



PROJECT NUMBER:

**338884.FL**

BORING NUMBER:

**B-15**

SHEET 1 OF 9

## SOIL BORING LOG

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1724222.8 N, 458094.3 E (NAD83)

ELEVATION : 42.3 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, 2-15/16" tri-cone bit

ORIENTATION : Vertical

WATER LEVELS : 4.0 ft bgs on 5/15/07

START : 5/15/2007

END : 5/17/2007

LOGGER : T. Stewart

| WATER LEVELS : 4.0 fbs on 9/15/07      |                      |       | START : 9/15/2007                 |                                                                                                                    |                                                                                                                                                                                                                                  | END : 9/17/2007                                                                       |                                                                           |  | LOGGER : J. Stewart |  |  |
|----------------------------------------|----------------------|-------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------|--|---------------------|--|--|
| 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                                                                                                                                                  |                                                                                       |                                                                           |  |                     |  |  |
|                                        |                      |       |                                   |                                                                                                                    |                                                                                                                                                                                                                                  |                                                                                       |                                                                           |  |                     |  |  |
| 42.3                                   | 0.0                  | 1.0   | SS-1                              | 1-1-1 (2)                                                                                                          | <b>Silty Sand (SM)</b><br>0.0-1.0' - moderate yellowish brown, (10YR 5/4), moist, very loose, very fine to fine grained, 15% fines, 15% nonplastic fines, organics and rootlets, decreasing with depth                           |    | Sand is silica                                                            |  |                     |  |  |
|                                        | 1.5                  |       |                                   |                                                                                                                    |                                                                                                                                                                                                                                  |                                                                                       |                                                                           |  |                     |  |  |
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| 5                                      | 5.0                  |       |                                   |                                                                                                                    |                                                                                                                                                                                                                                  |                                                                                       |                                                                           |  |                     |  |  |
| 37.3                                   |                      | 1.1   | SS-2                              | 3-4-5 (9)                                                                                                          | <b>Clayey Sand (SC)</b><br>5.0-6.1' - greenish gray, (5GY 6/1), wet, loose, very fine to fine grained, medium to high plasticity, trace very fine grain black particles, trace rootlets, 35-40% plastic fines                    |   | Water level approximately 4.0' below ground surface                       |  |                     |  |  |
|                                        | 6.5                  |       |                                   |                                                                                                                    |                                                                                                                                                                                                                                  |                                                                                       |                                                                           |  |                     |  |  |
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| 10                                     | 10.0                 |       |                                   |                                                                                                                    |                                                                                                                                                                                                                                  |                                                                                       |                                                                           |  |                     |  |  |
| 32.3                                   |                      | 1.0   | SS-3                              | 23-9-7 (16)                                                                                                        | <b>Silt And Limestone Fragments (ML)</b><br>10.0-11.0' - moderate yellow, (5Y 7/6), wet, stiff, nonplastic, very rapid dilatancy, moderate HCl reaction, interbedded with 1/8" thick limestone lenses and 1" limestone fragments |  | Driller's Remark: Complete circulation loss at 10.5' below ground surface |  |                     |  |  |
|                                        | 11.5                 |       |                                   |                                                                                                                    |                                                                                                                                                                                                                                  |                                                                                       |                                                                           |  |                     |  |  |
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| 15                                     | 15.0                 |       |                                   |                                                                                                                    |                                                                                                                                                                                                                                  |                                                                                       |                                                                           |  |                     |  |  |
| 27.3                                   | 15.2                 | 0.2   | SS-4                              | 50/2.5 (50/2.5")                                                                                                   | <b>Silt And Limestone Fragments (ML)</b><br>15.0-15.2' - Same as 10.0-11.0'                                                                                                                                                      |  |                                                                           |  |                     |  |  |
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| <b>PROJECT NUMBER:</b><br><b>338884.FL</b> | <b>BORING NUMBER:</b><br><b>B-15</b> |
| SHEET 2 OF 9                               |                                      |
| <b>SOIL BORING LOG</b>                     |                                      |

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site    LOCATION : 1724222.8 N, 458094.3 E (NAD83)  
 ELEVATION : 42.3 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, 2-15/16" tri-cone bit    ORIENTATION : Vertical  
 WATER LEVELS : 4.0 ft bgs on 5/15/07    START : 5/15/2007    END : 5/17/2007    LOGGER : T. Stewart

