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60-Second E-mail™ – May 30, 2006

Science, Technology, and the Shortage of Talent

In this month's 60-Second E-mail™, we speak with Dr. G. Todd Wright, Laboratory Director of the Savannah River National Laboratory (SRNL). SRNL is one of several National Laboratories overseen by the Department of Energy. Others include Los Alamos, Lawrence Livermore, Oak Ridge, and Brookhaven National Laboratories. We discuss with Dr. Wright the work and purpose of SRNL as well as the impact of the current talent shortage.

David Harper: Dr. Wright, for those readers who aren't familiar with the Savannah River National Laboratory, would you please provide some background on the lab, its work and purpose.

Dr. G. Todd Wright: Savannah River National Laboratory (SRNL) is the applied research and development laboratory at the U.S. Department of Energy's Savannah River Site. The Laboratory develops and deploys technology solutions to address the nation's needs in the areas of energy security (such as hydrogen as the energy source of the future), national and homeland security (including support for the nation's nuclear defense, and technologies for a variety of homeland security initiatives), and environmental cleanup and protection (including groundwater cleanup, and management and disposition of radioactive materials). Washington Savannah River Company, a subsidiary of Washington Group International, operates SRNL for the DOE.

Harper: How has the mission of SRNL evolved over time?

Wright: The laboratory was established in the early 1950s to provide the technology support needed to start up and operate the Savannah River Site, a key facility in the nation's nuclear weapons production complex. In more recent years, the laboratory has extended its mission, applying its expertise to serve other facilities within the Department of Energy, other federal agencies, and commercial customers. Today, while the majority of the laboratory's work is still for the DOE, including SRS, its customers and technology development partners include the Department of Homeland Security, various law enforcement agencies, Toyota Technical Center, General Motors, and others.

Harper: And who works for SRNL? What are their backgrounds and areas of expertise?

Wright: Our workforce is highly educated, and consists largely of engineers and scientists engaged in a variety of research disciplines, such as chemistry, chemical engineering, mechanical engineering, nuclear engineering, computational science, biology/microbiology and others. About a quarter of our research staff holds PhDs. The research staff is supported by an operations staff, which is responsible for engineering and other support to keep research operations progressing. The average experience level for an SRNL employee is about 20 years.

Harper: Particularly in science and technology-related industries, there is much talk about the double impact of: 1) the shortage of scientists and engineers graduating from US colleges and universities, and 2) the exodus of the Baby Boom Generation (and its accompanying years of experience). How are you affected by these realities?

Wright: Our laboratory, along with other businesses, is faced with the same dilemma: How do we grow and/or replace experienced research personnel who are retiring, while we are facing fewer new

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incoming candidates? Much has been written recently regarding global competition for technical resources for scientists and engineers and the ability for the U.S. to remain competitive. It is widely acknowledged that this could impact many business sectors in the U.S., including the National Laboratories.

Harper: And what are you doing to deal with this?

Wright: There are steps that we are taking to address and possibly minimize this. The first involves awareness and promotion of math and science in education. We annually sponsor over \$50,000 in regional grants to local schools to enable teachers to capture the interest of students through innovative school projects and projects. This program has been very successful in providing teachers more tools for this important aspect of education.

Second, we fully promote and use the school-to-work program as well as the co-operative work program whereby students alternate between university and work assignments during their undergraduate program. This gives students “first hand” experience and creates a stronger relationship between science and engineering and their courses at school. We also have increased the number of post doctoral assignments that provide the orientation and familiarity with the Laboratory as well as ongoing, challenging research programs, thereby building competency within the specialized nature of our work. The third effort involves an overall approach for performing work centered on collaboration.

Harper: That’s interesting; increasingly you’re hearing about improved innovation through collaboration.

Wright: Many factors have necessitated a paradigm shift towards greater collaboration instead of “in-house” only sponsored work. Industrial, academic and government research laboratories are realizing the benefits of “team-based research”.

Harper: What do you believe has led to this approach?

Wright: There are many reasons for this, including 1) the rate of change of technology, 2) the need to build cross-functional teams that would be cost prohibitive for a single business or institution alone to sponsor, and 3) the ability to share/utilize physical assets. When these are combined, there is a distinct advantage of collaboration. This not only enables high quality research, but also helps minimize the impact as competition for resources continues to grow.

This is only a partial solution, but it is an approach we are utilizing to address concern in this area for the foreseeable future.

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Until next month, best regards,

David

David Harper
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