OMAO Okeanos Explorer Update

RADM David A. Score
Ocean Exploration Advisory Board
27 April 2016
OUTLINE

• Operating Areas 2008 – 20016
• Utilization Trends
• Maintenance Activities and Plans
• Fleet Demand and Allocation Process
• NOAA Fleet Status and Projections
• Recapitalization Planning (Fleet IRT)
Okeanos Explorer 2008-Present
Okeanos Explorer Utilization Numbers FY10-FY15

- **Weather Day at Sea**
- **Sea Trial Day at Sea**
- **Other Day at Sea**
- **OMAO Transit Day**
- **Casualty Repair Day at Sea**
- **Project Day at Sea**

Days at Sea (DAS)

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<th>Fiscal Year</th>
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Actual NOAA DAS*: 2010-2014

* Actual DAS data are less than planned DAS due to effects from ship breakdowns, weather, or other extenuating circumstances limiting operations.
Total Maintenance Costs

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Okeanos Explorer FY12 – FY16 Maintenance Costs

**FY12:**
- Anti-Roll Tank Drain Piping Renewal
- Fuel Piping Renewal in Ballast Tank
- Ballast Tank 4-52-0-W Vent Piping Renewal
- Bow Thruster Motor Cleaning
- Marine Sanitation Device and Sewage Piping Renewal
- Stern Thruster Space Bilge Suction Piping Installation
- Bow Thruster Padeye Installation
- Heating Ventilation and Air Condition System Cleaning
- Gage and Instrumentation Calibration

**FY13:**
- Regulatory Inspections and overhaul in Machine
- Main propulsion motor seawater cooling piping replacement
- Anchor Windlass Overhaul & Aft Capstan Inspection and Overhaul
- Flexible and Hydraulic Hose Assembly Renewals
- Mission Deck Watertight Hatch Removal & Manhole Installation
- Port Rescue Boat Davit Anti Two Block Installation
- Rack Room Ductless AC Unit Installation
- ROV Crane Sheave Head Replacement
- Mission UPS Replacement
- Replacement of room exhaust fans
## Okeanos Explorer FY12 – FY16 Maintenance Costs

### FY14:
- Regulatory Inspections and overhaul in Machinery (Cranes, main propulsion), and Hull (UWILD)
- Potable Water Tank Repairs
- Preservation (01 & 02 Deck, Bilge, Ballast Tank)
- Laundry Room Deck Covering Replacement
- Fire Alarm System Expansion
- ROV Control Room Door and Door Frame Replacement

### FY15:
- Regulatory Inspections and overhaul in Machinery, Tanks
- Internal Communications (upgrade)
- Engine Mount Replacements
- AC compressor overhauls
- Bilge Preservation

### FY16:
- Regulatory Inspections and overhaul in Machinery, Sea valves, Tanks and Hull
- Motor Room Vent Repairs
- Bow Thruster Repair
- Exhaust Insulation renewals
- ADCP (38 kHz & 300 kHz) Transducer Installation (upgrade)
- EK-60 Transducer Suite Installation (upgrade)
- Doppler Speed Log Installation (upgrade)
- ROV Pit Hatch cover Installation
### Okeanos Explorer FY17 – FY19 Planned Maintenance

#### Total Project

**Beginning in FY17**
- Galley Equipment, replace (FY17 - FY20) $90,000
- Special Storage Capability $25,000
- Deck Covering, replace (FY17 - FY20) $165,000
- Renewal of Living Spaces (FY17 - FY20) $550,000
- CCTV System, upgrade (FY17 - FY18) $69,500
- Fire Detection System Upgrade (FY17 - FY18) $180,000

**Total** $1,079,500

**Beginning in FY18**
- Storerooms, rearrange $250,000
- Propulsion Control System, upgrade (FY18 - FY20) $250,000

**Total** $500,000

**Beginning in FY19**
- Propulsion Drive System, upgrade (FY19 - FY20) $250,000.00
- Radar Units, upgrade $120,000.00
- NetApp, upgrade $200,000.00
- Ballast Water Treatment System (FY19 - FY20) $350,000.00
- Crane, replace with man-rated (FY19 - FY20) $450,000.00
- Multibeam, upgrade (FY20 - FY21) $920,000.00
- ADCP, upgrade $80,000.00

**Total** $2,370,000
Fleet Demand and Allocation Process
Mission Requirements

Based on careful analysis of mission requirements, NOAA would need 15,245 Days At Sea (DAS) to meet mandates for at sea observations and data collection.

