



WASTE MANAGEMENT TECHNOLOGY CONTROL
A TEKNEKRON INDUSTRIES AFFILIATE CORP.

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Ms. Pauline Brooks, Project Officer
Division of Waste Management
MS 623 SS
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Distribution:

P. Brooks

(Return to WM, 623-SS)

Subject: Contract No. NRC-02-81-026
Benchmarking of Computer Codes and Licensing Assistance
Proposed Changes in Key Personnel

Dear Pauline:

As we discussed, Mr. Douglas K. Vogt is resigning his position at CorSTAR Research, Inc. We are proposing that Mr. Chuck Rosselle replace Mr. Vogt on an interim basis as the project manager. Mr. Rosselle, a graduate of the United States Naval Academy, is a nuclear engineer with 18 years of experience in the nuclear navy and the nuclear industry. In the U.S. Navy, Mr. Rosselle was assigned a variety of responsibilities in the areas of operations, engineering, and training. He was certified by the division of Naval Reactors for supervision and management of a naval nuclear propulsion plant.

While employed by Impell Corporation for 10 years, Mr. Rosselle held a variety of engineering management positions in the areas of structural and mechanical design of commercial nuclear power facilities. A copy of Mr. Rosselle's resume is enclosed with this letter.

Mr. Richard Chapman will continue to provide support to the NRC on this project. Mr. Chapman has played a major technical role on the project over the last six months. Mr. Chapman has had a technical lead on all aspects related to Task 6 - Technology Transfer of the Project. He has also been responsible for CorSTAR's efforts on Task 4 & 5 of the Repository Design Codes. Mr. Chapman will continue to be available to support the NRC on this effort. A copy of his resume is also attached.

Pauline, I trust that these key personnel changes will be acceptable to the NRC. CorSTAR wishes to provide the NRC with the same high level of support that they have been accustomed to over the last 4½ years. We share with the NRC the objective of bringing this most important project to a successful conclusion. Please feel free to contact me directly if you have any concerns on these key personnel changes or any other matters related to this project.

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PDR WMRES EECCORS
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Yours sincerely,

Peter M. Cukor, Ph.D.
President

PMC:kg
Enclosures
cc: Marie Page

CHARLES J. ROSSELLE
Director, Business Systems

Education

B.S. Nuclear Engineering, United States Naval Academy

Summary of Experience

Mr. Rosselle has had over 18 years of experience in the nuclear industry as an operator, instructor, and nuclear facilities designer. Included have been eight years of experience in the management of naval nuclear propulsion plants, two years of detailed mechanical and structural design work for a number of utilities (including, for example, the Tennessee Valley Authority and Houston Lighting and Power), and four years of design project management for several major utilities (including Pacific Gas and Electric (PG&E), Northern States Power, Duke Power Company, and the Commonwealth Edison Company). While a member of the Nuclear Navy, Mr. Rosselle was assigned to work with the General Electric Company, which was under contract with the U.S. Navy to maintain a land-based naval reactor and to train personnel in naval reactor operations and management. Mr. Rosselle was responsible for the overall training program. In addition, he managed the Nuclear-Navy's \$30 million refueling overhaul of an operating submarine. Mr. Rosselle also is experienced in the development and implementation of computer and imaging systems for information management.

Recent Project Responsibilities

Before joining CorSTAR, Mr. Rosselle worked at Impell Corporation, where he participated in the structural and mechanical design of the TVA Watts Bar and Sequoyah nuclear plants, Houston Light and Power's South Texas Project, Duke Power's McGuire and Catamba nuclear plants, and Commonwealth Edison's Dresden, Quad Cities, and Byron nuclear plants. As a project engineering manager for the Duke Power, Commonwealth Edison, PG&E, and Northern States Power projects he had overall responsibility for the successful completion of over \$50 million of engineering work. At CorSTAR, Mr. Rosselle's expertise in computer systems engineering, project management, and consulting and operations has proved valuable in the design of large image processing systems for complex applications in transportation and other industries.

RICHARD A. CHAPMAN
Senior Engineer, CORSTAR, INC.

