Attachment 11

PRESS RELEASE FOR IAPWS ANNUAL MEETING IN VEJLE, DENMARK

August 2003

Fifty-nine scientists and engineers from thirteen countries attended the annual meetings of the International Association for the Properties of Water and Steam (IAPWS), August 24-29, 2003 in Vejle, Denmark. IAPWS provides standards for steam and water properties and serves as a forum where engineers from the power industry and academic scientists can communicate problems and solutions to each other. IAPWS has traditionally concentrated on the science underlying the thermodynamics and chemistry in steam power plants, but is broadening into other aspects of power generation and high temperature aqueous systems.

In 1997, IAPWS adopted a formulation for industrial calculations IAPWS-IF97. It includes both defining equations and backward (closely approximating inverse) equations to promote speed of calculation. This year IAPWS approved supplementary backward equations, with pressure and enthalpy or pressure and entropy as the input variables, that significantly enhance the speed of computation for calculations using IAPWS-IF97. IAPWS expects to enhance IAPWS-IF97 further with additional backward equations. IAPWS also approved the "Guideline on the Tabular Taylor Series Expansion (TTSE) Method for Calculation of Thermodynamic Properties of Water and Steam Applied to IAPWS-95 as an Example". This guideline describes a method to do fast calculations based on the Release on the IAPWS Formulation 1995 for the Thermodynamic Properties of Ordinary Water Substance for General and Scientific Use. An advisory note on the Uncertainties in Enthalpy for the IAPWS Formulation 1995 for the Thermodynamic Properties of Ordinary Water Substance for General and Scientific Use (IAPWS-95) and the IAPWS Industrial Formulation 1997 for the Thermodynamic Properties of Water and Steam (IAPWS-IF97) has also been released.

The working group on Power Cycle Chemistry exchanges information on the chemical problems in steam power plants world wide. Highlights of this exchange were a workshop on pH measurement in high purity water and at working temperatures up to 300°C. A series of talks on plans for the new ultrasupercritical plant with steam temperatures of 760°C led to considerable discussion of the chemical issues such a plant would face. Work on research plans to solve those issue will progress through the coming year.

Simulation of thermophysical properties of water continues to be an interest of IAPWS. The IAPWS Helmholtz Award lecture this year, "New Techniques for the determination of Phase Properties of Aqueous Systems via Computer Simulations," by E. Luijten of the University of Illinois, provided additional insights into ways to understand phenomena that occur in experimentally difficult regions.

A joint project between Aristotle University (Greece) and NIST (USA) to develop a new formulation for the viscosity of water furthers both science and the important IAPWS goal of international cooperation in developing formulations. Other major projects in progress include a critical compilation of high temperature experimental techniques and data on a variety of properties of aqueous systems, a proposed joint project between IAPWS and IUPAC for the hydration properties of selected organic solutes, and a monograph **The Physical and Chemical Properties of Aqueous Systems at Elevated Temperatures and Pressures: Water, Steam and Hydrothermal Systems**, due out early in 2004.

The next IAPWS meeting will be the 14th International Conference on the Properties of Water and Steam: Water, Steam and Aqueous Solutions for Electric Power—Advances in Science and Technology. It will be held August 29-September 3, 2004 in Kyoto, Japan. The deadline for abstracts for this conference is December 15, 2003. The IAPWS working groups and executive committee will meet before the conference on August 29, 2004. Details of the meeting will be available through links from the IAPWS website at www.iapws.org. Minutes of the 2003 meeting will appear on the website shortly.

People interested in IAPWS documents and activities should contact the chairman of their IAPWS National Committee (see website [or fill in information]) or the IAPWS Executive Secretary, Dr. Barry Dooley, EPRI, 3412 Hillview Ave, Palo Alto, California 94304, USA.