Welcome to ADAC’s Annual Meeting
9-10 November 2016
Alexandria, Virginia
Arctic Education in Training

CAPT Ralph Pundt,
Maine Maritime Academy
Project Title - Arctic Education: Implementing the Arctic Strategy in Training

FOA/NOFO Research Question: 6a, New curricula, courses, and certificate programs.

Project Objectives:
- Develop Basic and Advanced Ice Navigation classes.
- Obtain certification for both courses from USCG as meeting requirements for ice navigation under the new International Maritime Organization (IMO) Polar Code.
- Teach basic ice navigation class in a classroom setting.

Potential Impact:
- Provides required ice navigation training under the new Polar Code to USCG and other Arctic oriented U.S. mariners.

Key Milestones/Deliverable Schedule:
- Project Start .......................................................Jan 15 √
- Finished Basic Ice Navigation class .......................Dec 15 √
- First Ice Navigation class taught ............................Jan 16 √
- Basic Ice Navigation class certified by USCG ............Jul 16 √
- Advanced Ice Navigation class completed ...............Jun 17
- Project End .............................................................Jun 17

Performance Metrics:
- Basic Ice Navigation class completed & certified – complete. √
- Advanced class completed and certified – pending funding
- Basic ice navigation class taught is a classroom setting and completed by 22 students – complete. √

Key Accomplishments:
- Basic Ice Navigation Course completed and submitted to USCG for approval for certification.
- Basic Ice Navigation class approved for certification.
- A total of 22 students completed the classroom version of the Basic Ice Navigation course in Spring 2016.
- Participation and presentations at various events and conferences promoting ice navigation and Polar Code compliance.

Funding:
- Expended to Date by End of Year 2 ............... $177,372.67

Program Champions:
- LCDR. M. Kennedy, HQ USCG CG-751.
- CAPT D. Evans, USCG RDC.

Stakeholders:
- HQ USCG, USCG RDC, USCG D-17.
- U.S. Maritime Academies.
- Professional Arctic Mariners.

Points of Contact:
- Sue Hazlett, MMA, Project PI.
- Captain Ralph Pundt, MMA Technical Investigator.
Maine Maritime Academy

The mission of Maine Maritime Academy is to provide a quality education focused on marine and related programs. The curriculum will empower students to take on leadership roles, encourage rigorous self-discipline, promote curiosity, and provide graduates with the skills, ethics, and knowledge needed to succeed in the global economy.
Shipping in the Arctic is a reality
Project Title - Arctic Education: Implementing the Arctic Strategy in Training
Project Title - Arctic Education: Implementing the Arctic Strategy in Training

IMO - International Maritime Organization - Establish minimum international maritime standards

USCG – US Maritime Authority - enforces IMO mandates and is authorized to establish higher standards than those imposed by IMO

Basic and advanced ice navigation courses to meet IMO/USCG mandated specifications

Mariners complies with maritime authority regulation
IMO Plenary

Maritime Safety Committee (MSC)

Marine Environment Protection Committee (MEPC)

Human Element, Training and Watchkeeping (HTW)

Pollution Prevention and Response (PPR)

Navigation, Communications, Search & Rescue (NCSR)

Ship Design and Construction (SDC)

Ship Systems and Equipment (SSE)

Carriage of Cargoes and Containers (CCC)

Implementation of IMO Instruments (II)
Course Requirements

- Basic Course
  - Watch Officers
  - Chief Mate & Master

- Advanced Course
  - Chief Mate & Master
Basic Course

• **Contribute to safe operation of vessels operating in polar waters**
  – Basic knowledge of ice characteristics and areas where different type of ice can be expected in the area of operation:
  – Basic knowledge of vessel performance in ice and low air temperature:
  – Basic knowledge and ability to operate and maneuver a ship in ice

• **Monitor and ensure compliance with legislative requirements**
  – Basic knowledge of regulatory considerations:

• **Apply Safe working practices respond to emergencies**
  – Basic knowledge of crew preparation, working conditions, and safety:

• **Ensure compliance with pollution prevention requirements and prevent environmental hazards**
  – Basic knowledge of environmental factors and regulations:
Advanced Course

• Plan and conduct a voyage in Polar Waters
  – Knowledge of voyage planning and reporting:
  – Knowledge of equipment limitations:

• Manage the safe operation of vessels operating in polar
  – Knowledge and ability to operate and maneuver a ship in ice:

• Maintain safety of the ship's crew and passengers and the operational condition of life-saving, firefighting and other safety systems
  – Knowledge of safety:
Project Title - Arctic Education: Implementing the Arctic Strategy in Training

- Define training requirements
  - US delegate to the IMO to define course requirements
  - Worked with USCG to assess model courses submittals

- IMO mandates
  - Polar Code in Effect as of January 2017 and training requirements in effect as of January 2018, Note STCW- STCW requirements not yet ratified (expected date July 2018)

