Nuclear Regulatory Commission
Exhibit # - SNC000023-00-BD01
Docket # - 05200011
Identified: 03/17/2009

Admitted: 03/17/2009 Withdrawn:
Rejected: Stricken:

SNC000023

James W. Cuchens

Curriculum Vitae

SOUTHERN COMPANY

JAMES W. CUCHENS, P.E.
Principal Engineer

B.S., Mechanical Engineering
Mississippi State University, 1973

EXPERIENCE SUMMARY

Mr. Cuchens has over 34 years of experience in all phases power plant design and construction including conceptual design studies, equipment design specifications, and equipment bid evaluations. His experience includes design of major plant equipment including the thermal cycle equipment, boiler and draft system equipment, and the plant cooling system equipment. Mr. Cuchens design experience includes various types of unit designs including nuclear, fossil, and co-generation units. Overall experience includes most of the major plant equipment and systems including turbine generators, boilers, FD & ID Fans and draft systems, combustion turbines, and miscellaneous pumps. Experience within the past 27 years has primarily been associated with power plant cooling systems which includes cooling towers, cooling ponds/lakes, air-cooled condensers, heat exchangers, steam surface condensers, circulating water pumps, service water equipment, and related piping systems. Experience also includes the use of Syntha and Pepsi turbine cycle models, Gate Cycle models, and the development of in-house cooling system simulation models for component and system design/evaluation.

RELATED EXPERIENCE

Power Engineering experience includes the development of power cycle equipment design in support of resource forecast modeling (future generation plans) which includes consideration of various types of units including: pulverized coal unit; pulverized fluidized bed coal unit; gas fired combined cycle; and simple cycle combustion turbines. Additional power engineering experience includes supporting the development of proposals and providing engineering consulting services for various power generation projects.

Steam Cycle / Balance of Plant Design experience includes the development of thermal cycle configurations including feedwater heater and balance of plant equipment configurations. Additional steam cycle engineering experience includes evaluation of turbine design criteria for once-through and closed-loop cooling cycles in establishing guaranteed performance parameters. Additional steam cycle experience includes the evaluation of steam cycle performance constraints and limitations with consideration of equipment design (single pressure, multipressure, etc.) and site specific conditions (climatology, geology, etc.).

James W. Cuchens, P.E.

Cooling System/Cycle Design experience includes various types of cooling system technology and feasibility studies. Experience includes the development of equipment technical specifications, bid evaluations, and applied research of cooling systems equipment technologies. Mr. Cuchens' experience includes design and operating knowledge for various types of cooling cycles including closed loop, once-through, and/or cooling ponds, serving nuclear units, fossil units, and cogeneration units. Design experience includes the optimization of the cooling system equipment (towers, pumps, and condensers) for new and/or existing units with consideration of performance, capital cost, and operation and maintenance. Expertise includes development of computer programs for selection of cooling cycle equipment design as well as analysis of equipment and/or plant performance. Computer experience also includes modeling of cooling system/cycles and performance analysis for simulation of various cooling system(s).

Cooling Tower experience includes the engineering design and application of natural draft and/or mechanical draft cooling towers for numerous power generating facilities. Design experience includes the development of tower design standards for utilization of concrete, wood, and/or fiberglass construction materials for both cross-flow and counter-flow type cooling towers. Cooling tower experience includes consulting services to plant personnel (field inspections, equipment trouble shooting, etc.) in support of operations and maintenance activities. Cooling tower experience includes field testing for development of a system data base for in-depth analysis of tower thermal design and evaluation of vendor proposals. Cooling tower experience includes feasibility studies for modifying and/or upgrading existing towers for enhancing tower performance and reducing operations and maintenance costs. Retrofit experience includes refurbishing existing cooling towers as well as installation of helper cooling towers for supplementing existing tower performance. Mr. Cuchens has served on various professional engineering organizations including ASME PTC 23 Cooling Tower Test Code Committee, Codes and Standards Committee of the Cooling Technology Institute (CTI), as well as President, Vice President, and Board of Directors of the CTI.

Condenser Design experience includes the engineering design and application of various types of air-cooled and steam surface condensers including single pressure, multi-pressure, single pass, and multi-pass. Mr. Cuchens' experience includes the development of condenser design standards for field erected and modular type condenser construction. Condenser experience includes consulting services to plant personnel (tube inspections, air leakage trouble shooting, etc.) in support of condenser operations and maintenance activities. Experience includes field testing for determination of tube cleanliness and overall condenser performance. Responsibilities have included conducting feasibility studies for modifying and/or upgrading existing condensers for enhancing overall unit performance and reducing operations and maintenance costs. Retrofit experience includes retubing condensers (modular and conventional) and modification of condenser waterbox and associated piping systems, replacing hotwells, and application of various types of on-line condenser tube cleaning systems. Mr. Cuchens has served on various professional engineering organizations including EPRI Heat Exchanger Advisory Committee, and ASME committee currently developing ASME PTC 30 test code for air cooled condensers.

James W. Cuchens, P.E.

Circulating Water Pumps/System Design experience includes the engineering design of various types of circulating water pumps and piping systems including mixed-flow vertical can-type pumps and vertical volute type pumps. Mr. Cuchens expertise includes the capability for providing hydraulics analysis for determination of system pumping head requirements as well as the testing and evaluation of pump performance. Pump design experience includes development of pump sump design standards for closed suction systems as well as open pit sump designs. Mr. Cuchens has been responsible for conducting feasibility studies for modifying and/or upgrading existing pumps for enhancing pump/condenser flow. Retrofit experience includes refurbishing existing pump impellers as well as and installation of new pump rotating assemblies and modification of pump motors.

