery 115.0-116.5' Limestone 116.5-120.6' - light olive gray to yellowish gray, (5Y 5/2 to 5Y 7/2), very fine grained, very weak to medium strong (R1 to R3), fossiliferous with casts and molds up to 1/4" x 1/2". Voids up to 1/16" over 25% of surface, larger cavities/molds up to 1/2" x 1/2" on <5% of surface, thinly bedded No Recovery 120.6-121.5'	3/23/07, 16:48 Start coring Note: R1 is short run (2.5') to set stroke R1: 2 minutes Slight loss of circulation during run, driller advancing casing to 111.5' 3/23/07 End drilling for the day at 111.5' 3/24/07, 07:54 water level is 8.9' below ground surface 08:17 Begin drilling SC-1 collected as 112.8-113.5' Slight circulation loss during R2-NQ run R2: 18 minutes
			2	109.7' - Fracture, 55 deg, smooth, undulating			
			2	110.0' - Fracture, vertical, smooth to rough, undulating			
115 -72.4	R2-NQ 5 ft 70%	52	NR	110.7' - Mechanical break			
			2	111.15, 111.35' - Fracture (2), 70 deg, smooth to rough, undulating			
			3	112.1' - Mechanical break			
			0	112.2' - Bedding plane, <10 deg, smooth, undulating			
			2	112.85, 113.25' - Bedding plane (2), <20 deg, rough, undulating			
			NR	113.4' - Bedding plane, <10 deg, rough, undulating			
			2	113.5, 113.9' - Mechanical break			
			NR	114.9' - Fracture, 50 deg, rough, undulating			
			NR	115.2' - Bedding plane, <20 deg, rough to smooth, undulating			
			NR				
120 -77.4	R3-NQ 5 ft 82%	44	4	116.5			R3: 22 minutes
			3	117.05, 117.25, 117.4' - Bedding plane (3), 20 deg, rough, undulating			
			2	117.7, 117.8, 117.9' - Bedding plane (3), <10 deg, smooth, planar			
			2	118.0, 118.75, 119.25, 120.0, 120.15' - Bedding plane (5), <10 deg, smooth, planar, infill of fine grained material at 119.25'			
			NR				
			NR				
125 -82.4	R4-NQ 5 ft 84%	58	5	121.5		Limestone 121.5-122.85' - light olive gray, (5Y 5/2), fine grained, weak to medium strong (R2 to R3), voids (1/16") over 15-20% of surface, moderately fossiliferous with casts up to 1/4" x 1/4", larger cavities up to 1" x 1/2" over <5% of surface, thinly bedded 122.85-122.9' - medium light gray, (N6), very fine grained, medium strong (R3), no voids/fossils/cavities 122.9-125.7' - Same as 121.5-122.85' No Recovery 125.7-126.5'	SC-2 collected at 124.0-125.4' R4: 15 minutes
			3	121.95' - Bedding plane, 20 deg, rough, undulating			
			3	122.0, 122.1, 122.3, 122.5, 122.6, 122.75, 122.85, 122.9' - Bedding plane (8), <10 deg, smooth, undulating			
			3	123.65, 123.8, 123.95' - Bedding plane (3), <10 deg, smooth to rough, undulating			
			0				
			NR				
	R5-NQ		3	126.5			SC-3 collected at 127.10-128.15'
			1	126.85' - Fracture, 85 deg, rough to smooth, undulating			
				126.95, 127.05' - Bedding plane (2), horizontal, smooth, undulating			
				128.15' - Bedding plane, <10 deg, rough to smooth, undulating			



PROJECT NUMBER: 338884.FL	BORING NUMBER: A-22	SHEET 8 OF 11
ROCK CORE LOG		

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1723199.8 N, 458088.0 E (NAD83)

ELEVATION : 42.6 ft (NAVD88) DRILLING CONTRACTOR : Universal Engineering Sciences, Jacksonville, FL; Driller: D. Buchler