Education

- M.S. Sanitary Engineering, University of New Hampshire
- B.S. Civil Engineering, University of New Hampshire

Summary of Experience

Mr. Chapman has had 20 years of professional experience. Over the past ten years he has developed solutions to benchmark problems related to various aspects of radioactive waste management, prepared input data for large mainframe computer codes to be used in solving nuclear-waste repository design problems, managed the development of a hydraulic simulation model that traces systemwide water distribution from a specific source, and evaluated state-specific cogeneration potential as well as the economics of specific cogeneration projects. In addition, Mr. Chapman, has provided key technical input to the preparation of discovery documents and expert witness testimony involved in administrative hearings and federal district court cases, managed projects related to the development of large coal supply data bases and the evaluation of coal cleaning as an SO₂ control technology, and evaluated the performance and cost of particulate and sulfur dioxide emission controls for coal-fired boilers. He is also an authority on the development of energy conversion processes for solid waste, sewage sludge, and biomass; on the evaluation of environmental impacts of conversion processes; and on the determination of kinetics for conversion of waste cellulose to glucose via acid hydrolysis.

Professional Experience

1977-Present Senior Engineer, CorSTAR, Inc.

Recently, for the Nuclear Regulatory Commission, Mr. Chapman developed FORTRAN, Basic, and spreadsheet solutions to benchmark problems related to high level radioactive waste management. Problems included those related to repository design, waste packages, and radiological assessment. In addition, Mr. Chapman prepared input data for two large mainframe computer codes, HEATING and STEALTH, which will be used in the solution of repository design benchmark problems.

For another client, Mr. Chapman managed the development of a hydraulic simulation model that traces the distribution throughout the system of water from a specific source. Tasks included: (1) development of the trace routines and their incorporation in an existing hydraulic simulation model; (2) development of a

spatial and temporal water-use database from customer billing records; (3) development of daily water demand hydrographs for six categories of water consumers (residential, schools, etc.); and (4) calibration of the model to reflect actual water supply to the system from 13 sources and a storage tank.

Mr. Chapman has evaluated the engineering and economic aspects of various cogeneration projects for numerous energy companies. His analyses have ranged from general state-by-state assessments of cogeneration potential to the evaluation of the economics of specific cogeneration projects.

For several years Mr. Chapman has been closely involved in preparing expert witness testimony and in assisting counsel with discovery in a variety of administrative hearings and civil court cases. For example, in a multimillion-dollar antitrust suit, he assisted counsel with the preparation of deposition questions regarding technical considerations and project costs of coal slurry pipelines.

In another case, Mr. Chapman developed a competitive fuels analysis model used to determine the competitive position of alternative coals and transportation services for specific electric utility generating stations. Air pollution control costs, boiler capital costs for new plants (or boiler derating for existing plants), coal f.o.b. mine costs, transportation costs, and financial parameters were used to calculate the levelized cost of each alternative coal. The output from this model, which was favorable to our client, was entered into evidence and became a key factor responsible for our client's success in the lawsuit.

Mr. Chapman has also developed computerized pollution control performance and cost models for particulate control devices (fabric filters, electrostatic precipitators, venturi scrubbers) and SO₂ control devices (numerous wet and dry flue gas desulfurization, furnace sorbent injection, and duct sorbent injection systems) for use on coal-fired electric utility generating stations.

As Project Manager of a major coal resources assessment, Mr. Chapman developed a set of extensive coal supply data bases and evaluated numerous SO₂ control technologies. The coal data bases included the quantity and properties of coal at the individual mine, seam, or county level of aggregation for coal reserves, current coal production, planned coal production, and deliveries to utilities. The SO₂ control technologies included flue gas desulfurization, physical coal cleaning, chemical coal cleaning, fluidized bed combustion, and coal gasification.

Mr. Chapman has assisted both eastern and western coal producers in identifying markets for their coal. One study required the development of a computerized data base of over 500 industrial coal users, while another involved examination of the potential compliance strategies of numerous midwestern utilities in response to pending acid rain legislation.