| WATER LEVELS : 4.0 RDBS ON 9/15/07     |                      |       | START : 9/15/2007                 |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                      | END : 9/17/2007 |              |                                                                                | LOGGER : T. Stewart |  |  |
|----------------------------------------|----------------------|-------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------|--------------------------------------------------------------------------------|---------------------|--|--|
| 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                                                                                                                                                                                                                                                      |                 |              |                                                                                |                     |  |  |
|                                        |                      |       |                                   |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                      |                 |              |                                                                                |                     |  |  |
| 22.3                                   | 20.0                 | 1.0   | SS-5                              | 10-32-50/4 (82/10")                                                                                                | <b>Silty Sand And Limestone Fragments (SM)</b><br>20.0-21.0' - moderate yellow, (5Y 7/6), wet, very dense, fine to coarse grained, nonplastic, moderate HCl reaction, 15-20% nonplastic fines, 20% fine to coarse gravel-sized limestone, all carbonate, trace very fine sand-sized white particles, trace brilliant green particles |                 |              |                                                                                |                     |  |  |
|                                        | 21.3                 |       |                                   |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                      |                 |              |                                                                                |                     |  |  |
|                                        |                      |       |                                   |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                      |                 |              |                                                                                |                     |  |  |
| 25                                     | 25.0                 |       |                                   |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                      |                 |              |                                                                                |                     |  |  |
| 17.3                                   | 25.9                 | 0.8   | SS-6                              | 25-50/4.5 (75/10.5")                                                                                               | <b>Silty Sand And Limestone Fragments (SM)</b><br>25.0-25.8' - Same as 20.0-21.0' except moderate HCl reaction, 50% silt and 50% limestone                                                                                                                                                                                           |                 |              |                                                                                |                     |  |  |
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|                                        |                      |       |                                   |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                      |                 |              |                                                                                |                     |  |  |
| 30                                     | 30.0                 |       |                                   |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                      |                 |              |                                                                                |                     |  |  |
| 12.3                                   | 30.3                 | 0.2   | SS-7                              | 50/3.5 (50/3.5")                                                                                                   | <b>Limestone Fragments</b><br>30.0-30.2' - medium to coarse sand-sized and fine gravel-sized, poor recovery                                                                                                                                                                                                                          |                 |              |                                                                                |                     |  |  |
|                                        |                      |       |                                   |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                      |                 |              |                                                                                |                     |  |  |
|                                        |                      |       |                                   |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                      |                 |              |                                                                                |                     |  |  |
| 35                                     | 35.0                 |       |                                   |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                      |                 |              |                                                                                |                     |  |  |
| 7.3                                    | 35.2                 | 0.0   | SS-8                              | 50/2 (50/2")                                                                                                       | <b>No Recovery 35.0-35.2'</b>                                                                                                                                                                                                                                                                                                        |                 |              | Driller's Remark: Will install 4" HW casing down to 35.0' below ground surface |                     |  |  |
|                                        |                      |       |                                   |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                      |                 |              |                                                                                |                     |  |  |
|                                        |                      |       |                                   |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                      |                 |              |                                                                                |                     |  |  |
| 40                                     |                      |       |                                   |                                                                                                                    |                                                                                                                                                                                                                                                                                                                                      |                 |              |                                                                                |                     |  |  |



|                                            |                                      |
|--------------------------------------------|--------------------------------------|
| <b>PROJECT NUMBER:</b><br><b>338884.FL</b> | <b>BORING NUMBER:</b><br><b>B-15</b> |
| SHEET 3 OF 9                               |                                      |
| <b>SOIL BORING LOG</b>                     |                                      |

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site    LOCATION : 1724222.8 N, 458094.3 E (NAD83)  
 ELEVATION : 42.3 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, 2-15/16" tri-cone bit    ORIENTATION : Vertical  
 WATER LEVELS : 4.0 ft bgs on 5/15/07    START : 5/15/2007    END : 5/17/2007    LOGGER : T. Stewart

| WATER LEVELS : 4.0 (BGS) 9/15/07       |                      |       | START : 9/15/2007                 |                  |                                                                                                                                                                                                                      | END : 9/17/2007 |          |  | LOGGER : T. Stewart |  |  |
|----------------------------------------|----------------------|-------|-----------------------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------|--|---------------------|--|--|
| 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                                                                                                   |                 |          |  |                     |  |  |
|                                        |                      |       |                                   |                  |                                                                                                                                                                                                                      |                 |          |  |                     |  |  |
| 2.3                                    | 40.0                 | 0.8   | SS-9                              | 44-50/5 (94/11") | <b>Silt With Sand (ML)</b><br>40.0-40.8' - light olive brown, (5Y 5/6), wet, hard, fine to coarse grained, 20-30% sand, nonplastic, rapid dilatancy, mild HCl reaction, 5-10% organics, all carbonate                |                 |          |  |                     |  |  |
|                                        | 40.9                 |       |                                   |                  |                                                                                                                                                                                                                      |                 |          |  |                     |  |  |
| 45                                     | 45.0                 | 0.1   | SS-10                             | 50/3.5 (50/3.5") | <b>Limestone Fragments</b><br>45.0-45.1' - moderate olive brown, (5Y 4/4), mild to moderate HCl reaction, 10% fine grain, black particles in rock matrix, poor recovery, highly fossiliferous                        |                 |          |  |                     |  |  |
| -2.7                                   | 45.3                 |       |                                   |                  |                                                                                                                                                                                                                      |                 |          |  |                     |  |  |
| 50                                     | 50.0                 | 0.0   | SS-11                             | 50/2 (50/2")     | <b>No Recovery 50.0-50.2'</b>                                                                                                                                                                                        |                 |          |  |                     |  |  |
| -7.7                                   | 50.2                 |       |                                   |                  |                                                                                                                                                                                                                      |                 |          |  |                     |  |  |
| 55                                     | 55.0                 | 0.1   | SS-12                             | 50/4 (50/4")     | <b>Limestone Fragments</b><br>55.0-55.1' - medium olive brown, (5Y 4/4), medium grained, mild to moderate HCl reaction, trace medium grain-sized black particles, moderately fossiliferous (casts, molds up to 5/8") |                 |          |  |                     |  |  |
| -12.7                                  | 55.3                 |       |                                   |                  |                                                                                                                                                                                                                      |                 |          |  |                     |  |  |
| 60                                     |                      |       |                                   |                  |                                                                                                                                                                                                                      |                 |          |  |                     |  |  |



|                                            |                                      |
|--------------------------------------------|--------------------------------------|
| <b>PROJECT NUMBER:</b><br><b>338884.FL</b> | <b>BORING NUMBER:</b><br><b>B-15</b> |
| SHEET 4 OF 9                               |                                      |
| <b>SOIL BORING LOG</b>                     |                                      |

