

Beyond Fission

31 October 2014 – ME Auditorium 1300

With Guest Lecturer COL (ret) Paul E. Roege, P.E.

Idaho National Laboratory

Abstract:

Nuclear energy has been powering ecosystems for billions of years, but harnessing it for man-made uses exploded during the 20th century. Most of us are familiar with nuclear fission, which provides about 20% of electrical power in the United States and drives our largest and most sustainable naval ships. But, other nuclear energy phenomena are very important such as nuclear fusion that drives the stars and radioactive decay that helps to heat the earth's core. Radioactive decay has been used to light watch dials for about a hundred years and, more recently, to power space systems. As our energy needs expand and diversify, it is reasonable to consider roles that any of these other nuclear phenomena might play in new solutions. In his lecture, Colonel Roege will cover the range of nuclear energy phenomena and reactions, how they work, and what is being done to investigate them. Ongoing efforts range from international programs seeking to harness nuclear fusion for gigawatt-scale power to microwatt power sources for electronic devices. Finally, he will touch upon an emergent field of poorly understood phenomena being termed "Low Energy Nuclear Reactions." Even as some assert the sunset of fossil fuels, nuclear energy possibilities may be just beginning to unfold.



COL (ret) Paul E. Roege, P.E.

Biography:

Colonel Paul Roege advocates new ways of thinking about energy that will simplify decision processes, increase value, and ultimately cultivate greater resilience in home, community and business environments. Colonel Roege has over 35 years of global experience in energy-related research, engineering and operations, comprising a balance of military assignments and civilian work. He specializes in championing new approaches to meet emerging needs, having honed this talent through a range of applications from nuclear facility operations to national reconstruction and, recently, redefinition of energy concepts for military operations. As an undergraduate Roege studied nuclear engineering as the "energy discipline" and learned about nuclear fusion as the first West Point cadet research associate to Lawrence Livermore Laboratory. He went on to win a National Science Foundation fellowship in applied plasma physics. In his Army career, he managed construction around the world, planned the reconstruction of Iraqi oil systems, and most recently defined military concepts for Operational Energy." His concept of "energy-informed operations" is now guiding integration of energy into military strategies and doctrine. Colonel Roege graduated from the US Military Academy at West Point, received his MBA from Boston University and his Nuclear Engineer degree from Massachusetts Institute of Technology.



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