Reinhold Environmental Ltd.

2008 APC Round Table & Expo Presentation

July 13-15, 2008, in Savannah, GA

PLANNING FOR THE FUTURE

Progress Energy

BUDGET

- Progress Energy is no different that any other company.
- We have an O&M Budget yearly.
- We have a Capital Budget yearly.
- We are expected to hold to that budget number or below.

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ENVIRONMENTAL REQUIREMENTS

- From time to time local, state and national EPS's come up with new requirements.
- NOx, SOx, Particulate, Mercury, CO
- Some times government has better ideas on what utilities should use to produce electricity.
- Coal, Gas, Hydro, Nuclear

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PLANNING FOR THE FUTURE

- In order to meet new source requirements for NOx and SOx in the Florida region of Progress Energy, we produce a strategy I am sure similar to most other companies.
- Find our biggest bang for the buck.
- We determined that to meet our needs we needed to install an SCR and Wet FGD on both Crystal River Units 4&5.

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CRYSTAL RIVER 4 & 5 UNITS NOW

- They are sister units and are rated at 750 MW each.
- The Tangentially Fired CE Boilers were built in the early 1980's and are balanced draft with a cold side precipitator and dry stack and burns low sulfur coal. (Approximately 0.05% Sulfur, 13,000 BTU, 8% Ash)

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CRYSTAL RIVER 4 & 5 UPGRADED

- New SCR, Wet FGD SO3 Mitigation System
- Upgraded Soot Blower System, I. D Fans, Air Heaters, Precipitator, CEM's System

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CRYSTAL RIVER 4 & 5 UNITS FUTURE

- When the new environmental equipment is installed, we will then burn high sulfur coal (Approximately 3.5% sulfur, 11,000 BTU, 10% Ash Content)

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NEW ENVIRONMENTAL REQUIREMENTS

- NOx and SOx reductions
- Particulate Reductions (From 0.1 to 0.030 particulate and from 20% to 10% Opacity)

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CONCERNS/QUESTIONS TO BE BROUGHT UP

- Will the existing precipitator be reliable enough to meet the new source particulate requirements?
- What effect would the new SO3 mitigation system (Ammonia Injection) have on the fly ash?
- Would the existing flow straightening devices (Perforated Plates and Turning Vanes) work with the new fuel and would they need to be rapped?

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CONCERNS/QUESTIONS TO BE BROUGHT UP

- Would the existing economizer ash and fly ash systems be sized to meet the new additional ash being collected?
- Would the existing CE Walther European design with flailing hammers for both the plates and wire frames be the best design for the new environmental requirements?
- Would a new American Design be better?

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CONCERNS/QUESTIONS TO BE BROUGHT UP

- If we went to a top rapped American Design, would the new plates be able to get the necessary G-Force rapping at the bottom of the plate? The same question should be asked for the electrodes.

- Do the T/R Set sizing need to be changed or can we reuse the existing T/R's?

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CONCERNS/QUESTIONS TO BE BROUGHT UP

- One could go on and on with additional questions on the precipitator alone, but this gives you an idea of what had to go no in just the preliminary stages.

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EXISTING BOILER BUILDING AND SCR STEEL

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NEW SCR STEEL

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EXISTING PRECIPITATOR

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EXISTING OLD STACK AND I. D. FANS

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NEW ABSORBER FOR FGD

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NEW DUEL STACK

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