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site    LOCATION : 1724222.8 N, 458094.3 E (NAD83)  
 ELEVATION : 42.3 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, 2-15/16" tri-cone bit    ORIENTATION : Vertical  
 WATER LEVELS : 4.0 ft bgs on 5/15/07    START : 5/15/2007    END : 5/17/2007    LOGGER : T. Stewart

| WATER LEVELS : 4.0 TDS ON 9/15/07      |                      |       | START : 9/15/2007                 |                     |                                                                                                                                                                                                                                                                                                                                            | END : 9/17/2007                                                                 |              |                                                                                | LOGGER : T. Stewart |  |  |
|----------------------------------------|----------------------|-------|-----------------------------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------------------|---------------------|--|--|
| 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 |              |                                                                                |                     |  |  |
|                                        |                      |       |                                   |                     |                                                                                                                                                                                                                                                                                                                                            |                                                                                 |              |                                                                                |                     |  |  |
| -17.7                                  | 60.0                 | 0.7   | SS-13                             | 45-50/3.5 (95/9.5") | <b>Silty Sand And Limestone Fragments (SM)</b><br>60.0-60.7' - moderate olive brown, (5Y 4/4), wet, very dense, fine to coarse grained, 20-25% fines, low plasticity, mild to moderate HCl reaction, 40% fine gravel-sized limestone, poorly fossiliferous<br>Begin Rock Coring at 61.0 ft bgs<br>See the next sheet for the rock core log |                                                                                 |              | Driller's Remark: Will install 4" HW casing down to 61.0' below ground surface |                     |  |  |
| 60.8                                   |                      |       |                                   |                     |                                                                                                                                                                                                                                                                                                                                            |                                                                                 |              |                                                                                |                     |  |  |
| 65                                     |                      |       |                                   |                     |                                                                                                                                                                                                                                                                                                                                            |                                                                                 |              |                                                                                |                     |  |  |
| -22.7                                  |                      |       |                                   |                     |                                                                                                                                                                                                                                                                                                                                            |                                                                                 |              |                                                                                |                     |  |  |
| 70                                     |                      |       |                                   |                     |                                                                                                                                                                                                                                                                                                                                            |                                                                                 |              |                                                                                |                     |  |  |
| -27.7                                  |                      |       |                                   |                     |                                                                                                                                                                                                                                                                                                                                            |                                                                                 |              |                                                                                |                     |  |  |
| 75                                     |                      |       |                                   |                     |                                                                                                                                                                                                                                                                                                                                            |                                                                                 |              |                                                                                |                     |  |  |
| -32.7                                  |                      |       |                                   |                     |                                                                                                                                                                                                                                                                                                                                            |                                                                                 |              |                                                                                |                     |  |  |
| 80                                     |                      |       |                                   |                     |                                                                                                                                                                                                                                                                                                                                            |                                                                                 |              |                                                                                |                     |  |  |



PROJECT NUMBER:

338884.FL

BORING NUMBER:

B-15

SHEET 5 OF 9

# ROCK CORE LOG

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1724222.8 N, 458094.3 E (NAD83)

ELEVATION : 42.3 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 : 4.0 ft bgs on 5/15/07

