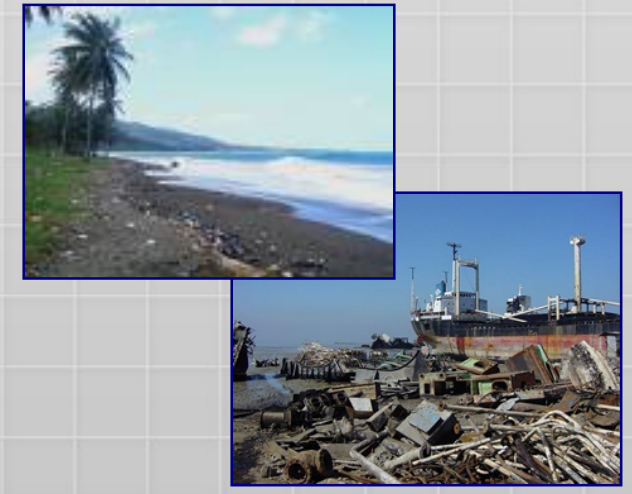
Maritime Administration (MARAD)

Marine Board Meeting
November 9, 2018



Environment

Security

Safety

Office of Safety, MAR-430

MARAD Update

- Department of Transportation (DOT) Activities
  - DOT Research, Development & Technology (RD&T)
    - FAST Act Requirements
      - Annual Modal Research Plans
      - Annual Performance Plans
      - Annual Funding Reports
    - DOT Research, Development & Technology Investment Topical Areas
      - Safety
        - » Automation, Systemic Safety Approach, Human Factors
      - Infrastructure
        - » State of Good Repair, Environmental Stewardship, Economic Competitiveness
      - Innovation
        - » Emerging/Enabling, Mobility Innovation, Cybersecurity
      - Accountability
        - » Technology Transfer/Deployment, Evaluation/Performance Measurement, Data

MARAD Update

- Maritime Administration Activities
  - MARAD Reorganization
  - Jack Buono selected as USMMA superintendent
  - National Security Multi-Mission Vessel (NSMV)
    - FY 2018 - $300 million
    - Request for Proposal for a Vessel Construction Manager (Oct 11, 2018)
      - FedBizOpps.gov, Sollicitation Number: 693JF718R000029
  - MARAD Research Activities
    - FY 2019-2020 MARAD AMRP submitted for OST
    - Maritime Environmental and Technical Assistance (META) Program
    - Ports and Intermodal collaboration with DOT ITS-JPO
    - Proposed Maritime Research and Development Centers (MRDC) Program

MARAD Update

- Maritime Administration Activities (continued)
  - Maritime Research and Development Centers (MRDC) Program
    - Solicit proposals for establishment of designated centers
    - Centers will include:
      - Broad maritime participation from academia, maritime operators, equipment manufacturers, technology providers, labor, other non-governmental stakeholders, and government partners
      - Maritime Academy engagement as a key element
      - Administration through cooperative agreements
      - Minimum 50/50 cost sharing of federal funds and/or in-kind labor and materials
      - Emphasis on technology transfer and adaptation for commercial application
    - Center Research Focus Areas:
      - Efficiency
      - Remote and Autonomous Operations
      - Safety
      - Training
      - Infrastructure
      - Security
      - Environment
      - Green Energy Development

MARAD Update

- Industry Activities
  - ASTM International F25 Committee Activities
    - Workshop on Maritime Autonomy, Automation and Cyber Security – December 5th in DC
    - Standards Development – Guide for incorporating Cyber Elements into Safety Management Systems
  - Transportation Research Board (TRB)
    - AW040 Committee Meeting
    - AW040 Podium Session focusing on sociotechnical system
  - Committee on the Marine Transportation System (CMTS)
    - MIST Working Group/R&D Conference 2020
    - Heavy Weather Working Group Activities
  - Ship Operations Cooperative Program (SOCP)
    - SOCP 2019 Spring Summit (Apr 10-11) hosted by Massachusetts Maritime Academy

Thank You!

