

ASNE Day 2012

**“Naval Warfare – Critical
Engineering Challenges”**

**Arlington, Virginia, USA
9-10 February 2012**

ISBN: 978-1-62748-808-2

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2012) by the American Society of Naval Engineers
All rights reserved.

Printed by Curran Associates, Inc. (2013)

For permission requests, please contact the American Society of Naval Engineers
at the address below.

American Society of Naval Engineers
1452 Duke Street
Alexandria, Virginia 22314

Phone: (703) 836-6727
Fax: (703) 836-7491

asnehq@navalengineers.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

DAY ONE

PANEL 1: WILL COST-SHOULD COST

Should Cost Management	1
<i>Nidak Sumrean</i>	
ASNE	7
<i>Chris Deegan</i>	
Executing to Should-Cost	14
<i>Dub Summerall</i>	

PANEL 2: SHIP AND WARFIGHTING WHOLENESS

Ship and Warfighting Wholeness: Making Informed Programmatic and Fiscal Decisions to Deliver "Wholeness" to the Fleet	18
<i>Bilyana Anderson</i>	
LCS Wholeness	20
<i>Jim Murdoch</i>	
Amphibious Wholeness Overview	23
<i>William Boozer</i>	

SESSION 1: INTEGRATING UNMANNED SYSTEMS

UAV Deck Recovery Stability Analysis	27
<i>Bernard Ferrier, John Duncan</i>	
UV Sentry: A Collaborative Approach to Creating a Collaborative System	44
<i>Cullen Sarles, Alexandria Byrd, Ron Duarte, Karl von Ellenrieder, Daniel Gorelik, Mark Groden, Robert Gutzwiller, Davis Knox, Greg Koch, Jeremy Payne, John Reeder, Phillip Verbancsics, Virginia Wang, Robert A. Brizzolara</i>	
Leveraging Offshore Oil & Gas Technology for Handling and Refuelling Unmanned Vehicles from Surface Combatants	57
<i>Geoff Lebans, Bill Spencer, Malcolm Robb, Gary Webb</i>	

SESSION 2: ENERGY EFFICIENCY

A Case for Power Management of Ship Power Systems: Improving Operational Efficiency while Maintaining Survivability and Operational Performance	66
<i>Justin C. Morse, Donald C. Simon, Troy V. Nguyen</i>	
Hull, Mechanical, & Electrical (HM&E) Roadmap: Revolutionizing Naval Warfare and Achieving Energy Security	80
<i>Thomas W. Martin, Jeffrey M. Voth, Weston L. Gray</i>	
Hydrodynamic Energy Saving Enhancements for DDG 51 Class Ships	91
<i>Dominic S. Cusanelli, Gabor Karafiath</i>	
Energy Technology Investments: Maximizing Efficiency through a Maritime Energy Portfolio Interface and Decision Aid	107
<i>Glen H. Sturtevant, Cathryn L. Leffler, Kathleen T. Schneck</i>	

SESSION 3: ENGINEERING FOR REDUCED MAINTENANCE

NASA/JPL ePrognostics Technology to Support Fleet Remote Operations and Asset Health Management	113
<i>K. Carlton-Wippern, P. Chan, J. Ochoa, V. Tsugawa, M. Ward</i>	

Advances in Aluminum Relative to Ship Survivability	122
<i>Jerri McMichael, Milo Novak, Kyle Crum</i>	
VAMPIRE: Accessing a Life-Blood of Information for Maintenance and Damage Assessment	132
<i>John S. Donnal, Christopher Schantz, Uzoma Orji, Steven B. Leeb, Jim Paris, Andrew Goshorn, Kevin Thomas, Jayme Dubinsky, Robert Cox, Jin Moon</i>	

PANEL SESSION 1: COMMONALITY - TIME FOR NAVY BUYERS LIST?