START : 5/15/2007

END : 5/17/2007

LOGGER : T. Stewart

| 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. |
| 61.0                                   | R1-NQ<br>5 ft<br>54%             | 35              | 3                  | 61.35' - Mechanical break                                                                                                                                          |              | <b>Limestone</b><br>61.0-63.7' - moderate olive brown to light olive gray, (5Y 4/4 to 5Y 5/2), moderate to strong HCl reaction, medium strong (R3), 15% voids <1/16", infilled cavities with dark gray material (N3)<br><br><b>No Recovery 63.7-66.0'</b>                                                                                                                                                                                                                                                                                                                                                                                                                            | R1: 16 minutes                                                                                         |
|                                        |                                  |                 | 2                  | 61.75, 61.9, 61.95' - Bedding plane (3), horizontal, rough, undulating, <1/16" gap, possible mechanical break                                                      |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                        |
|                                        |                                  |                 | 2                  | 63.0, 63.4' - Bedding plane (2), 5 deg and 10 deg, rough, undulating, open up to 3/16", fracture is through infilled cavity, possible mechanical break             |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                        |
| 65<br>-22.7                            |                                  |                 | NR                 |                                                                                                                                                                    |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                        |
| 66.0                                   | R2-NQ<br>5 ft<br>74%             | 53              | 2                  | 66.1' - Bedding plane, horizontal, rough, undulating, open 1/16"                                                                                                   |              | <b>Limestone</b><br>66.0-69.7' - Same as 61.0-63.7' except olive gray, (5Y 3/2), trace fossil casts, weak rock interval from 69.0-69.7'<br><br><b>No Recovery 69.7-71.0'</b><br><br><b>No Recovery 71.0-72.9'</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | SC-1 collected at 67.9-68.75'                                                                          |
|                                        |                                  |                 | 2                  | 66.55, 68.75, 69.0' - Bedding plane (3), horizontal, rough, undulating, tight, possible mechanical break                                                           |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                        |
|                                        |                                  |                 | 2                  | 67.15, 67.9' - Bedding plane (2), 5 deg and 10 deg, rough, undulating, tight, possible mechanical break                                                            |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                        |
|                                        |                                  |                 | 3                  | 68.75, 69.0' - Bedding plane (2), horizontal, rough, undulating, tight                                                                                             |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                        |
| 70<br>-27.7                            |                                  |                 | NR                 | 69.25' - Fracture, 10 deg and 15 deg, rough, undulating, tight<br>69.55, 69.65' - Fracture (2), horizontal and 5 deg, tight, fractures are in weak rock interval   |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                        |
| 71.0                                   | R3-NQ<br>5 ft<br>62%             | 38              | NR                 |                                                                                                                                                                    |              | <b>Limestone</b><br>72.9-76.0' - moderate olive brown grading at 74.7' to light olive brown, (5Y 4/4 grading to 5Y 5/6), strong HCl reaction, medium strong to weak (R3 to R2), 15% voids <1/16" on surface in creasing to 30% from 74.7' with depth, poorly fossiliferous (casts), trace unfilled cavities to 3/8"x3/16" elongated, bioturbated areas 3% irregularly shaped cavities >1", trace dark gray infill fines<br>76.0-81.0' - yellowish gray to light olive brown, (5Y 8/1 to 5Y 5/6), fine grained, moderate to strong HCl reaction, weak to medium strong (R2 to R3), 30-35% voids <1/16", poorly fossiliferous (casts), 3-5% dark gray fine to medium grained particles | R3: 17 minutes                                                                                         |
|                                        |                                  |                 | >10                | 72.9-73.35' - Fracture zone, subangular and rounded fragments up to 1-3/8" in size<br>73.35-74.1' - Joint, vertical                                                |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                        |
| 75<br>-32.7                            |                                  |                 | 1                  | 74.1' - Fracture, horizontal, rough, undulating, open 1/16", broken across infilled void, black stain                                                              |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                        |
|                                        |                                  |                 | 3                  | 75.3, 75.5, 75.7' - Fractures (3), 10 deg and 15 deg, rough, undulating, tight, possible mechanical break                                                          |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                        |
| 76.0                                   | R4-NQ<br>5 ft<br>100%            | 84              | 2                  | 76.1' - Bedding plane, horizontal, smooth, stepped, tight, possible mechanical break                                                                               |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | SC-2 collected at 76.9-78.05'                                                                          |
|                                        |                                  |                 | 0                  | 76.9' - Fracture, 5 deg and 10 deg, rough, undulating, open 1/16"                                                                                                  |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                        |
|                                        |                                  |                 | 3                  | 78.05' - Fractures, 15 deg and 20 deg, rough, undulating, tight, possible mechanical break<br>78.45' - Fracture, horizontal, rough, undulating, tight to 1/2" open |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                        |
|                                        |                                  |                 | 2                  | 78.7' - Fracture, horizontal, rough, undulating, up to 3/4" open                                                                                                   |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                        |
| 80<br>-37.7                            |                                  |                 | 1                  | 79.4, 79.5' - Bedding plane (2), horizontal, rough, undulating, open 1/8", possible mechanical break                                                               |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                        |
| 81.0                                   |                                  |                 |                    |                                                                                                                                                                    |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | R4: 11 minutes                                                                                         |



PROJECT NUMBER:

338884.FL

BORING NUMBER:

B-15

SHEET 6 OF 9

# ROCK CORE LOG

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1724222.8 N, 458094.3 E (NAD83)

ELEVATION : 42.3 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 : 4.0 ft bgs on 5/15/07