Todd Ripley
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Brief for Presenters on Building Maritime Organizational Resilience

The maritime industry has come a long way in the safety performance of ships. However, the industry continues to have catastrophic accidents, which are often classified as Beyond Design Basis Accidents (BDBA). The other category, the Designed Basis Accidents (DBA) have a relatively controlled outcome because the naval architects, programmers and engineers have developed redundancies (layers of protection) in engineered and programmed systems of the ship (physical design, software and equipment). Each of these systems have operational limitations, and they change over time. The change in the physical systems is often linear and predictable enough to develop/ adjust controls.

In contrast, Beyond Design Basis Accidents occur when the predictability is very low, and outcomes are relatively more serious and at times catastrophic. How do we prevent these serious accidents?

The maritime industry has often related safety to the absence of negatives, rather than the capacity to be successful in varying conditions. This means developing resilience under all conditions through safety management systems.

To ensure safe operations, a safety management system should include a sociotechnical risk identification approach to better manage and sustain the overall wellness of the organization. This is the objective of the IMO's ISM Code Section 1.2. The sociotechnical approach seeks to integrate the social infrastructure (human elements) that overlays the physical infrastructure and develops methods to make the combined system dynamic in nature. The system looks out for its variabilities in performance under varying conditions and initiates proactive action to prevent loss of control and maintain dynamic stability.

The sociotechnical system treats ships at sea as business units of the Company ashore. What we find in ships during audits, and inspections are the resultant effects of the relationships, policies, processes and procedures (safety culture) promoted and maintained by the Company. Therefore, the "causal factors" of deficiencies afloat lies somewhere in the organizational dynamics ashore. Just as you would take care of the foundational elements to keep a plant healthy, similarly, maritime industry needs to take care of the foundational elements within management systems created by the Company.

Provide information that enables exploration of following key questions, inter alia:

- What are the most significant hurdles in implementing a sociotechnical risk identification approach? And what can we do to overcome the hurdles?
- What type of social infrastructure characteristics should be overlaid with physical infrastructure to change the paradigm?
- What tools and resources could be leveraged within the IMO's ISM Code to foster the sociotechnical risk approach?

ASTM INTERNATIONAL
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Workshop on Autonomous Shipping, Vessel Automation and Maritime Cyber Security

December 5, 2018
Washington Hilton
Washington, DC

Sponsored by ASTM Committee F25 on Ships and Marine Technology

About the Event

The Workshop on Autonomous Shipping, Vessel Automation and Maritime Cyber Security will be held Wednesday, December 5, 2018 at the Washington Hilton in Washington, DC, in conjunction with the December standards development meetings of the committee.

Objective

The objective for this workshop will be to identify potential new opportunities for standards and related products applicable to advancements in automation, autonomous shipping, and maritime-specific cyber security issues.

Registration

Registration is now open on the ASTM website.

Technical Chair Contact Information

Workshop Chairman: Thane Gilman
Email: thane.gilman@uscg.mil
Phone: (202) 372-1383

Workshop Co-Chair: Todd Ripley
Email: todd.ripley@dot.gov
Phone: (202) 366-2625

Topics

Topics will include, but are not limited to:

- Autonomous shipping – Developments on the national and international level
  - Vessel remote control techniques
  - Semi-autonomous vessels
- Autonomous vessels – Safety and continuity of operations
  - Failure modes
  - Casualty prevention/recovery
  - Performance standards/guidelines for operators
- Autonomous shipping operations – Legal and regulatory issues
  - Legal definitions/terminology for autonomous shipping
  - IMO developments-scope of effort for SOLAS/COLREGS modifications
  - Insurance
  - National and state laws
  - Personnel requirements (STCW and other qualification standards)
- Cyber Risk Management – National and international policy developments
- Cyber Risk Management – Issues specific to the maritime sector
  - Testing of maritime security systems
  - Integration of cybersecurity with safety management/ISM
- Automation – Recent developments
  - Novel vessel concepts (LNG, fuel cell, battery propulsion)

