ASME PEER REVIEW PANEL MEMBERS

ADVANCED POWER SYSTEMS PEER REVIEW
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John F. Clarke, Sc.D

Dr. Clarke is currently serving as Deputy Director of the Office of National Laboratories in the Science and Technology Directorate of the Department of Homeland Security (DHS) under an Intergovernmental Personnel Agreement. Before his DHS assignment, he was responsible for the macro-economic characterization and analysis of energy and environmental technologies within Joint Global Change Research Institute integrated assessment models and the Global Technology Strategy Project. In the latter capacity, Dr. Clarke managed the nuclear, bio-technology, and fusion energy strategic technology analysis projects. The focus of his research work is in the application of conditional choice theory to the market competition of energy technologies in macro-economic models. At the US Department of Energy (DOE), Dr. Clarke served as Executive Director of DOE Climate Activities and was DOE representative to the Intergovernmental Panel on Climate Change (IPCC). Prior to his government service, Dr. Clarke was the Director of the Fusion Energy Division at Oak Ridge National Laboratory. He received a Bachelor's Degree in physics and philosophy at Fordham University, and earned a Master of Science degree in plasma physics and a Doctor of Science degree in nuclear engineering at the Massachusetts Institute of Technology.

William H. Day Ph.D

Dr. Day is a consultant, most recently for four years at the South Carolina Institute for Energy Studies (SCIES) whose work includes Integrated Gasification Combined Cycle (IGCC) efforts for the US Department of Energy (DOE). Prior to this, he spent 23 years at United Technologies (UTC) where he was a Pratt & Whitney Fellow and Manager of Advanced Industrial Programs. Before joining UTC, Dr. Day was Manager of Advanced Program Management and Product Planning for General Electric (GE). In his 19 years at GE, Dr. Day's work included successfully proposing and then running the first Electric Power Research Institute (EPRI) and DOE industrial gas turbine development program; winning a 4-way competition for a $32 million DOE High Temperature Turbine Technology Program and then managing the program; and managing development of IGCC systems. In 1995, Dr. Day founded the Gas Turbine Association in Washington, DC that successfully lobbied Congress to retain the Advanced Turbine Systems Program and to establish the Next Generation Gas Turbine Program. He received a Bachelor of Science degree in Mechanical Engineering from Cornell University, and earned a Master of Science degree and his doctorate from the Polytechnic Institute of Brooklyn.

Daniel J. Kubek, MSChE

Mr. Kubek is a consultant specializing in synthesis gas and natural gas purification and separation. His clients include the Electric Power Research Institute (EPRI) – CoalFleet, for whom he provides technical guidance on integrated processes for Gasification projects, and the Gasification Technologies Council (GTC), where he serves as an advisor on technical issues related to Gasification, particularly in the areas of H_2S removal and CO_2 capture and sequestration. Prior to this, Mr. Kubek was with UOP for 18 years as Senior Technology Manager. His primary work was for UOP's Solvent Absorption, Molecular Sieve Adsorption, and H_2 Processing technologies as applied to natural gas and synthesis gas processing. He was the Process Manager responsible for all Process Design Packages for multiple Gasification projects and served as Development Manager for their Gas Processing Business. In 2005, Mr. Kubek was awarded UOP's Don Carlson Award for Career Technical Innovation. Before joining UOP, he spent 17 years with Union Carbide. Mr. Kubek received a Bachelor of Science degree in Chemical Engineering from Rutgers University and earned a Master of Science in Chemical Engineering from Purdue University.

Bruce Reynolds, MSChE

Mr. Reynolds is currently Department Manager, Fossil Energy Technology for Idaho National Laboratory (INL). The Fossil Energy Technology Department has responsibility for all aspects of oil and natural gas exploration and production, crude refining and utilization technologies, development of compressed natural gas fueling stations, natural gas liquefaction technologies, alternate fueled vehicles, synthetic liquid fuel production, coal, hydrogen, carbon dioxide sequestration, and methane hydrates. Mr. Reynolds has management responsibility for INL's participation in the Big Sky Regional CO_2 Sequestration project. He a technical advisor to the Center for Advanced Engineering Studies and the Center for Space Nuclear Fuel at INL, and on the board of directors for The Energy Systems Technology and Education Center (ESTEC) at Idaho State University. Prior to joining INL, Mr. Reynolds was a Program Manager for six years with Battelle Pacific Northwest National Laboratory (PNNL). At PNNL, he was point of contact for the "Refinery of the Future" Initiative in the Strategic Alliance with the Mexican Petroleum Institute (IMP) and the National Autonomous University of Mexico (UNAM). Mr. Reynolds received a Bachelor of Science degree in Chemical Engineering with Honors from the University of Nebraska and earned a Master of Science in Chemical Engineering from Massachusetts Institute of Technology.

M. Brett Shelton, MS, Materials Science

Mr. Shelton is a consulting engineer with Dominion Energy responsible for all aspects of materials engineering for the fossil and hydro business unit, both regulated and merchant. He has over 25 years of engineering experience in failure analysis and prevention, fracture mechanics and fatigue, component condition assessment, selection of materials for component design, corrosion control, and application of codes and standards relating to power plant operation and maintenance with emphasis on inspection, defect assessment, and repair. Mr. Shelton developed and organized the operation of a corporate failure analysis laboratory for the investigation of power plant component failures; conducted failure analyses of hundreds of diverse fossil, nuclear, and hydroelectric power generation equipment failures; and provided written recommendations for avoiding repeat failures and extending component life that significantly improved plant reliability. And he developed and implemented a risk-based condition assessment program with demonstrated cost savings of over $1,000,000 in the first year. Mr. Shelton received a Bachelor of Science degree in Materials Engineering from Virginia Tech and earned a Master of Science of Materials Science from the University of Virginia. He is also a registered Professional Engineer (Virginia).