START : 5/15/2007

END : 5/17/2007

LOGGER : T. Stewart

| 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. |
| 85<br>-42.7                            | R5-NQ<br>5 ft<br>100%            | 88              | 0                  | 80.2' - Fracture, horizontal, rough, undulating, tight, possible mechanical break                                                   |              | <b>Limestone</b><br>81.0-86.0' - light olive brown, (5Y 6/6), strong HCl reaction, weak (R2), 10-15% mottled yellowish gray (5Y 8/1) with olive gray (5Y 5/2), moderately fossiliferous (casts/molds), carbonate fines (irregularly shaped fines possible bioturbation), trace organic lenses to 3/8" thick at 82.15' and 82.5', fossils to 9/16" predominately horizontally oriented and rice shaped with corrugated patterns | R5: 13 minutes                                                                                         |
|                                        |                                  |                 | 3                  | 82.15, 82.5' - Bedding plane (2), horizontal, rough, undulating, open 7/16", dry, fine laminations                                  |              |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 0                  | 82.8' - Bedding plane, horizontal, rough, undulating, tight, possible mechanical break                                              |              |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 2                  | 84.35' - Bedding plane, horizontal, rough, undulating, tight, in very weak rock, possible mechanical break                          |              |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 0                  | 84.6' - Bedding plane, horizontal, fracture in bioturbated zone, possible mechanical break                                          |              |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
| 90<br>-47.7                            | R6-NQ<br>5 ft<br>94%             | 54              | 6                  | 86.05, 86.2, 86.35, 86.45, 86.5, 86.7' - Bedding plane (6), 0 deg to 5 deg, rough, undulating, 1/16" gap, possible mechanical break |              | 86.0-86.35' - Same as 81.0-86.0'<br>86.35-90.7' - white to yellowish gray with medium dark gray and moderate yellow, (5Y 8/1 with N4 and 5Y 7/6), very fine grained, strong HCl reaction, strong (R4), very fossiliferous (casts, microforams), trace spherical voids <1/16", bioturbated mottling 30-35% of surface with 15-20% voids <1/16"                                                                                  | R6: 21 minutes                                                                                         |
|                                        |                                  |                 | 0                  |                                                                                                                                     |              |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 2                  | 88.1, 88.5' - Fracture (2), horizontal, rough, undulating, tight, possible mechanical break                                         |              |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 3                  | 89.1' - Bedding plane, horizontal                                                                                                   |              |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 2                  | 89.4' - Bedding plane, horizontal, possible mechanical break                                                                        |              |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
| 95<br>-52.7                            | R7-NQ<br>5 ft<br>98%             | 60              | NR                 | 89.55' - Fracture, vertical, rough, undulating, gray staining, tight, with bisecting mechanical breaks                              |              | <b>No Recovery 90.7-91.0' Limestone</b><br>91.0-95.9' - yellowish gray with dark gray and white, (5Y 7/2 with N3 and N9), strong HCl reaction, weak (R2), very fossiliferous (casts, molds, shells) fossils to 7/8", 94.0-95.9' apparent bedding and horizontal fossil alignment                                                                                                                                               | R7: 10 minutes                                                                                         |
|                                        |                                  |                 | 4                  | 90.0' - Fracture, horizontal, rough, undulating, 1/8" open                                                                          |              |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 3                  | 90.4' - Fracture, horizontal, rough, undulating, tight                                                                              |              |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 3                  | 91.4, 91.5, 91.7, 91.95, 92.15, 92.4' - Fractures (6), horizontal, rough, undulating, tight, possible mechanical break              |              |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 2                  | 92.95, 93.25, 93.5' - Fractures (3), 5 deg to 10 deg, rough, undulating, tight, possible mechanical break                           |              |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
| 100<br>-57.7                           | R8-NQ<br>5 ft<br>100%            | 95              | 2                  | 93.75' - Fracture, 30 deg, rough, undulating, tight                                                                                 |              | <b>No Recovery 95.9-96.0' Limestone</b><br>96.0-101.0' - Same as 91.0-95.9' except medium-sized white (N9) and dark gray (N3) grains                                                                                                                                                                                                                                                                                           | R8: 9 minutes                                                                                          |
|                                        |                                  |                 | 2                  | 94.4, 94.6, 95.2, 95.6' - Fractures (4), 0 deg to 5 deg, rough, undulating, tight, possible mechanical break                        |              |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 1                  | 96.6' - Fracture, 45 deg, rough, undulating, tight                                                                                  |              |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 1                  |                                                                                                                                     |              |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 2                  | 97.95' - Fracture, horizontal, rough, undulating, open 3/4"                                                                         |              |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 1                  | 98.2' - Fracture, 55 deg, rough, undulating, tight                                                                                  |              |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 1                  | 98.5' - Mechanical break                                                                                                            |              |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 1                  | 98.65' - Bedding plane, horizontal, rough, undulating, tight, possible mechanical break                                             |              |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 1                  | 99.6' - Bedding plane, horizontal, rough, undulating, tight, possible mechanical break                                              |              |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 |                    |                                                                                                                                     |              |                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |



PROJECT NUMBER:

338884.FL

BORING NUMBER:

B-15

SHEET 7 OF 9

# ROCK CORE LOG

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1724222.8 N, 458094.3 E (NAD83)

ELEVATION : 42.3 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 : 4.0 ft bgs on 5/15/07