**LEGISLATIVE MANDATES**

- Magnuson-Stevens Fishery Conservation and Management Act
- Endangered Species Act
- Marine Mammal Protection Act
- Coral Reef Conservation Act
- Harmful Algal Bloom and Hypoxia Research and Control Act
- Hydrographic Services Improvement Act
- National Marine Sanctuaries Act

**EXECUTIVE MANDATES**

- Office of Marine and Aviation Operations

**MISSION REQUIREMENTS**

- NWS, NMFS, NESDIS, NOS, OAR

For Example:

- Magnuson-Stevens Reauthorization Act
- Endangered Species Act
- Marine Mammal Protection Act
- Coral Reef Conservation Act
- Harmful Algal Bloom and Hypoxia Research and Control Act
- Hydrographic Services Improvement Act
- National Marine Sanctuaries Act

15,245 DAS Priority 1 Requirements (needed to meet mandates; fiscally unconstrained)
Prioritizing Mission Requirements

Line Office Technical Capacity

15,245 DAS Priority 1 Requirements (needed to meet mandates; fiscally unconstrained)

NOAA Funded Capacity
FY15: 3,692 DAS
FY15: 2,702 Fleet DAS
FY15: 990 Charter DAS

But all 15,245 DAS are not possible. NOAA conducts detailed analysis to prioritize and match the science requirements to the annual DAS capacity.

15,245 DAS Priority 1 Requirements

NWS, NMFS, NESDIS, NOS, OAR

~8,700 DAS Requested/Yr.

Prioritization, Allocation and Scheduling Process (PAS):

• Line Offices (LO) prioritize their requested DAS
• OMAO provides the total available budget from OMAO funds to support DAS
• LO Deputy Assistant Administrators and OMAO (Fleet Council) integrate priority of observational requirements across NOAA and determine allocation of DAS
• OMAO develops draft Fleet Allocation Plan (FAP) for a Fleet Council vote
• Fleet Council updates throughout the year as funding levels and operational conditions change and revise the FAP as necessary

FLEET ALLOCATION PLAN
(process includes UNOLS vessels)
Value/Relevance of Ships as Observing Platforms

**Observing System Cost vs Impact (Log/Log Scale)**

- **NOAA Ships**
- **Ships**
- **IOp**
- **OOI-Coastal**
- **OOI-Cabled**
- **Manned Vehicles**
- **ROV**
- **AUV**
- **Field Stations**
- **Gliders**
- **OBS**

**Office of Marine and Aviation Operations**

**Ocean Exploration Advisory Board**
### NOAA Fleet Projections

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- **First Year of Operations**
- **Design Life**
- **Extended Life**
- **Gap in Capacity**
- **X = Inactive**

Office of Marine and Aviation Operations
No Action Alternative: NOAA Fleet Capacity Drops 50%

It takes 8-10 Years to Build a Replacement Ship – Important to Start in 2016
Sustaining NOAA’s Ship Capabilities

• 2008 - Recapitalization Plan (not funded to date)
• 2012 - Requirements Validation and Fleet Advisory Committee Recommendations
• 2013-15 IAA w/NAVSEA on AGOR design
• January 2016–Independent Review Team (IRT)
NOAA IRT Intent

• Assess Fleet condition, composition, management, and planning.

• Assess NOAA at sea requirements and alternative capabilities to optimally meet them.

• Deliver recommendations on short and long term actions NOAA should consider to position the agency to effectively sustain persistent capabilities to meet at sea requirements.
NOAA IRT Composition

Co-Chairs

Dick West
RADM, US Navy (ret)

Robert Winokur
Senior Advisor
Michigan Tech Research Institute / Michigan Tech Univ.

Members

Fred Byus
RDML, US Navy (ret)
Vice President & General Manager
Battelle Mission and Defense Technologies

John Crowley
RADM, US Coast Guard (ret)
Executive Director
National Association of Waterfront Employers

Dr. Steve Murawski
Professor
University of South Florida

Nancy Rabalais, Ph.D.
Executive Director and Professor
Louisiana Universities Marine Consortium
National Defense University, Penn State University

Robert (Tim) Schnoor
Ocean Research Facilities Manager

Dr. John Hughes-Clark
Professor
University of New Hampshire

Bauke (Bob) Houtman
Head, Integrative Programs Section
National Science Foundation, Ocean Sciences Division

Blake Powell
President
JMS Naval Architects

Dr. Steve Ramberg
Distinguished Research Fellow
Center for Technology and National Security Policy

Dick Vortman
President and CEO (retired)
National Steel and Shipbuilding Company (NASSCO)

NOAA Liaisons

Nancy Hann, CDR/NOAA
Chief of Staff
NOAA Office of Marine and Aviation Operations

Richard J. Park, LT/NOAA
Flag Aide to Director, NOAA Corps and OMAO
NOAA Office of Marine and Aviation Operations

Ocean Exploration Advisory Board
QUESTIONS?