Commonality and Total Ownership Cost: A View from Industry and Commercial Perspectives.....	143
<i>John L. Lovasz</i>	
Enterprise Commonality	148
<i>Jerry Punderson</i>	

PANEL SESSION 2: MILITARY SPECIFICATIONS AND STANDARDS FROM A COST/AFFORDABILITY POINT OF VIEW

Mil-specs – Cost Driver / Affordability Killer?	152
<i>Cary Shiao</i>	
Why Military Specifications and Standards?	158
<i>Norbert Doerry</i>	
Military Specifications and Standards from a Cost / Affordability Point of View	163
<i>Gary Baumgart</i>	

DAY 2

SESSION 1: ADAPTING TO A CHANGING THREAT

Submersible Amphibious Assault Vehicles (SAAV)	169
<i>Jeff Jordan</i>	
Preparing for U.S. Polar Icebreaker Recapitalization.....	176
<i>Craig Schnappinger, Robert McKenna</i>	
Investigation Into the Implications of Fuel Cell Shipboard Integration Into the T-AGOS 19 Class	185
<i>Livia Cohen, Andrew Tate, Nicholas Weinhold</i>	
Anti-Tamper Protection of Critical Technologies to Reduce Total Ownership Costs	198
<i>Tom Roberson</i>	

SESSION 2: AFFORDABILITY AND COST MANAGEMENT

Total Ownership Cost Trade-off Analysis Architecture for Naval Platforms	203
<i>Christopher S. Trost, Tamara Greenlaw, Christopher Kish, Tamara Kett, Tom Mullen, Richard-Duane Chambers, William K. Krebs</i>	
Vessel Performance Management Systems: How a Commercial Company Uses Metrics to Reduce Total Ownership Costs	222
<i>Gordan E. Van Hook</i>	
Enabling the Continuous Improvement of our Surface Navy Fleet Post Shakedown Availability (PSA) by Standardizing Execution Processes	226
<i>Michael Mehls, Kaitlyn Hines, Ann Lowe</i>	
Driving Affordability into Modernization	233
<i>Danial Ashmun, Michael King</i>	
Implementation of Distance Support (DS) to Reduce Total Ownership Cost (R-TOC)	242
<i>William J. Smith, Kristopher D. Leonard, Chad Eric Jones</i>	

SESSION 3: SHIP DESIGN CHALLENGES

Helping Bridge the Gap Between Space-Only Arrangements and Distributed System Layouts	264
<i>Justin W. Gillespie, David J. Singer</i>	
Effective Application of Design Space Exploration in Ship Design	271
<i>Bruce Wintersteen, Igor Mizine</i>	

Green Ships Bringing the Green Machine to the Fight: How New Concept Small Deck Amphibious Ships Can Enhance the U.S. Navy Energy Security Posture.....	282
<i>Thomas W. Martin, Thomas J. Levac</i>	
Determining the Influence of Functional Design Groups and Variables in the Set-Based Design Process	288
<i>Thomas A. McKenney, David J. Singer</i>	

SESSION 4: TRANSITIONING ELECTRIC WEAPONS TO THE FLEET

Engineering Free Electron Lasers for Deployment to the Fleet.....	300
<i>Edward Pogue, Bill Colson, Roy Whitney</i>	

POSTER PAPERS

MK38 Tactical Laser System.....	306
<i>Stephen Sohm, Pradip Kar, Kami Burr, Amir Chaboki</i>	
Applying Lessons Learned From Manufacturing to Systems Engineering	313
<i>Jeff Bybee, Patrick Burnett, Michael E. Buckley, David J. Singer</i>	
Development of a Forced Roll Mechanism for Planing Hull Models	322
<i>Carolyn Q. Judge, William Beaver</i>	
Megawatt Scale Hardware-in-the-Loop Testing of a High Speed Generator	330
<i>James Langston, Michael Steurer, Karl Schoder, John Hauer, Ferenc Bogdan, Isaac Leonard, Tim Chiocchio, Michael Sloderbeck, Andrew Farrell, Jay Vaidya, Kevin Yost</i>	
System Dynamics of Outsourcing Construction in Shipbuilding Projects.....	341
<i>Stephen D. Lisse</i>	
Development of Air-Supported Amphibious Marine Transports.....	352
<i>Christopher Chaney, Andrew Robinson, Konstantin I. Matveev</i>	
Arctic Ship Design Impacts: Green Arctic Patrol Vessel (GAPV) Project	360
<i>W. Scott Weidle, Parker Field, Nicholas Buckley</i>	
Condition Monitoring of Composite Stave Bearing in Ohio Replacement Program Submarine Propeller-Shaft System.....	372
<i>Nayak Subhadarshi, Jyoti Agrawal, William L. Marshall</i>	
Author Index	