CORING METHOD AND EQUIPMENT : CME 55 S/N 316625, mud rotary, NQ tools, HW casing

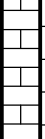
ORIENTATION : Vertical

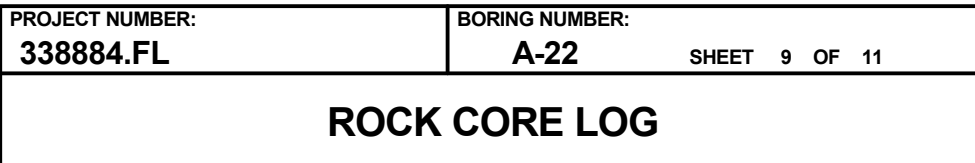
WATER LEVELS : 6.6 ft bgs on 3/23/07

START : 3/22/2007

END : 3/27/2007

LOGGER : N. Jarzyniecki

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
130 -87.4	5 ft 80%	48	4		Limestone 126.5-128.7' - light olive gray, (5Y 5/2), fine grained, weak (R2), small (1/16") voids over 15% of surface, fossiliferous, fossil casts up to 1/2" x 1/4", cavities 1" x 1/2" over <5% of surface, light gray (N6) mottling at 128.15-128.7' with decrease in small voids (<1/16") to <5% 128.7-130.5' - dusky yellow, (5Y 6/4), extremely weak to very weak (R0 to R1), small (<1/16") voids over 35% of surface, highly fossiliferous No Recovery 130.5-131.5' Limestone 131.5-135.5' - light olive gray, (5Y 5/2), fine grained, weak to medium strong (R2 to R3), small (<1/16") voids over 15-30% of surface increasing with depth, larger cavities up to 1" x 1" over 10% of surface, discontinuous black organic laminae (<5%), interbed of very fine grained light olive gray (5Y 5/2) dense limestone with <5% voids (<1/16") over surface No Recovery 135.5-136.5' Limestone 136.5-139.7' - yellowish gray to light gray, (5Y 8/1 to N7), weak to medium strong (R2 to R3), small voids (<1/8") over 10-20%, generally increasing with depth, larger cavities up to 1/2" x 1" over up to 10% of surface, partial infilling of cavities with soft medium light gray (N6) material No Recovery 139.7-141.5'	Circulation loss during run, advancing casing R5: 21 minutes	
			>10				
			NR				
135 -92.4	R6-NQ 5 ft 80%	53	>10			Lost circulation at 135' R6: 5 minutes	
			>10				
			2				
			3				
			NR				
140 -97.4	R7-NQ 5 ft 64%	36	>10			R7: 8 minutes 3/24/07 End drilling for the day at 141.5' 3/25/07, 07:59 Water level 2.9' below ground surface 08:41 Resume drilling	
			>10				
			2				
			0				
			NR				
145 -102.4	R8-NQ 5 ft 74%	35	>10			R8: 14 minutes	
			>10				
			2				
			6				
			NR				
	R9-NQ		>10			Driller's Remark: Circulation loss 100% near beginning of run R9 SC-4 collected at 147.0-147.8'	
			3				





PROJECT NUMBER:

338884.FL

BORING NUMBER:

A-22

SHEET 10 OF 11

ROCK CORE LOG

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1723199.8 N, 458088.0 E (NAD83)

ELEVATION : 42.6 ft (NAVD88)

DRILLING CONTRACTOR : Universal Engineering Sciences, Jacksonville, FL; Driller: D. Buchler

CORING METHOD AND EQUIPMENT : CME 55 S/N 316625, mud rotary, NQ tools, HW casing

ORIENTATION : Vertical

WATER LEVELS : 6.6 ft bgs on 3/23/07

START : 3/22/2007

END : 3/27/2007

LOGGER : N. Jarzyniecki

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.
170 -127.4	5 ft 54%	38		168.4' - Bedding plane, 10 deg, smooth, undulating 168.55' - Fracture zone, 1-3" pieces 168.6' - Bedding plane, 15 deg, rough, undulating, open		Limestone 166.5-169.2' - light olive gray, (5Y 5/2), moderate HCl reaction, medium strong to strong (R3 to R4), zones and blebs of 30-50% small (<3/16") voids alternating with fine grained material with few voids, void-rich zones occur along undulating bedding planes, larger cavities/fossil molds (up to 1/2" x 3/4") vary from <5-10% over surface No Recovery 169.2-171.5'	R13: 8 minutes Casing advanced to 170' 3/25/07 End of drilling for the day at 171' 3/26/07, 08:05 Cleaning out hole to resume drilling
175 -132.4	R14-NQ 5 ft 94%	50	>10 >10 >10 >10 0	171.5, 171.6, 171.9, 172.2, 172.4, 173.0, 173.15' - Bedding plane (7), horizontal, smooth, planar 173.1' - Fracture, 80 deg, smooth, undulating 173.4-173.8' - Fracture zone, 3/4"-2" fragments 173.95' - Fracture, horizontal, rough, undulating, black staining on 50% of surface 174.2' - Fracture or mechanical break, 10 deg, rough, undulating 174.5' - Fracture, horizontal, rough, planar 174.8-175.2' - Fracture zone		Limestone 171.5-176.2' - light olive gray, (5Y 5/2), dense, very fine grained, moderate HCl reaction, strong (R4), thinly laminated in zones 2-4" thick alternating with zones of 25-30% small (<1/8") voids and few (<5%) larger cavities up to 1/2" diameter No Recovery 176.2-176.5' Limestone 176.5-178.8' - light olive brown to yellowish gray, (5Y 5/6 to 5Y 7/2), strong HCl reaction, strong (R4), fossiliferous with casts/molds up to 1/2", small (1/16") voids over 10-20% of surface occurring in zones, very fine lens of rock with no voids No Recovery 178.8-181.5'	SC-5 collected at 175.4-176.2' R14: 13 minutes SC-6 collected at 176.5-177.45'
180 -137.4	R15-HQ 5 ft 46%	19	>10 NR	177.75' - Fracture, horizontal, rough, undulating 177.75-178.8' - Fracture zone, 3/4"-3" fragments			R15: 107 minutes Stop drilling to mix mud
185 -142.4	R16-NQ 5 ft 22%	0	>10 >10 NR	181.5-181.75' - Fracture zone, 1"-2" fragments 182.05' - Bedding plane 182.3-182.6' - Fracture zone, 1"-3" fragments		Limestone 181.5-182.6' - moderate olive brown with light olive gray zones, (5Y 3/4 with 5Y 3/4), fine to very fine grained, moderate to strong HCl reaction, strong (R4), <5% small (1/16") voids, poorly fossiliferous No Recovery 182.6-186.5'	R16: 15 minutes
	R17-NQ		>10 >10 >10	186.5-186.9' - Fracture zone, 3/4"-2" fragments 187.55' - Fracture, 25 deg, rough, undulating 187.85' - Bedding plane, rough, stepped 188.35-188.65' - Fracture zone			