James C. Sorensen, MSChE, MBA

Mr. Sorensen is a consultant specializing in the conception and development of clean coal and other energy programs with a focus on Integrated Gasification Combined Cycle (IGCC), Oxy-Fuel Combustion, Gas-To-Liquids (GTL), and Air Separation and Hydrogen/syngas technology. Prior to this, he worked for Air Products and Chemicals both as Director, New Markets and as Director, Gasification and Energy Conversion. While in these positions, his achievements included developing and selling a $26 million Ultra Clean Fuels technology development program that was selected by the US Department of Energy (DOE), selling a $30 million single train separation facility for a 250 mw IGCC power plant, proposing and developing a $22.5 million fossil fuel R&D program selected by DOE, and leading Air Products effort on a multi-team proposal selected by DOE for a $180 million Clean Coal Technology award. Mr. Sorensen is the founding chairman of the Gasification Technologies Council. He received a Bachelor of Science degree in Chemical Engineering from the California Institute of Technology and earned a Master of Science in Chemical Engineering from Washington State University. Mr. Sorensen also earned a Master of Business Administration in General Management from Harvard Business School.

David C. Thomas, Ph.D

Dr. Thomas is currently a Senior Technical Advisor with Advanced Resources International providing consulting services to industry and government on CO_2 mitigation technology and policy related issues. He is also a consultant to the CO_2 Capture Project (CCP), a multi-national, multi-company CO_2 mitigation research program, where he has organized and managed the CCP's communications with the US Department of Energy (DOE) and is the Chief Editor of CCP's technology results volumes published in January 2005 by Elsevier Science. Prior to this, Dr. Thomas worked for BP Amoco Corporation for 24 years including as Manager, CO_2 Mitigation Technology, Green Operations. In this position, he led an international team responsible for a CO_2 mitigation program worldwide, led development of a group-wide technology strategy for Green Operations technology and implementation through a balanced program of technology sharing through step-change technologies, and had oversight and budgetary responsibility for CO_2 mitigation technology including the CO_2 Capture Project – a major joint industry project bringing together nine international energy companies and three governments to address greenhouse gas reduction. Dr. Thomas received a Bachelor of Science degree in Chemistry from Baker University and earned a Master of Science in Inorganic Chemistry from The University of Akron. He also earned a doctorate in Physical Chemistry from The University of Oklahoma.

Douglas M. Todd, BSChE

Mr. Todd is the owner and President of Process Power Plants LLC, a consulting company dedicated to integrating Gas Turbine Combined Cycles with Gasification systems (IGCC) to provide extremely clean, economical electric power and other useful products from low cost fuels. Mr. Todd's experience includes 35 years with GE Company in engineering, marketing, and product management positions culminating with business management responsibility for GE's Process Power Plants Organization. He was responsible for developing and introducing Combined Cycle and IGCC Power Plant technology on a worldwide basis including setting up an in-country Gas Turbine Manufacturing Agreement with China. Gas turbine technology development combined with technology partnerships led to worldwide acceptance of IGCC with 22 IGCC plants announced, totaling 6000 mw. Mr. Todd was involved directly with 16 IGCC projects with eight different gasification technologies. He received the first European IChemE Medal for Excellence in Gasification in 2002 and the Gasification Technologies Council Lifetime Achievement Award in 2003. Mr. Todd received a Bachelor of Science degree in Chemical Engineering from Worcester Polytechnic Institute.

Paul M. White, BSME

Mr. White is a Manager at Dominion Energy responsible for providing gas turbine technical support for 71 gas turbines– ranging from 1960 to current advanced technology – located on 20 sites. He also manages a group of technical support personnel spanning operations, controls, and maintenance expertise. Mr. White's group is responsible for technical and commercial negotiations for $0.5 billion major maintenance services contracted across the Dominion fleet. Previously, he was with Duke Power for 19 years including Director of Engineering for Duke Energy North America, where he was responsible for strategic turbine expertise in both current and developing technologies, and Senior Engineer, Gas Turbine Technical Support for Duke Power—Power Generation. Mr. White is involved with many combustion turbine group organizations including as the current Steering Committee Co-Chairman, GE 7F User Group – the largest gas turbine fleet user organization worldwide – and the US Department of Energy Advanced Turbine Systems (ATS) Program. He received a Bachelor of Science degree in Mechanical Engineering for NC State University and he is also a registered Professional Engineer (North Carolina and South Carolina).

Raymond L. Zahradnik, Ph.D

Dr. Zahradnik is a consultant and partner in Appalachian-Pacific LLC. Prior to working as a private consultant, he worked for Occidental Petroleum Corporation for 14 years first as Director of Energy Research, then as President of Occidental Oil Shale, Inc. In the latter capacity, Dr. Zahradnik oversaw all of Occidental's oil shale activities including a large field-test facility and a commercial venture involving a leasehold property from the US Department of the Interior (DOI). He also worked for various branches of the Federal Government including the National Science Foundation and DOI mostly involved in energy subjects. And Dr. Zahradnik was acting head of the Office of Coal Research and Director of the Coal Conversion and Utilization Department at the Energy Research and Development Administration (ERDA). Previous to this, he was Professor of Chemical Engineering at Carnegie-Mellon University for 6 years. Dr. Zahradnik earned his Bachelor of Science degree in Chemical Engineering, Master of Science in Chemical Engineering, and doctorate in the same field from Carnegie-Mellon University.