In addition, Mr. Chapman has developed conceptual designs and cost estimates for a sodium heat engine using coal as the heat source for use in powering line-haul railroad locomotives. Combustion and heat transfer aspects of the system as well as energy and material balances were considered in the design.

He has also estimated the cost of wastewater treatment for the proposed Virginia coal slurry pipeline. Slurry effluent characteristics, environmental regulations, and alternative treatment unit operations were addressed in the design of the system.

Recently Mr. Chapman helped develop a computerized monitoring system to track all materials used, and wastes generated, by a large manufacturing facility involved in the batch production of chemicals.

1971-1977

Senior Sanitary Engineer, EPA, Industrial Environmental Research Laboratory, Cincinnati, Energy Systems Environmental Control Division.

Mr. Chapman was on-site Project Officer for EPA's largest solid waste research contract, an \$8 million program to develop a system to burn solid waste in a fluidized bed combustor and expand the hot products of combustion through a gas turbine to generate electricity.

- The 1-MW, computer-controlled pilot plant was used by the Energy Research and Development Administration (ERDA) for the burning of high-sulfur coal in a bed of dolomite for sulfur control and for the evaluation of hot corrosion control techniques.
- A granular filter was developed in the pilot plant for high-temperature fine particulate control.

He served as Project Officer on a research contract to study the pyrolysis, partial oxidation, and steam gasification of mixed waste.

- A 6-ton-per-day fluidized bed reactor system was used to generate experimental data.
- A mathematical model was developed to allow the prediction of product yields on the basis of input waste composition and reactor operating conditions.

He also served as Project Officer on a research contract for the environmental assessment of the land and ocean disposal of ash and residues generated from fluidized bed combustion processes that use high-sulfur coal to generate electricity.

1967-1971 Sanitary Engineer, EPA, National Environmental Research Center, Cincinnati, Solid Waste Research Laboratory.

As Research Director in a project to produce glucose by the acid hydrolysis of cellulosic wastes, Mr. Chapman was responsible for experimental design, data generation and analysis, and report preparation. Also, he participated in the design and development testing of a small-scale, high-temperature vortex incinerator.

1965-1967 Civil Engineer, USDA, Soil Conservation Service, Connecticut River Basin Survey, Durham, New Hampshire.

Mr. Chapman worked part time during the school year and full time during vacations under the direction of the Staff Hydrologist. He performed tasks required for the design of flood prevention structures.

Public Domain Publications

Particulate and SO₂ Control Models. Prepared for Electric Power Research Institute, Palo Alto, California. Berkeley, Calif.: Teknekron Research, Inc., 1984.

Alkali Metal Thermal Electric Converter: Preliminary Assessment for Railway Locomotion. Prepared for Burlington Northern Railroad. Berkeley, Calif.: Teknekron, Inc. 1983.

Cost of Wastewater Treatment for the Proposed Virginia Coal Slurry Pipeline. Prepared for railroad industry representative (client confidential). Berkeley, Calif.: Teknekron, Inc., 1983.

Industrial Coal Markets in the 1980s. Prepared for energy development company (client confidential). Berkeley, Calif.: Teknekron, Inc., 1982.

A Study to Ascertain the Increase in Electric Power Prices Due to Implementing Controls to Reduce Acid Rain Pollutants from Thermal Power Stations (with C. Bowen). RK-81-3006. Prepared for Environment Canada, Air Pollution Control Directorate. Berkeley, Calif.: Teknekron Research, Inc., November 1981.

Coal Resources and Sulfur Emission Regulations: A Summary of Eight Eastern and Midwestern States (with M.A. Wells). EPA-600/7-81-086. Research Triangle Park, N.C.: U.S. Environmental Protection Agency, May 1981.

"Coal Resources and Sulfur Emission Regulations" (with M.A. Wells and J.D. Kilgroe). Paper presented at the Seventy Third Annual Meeting of the American Institute of Chemical Engineers, Session 70, Chicago, Illinois, November 1980.

Electric Utility Emissions: Control Strategies and Costs (with A. Van Horn, D. Arpi, et al.). RK-80-2057. Prepared for U.S. Environmental Protection Agency, Argonne National Laboratory, and U.S. Department of Energy. Berkeley, Calif.: Teknekron, Inc., April, 1980.