PROJECT NUMBER:

338884.FL

BORING NUMBER:

A-22

SHEET 11 OF 11

ROCK CORE LOG

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1723199.8 N, 458088.0 E (NAD83)

ELEVATION : 42.6 ft (NAVD88)

DRILLING CONTRACTOR : Universal Engineering Sciences, Jacksonville, FL; Driller: D. Buchler

CORING METHOD AND EQUIPMENT : CME 55 S/N 316625, mud rotary, NQ tools, HW casing

ORIENTATION : Vertical

WATER LEVELS : 6.6 ft bgs on 3/23/07

START : 3/22/2007

END : 3/27/2007

LOGGER : N. Jarzyniecki

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.
190 -147.4	5 ft 48%	22	NR	188.7' - Fracture, 80 deg, rough, stepped, black fine particles on fracture face		Limestone 186.5-188.9' - Same as 181.5-182.6' except increasingly mottled moderate olive brown and light olive gray, (5Y 4/4 and 5Y 5/2), fossils casts/molds up to 1/4" x 1/2", small (1/16") voids over 15% of surface, except <5% over 188.2-188.4', moderate HCl reaction, medium strong to strong (R3 to R4) rock No Recovery 188.9-191.5'	R17: 12 minutes
191.5			5	192.0-193.5' - Bedding plane, numerous 2" long bedding plane		Limestone 191.5-193.6' - olive brown, (5Y 4/4), fine grained, moderate HCl reaction, medium strong to strong (R3 to R4), less than 5% small (<1/16") voids on surface, highly fossiliferous, casts/molds up to 1/4" x 1/4"	
			4	192.25' - Bedding plane, <15 deg, rough, undulating, organic staining		No Recovery 193.6-196.5'	
			0	192.75, 193.1' - Fracture (2), 75 deg, rough, undulating, black staining			
195 -152.4	R18-NQ 5 ft 42%	25	NR				
196.5			>10	196.5, 196.6, 197.55, 197.7, 197.9, 198.1' - Fractures (6), 0-15 deg, mostly rough and undulating, semi planar, organic black staining		Limestone 196.5-199.0' - light olive gray to dark yellowish orange mottled, (5Y 5/2 to 10YR 6/6), dense, fine grained, moderate to strong HCl reaction, strong to very strong (R4 to R5), moderately fossiliferous, fossil casts up to 1/4" x 1/4", small 1/16" voids over <10% of surface No Recovery 199.0-201.5'	R18: 10 minutes 3/26/07, 17:31 End drilling for the day at 196.5' 3/27/07, 07:51 Water level is 3.3' below ground surface 08:05 Resume drilling
			>10	196.5-198.9' - Fracture zone, rough, undulating, numerous 0-25 deg. fractures over 1-2" intervals			
			0	196.85' - Fracture, 50 deg, rough, undulating, black organic staining			
200 -157.4	R19-NQ 5 ft 50%	28	NR				R19: 25 minutes 3/27/07, 09:30 Boring total depth 201.5' Water level at 3.5' below ground surface
201.5						Bottom of Boring at 201.5 ft bgs on 3/27/2007	