START : 5/15/2007

END : 5/17/2007

LOGGER : T. Stewart

| 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. |
| 105<br>-62.7                           | R9-NQ<br>5 ft<br>100%            | 84              | 2                  | 100.5' - Bedding plane, horizontal, rough, undulating, tight, possible mechanical break                                                   |              | <b>Limestone</b><br>101.0-106.0' - yellowish gray with medium gray, (5Y 7/2 with N9), fine to medium grained, strong HCl reaction, very weak to weak (R1 to R2), very fossiliferous (microforams, casts, molds >1/8") decreasing abundance with depth, white rounded elongated grains 25-35% increasing with depth, 5-10% medium gray grains, voids <1/16" 30-40% of surface from 101.0-103.2' | R9: 9 minutes                                                                                          |
|                                        |                                  |                 | 3                  | 101.1' - Bedding plane, horizontal, rough, undulating, tight, possible mechanical break                                                   |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 2                  | 101.9' - Fracture, 25 deg to 30 deg, rough, undulating, tight                                                                             |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 1                  | 102.2, 102.8' - Fracture (2), horizontal, rough, undulating, tight, possible mechanical break                                             |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 1                  | 102.4' - Fracture, 70 deg to 80 deg, rough, undulating, 3-7% black stain, tight                                                           |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 1                  | 103.2, 103.5' - Fracture (2), 10 deg to 15 deg, rough, undulating, tight                                                                  |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
| 110<br>-67.7                           | R10-NQ<br>5 ft<br>100%           | 65              | 3                  | 104.1' - Fracture, 30 deg, rough, undulating, tight, possible mechanical break                                                            |              | 106.0-111.0' - yellowish gray with medium gray, (5Y 7/2 with N5), fine to medium grained, strong HCl reaction, very weak to weak (R1 to R2), very fossiliferous (predominantly microforams and molds), 3-5% medium gray grains, voids <1/16" 10-15% of surface, 1/4" bedded accumulation of fossils at 109.1'                                                                                  | R10: 8 minutes                                                                                         |
|                                        |                                  |                 | 4                  | 105.0' - Fracture, horizontal, rough, undulating, tight, possible mechanical break                                                        |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 3                  | 106.15, 106.4, 106.9' - Bedding plane or mechanical break (3), horizontal, rough, planar, <1/16" gap                                      |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 1                  | 107.0, 107.15' - Bedding plane or mechanical break (2), horizontal, rough, undulating, 10-15% black staining                              |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 2                  | 107.2' - Bedding plane or mechanical break, horizontal, rough, undulating, tight                                                          |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 2                  | 107.8, 108.1, 108.4' - Mechanical break or bedding plane (3), 0 deg to 5 deg, smooth, planar, tight                                       |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
| 115<br>-72.7                           | R11-NQ<br>5 ft<br>70%            | 28              | 2                  | 109.1' - Bedding plane, horizontal, bedded fossil casts and molds                                                                         |              | 111.0-114.5' - yellowish gray, (5Y 7/2), medium grained, strong HCl reaction, very weak (R1), very fossiliferous (microforams, shells, molds) fossils >75% of rock to 1/16" trace to 1"                                                                                                                                                                                                        | R11: 9 minutes                                                                                         |
|                                        |                                  |                 | 5                  | 110.5' - Bedding plane, horizontal, rough, undulating, tight, hard mineral surface                                                        |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 4                  | 110.8' - Fracture, 55 deg to 60 deg, rough, undulating, tight                                                                             |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 2                  | 111.2' - Fracture or mechanical break, horizontal, rough, undulating, tight                                                               |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | NR                 | 111.7, 112.0' - Bedding plane (2), 5 deg to 10 deg, rough, undulating, tight                                                              |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | NR                 | 112.2, 112.3' - Bedding plane or mechanical break (2), 7 deg to 10 deg, rough, undulating, 1/8" open                                      |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
| 120<br>-77.7                           | R12-NQ<br>5 ft<br>100%           | 46              | 3                  | 112.5' - Bedding plane or mechanical break, horizontal, rough, undulating, tight                                                          |              | <b>No Recovery 114.5-116.0'</b><br><br><b>Limestone</b><br>116.0-121.0' - Same as 111.0-114.5'                                                                                                                                                                                                                                                                                                 | R12: 11 minutes                                                                                        |
|                                        |                                  |                 | 2                  | 112.85, 113.0, 113.2' - Bedding plane or mechanical break (3), 5 deg to 10 deg, rough, undulating, fossil casts/molds on fracture surface |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | >10                | 113.5' - Mechanical break, rough, undulating, tight                                                                                       |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 2                  | 113.95' - Fracture, 70 deg, rough, undulating, tight                                                                                      |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 3                  | 114.1, 114.2' - Fracture or mechanical break (2), horizontal, rough, undulating, tight                                                    |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 | 3                  | 116.15, 116.75, 116.9, 117.2, 117.3' - Fracture or mechanical break (5), 0 deg to 5 deg, rough, undulating, tight                         |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 |                    | 118.0' - Fracture or mechanical break, horizontal, tight, in friable rock                                                                 |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 |                    | 118.3, 118.6' - Fracture, vertical, rough, undulating, tight                                                                              |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |
|                                        |                                  |                 |                    | 118.85-119.1' - Fracture zone                                                                                                             |              |                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                        |



PROJECT NUMBER:

338884.FL

BORING NUMBER:

B-15

SHEET 8 OF 9

# ROCK CORE LOG

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1724222.8 N, 458094.3 E (NAD83)

ELEVATION : 42.3 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 : 4.0 ft bgs on 5/15/07