RELATED PROJECTS

Special Job Interests include the development of computer models for simulation of actual cooling system performance in conjunction with actual unit performance. Cooling cycle simulator computer programs are developed as a design tool in support of conceptual design and equipment selection. The cooling cycle simulator computer programs are also used in supporting plant performance monitoring and evaluations of cooling cycle modifications. The cooling cycle program provides a graphical simulation of equipment performance including condensers, cooling towers, and different types of turbines. Film fill designs used in counter-flow type cooling towers have a tendency to foul or plug under certain water chemistry conditions. He is involved in the investigation of anti-fouling fill designs for prevention of fouling in counterflow cooling towers. Mr. Cuchens has also been involved in the investigation of the use of surfactants to enhance cross-flow cooling tower performance.

CERTIFICATIONS AND AFFILIATIONS

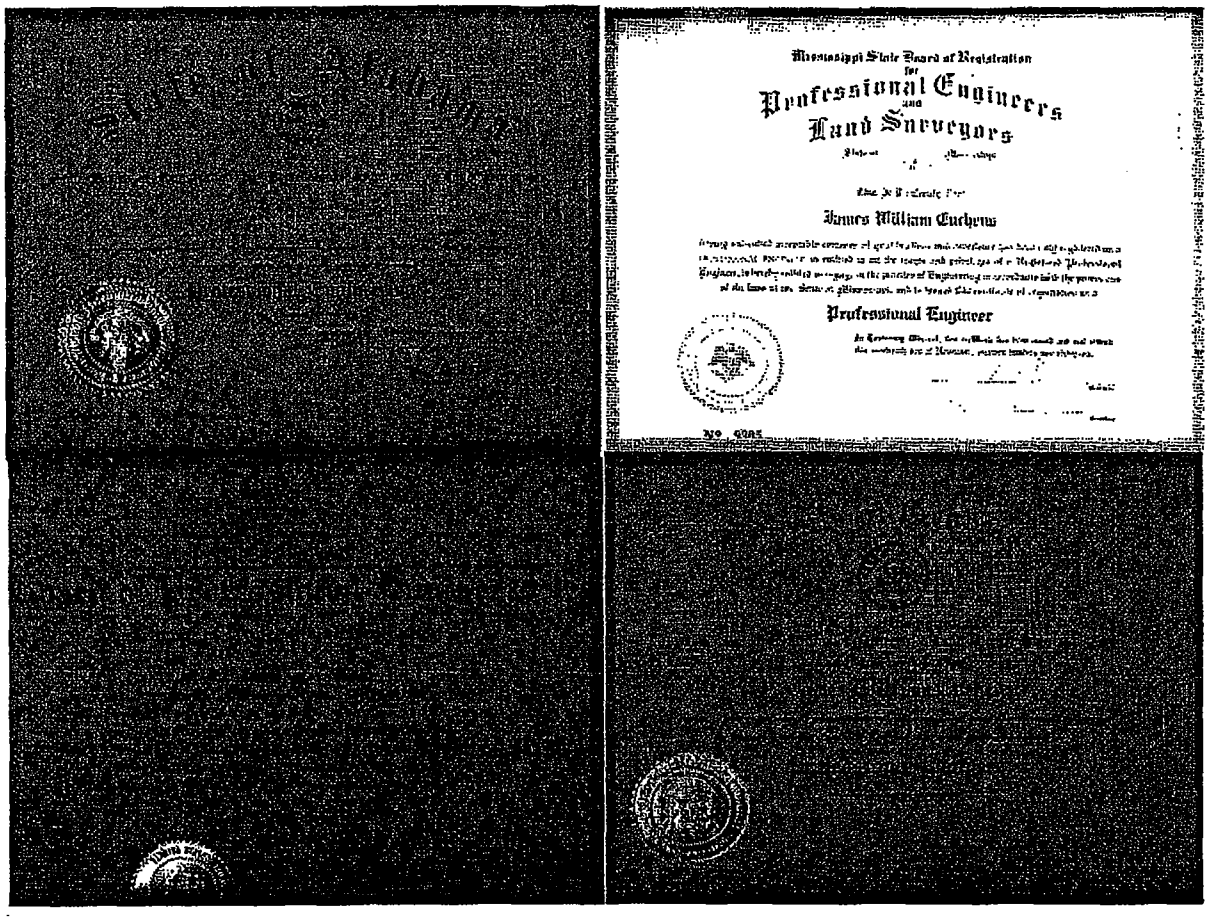
- Registered Professional Engineer: Alabama PE # 13752
- Registered Professional Engineer: Florida PE # 37709
- Registered Professional Engineer: Georgia PE # 16164
- Registered Professional Engineer: Mississippi PE #09905

- American Society of Mechanical Engineers – Member and Committee Representative

- Cooling Technology Institute
  - Engineering Standards & Maintenance Committee – Chairman 1991-1995, 2001-2004
  - Board of Directors 1995-1997
  - Board of Directors 1999-2001
  - Vice President 1999
  - President/Chairman of Board 2000
  - Education Program Chair – 2005-2007

- ASME - Power Test Code (PTC) 23 – Cooling Tower Test Code - Committee Member
- ASME - Power Test Code (PTC) 30 – Air Cooled Condenser Test Code - Committee Member

James W. Cuchens, P.E.



Mississippi State Board of Registration
for
Professional Engineers
and
Land Surveyors

James William Cuchens

Professional Engineer

NO 6085