

Fleet Maintenance & Modernization Symposium (FMMS 2019)

San Diego, California, USA
7-9 August 2019

ISBN: 978-1-5108-9687-1

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© (2019) by American Society of Naval Engineers
All rights reserved.

Printed with permission by Curran Associates, Inc. (2020)

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

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

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: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

FMMS2019 Technical Proceedings Directory

| TRACK | TITLE | AUTHORS | PAGE |
|--|--|--|------|
| Innovation Theater | CCAT Update | James "Jim" Wigle | 1 |
| Innovation Theater | Composite Components for Reduced Maintenance and Total Ownership Cost | Dr. Maureen Foley | 19 |
| Innovation Theater | Corrosion Community of Practice Update | Larry Bowden | 37 |
| Innovation Theater | Designing Ships for Better Sleep | CAPT John P. Cordle, USN Ret., Dr. Charles Stuppard, CAPT Robert W. Sweetman, USN Ret. | 45 |
| Innovation Theater | Digital Twin Technology | Rich Owen | 60 |
| Innovation Theater | Expanding the Advantage - Additive Manufacturing for Aircraft Carriers | CAPT John Markowicz, USN | 72 |
| Innovation Theater | High Ratio Zinc Coatings | Michael Fowler | 80 |
| Innovation Theater | Maintaining and Modernizing USS MIDWAY (CV 41) | CDR Len Santiago, USN Ret. | 122 |
| Innovation Theater | NSWC Ship Maintenance Data Improvement Initiative (SMDII) | Vic Garcia | 135 |
| Innovation Theater | Sustainment and Modernization Challenges for Command, Control, Communications, Computers and Intelligence (C4I) on Navy Ships | Jeffrey Sanders | 140 |
| Innovation Theater | SWRMC Engineering Perspective: In Place Repair Provides US Navy Flexibility in Gas Turbine Maintenance | Bruce D. Thompson, Monique Kadmiri | 148 |
| Innovation Theater | UCSD Human Powered Submarine STEM Program Overview | Alexander Westra | 156 |
| Keynote | Keynote | Nick Freije | 163 |
| Keynote | Keynote | RADM Lorin Selby, USN | 175 |
| NAVSEA Engineering Forum | Cumbersome Work Practices (CWP) Successes and Establishing THE NAVSEA Industrial Innovations Partnership (NIIP) | Sanjay Chandra | 184 |
| NAVSEA Engineering Forum | Departure from Specification (DFS) Trends | Eric Lind | 195 |
| NAVSEA Engineering Forum | Engineering and Technical Authority Overview | Eric Lind | 198 |
| NAVSEA Engineering Forum | LCS Technical Guidance for In-Service Maintenance and Repair | Justin Kennedy | 207 |
| NAVSEA Engineering Forum | Lithium Ion Battery Stowage Way Ahead | Tamera Barr | 213 |
| NAVSEA Engineering Forum | Main Reduction Gears & Propulsion Lube Oil System Update | Rick Collazo | 219 |
| NAVSEA Engineering Forum | Monroe Cable 24640/19-14 Deficiency and Status | Ryan Boslego | 228 |
| NAVSEA Engineering Forum | Naval Ships Technical Manual (NSTM) 100 Update - Testing and Analysis Tools to Improve Structural Assessments | Chris Rodgers | 236 |
| NAVSEA Engineering Forum | Revision Status of NAVSEA Welding and Brazing Technical Publications | Chris Melvin | 248 |
| Panel 1: Delivering a More Modern and Capable Fleet | Panelist - Delivering a More Modern and Capable Fleet | Mr. John W. Pope, III | 260 |
| Panel 3: Improved Maintenance Responsiveness through Predictable On-Time Deliveries | Panelist - Improved Maintenance Responsiveness through Predictable On-Time Deliveries | RDML Tom Anderson, USN | 263 |
| Panel 3: Improved Maintenance Responsiveness through Predictable On-Time Deliveries | Panelist - Improved Maintenance Responsiveness through Predictable On-Time Deliveries | RDML Nathan Moore, USCG | 266 |
| Panel 3: Improved Maintenance Responsiveness through Predictable On-Time Deliveries | Panelist - Improved Maintenance Responsiveness through Predictable On-Time Deliveries | Rob Wolborsky, SES | 268 |
| Panel 4: Strengthening and Expanding Our Network of Maintenance and Modernization Partners | Panelist - Strengthening and Expanding Our Network of Maintenance and Modernization Partners | RDML Tom Anderson, USN | 271 |
| Panel 4: Strengthening and Expanding Our Network of Maintenance and Modernization Partners | Panelist - Strengthening and Expanding Our Network of Maintenance and Modernization Partners | Rich Caccese | 274 |
| Track 01 | Laser Scan to CAD Analysis (A Laser Scan to 3D Product Model Compare Process) | Mark Debbink, Erik Giddinge | 278 |
| Track 01 | Naval Control Systems Maintenance, Cybersecurity and Systems Engineering to Manage Software Upgrades Efficiently | John E. Messick, Jr; Mark Roman | 285 |
| Track 02 | A Workflow Model for Human-Automation using IMPRINT | Dr. John P. Cordle, Captain, USN (Retired) | 293 |
| Track 02 | Applications and Lessons Learned from Applying Advanced Digital Analytics to Lifecycle Asset Management for Military Vessels | Subrat Nanda, Kashif Mahmood, Randy Blankenship | 321 |
| Track 03 | Digital Transformation to Improve Shipyard Effectiveness, Efficiency, and On-Time/At-Cost Delivery | Ryan Harrington, Joe Beel | 330 |
| Track 03 | On-Board Ship 3-D Environment (A Commercial-Off-the-Shelf (COTS) System) | Mark D. Debbink, Carla Coleman | 347 |
| Track 04 | Balancing Performance, Scheduling, and Cost for Rapid Prototyping, Experimentation, and Demonstration Programs Using Modeling and Simulation | Justin Woulfe | 355 |
| Track 04 | Surface Ship Drydock Schedule Planner | LCDR Adam Hilliard, Dr. Kyle Y. Lin, Robert D. Sparks | 360 |