WORKSHOP ON AUTONOMOUS SHIPPING, VESSEL AUTOMATION AND MARITIME CYBER SECURITY

Workshop Sponsored by ASTM F25 Committee on Ships and Marine Technology

December 5, 2018
Washington Hilton
Washington, DC

Workshop Chairman: Thane Gilman
United States Coast Guard
Office of Design and Engineering Standards

Committee F25 Chairman: Todd Ripley
U.S. Department of Transportation Maritime Administration

WEDNESDAY, DECEMBER 5, 2018

8:00 AM
Opening Remarks
Todd Ripley, Committee F25 Chairman

KEYNOTE SPEAKER

8:10 AM
Keynote Speaker
Richard Balzano, Deputy Administrator, Maritime Administration

SESSION 1: FEDERAL AGENCY AUTONOMOUS/AUTOMATED ACTIVITIES AND ASSOCIATED REQUIREMENTS

Moderator: Richard Balzano

8:40 AM
Navy Autonomous/Automated Technologies
Jason Stack, Ph.D. Deputy Portfolio Manager for Autonomy Office of Naval Research

9:00 AM
Autonomous Technologies supporting Environmental & Chart Data Collection
Rob Downs, NOAA

9:20 AM
Automation/Autonomy supporting Maritime Operations
Eddie Wiggins, USACE

9:40 AM SESSION 1: Q & A

10:00 AM BREAK

SESSION 2: COMMERCIAL AUTONOMOUS/AUTOMATED TECHNOLOGY ACTIVITIES

Moderator: Richard Delpizzo, ABS

10:20 AM
Autonomous Vessel Control & Navigation
Michael Gordon Johnson, Sea Machines Robotics, Inc.

10:40 AM
Embed Artificial Intelligence on Board Ships
Ugo Vollmer, Shone

11:00 AM
Remote Operation and Autonomy in Shipping - Safety Perspectives and Current Developments
Jan Hagen Andersen, DNV GL – Maritime

11:20 AM
One Sea - Autonomous Maritime Ecosystem Introduced Roadmaps to Autonomous Shipping
Dave Adams, Wartsila

11:40 AM SESSION 2: Q &A

12:00 PM LUNCH (On Your Own)

KEYNOTE SPEAKER

1:30 PM
Keynote Address
SpaceX (Tentative)

SESSION 3: THE EVOLVING REGULATORY ENVIRONMENT FOR AUTONOMOUS AND AUTOMATED MARITIME OPERATIONS

Moderator: CAPT Ben Hawkins, USCG (Ret.), Deputy Director, Commercial Regulations and Standards (CG-5PS)

2:00 PM
Class
John Jorgensen, ABS

2:20 PM
IMO/International and Domestic Regulations
LT Chris Rabalais, USCG, Office of Design and Engineering Standards (CG-ENG)

2:40 PM BREAK

3:00 PM
Education and Training for Automated Vessels
Dr. Elizabeth McNie, Professor of Marine Transportation, California Maritime Academy

3:20 PM
Remote Control & Monitoring for Machinery and Systems on Barges
Dan Wesp, ABS

3:40 PM SESSION 3: Q & A

SESSION 4: MARITIME CYBER RISK MANAGEMENT AND THREAT MITIGATION
Moderator: John Jorgensen, ABS

3:55 PM
Cyber Risk Management for Vessels: Coast Guard and IMO
LT Kevin Kuhn, USCG, Office of Design and Engineering Standards (CG-ENG)

4:15 PM
Accreditation to mitigate Cyber Risk
Elizabeth Carbonella, Accreditation Manager, A2LA

4:35 PM
Creating Deterrence to Maritime Cyber Attacks
Dr. Joan Mileski, Professor of Maritime Administration and Marine Science
Texas A&M University

4:55 PM
Development of Cyber Security Education for the Maritime Commons
CAPT Tony Piscitelli, PhD, SUNY Maritime College

5:15 PM
Cyber Attacks on Physical Property Assets
Dr. Gary Kessler, Professor of Cybersecurity, Embry-Riddle Aeronautical University

5:35 PM SESSION 4: Q & A

5:50 PM
Closing Remarks
Thane Gilman, Workshop Chairman

5:55 PM WORKSHOP ADJOURNS

6:00 PM RECEPTION