"Coal Resources and Sulfur Emission Regulations: A Background Document" (with M.A. Wells et al). Draft Report, EPA Contract No. 68-02-3136. Research Triangle Park, N.C.: Environmental Protection Agency, Industrial Environmental Research Laboratory, February 1980.

"Cost and Performance of Particulate Control Devices for Low-Sulfur Western Coals" (with D. Clements, L.E. Sparks, and J.H. Abbott). In Second Symposium on the Transfer and Utilization of Particulate Control Technology. EPA-600/9-80-039. Research Triangle Park, N.C.: U.S. Environmental Protection Agency, 1980.

Review of New Source Performance Standards for Coal Fired Utility Boilers, Phase 3 Final Report, Sensitivity Studies for the Selection of a Revised Standard (with A. Van Horn, G. Ferrell, et al. at Teknekron Research, Inc.). EPA-600/7-79-215. Washington, D.C.: U.S. Environmental Agency, Office of Research and Development, December 1979.

"Assessment of the Cost and Performance of Particulate Control Devices for Low-Sulfur Western Coals" (with T.F. Edgar and L.E. Sparks). In Symposium on the Transfer and Utilization of Particulate Control Technology. EPA-600/7-79-044. Research Triangle Park, N.C.: U.S. Environmental Protection Agency, 1979.

"Economic Comparison of Fabric Filters and Electrostatic Precipitators for Particulate Control on Coal-Fired Utility Boilers" (with P.M. Cukor). In Proceedings of the Conference on Coal Use in California, Pasadena, California, 9-11 May 1978.

"Solid Waste Systems for Energy Generation." In Handbook of Energy Technology, ed. Douglas M. Considine. New York: McGraw-Hill, 1977.

"Environmental Impact of Solid Waste and Biomass Conversion-to-Energy Processes" (with S.J. Gage). In Proceedings of the IGT Symposium on Clean Fuels from Biomass and Wastes, Institute of Gas Technology, Orlando, Florida, 1977.

"Solid-Fuel-Fired Gas Turbine Pilot Plant Testing Status" (with G.L. Huffman). In Proceedings of the United Nations/Economic Commission for Europe Second Seminar on Desulfurization of Fuels and Combustion Gases, Washington, D.C., 1975.

"Development of a Solid-Waste-Fired Gas Turbine System." In Proceedings of the First International Conference on Conversion of Refuse to Energy, Montreux, Switzerland, 1975.

"Waste Utilization as an Unconventional Energy Source" (with G.L. Huffman). Paper presented at the ASME Symposium "Unconventional Energy: Its Potential Use," Battelle Memorial Institute, Columbus, Ohio, 1974.

"CPU-400 Solid-Waste-Fired Gas Turbine Development" (with F.R. Wocasek). In Proceedings of the 1974 Incinerator Conference, ASME, Miami, Florida, 1974.

"Solid Waste as a Fuel for Power Generation." In Proceedings of the Thermal Power Conference, Washington State University, Pullman, Washington, 1973.

Summaries of Solid Waste Research and Training Grants - 1970 (with L.W. Lefke, A.G. Keen, and H. Johnson). Public Health Service Publication Number 1596. Washington, D.C.: U.S. Government Printing Office, 1970.

Acid Hydrolysis of Cellulose in Municipal Refuse. Open-File Report, RC-02-68-II. Cincinnati, Ohio: U.S. Public Health Service, Bureau of Solid Waste Management, Division of Research and Development, 1970.

"Chemical Hydrolysis of Cellulosic Wastes - A Kinetic Study." In Proceedings of the Waste Cellulose Reclamation Symposium. Cincinnati, Ohio: U.S. Public Health Service, Bureau of Solid Waste Management, Division of Research and Development, 1969.

"Hydrolysis of Municipal Refuse" (with C.J. Rogers). In Preprints, Solid Waste Research and Development II, Engineering Foundation Research Conference, Beaver Dam, Wisconsin, 1969.