| | | | |
|----------|--|--|-----|
| Track 05 | On-Line Lube Oil Analysis: Preventing Machinery Failures, Reducing Sailor Maintenance Man-hours | Stephen Steen, Peter J. Sisa | 373 |
| Track 06 | Applying Machinery Condition Analysis (MCA) to Rotating Machinery Repairs can Result in Decreased Cost and Increased Readiness | Matthew Hahn, P.E. | 385 |
| Track 06 | Enabling Maritime Superiority through Continuous Modal Acoustic Emission (MAE) Monitoring of Unmanned Surface Vessel (USV) and Unmanned Underwater Vehicles (UUV) Structures | Steven Ziola, Steven Robinson, Gregg Baumeier, Brian Burks, Gerald Addison | 391 |
| Track 07 | Optimizing Cable Transits thru Rated Bulkheads and Decks | Terry Mannion, Julio Lopes | 400 |
| Track 07 | Update of TT-C-492: Anti-Sweat Coatings Specification | Dr. Charles White | 405 |
| Track 08 | Evolution of the Shipyard Project Management Model: Hybrid Agile Solutions for a VUCA (Volatile, Uncertain, Complex and Ambiguous) Environment | CAPT James Kalowsky, USN Ret. | 411 |
| Track 08 | The Emerging Paradigm for Increasing Speed and Efficiency in the Shipyards | CAPT Joseph Bradley, Ph.D., P.E., CAPT Jon Iverson, USN Ret., Michael Hamlin, CDR Kent Kettell, USN Ret. | 421 |
| Track 09 | Agile Analytics: Rapid Time-to-Value for the Warfighter: An Agile approach to applying advanced analytics | CAPT James Kalowsky, USN Ret., Kevin Worley | 429 |
| Track 09 | Minimizing Variation to Enhance Configuration Management, Mission Capabilities, Safety and Total Ownership Cost | Mark Williams, John Sofia | 439 |
| Track 10 | Management of Navy Data to Provide Knowledge | CAPT C.W. Chesterman, Jr., USN (Ret.), Jared Oliverio | 445 |
| Track 10 | Private Shipyard Contracting Agility to Improve Fleet Operational Availability | Mason Beninger, Joseph M. Bradley, PhD, PE, Kaitlynn M. Castelle, PhD, Sanjeev Gupta | 454 |
| Track 11 | Improving Ships Readiness to Meet Mission Requirements | Martin Gagne, Bernardo Duran, Doug Rourke | 465 |
| Track 11 | Quantifying a Discrete Value Function for Fleet Life Cycle Management | Tobias Lemerande | 472 |
| Track 12 | Autonomous Hull Grooming Robots- How Advanced Navigation and Control Technology Can Enable Routine Grooming to Improve Fuel Efficiency and Reduce Maintenance Costs | Ben Kinnaman, Karl Lander, Geoffrey Swain | 479 |
| Track 12 | Development of a System for In-Water Inspection of Submarine Hull Coatings | J. Cipolla, K. Lobaza, A. Shakalis, J. Byrnes | 493 |