START : 5/15/2007

END : 5/17/2007

LOGGER : T. Stewart

| 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. |
| 125<br>-82.7                           | R13-NQ<br>5 ft<br>86%            | 61              | 2                  | 119.35' - Fracture or mechanical break, 5 deg to 10 deg, rough, undulating, tight                                                                                                         |              | <b>Limestone</b><br>121.0-125.3' - yellowish gray, (5Y 8/1), strong HCl reaction, very weak (R1), voids <1/16" on 15-20% of surface, very fossiliferous (casts, microforams), trace black laminations possible organics, 5-7% medium dark gray grains (angular-subangular), 121.6-121.7', very strong HCl reaction, finely laminated slightly coarser grained infill with undulating bedding planes to 10 deg, possible trace fine quartz sand<br><b>No Recovery 125.3-126.0'</b> | R13: 10 minutes                                                                                        |
|                                        |                                  |                 | 2                  | 119.8' - Bedding plane, horizontal, smooth, undulating, tight                                                                                                                             |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                        |
|                                        |                                  |                 | 3                  | 120.2, 120.35, 120.55' - Mechanical break or bedding plane (3), horizontal, rough, planar, tight                                                                                          |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                        |
|                                        |                                  |                 | 3                  | 121.1' - Bedding plane or mechanical break, horizontal, rough, undulating, 1/8" open                                                                                                      |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                        |
|                                        |                                  |                 | 1                  | 121.6' - discontinuity, nonplanar, undulating, tight, black staining on surface                                                                                                           |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                        |
|                                        |                                  |                 | NR                 | 122.05, 122.7, 123.05, 123.4, 123.9, 124.6, 124.9, 125.2' - Bedding plane or mechanical break (8), horizontal, rough, undulating, tight, fractures through cavities at 125.2' and 123.05' |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                        |
| 130<br>-87.7                           | R14-NQ<br>5 ft<br>100%           | 41              | 7                  | 124.0' - Bedding plane or mechanical break, horizontal, rough, undulating, 3/16" gap                                                                                                      |              | <b>Limestone</b><br>126.0-131.0' - yellow gray with medium dark gray and pale yellowish orange, (5Y 8/1 with N4 and 10YR 8/6), very fine to medium grained, strong HCl reaction, very weak (R1), thin bedding, grain size alternates 127.5-129.0' medium to coarse grained, very fossiliferous                                                                                                                                                                                    | R14: Run time not recorded                                                                             |
|                                        |                                  |                 | 6                  | 126.05-130.85' - Bedding plane (16), rough, planar, <1/16" gap                                                                                                                            |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                        |
|                                        |                                  |                 | 2                  | 127.7, 128.05' - Mechanical break or bedding plane (2), horizontal, rough, undulating, 1/8" gap at 127.7', tight at 128.05'                                                               |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                        |
|                                        |                                  |                 | 2                  | 128.2, 129.3' - Bedding plane or mechanical break (2), 5 deg to 10 deg, rough, undulating, tight                                                                                          |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                        |
|                                        |                                  |                 | 5                  | 129.55' - Bedding plane, horizontal, rough, undulating, tight                                                                                                                             |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                        |
|                                        |                                  |                 | NR                 |                                                                                                                                                                                           |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                        |
| 135<br>-92.7                           | R15-NQ<br>5 ft<br>96%            | 88              | 0                  | 132.0' - Bedding plane, 20 deg, rough, undulating, tight                                                                                                                                  |              | 131.0-135.8' - yellowish gray with light olive gray, olive gray and medium dark gray, (5Y 8/1 with 5Y 4/1, 5Y 6/1 and N4), fine to medium grained, strong HCl reaction, laminated bedding, very fossiliferous (microforams, shells, casts/molds), fossils to 5/8"x3/16", voids <1/16" 15-20% of surface, 3-5% cavities to 3/4"x1/2" from 134.5-135.3' infilled, mineralization subhorizontally aligned, 1" scour and fill structure at 134.4'                                     | SC-4 collected at 131.0-132.0'                                                                         |
|                                        |                                  |                 | 3                  | 132.45' - Fracture or mechanical break, horizontal, rough, undulating                                                                                                                     |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                        |
|                                        |                                  |                 | 0                  | 132.95' - Bedding plane or mechanical break, 10 deg to 15 deg, rough, undulating, tight                                                                                                   |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                        |
|                                        |                                  |                 | 2                  | 134.35' - Bedding plane, 5 deg, rough, undulating, 1/32" silt and/or clay sized infilling, open 1/16"                                                                                     |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                        |
|                                        |                                  |                 | 1                  | 134.4' - Fracture, undulating, tight                                                                                                                                                      |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                        |
|                                        |                                  |                 | NR                 | 134.9' - Bedding plane or mechanical break, horizontal, rough, undulating, tight                                                                                                          |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                        |
| 140<br>-97.7                           | R16-NQ<br>5 ft<br>96%            | 62              | 3                  | 135.45' - Bedding plane or mechanical break, horizontal, rough, undulating, tight, 3/4" hard medium gray infilled cavity on surface                                                       |              | <b>No Recovery 135.8-136.0'</b><br><b>Limestone</b><br>136.0-136.5' - yellowish gray, (5Y 4/4), medium grained, strong HCl reaction, very weak (R1), thin bedding, 136.0-136.25' rounded clast to 1/4" with thin halo on edges, clasts strong rock (R4), strongly suggests possible fluvial deposition                                                                                                                                                                            | R16: 18 minutes                                                                                        |
|                                        |                                  |                 | 3                  | 136.25, 136.4' - Bedding plane or mechanical break, horizontal, rough, planar, 1/16" open                                                                                                 |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                        |
|                                        |                                  |                 | 2                  | 136.5' - Bedding plane or mechanical break, horizontal, rough, undulating, 1" open, through cavity/ bioturbated pockets                                                                   |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                        |
|                                        |                                  |                 | 3                  | 137.2' - Bedding plane or mechanical break, horizontal, rough, undulating, tight, fracture in bioturbated cavity                                                                          |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                        |
|                                        |                                  |                 | 1                  | 137.65' - Bedding plane or mechanical break, 20 deg, rough, undulating, tight                                                                                                             |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                        |
|                                        |                                  |                 | NR                 |                                                                                                                                                                                           |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                        |
|                                        |                                  |                 |                    |                                                                                                                                                                                           |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                        |



PROJECT NUMBER:

338884.FL

BORING NUMBER:

B-15

SHEET 9 OF 9

# ROCK CORE LOG

PROJECT : Progress Energy Florida - COLA Investigation, Levy County Site LOCATION : 1724222.8 N, 458094.3 E (NAD83)

ELEVATION : 42.3 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 : 4.0 ft bgs on 5/15/07