- Evaluate / purchase ice navigation simulators
  - Scenario Development

- Research and out reach
  - International Ice Patrol Conference
  - IMQ – Institute Maritime Quebec- Simulator Research

- Basic course development
  - Blended – includes voice over

- Presented first course to 22 MMA senior students
  - Second course will be offered Spring semester 2017

- USCG Course approved Basic course for continuing education
Human Element, Training, and Watch keeping subcommittee delegates - IMO Feb 2015

First basic ice navigation class

Captain Patrick Toomie, Canadian Ice breaker service
Outreach Initiatives

Arctic Shipping Forum North America

Discussion session: Managing the transitional challenges before entry into force of the new STCW Code

David Snider, President and CEO, Martech Polar Consulting Ltd
Capt Ralph Pundt, Professor, Marine Transportation Operations, Maine Maritime Academy
Project Title - Arctic Education: Implementing the Arctic Strategy in Training
Available Simulator Training areas

- Barrow
- Chukchi Sea
- Bering Strait
- Nome
- Anchorage Harbor and Nikiski oil terminal and approaches
- Valdez Harbor and approaches
- Sault Saint Marie locks and approaches
Project Title - Arctic Education: Implementing the Arctic Strategy in Training
• Developing Advanced course
  – Blended course
  – Develop Simulation Scenarios
  – Develop emergency response simulation scenario
• Submitted Basic course for approval for undergraduate students in a classroom setting.
• 20 Students have enrolled for the basic course in the Spring Semester
• Promote the Basic blended course to professional mariners
Education Outreach and Workshop Development, including Minority Service Institution Internship and Career Development Scholars and ADAC Fellows

Ms. Clarice Conley, University of Alaska Anchorage
Mr. Kyle Alvarado, ADAC Fellow
Mr. James Matthews, ADAC Fellow
# Project Title: Career Development Grant
(DHS S&T COE Supplemental)

**FOA/NOFO Research Question(s):** Topic 6g, Programs to identify COE students for DHS internship opportunities.

## Project Objectives:

- **Objective 1:** Attract the highest caliber undergraduate and graduate students to our science and engineering programs at UAA.
- **Objective 2:** Nurture and train these students for careers in DHS—related applied fields of science and technology.
- **Objective 3:** Provide students opportunities for direct involvement in DHS operations and embedded research among our DHS collaborators and stakeholders.
- **Objective 4:** Provide education and mentorship to students that leads to timely completion of degrees and fulfilling careers in DHS Enterprise.

## Potential Impact:

- **Impact 1:** Contribute to growth of highly skilled workforce for Homeland Security agencies
- **Impact 2:** Contribute to the capability of US Coast Guard operator and in support of USCG missions in the Arctic.

## Key Milestones/Deliverable Schedule:

- **Project Start:** Feb 16
- **Key Milestone 1 (student recruitment/selection):** Feb 16
- **Key Milestone 2 (sponsor summer internships):** Jun 16
- **Key Milestone 3 (student degree completion):** Jun 17
- **Project End:** Jun 18

## Performance Metrics:

- Type of Major: 5 STEM—2 Masters, 3 Undergraduate.
- 13 DHS focus areas; 17 faculty involved.
- 100% student retention rate.

## Key Accomplishments:

- Awarded five full-time fellowships.
- ADAC students completed comprehensive Arctic IONS Literature Review.
- Two scholars participated in MSC Summer Intern Seminar and one completed summer internship with industry at engineering firm.
- 100% student retention rate.
  - Funding arrived in Sep 15, too late to award fellowships for Fall semester 15. Fellowships were awarded in Spring semester 16.

## Funding:

- Expended to Date by End of Year 2 ……$77,693.92

## Program Champions:

- N/A.

## Stakeholders:

- DHS, and DHS components.
- State of Alaska; University of Alaska Anchorage, Fairbanks and ADAC Research Network.

## Points of Contact:

- **Federal Agency Customer:** Ms. S. Willett, and Ms. R. Flowers, DHS S&T OUP.
- Clarice Conley, UAA, Principal Investigator.
DHS S&T Supplemental Awards for Existing Centers of Excellence

Application ADAC year 1
- CDG funded Sep, 2015

UAA Honors College outreach
- New ADAC leadership, Jan, 2016

Applications vetted
- 5 CDG scholars, Spring 2016
Kickstart
Our Current ADAC Fellows

Matthew Ahlrichs  James Matthews  Leif Hammes  Kyle Alvarado  Christina Hoy
What have we been involved with?

- Northwest Passage TTX
- IONS Literary Reviews
- IONS Workshop Participation
- Arctic Chinook Preparation
- Summer Internships/Engagements
- Professional development
North West Passage Table Top Exercise

- Day 1: (KYLE)
  - Review of Groups
- Day 2: (JAMES)
  - Simulation
Incidents of National Significance (IONS) Literary Reviews

- Prepared literary reviews on published journals
- Geared towards Arctic travel
IONS Workshop Participation

- **Group 1: (JAMES)**
  - Achieving total accountability of personnel in a crisis.

