Toward Ship Design Criteria for Launch and Recovery of Surface and Subsurface Vehicles from Naval Surface Ships

Dr. Chris Bassler (USA), CDR Christian Wines (Norway), Dr. Kevin McTaggart (Canada), Dr. Norbert Stuntz, (Germany), Michael Crees (UK), Dr. Mike Hughes (USA)

ASNE Launch & Recovery Symposium
November 19-20, 2014; Linthicum, MD
Overview

• NATO Organization Overview
• NATO Motivation for Launch and Recovery
• Recent and Ongoing L&R Work
• A Vision Toward the Future NATO STANAG
  – Ship Design Considerations and Criteria
  – Evaluation Methods for Improved Ship Design & Operations
NATO Organization

North Atlantic Council

NATO C3 Board
- Science for Peace & Security Committee
  - Allied Command Transformation
  - NATO Underwater Research Center

NATO C3 Agency

Military Committee
- Allied Command Operations
  - STO

Conference of National Armament Directors
- NATO Army Armaments Group
  - NATO Naval Armaments Group
  - NATO Air Force Armaments Group
  - NATO Industrial Advisory Group

SDCG
NATO Ship Design Capability Group (SDCG)

SDCG is Chaired by Mr. James Webster (US)

*Active POW: Sunset outside 4 year window

POW completed and Sunset within 4-year window
NATO Specialist Team on Seaway Mobility

STANAG 4721 Maneuvering
- ANEP 70
- ANEP 78

STANAG 4194 Wind & Waves
- ANEP 11
- ANEP 14

STANAG 4154 Seakeeping
- ANEP 46

STANAG ?? Launch & Recovery
- ANEP ??

Supporting Documents:
- ANEP 77
- ANEP 79
NATO Motivation for L&R

• Rapid increase in operational experience with deployable vehicles from naval ships for NATO Navies
• Improve naval interoperability for an increasingly diverse set of deployable vehicles
  – Continued use of manned vehicles
    • Helos and RHIBs (e.g. for Search and Rescue, ISR, MIO, ASW, and MCM)
  – Increasing use of unmanned vehicles (UAVs, UUVs, and USVs)
  – Desire for improved capabilities for launch and recovery
    • Higher sea state limits
    • Decreased time and crew required for operations
• Emphasis on Alliance mission capabilities enhanced with deployable vehicles
  – Defense against terrorism (includes counter-piracy and asymmetric threats)
  – Long-term capability requirements
    • ISR
    • Naval warfare capabilities on current and future platforms
Recent and Ongoing L&R Work

– Some examples outside of NATO
  
  • LAURA JIP
  
  • EDA Safety and Regulations for Unmanned Maritime Systems (SARUMS)
Recent and Ongoing L&R Work

- **Inside NATO**
  - NATO AVT 217: Ship Design Guidance for Aircraft Operations
  - NIAG SG171: Launch and Recovery of Surface and Sub-Surface Vehicles
  - NIAG SG187: Criteria and Training for Launch and Recovery of Surface and Subsurface Vehicles from Surface Ships
A Vision Toward the Future NATO STANAG

- Emphasis on ship design perspective
  - Retrofitting equipment on existing ships
  - Designing new ships
- Consideration for a range of deployable vehicles
  - Manned and unmanned
  - Air, surface, subsurface vehicles
- Standardization
  - Common methods to include L&R considerations in ship design
  - Common methods to evaluate L&R capabilities
  - Common criteria to ensure minimum required capability to conduct operations
Ship Design Considerations and Criteria

The Range of L&R System Types Considered

- Single point davit
- Double lift point davit
- Stern ramp
- Various USV, UUV, and UAV types
- Flight Deck
- Manned vehicle systems
Ship Design
Considerations and Criteria

• Goal-based, mission-oriented framework

• Ship design
  – Hull
    • Motions
  – Topside geometry
    • Airwake

• Handling equipment
  – Placement
  – Crew requirements

• Training and certification for safety
Evaluation Methods for Improved Ship Design & Operations

- Simulations & Trainers
- Model experiments
- Full-scale trials

Example of 2D+t method used for RHIBs
Questions?

Contact Information
Dr. Chris Bassler (US, NSWCCD), christopher.bassler@navy.mil
Dr. Kevin McTaggart (Canada, DRDC), Kevin.McTaggart@drdc-rddc.gc.ca
Dr. Mike Hughes (US, NSWCCD), michael.j.hughes@navy.mil

NATO Specialist Team on Seaway Mobility at NATO HQ
Selected NATO Terminology

- ANEP – Allied Naval Engineering Publication
- AVT – Applied Vehicle Technology
- DAT – Defense Against Terrorism
- ET – Exploratory Team
- LCTR – Long-Term Capability Requirements
- MCR – Minimum Capability Requirements
- NNAG – NATO Naval Armaments Group
- POW – Program of Work
- SC – Ship Costing
- SDCG – Ship Design Capability Group
- SM – Seaway Mobility
- ST – Specialist Team
- STANAG – Standardization Agreement
- TSSE – Total Ship Systems Engineering