START : 5/15/2007

END : 5/17/2007

LOGGER : T. Stewart

| DEPTH BELOW<br>SURFACE AND<br>ELEVATION (ft) | CORE RUN<br>LENGTH AND<br>RECOVERY (%) | DISCONTINUITIES |                       |                                                                                                                         | SYMBOLIC LOG | LITHOLOGY                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------|----------------------------------------|-----------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                              |                                        | RQD (%)         | FRACTURES<br>PER FOOT | DESCRIPTION                                                                                                             |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                              |                                        |                 |                       | DEPTH, TYPE, ORIENTATION, ROUGHNESS,<br>PLANARITY, INFILLING MATERIAL AND<br>THICKNESS, SURFACE STAINING, AND TIGHTNESS |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                           |
| 145<br>-102.7                                | R17-NQ<br>5 ft<br>94%                  | 70              | 1                     | 137.8' - Bedding plane or mechanical break, horizontal, rough, undulating, tight, fracture through bioturbated cavity   |              | <b>Limestone</b><br>136.5-138.5' - light olive gray, (5Y 5/2), very fine grained, strong HCl reaction, medium strong (R3), 3-5% voids <1/32", 5% irregularly shaped cavities >2" (bioturbation pockets) with 25-30% voids <1/16" and mottling of moderate yellow rimming, moderate yellow infill, poorly fossiliferous (casts, molds)<br>138.5-140.3' - light olive gray, (5Y 5/2), very fine grained, strong HCl reaction, medium strong (R3), moderately fossiliferous (casts, molds) increase abundance with depth, 5% infilled irregularly shaped cavities to 1" with black staining, 3-5% mottling, trace elongated cavities to 3/8"x3/16"<br>140.3-140.8' - light olive gray, (5Y 5/2), very fine grained, strong HCl reaction, medium strong to strong (R3 to R4), black (<1/32" thick) microlaminations dipping 20-25 deg, trace voids <1/32"<br><b>No Recovery 140.8-141.0'</b><br><b>Limestone</b><br>141.0-142.2' - Same as 140.3-140.8'<br>142.2-145.7' - yellowish gray with grayish orange and light gray, (5Y 8/1 with 10YR 7/4, N6), fine to medium grained, strong HCl reaction, weak (R2), moderately fossiliferous (casts, shells), fossils horizontally aligned, grayish orange grains have a frosted to translucent luster<br><b>No Recovery 145.7-146.0'</b><br><b>Limestone</b><br>146.0-151.0' - light olive gray to moderate olive brown, (5Y 5/2 to 5Y 4/4), very fine to fine grained, strong HCl reaction, medium strong (R3), poorly fossiliferous (casts), 3-5% spherical voids <1/16", 149.2-150.1' weak rock zone of fine to medium grained laminated material alternating yellowish gray and moderate olive brown (5Y 8/1 and 5Y 4/4), 149.2-150.1' similar to 142.2-145.7'<br><b>No Recovery 150.8-151.0'</b><br>Bottom of Boring at 151.0 ft bgs on 5/17/2007 | SC-5 collected at 141.0-141.8'<br><br>R17: 11 minutes<br><br>13:12 water level in HW casing 6.7' below ground surface<br>End configuration 4" HW to 56.0' below ground surface<br>NQ from 61.0-151.0' below ground surface<br>Soil/split spoon from 0.0-60.0'<br>Abandonment:<br>16 bags of type I/II Portland cement<br>Mixed with 37 gallons of water<br>Plus 3 dry bags of Portland<br>R18: 16 minutes |
|                                              |                                        |                 | 3                     | 138.1' - Bedding plane or mechanical break, horizontal, rough, undulating, tight to 1" open                             |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                              |                                        |                 | 0                     | 138.7' - Fracture zone, 2" wide with 1/2" to 1-1/2" fragments                                                           |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                              |                                        |                 | 2                     | 139.1' - Fracture or mechanical break, horizontal, rough, undulating, tight organics on 50% of surface                  |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                              |                                        |                 | 3                     | 139.7' - Bedding plane or mechanical break, horizontal, rough, undulating, tight                                        |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                              |                                        |                 | NR                    | 139.8' - Bedding plane or mechanical break, 20 deg, rough, undulating                                                   |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                              |                                        |                 | 1                     | 140.3' - Bedding plane, rough, stepped, tight to 1/16" open, parting along wavy lamination                              |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                              |                                        |                 | 0                     | 141.8-145.55' - Bedding plane or mechanical break (6), horizontal, rough, planar, tight                                 |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                              |                                        |                 | 2                     | 142.0' - Fracture, 70 deg to 80 deg, rough, undulating, tight                                                           |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                              |                                        |                 | 8                     | 142.25' - Bedding plane or mechanical break, horizontal, rough, undulating, 1/2"-1-3/8" open                            |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                           |
| 150<br>-107.7                                | R18-NQ<br>5 ft<br>96%                  | 54              | 2                     | 144.8' - Fracture, 60 deg, rough, undulating, tight                                                                     |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                              |                                        |                 | 2                     | 146.1' - Bedding plane or mechanical break, horizontal, rough, undulating, <1/16" open                                  |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                              |                                        |                 | NR                    | 146.5-147.4' - Fracture, healed                                                                                         |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                              |                                        |                 | NR                    | 148.3' - Bedding plane, horizontal, smooth, stepped, tight                                                              |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                              |                                        |                 | NR                    | 148.65' - Bedding plane or mechanical break, horizontal, rough, undulating, 1/16" open                                  |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                              |                                        |                 | NR                    | 149.0, 149.15' - Bedding plane or mechanical break (2), horizontal, rough, undulating, 1/16" open                       |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                              |                                        |                 | NR                    | 149.2-149.8' - Bedding plane (6), horizontal, rough, undulating, 1/16" open                                             |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                              |                                        |                 | NR                    | 150.1' - Fracture or mechanical break, 5 deg to 10 deg, rough, planar, tight                                            |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                              |                                        |                 | NR                    | 150.6' - Bedding plane or mechanical break, horizontal, rough, undulating, tight                                        |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                           |
|                                              |                                        |                 | NR                    | 150.8' - Bedding plane or mechanical break, horizontal, rough, undulating, tight                                        |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                           |