- **Group 2: (KYLE)**
  - Improving medical preparedness and response with rescue and recovery in an Arctic region MRO.

- **Group 3: (MR. SETH CAMPBELL)**
  - Identifying and mitigating related/relevant hazards to Arctic Major Response Operations.

- **Group 4: (MR. LEIF HAMMES)**
  - Advancing Arctic region rescue response coordination, awareness, and communications
Arctic Chinook Poster Board Preparation

- Poster Boards Development and Assembly
- Attended and Represented the Center at Joint Base Elmendorf-Richardson, 23 August
Summer Internships & Engagements

- CHRISTINA and UAF student Alvaro Murillo
  - Summer Research experience with the Marine Security Centers Summer Research Institute

- JAMES
  - ARCTEC Alaska internship

- KYLE
  - Development of Poster Boards & ADAC Banner
  - Engagement with Airforce Cadet and UAA professor
Project Title: MSI & Integrated Arctic Education (& Workforce Development)

FOA/NOFO Research Question(s). Topic 6c, Arrangements for programs and linkages with Minority Serving Institutions; Topic 6g, Programs to identify COE students for DHS internship opportunities.

Project Objectives:
- **Objective 1**: Attract the highest caliber undergraduate and graduate students to ADAC projects within the ADAC Research Network (ARN).
- **Objective 2**: Nurture and train these students for careers in DHS—related applied fields of science and technology.
- **Objective 3**: Provide students opportunities for direct involvement in DHS operations and embedded research among our DHS collaborators and stakeholders.
- **Objective 4**: Provide education, mentorship and internships to students that leads to timely completion of degrees and fulfilling careers in DHS Enterprise.

Potential Impact:
- **Impact 1**: Contribute to growth of highly skilled workforce for Homeland Security agencies.
- **Impact 2**: Contribute to the capability of US Coast Guard operator to provide disaster relief, search & rescue, & humanitarian aid in the Arctic.

Key Milestones/Deliverable Schedule:
- **Project Start**: September 14
- **Key Milestone 1 (student recruitment and selection)**: November 16
- **Key Milestone 2 (place minority summer interns)**: May 17
- **Key Milestone 3 (execute Fellows mentoring)**: November 16
- **Project End**: June 19

Performance Metrics:
- Recruit, assign mentors and student research work in individual ADAC projects for MSI and WFD (year 3 plan)
- Provide bi-monthly ADAC Fellows coaching and mentoring sessions
- Assess performance of minority students in summer research programs
- MSI students who compete and earn CDG scholarships following internship

Key Accomplishments:
- Master’s in Arctic Engineering degree program at UAA and online course available to the public.
- Hosted MSI summer intern from FL institute in UAA ADAC project.
- In year 2, ADAC built a plan to recruit disadvantaged students into summer internships that commence summer 2017.
- Creation of ADAC Fellows Program, including CDG, MSI and project research interns
  - MSI and Workforce Development funding for Year 3 approved beginning Nov, 2016.
  - Scope of originally proposed education plan not sufficiently funded or implemented prior to new Center management in Year 2

Funding:
- Expended to Date by End of Year 2............$33,454.52

Program Champions:
- N/A.

Stakeholders:
- DHS, and DHS components.
- State of Alaska; University of Alaska Anchorage, Fairbanks and ADAC Research Network.

Points of Contact:
- Federal Agency Customer: Ms S. Willett and R. Flowers, DHS S&T OUP.
- Clarice Conley, UAA, Principal Investigator.
Minority Serving Institution/ Workforce Development Program (formerly Integrated Arctic Education)

• Key accomplishments through Year 2:
  • Master’s in Arctic Engineering degree program at UAA and online course available to the public.
  • Hosted MSI summer intern from FL institute in UAA ADAC project.
  • In Year 2, ADAC built a plan to recruit disadvantaged students into summer internships starting in summer, 2017.
  • Creation of ADAC Fellows Program toward end of Year 2 for implementation in Year 3.
US Military Academy Outreach
ADAC Fellows Program
ADAC Research Network

Nearly 20 PIs

~ 15 supporting team

17 entities

Nearly 20 PIs
ADAC Research Fellows

- Assigned mentor and work plan
- Bi-monthly mentoring via webinar
- Ten-week summer internships (workforce development & CDG)
- Bi-monthly ADAC Customers and Partners Roundtable meetings
- Annual Student Research Symposium
Transition

Post-secondary Degree

DHS-related research experiences

Highly-skilled DHS Workforce
ADAC Fellows Beyond Year 3

- Diversify funding streams
- Diversify STEM fields
- Grow with vision of National Center
- Grow educational partnerships with NOAA and USCGA
Theo Gemelas, DHS S&T OUP Project Manager