NPS Defense Energy Program Presents:

Defense Energy Seminar

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Model and Simulation Based Systems Engineering and Analysis in Operational Energy Research for the U.S. Marine Corps

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Abstract:

Multidimensional issues require flexible and often equally involved methods to address them. Operational energy problems are among the most complex in combat and peacetime conditions. As technology drives the United States military to increase energy consumption, it becomes critical to examine the gaps that appear in this resource-hungry environment. Specifically, the Marine Corps recognizes that the inability to properly plan and use operational energy will truncate its operational reach. The next iteration of the Marine Corps expeditionary strategy demands that combat units operate for longer periods and in larger battlespaces with the same amount of fuel and resources than they did in past decades. The need to extend its operational reach has compelled the Marine Corps to establish the Expeditionary Energy Office. In this pursuit, the Energy Office has initiated a variety of research efforts with numerous agencies, in particular, with the United States Naval Postgraduate School. Model and simulation based systems engineering and analysis plays a major role in the School's research support. This presentation describes how this research framework has effectively facilitated the investigation of a wide range of energy issues; a sample list of studies, products, and residual capabilities attest to its utility.

Abridged Biography:

Professor Andy Hernandez joined the Systems Engineering Department after 26 years of military service. He teaches courses in modeling and simulation, mathematical models, and capabilities engineering, as well as system suitability. He is active in different departments and programs; he serves as the principal instructor for the Military Decision Making Process Workshop that is a vehicle for building alliances through Security Cooperative Engagements with nations such as Uzbekistan. He serves as the Deputy Director for the Simulation Experiments and Efficient Designs Center and the Systems Engineering Department Representative to the NPS Energy Academic Group.

His research efforts combine wargaming, computerized simulation experiments to include experimental designs, systems analysis, and systems engineering methodologies to improve decision making processes that support system design, development, operations, and management.

Andy's military career includes serving in leadership and staff positions from squad to Joint Task Force levels. His previous tour at NPS was as a military faculty member, Director of Wargaming, and the Associate Dean for the Graduate School of Operational and Information Sciences. He is Joint qualified with assignments in the Joint Intelligence Cell during Joint Task Force Provide Promise with Allied Forces South and with J-7/ Joint Warfighting Center, U.S. Joint Forces Command. He led an analysis team in support of Joint Task Force Joint Endeavor. During his tour in Iraq, from April 2009 to April 2010, he served as Director, Analysis & Assessments, Strategic Communications, J9, USF-I. Prior to his retirement he was the Chief of the Warfighting Analysis Division, DAPR-FDA, G-8.

He holds a BS in Civil Engineering from the United States Military Academy, an MS and PhD in Operations Research from NPS, and a MA in Strategic Studies from the U.S. Army War College. Among his awards are two decorations of the Legion of Merit, the Bronze Star, Defense Meritorious Service Medal with one oak leaf cluster, Army Meritorious Service Medal, and the Army Commendation Medal with two oak leaf clusters. He has twice earned the Department of Navy Meritorious Civilian Service medal.

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